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PRECIS

This thesis is an empirical study of the unguided colonisation of land in Mindanao by migrants from other islands in the Philippines. Land settlement is widely believed to have a valuable part to play in the economic development of countries that have large areas of vacant land, but evidence from many areas suggests that this role may not be fulfilled. Economic and demographic data on the Philippines illustrate the need for increased agricultural productivity, not merely increased production through the development of new land.

The first chapter is based largely on secondary sources and presents firstly a brief review of the growth and distribution of Philippine population and the institutional arrangements designed to encourage the orderly occupation of public lands. A description of recent agrarian conditions in the most densely settled areas is followed by a short account of the development of Davao province. This notes the role of Japanese entrepreneurs up to 1941 and the emergence of problems of squatting, tenancy and diminishing farm sizes with rapid immigration after 1945.

The fieldwork area was the municipality of Mawab in northern Davao. The municipality comprises a plain entirely surrounded by rugged hills. The first immigrant arrived in 1919, when the area was inhabited by a few hundred shifting cultivators, and by 1967 the population of almost 12,000 consisted mainly of immigrants.

The location, area and tenure of land that a settler acquired were greatly influenced by the time at which he arrived in Mawab. The earliest settlers were able to obtain free homesteads up to the legal maximum size of 24 ha,

covering most of the centre of the plain. By the late 1930s, most immigrants could obtain areas only one half or one fourth as large. By 1950, all the plain was occupied and new immigrants who could not afford to buy land became squatters in the hills, tenants in the plain or labourers. As land values have begun to increase rapidly, tenants and labourers can rarely save enough to buy land. As immigration continues, mean farm sizes have become smaller, making capital formation by tenants and squatters difficult. Most available land is bought either by non-residents or by wealthy pioneers with large landholdings. Such people may also obtain land by foreclosing on unredeemed mortgage loans made to small farmers. It is suggested that conditions of the tenure and size of farms will increasingly resemble those in the migrant source areas.

The early development of Mawab depended on virtual monoculture of abaca, but in the mid-1950s disease and low prices led to its gradual removal. The most profitable alternative crop was lowland rice; however, only people in the centre and north of the Mawab plain had land suitable for rice fields, and most of this area was occupied by pioneers with large homesteads. In other parts of the plain and in the hills, abaca was replaced by less profitable crops such as corn, coconuts and coffee. Land use seems to be determined as much by short-term economic considerations as by the suitability of land for particular crops. Planned crop rotations are rare and hill farms in particular may suffer severe soil erosion on exposed areas under temporary crops.

Methods of crop production in general are little different from those used in the migrant source areas, although many individuals have adopted techniques from their neighbours. The most significant recent innovations in crop production have been in rice growing and they tend to be

labour-saving or crop-protecting inputs rather than directly yield-increasing inputs. The leading innovators have been the wealthy pioneers, particularly those of the Ilocano cultural group, but few people have adopted the full range of innovations necessary to achieve the maximum possible yields with their current crop varieties. Yields, however, are considerably higher than those of the source areas, while shares of output received by tenant farmers and by labourers are also usually more favourable than in their home areas.

Apart from becoming the owners of large holdings in the most accessible parts of the plain, the earliest settlers were also able to benefit from periods of high prices for abaca and, later, from their occupation of land suitable for lowland rice. These advantages have made considerable capital formation possible. Apart from high levels of consumption, the pioneers have been able to afford education for their children, making it possible for some to obtain permanent employment as teachers, professional men or civil servants. This reduces the probability of fragmentation of the pioneers' large holdings through inheritance, which is beginning to occur with the farms of smaller owners who arrived later. Low incomes associated with small farms, share tenancy and unfavourable locations make capital formation difficult for more recent settlers, whether owners, tenants or squatters. Their lack of financial reserves makes borrowing necessary in emergencies, but repayment of large loans is difficult, particularly when loans are of the <u>prenda</u> type by which the borrower loses the usufruct of his land until the loan is repaid. It is likely that two trends in farm sizes and ownership will emerge: some farms will be subdivided through inheritance and in emergencies the resulting smaller operating units will be sold or mortgaged, in whole or in

part. On the other hand, wealthier farmers and businessmen will enlarge their holdings by purchases or by foreclosure on unredeemed mortgages. It is unlikely that non-farm employment will expand at a rate sufficient to absorb a growing number of landless settlers.

Comparisons with the processes of spontaneous colonisation in Indonesia, Burma and Costa Rica show several similarities with those in the Philippines, although none of these countries has had a coherent legal framework for colonisation like the Philippines. In these countries, as in the Philippines, the development of new land has often made possible valuable increases in agricultural output and many settlers have experienced dramatic improvements in their levels of living. However, much evidence indicates that improvements may be only short-term, as new areas have rapidly become prone to problems of land use, land tenure and low incomes associated with diminishing farm sizes.

As land reserves in the Philippines have become negligible while the rate of population growth has increased, the role of colonisation as a 'safety valve' has proved to be only temporary and its future role in national economic development is likely to be increasingly circumscribed by the re-creation of the agrarian problems of the densely settled areas.

PEASANT COLONISATION IN MINDANAO, THE PHILIPPINES

by

Peter A. Krinks

This thesis was submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in the Australian National University

March 1970

Except where otherwise acknowledged in the text, this thesis represents the original research of the author.

Peter A. Krinks

CONTENTS

		Page
List of Tables		v
List of Maps		x
List of Figures		xi
List of Plates		xii
Conventions		xiii
Acknowledgments		xv
INTRODUCTION		xviii
Chapter I	POPULATION GROWTH AND THE DEVELOPMENT OF PUBLIC LAND IN THE PHILIPPINES	1
Chapter II	THE FIELDWORK AREA	44
Chapter III	THE ACQUISITION OF LAND BY SETTLERS	76
Chapter IV	THE EVOLUTION OF CROPPING PATTERNS IN MAWAB	124
Chapter V	THE PRODUCTION AND DISPOSAL OF SETTLERS' CROPS	152
Chapter VI	THE ECONOMIC CONDITIONS OF SETTLERS	193
Chapter VII	SOME INTERNATIONAL COMPARISONS OF PEASANT COLONISATION MOVEMENTS	236
Chapter VIII	SUMMARY AND CONCLUSIONS	266
PLATES		278

APPENDICES

Figure 1.	Population pyramids for Davao province and the Philippines.	284
Table 1.	Population projections for the Philippines, 1960-2000.	285
Table 2.	Selected aspects of national output, 1950-68, at constant (1955) prices.	286
Table 3.	Philippine exports.	287
Table 4.	Philippine imports.	288

BIBLIOGRAPHY 289

LIST OF TABLES

		Page
Introduction Table 1	Average yields of rough rice (paddy) in selected countries, 1963-7	xxix
Table 1:1	Population density and rates of tenancy in Mindanao provinces and the Philippines, 1960	11
1:2	Measures of population density and rates of tenancy in the Ilocano region, 1960	17
1:3	Measures of population density and rates of tenancy in the Ilongo area, 1960	24
1:4	Measures of population density and rate of tenancy in Cebu and Negros Oriental, 1960	24
1:5	Measures of population density and rate of tenancy in Bohol, 1960	28
1:6	Measures of population density and rate of tenancy in Leyte, 1960	30
1:7	Major crops in six source areas of migrants to Mindanao	32
1:8	The development of agriculture in Davao province, 1903-60	36
2:1	Population of Mawab municipality, by barrio, 1960	59
2:2	Commercial establishments in Mawab, by barrio, 1967	62
2:3	Social and administrative facilities in Mawab, by barrio, 1968	63
2:4	Population density of Mawab, Davao and the Philippines, 1960 and 1967	65

		Page
Table 2:5	Source areas of settlers in a) Mawab and b) the research sample	68
2:6	Cultural group and province of birth of 50 settlers in Mawab	68
2:7	Education level of 50 settlers, by cultural group	72
2:8	Educational attainment of the population of Mawab, 1960 and of the research sample, 1967	73
2:9	Total and sampled numbers of households in Mawab, by barrio	74
3:1	Area of origin of all household heads in Mawab, by barrio.	82
3:2	Distribution of Visayan settlers in Mawab, by province of origin and by barrio.	83
3:3	Tenurial status and cultural origins of 23 sampled rice growers in Mawab.	87
3:4	Initial means of support for 50 settlers in Mawab.	89
3:5	Initial means of holding land by 50 settlers in Mawab, by period of arrival.	90
3:6	Initial means of support and land acquisition of seven pre-war settlers in Mawab.	94
3:7	Initial means of support and land acquisition by 19 post-war land owners in Mawab.	96
3:8	Tenants' reasons for abandoning farms.	109
3:9	Tenurial status of 50 settlers in Mawab, 1967, by period of arrival.	111
3:10	Tenure and area of land held by 50 settlers in 1967.	118
3:11	Areas controlled and operated by 50 settlers, 1966-7, by tenure.	119

		Page
Table 3:12	Owners' and squatters' reasons for relinquishing land.	122
4:1	Area planted to major crops in Mawab, 1960.	131
4:2	Major crops grown by 46 settlers, 1967.	132
4:3	Areas of major crops that are intersown.	133
4:4	Areas planted to selected crops in the Philippines, 1955, 1960 and 1965.	133
4:5	Crop combinations of 50 settlers in Mawab, 1966-7.	144
4:6	Generalised land use of 50 settlers in 1967 and 1,254 settlers in Mawab, 1960.	146
4:7	Land use of 50 settlers in Mawab compared with the migrant source areas.	150
5:1	Ownership of carabaos among 23 rice growers.	154
5:2	Estimates of labour inputs in the production of selected Philippine crops.	163
5:3	Disposal of lowland rice output, by tenure of rice land.	164
5:4	Percentage disposal of rice, Mawab 1966-7 and Mindanao and the Philippines, 1954-5.	164
5:5	Ownership of carabaos among 38 corn growers.	168
5:6	Number of corn fields by slope category.	169
5:7	Disposal of corn output, by tenure of corn land.	174
5:8	Receipts and expenses of 11 abaca growers, 1966-7.	177
5:9	Receipts and expenses of production and marketing by 14 copra producers.	180

		Page
Table 5:10	Value of output per hectare of major crops of 46 settlers, 1966-7.	183
5:11	Total value of livestock production by 50 settlers, 1966-7.	187
6:1	Gross value of output of 47 settlers in 1966-7, by length of residence in Mawab.	195
6:2	Farm receipts and expenses of 47 settlers, 1966-7.	196
6:3	Household income from farm, by tenure, 47 settlers.	197
6:4	Income from agriculture of 47 settlers.	199
6:5	Income from agriculture of 47 settlers, by tenure.	200
6:6	Total income from all sources for 47 settlers.	201
6:7	Off-farm earnings of 34 settlers by location of household.	202
6:8	Distribution of income among 47 households.	203
6:9	Mean income of 47 settlers, by length of residence in Mawab.	203
6:10	Total income of 47 settlers, by tenurial status.	204
6:11	Purposes of borrowing by 34 sampled settlers in Mawab.	211
6:12	Loans provided by Agricultural Credit Administration to Mawab 'Crash' Area, 1964-7.	212
6:13	Sources of credit obtained by 34 sampled settlers in Mawab.	213
6:14	Repayment of loans by 34 settlers in Mawab, 1966-7.	215

		Page
Table 6:15	Outstanding debts of 18 settlers by source and purpose of loan.	216
6:16	Assets of 50 settlers at time of arrival in Mawab (1955 prices).	222
6:17	Assets of 50 settlers at time of arrival and in 1967 (1955 prices).	223
6:18	Mean value of settlers' assets by item, according to length of residence in Mawab.	226
6:19	Livestock owned by sampled settlers.	227
6:20	Value of settlers' total fixed capital in 1967 according to length of residence in Mawab.	229
6:21	Value of settlers' total fixed capital according to tenurial status.	230
6:22	Capital assets on six tenant farms in Mawab.	232

LIST OF MAPS

Map		Page
1	The Philippines: major source areas of migrants to Mindanao	14
2	Incidence of tenancy in Davao province, by municipality, 1960	43
3	Mawab: location, relief and drainage	46
4	Location of sampled settlers, numbered in order of arrival	75
5	Distribution of landholdings in eastern Mawab, by cultural origin of owners	84
6	Location and tenure of landholdings of sampled settlers	110

LIST OF FIGURES

Figure		Page
2:1	Annual rainfall regimes at Odell Plantation, Compostela and Masara Mine	50
2:2	12 year rainfall graph, Masara Mine, 1956-67	52
2:3	Number of households settling in Mawab each year, 1919-66	56
2:4	Age-sex structure of the population of Mawab and the Philippines, 1960	66
2:5	Composition of sampled households by age and sex	72
3:1	Relationship between area controlled by settlers and length of residence in Mawab	117
4:1	Wholesale price indices of selected crops in Manila, 1951-67. (1955=100)	129
4:2	Relationship between land utilisation and relative prices in agriculture	134
5:1	Relationship between yields of rice and length of residence in Mawab	159

LIST OF PLATES

Plate	Short title	Page
4:1	Rice fields in central Mawab.	136
4:2	Coconut plantings in southeastern Mawab.	141
1.	Centre of Mawab poblacion.	278
2.	Barrio road.	279
3.	Fording the Hijo River.	279
4.	Harrowing a rice field.	280
5.	A squatter's corn fields.	280
6.	Rice fields in an upland basin.	281
7.	Rice, corn and coconut fields.	281
8.	Preparing copra for drying.	282
9.	Newly-arrived squatter's house.	282
10.	Debris from logging and clearing by squatters.	283
11.	Squatters' houses in barrio Tuburan.	283

CONVENTIONS

Local government units

Barrio: the smallest functional unit in the Philippine local government structure. Minor aspects of barrio affairs are administered by a council, headed by the barrio captain, elected by adult suffrage at four-yearly intervals. Barrios are usually subdivided into named but non-functional areas known as *sitios*. Barrios and *sitios* may have central areas of clustered houses and stores or they may comprise dispersed houses only.

Municipality: a municipality comprises a number of barrios. The barrio containing the municipal offices is known as the *poblacion* and usually gives its name to the whole municipality. In the text below, *poblacion* refers to both Mawab barrio in general and to the central, built-up portion that contains the municipal offices. I have occasionally used the term 'town' as interchangeable with 'municipality'. A municipality is governed by a mayor and council elected every four years.

Province: the major element in the local government hierarchy. A province comprises a number of municipalities. It is administered by a governor and a three-member provincial board elected every four years.

Measurements

The metric system is used in this thesis. Where local measures were used in data collection, they have been converted at the following rates:

7 gantas = 1 kerosene can

4 kerosene cans = 1 sack

1 sack (rice or corn) = 28 *gantas*

1 cavan = 25 gantas
1 sack rough rice (palay) = 49.3kg
1 sack shelled corn = 62.7kg
1 picul (abaca or shelled corn) = 63.25kg

Rough rice and corn have been converted to milled equivalent at the locally-assumed recovery rate of 50 per cent. This is lower than the 65 per cent rate often used by economists because the milling equipment in the barrios is mostly old and inefficient.

Monetary values are expressed in Philippine pesos. $Aus.1.00 = P4.23; $US1.00 = P3.89.

Percentage totals in tables are shown as 100 although individual items may not add to 100 due to rounding.

ACKNOWLEDGMENTS

Although I first became interested in the phenomenon of spontaneous colonisation by peasants during a visit to Bolivia in 1961, it was only in 1966 that I was able to begin a study of a peasant colonisation movement. By this time, my interest had turned towards the Philippines, both because of the scale of movement there and because of the lack of information on its processes and results.

I am grateful to the Australian National University for the award of a research scholarship that enabled my wife and I to spend 14 months in the Philippines and that made it possible for me to complete this thesis. I thank Professors P.D. Simkins and F.L. Wernstedt, who had begun a study of colonisation in Mindanao in 1965, for early encouragement of my proposal to carry out a similar, though smaller-scale, study.

My fieldwork could not have been completed successfully without the generous aid of many Filipinos. My greatest debt is to the 50 farmers and their families who formed my research sample in the municipality of Mawab, Davao province. In order to protect the privacy of their information, I cannot thank them by name, but the body of this study bears witness to the many hours each settler gave in several interviews to provide basic data. The willing collaboration and hospitality of these settlers (whether wealthy landowners, tenants or squatters) will remain my warmest memory of my stay in the Philippines and my deepest regret is that I cannot repay their kindness.

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Peter A. Krinks
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INTRODUCTION

Peasant colonisation as a research topic

Since 1945, there has been an increasing number of studies of the settlement of new land in the tropics by peasant farmers. These studies have been carried out by economists, anthropologists and sociologists as well as by geographers. Their interests have focussed mainly on settlement projects organised by governments or by private institutions, and there is now a considerable literature on the planning and administration of such projects. Particular attention has been paid to such aspects as costs and benefits, administrative structure within settlements, settler selection, farm sizes, financing of settlers and so on.

Far less attention has been devoted by geographers to the spontaneous, or unguided, diffusion of independent migrants into vacant lands. Most existing work has been on a broad regional scale or has merely noted movements of spontaneous colonisation almost in passing. There have been very few detailed investigations among individuals actively engaged in developing new areas.[1]

Such neglect is regrettable, firstly because of the sheer scale of the phenomenon of spontaneous colonisation. In the last fifty years, it has involved many millions of people in Latin America, Africa and Asia. Within the tropics alone, the process has been comparable in scale to the migrations that populated North America and Australia, but

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[1] Raison (1968:11) in an important paper reviewing colonisation in the tropics states 'Quant aux mouvements spontanés,...ils sont fort mal connus, sauf cas particuliers ...'

it is far less documented. Thus, in the Philippines some two million people have moved into sparsely populated areas without official assistance or guidance since 1945, but only one brief paper (Sandoval, 1957) has been devoted specifically to an investigation of the conditions of a sampled group of settlers.

A second reason why one might have expected greater attention to the study of spontaneous colonisation is that it bears on a wide range of topics of geographical interest. There is the advantage of being able to observe from the earliest stages the processes of development of agricultural and settlement patterns that are basically the result of settlers' own choices rather than of the pre-determined designs of an external guiding agency. These processes may be studied in themselves alone or in relation to theories of location, diffusion, environmental perception, economic development and other topics.

The approach followed in this thesis is essentially empirical and examines a range of themes, in the setting of a single municipality within a colonisation area in the Philippines. Briefly outlined, these themes are, firstly, the factors involved in the occupation of land by migrants and the forms by which they hold land; secondly, the development of the land and its present use; and, thirdly, the present economic conditions of the settlers. The conditions that have resulted from colonisation are viewed in relation not only to the colonists but also in general terms to the nation as a whole. The data from the study of colonisation in a single small area are not definitive but it seems important to make extrapolations to the national level, however tentative, for two related reasons. Firstly, the Philippine nation, from policy-makers to peasants, has for several decades relied on the development of new land as a solution to problems of population growth in more densely

settled parts of the country. Secondly, detailed information on the results of Philippine colonisation is lacking.

Land settlement, population problems and economic development

General considerations. Many nations in the tropics that have unevenly distributed populations have hoped that redistribution of the population through migration and resettlement would help to solve agrarian problems in the densely settled areas. These problems centre on low incomes and low levels of living for large proportions of the population and may be related to problems of land tenure, small farms, low productivity of land or labour and lack of alternative employment. It has widely been hoped that the development of new lands would relieve pressures in the densely settled areas, increase domestic food supply and increase production of raw materials for domestic industry and for export. Although demographic studies have shown that emigration very rarely has long-term effects in reducing (or even significantly slowing the rate of increase of) the population in densely settled areas, there may nevertheless be grounds for hope of significant other benefits from colonisation.

In this context, the colonisation of agricultural lands is bound up with the subject of economic development in general, not merely with agricultural development. A basic assumption of this thesis is that economic development is desirable, in the sense of increasing individuals' opportunities for choice among alternative ways of controlling their destinies. These opportunities are supported by reasonably reliable prospects of employment, increasing productivity and increasing real incomes (Mellor, 1966:9-10). It is further assumed that economic development in a country of rapidly growing population with

an established backlog of unemployment requires the development of industry as well as of agriculture. These assumptions will not be argued at length but some comments are in order to illustrate the frame within which colonisation in the Philippines has been viewed.

The relationships between agriculture, industrialisation and general economic development have provided ground for continuing debate between economists. Recent contributions particularly relevant to the viewpoint of this thesis are Paauw (1966) and Shand (1969) while Mellor (1966) has covered the whole field at length.

Shand, reviewing the processes of agricultural development in nine Asian countries, emphasises the degree of availability of land and the nature of the technology used in agriculture. He expresses these factors as limited or unlimited land and static or dynamic technology. Vacant agricultural lands offer nations a prospect of establishing new farms free of the traditional restraints of densely settled areas that commonly inhibit the adoption of productivity-increasing innovations. If improved technology is adopted, once subsistence is assured, increasing productivity allows an increasing proportion of farm output to be marketed. Even with constant prices farm incomes would then increase, but higher and more reliable output would also make possible economies in transportation and marketing so that prices paid to farmers would rise. This would increase incentives to raise productivity. Increased farm incomes would also allow greater purchases of both farm supplies and other manufactured products so that the role of farmers as consumers would stimulate domestic industrial growth. Industry would benefit from an improved supply of raw materials from agriculture. Moreover, if food crops experienced productivity gains the cost of food for

non-agricultural workers would be reduced so that urban real incomes should increase, stimulating further demand for both industrial and agricultural products.

Another element in this brief review of the potential beneficial results of adopting improved agricultural technology is that of employment. If incomes of farmers are high, they can afford schooling for their children, who are then more qualified for a wider range of employment opportunities. Such opportunities become more widely available as the non-agricultural sectors of the economy grow. The movement of rural people into non-farm employment reduces the likelihood - or at least the rate - of subdivision of farms through inheritance and so operates against a possible tendency towards decreasing farm incomes. The availability of vacant land for new farms may serve the same role, but the above conditions of increasing productivity and expanding employment opportunities would still need to operate or the advantage of newly developed areas would rapidly be dissipated through population growth.

Paauw (1966) discussed, with specific reference to the Philippines, the role of agriculture in helping to eliminate dualism in an economy, where dualism is seen as a contrast between a technologically stagnant agricultural sector and a smaller, more or less dynamic industrial sector.[1] Paauw stressed the importance of foreign trade in strengthening the symbiotic relationship between agriculture and industry that has been outlined above. Noting that earnings from agricultural exports commonly served to support early attempts at industrialisation, he suggested (1966:18) that

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1 This characterisation is a rather wide generalisation, since some agricultural enterprises, notably sugarcane production, are more dynamic than for instance, the important cottage industries of the Philippines.

agriculture should receive priority attention in the early stages of development in order to 'lay the basis for its historical role of financing transfers to industry through both domestic and foreign trade channels.'

The authors cited also point out the results of failure to adopt a dynamic technology in agriculture when population is growing rapidly. In very brief summary, declining real incomes per capita in agriculture would both lessen the availability of capital for investment in innovations and reduce the willingness of farmers to risk innovation. Increasing rural population might lead to a decline in marketing of food crops or to a shift from export crops to food crops for subsistence. If domestic food supplies for urban workers were reduced, causing price increases, urban wages would need to be raised, thus reducing funds for re-investment in industry. Alternatively, prices of manufactured products would be increased. With rural real incomes falling, domestic demand for industrial products would be restricted. If a conversion of land from export crops led to reduced export earnings, the reduced ability to import capital goods and raw materials would have an additional depressing effect on industrial activity. Moreover, foreign exchange might also be needed to import food if increasing proportions of domestically produced foods were consumed by the growing rural population.

The development of new land by traditional agricultural techniques merely delays the stage at which limitations of land begin to limit growth of agricultural output. It is therefore in the long run essential that steps should be taken to begin raising agricultural productivity before the limits of land availability are reached. From one viewpoint, the prospects of new settlers adopting a dynamic technology are favourable, since they are not generally subject to some of the constraints of densely settled areas such as small

farms and lack of incentives caused by tenurial arrangements. On the other hand, the very nature of colonisation may mean that settlers are remote both from extension workers who could transmit innovations and from suppliers of necessary production inputs. Furthermore, settlers using traditional techniques are quite likely to obtain good returns from newly cultivated land and to feel that the expense of inputs such as fertiliser is unnecessary. Raison (1968:102) commented on the paradox that an extension centre in a pioneering region would begin to achieve results only when the surrounding area was no longer a pioneering region. This comment echoes the thesis of Boserup (1965) that improvements in agricultural techniques and productivity are likely to develop primarily in response to population pressure on resources at a given technological level. The use of basically traditional techniques by Javanese settlers in Sumatra has been noted by several observers. Penny, using information from both old and new settlements in Java and Sumatra, estimates that where new land is developed without improved techniques and with population growth of 2 per cent annually, real income per head will begin to decline within a generation.[1] Within two generations farmers will again be willing to migrate if more new land is available.

These considerations show that the colonisation of new land is not in itself adequate to contribute greatly to long-term economic growth and, together with the evidence of the present study, they indicate that the potential benefits of land development as outlined above are perhaps rarely achieved in practice. This suggests that the processes actually operating during a colonising movement are of great

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1 D.H. Penny, personal communication.

importance in determining the impact that colonisation will have on the national economy, regardless of its role in the lives of individual colonists.

It was noted above that the main themes of this thesis are concerned with colonisation in one small area within the Philippines but that some space is also devoted to relating the fieldwork findings to conditions at the national level. It is convenient to present here aspects of the Philippine economy that are relevant to the general framework outlined above, that is, the relationships between land settlement, population problems and economic development.

The Philippine case

Population growth. At the beginning of the twentieth century the population of the Philippines was only 7.6 million and by 1918 had reached 10.3 million. Under the impact of educational and health services introduced by the American colonial regime, mortality rates began to decline. From 1926 to 1930 the crude death rate averaged 26 per 1000 but by 1956-60 it had fallen to only 14.5 per 1000. Meanwhile the crude birth rate remained steady at about 45 or 50 per 1000, so that population began to grow at an increasing rate (Concepcion, 1966:186-7). In 1948 the population was 19.2 million and appeared to be increasing at 1.9 per cent each year, but the 1960 census revealed a population of 27.1 million growing at an annual rate of 3.0 per cent.

Lorimer (1966) has made detailed analyses of Philippine population growth and presented projections for the future based on various assumptions (see Appendix Table 1). His maximum projection, assuming unchanged fertility and death rates, suggests a population in 1980 of 53 million - almost double the 1960 figure. In the following 20 years population would more than double, reaching 111 million in the year 2000.

Lorimer's minimum projection assumes a gradual decline of total fertility from 6.8 births per woman to 2.8 by 1995. This projection yields a population of 49 million in 1980 but only 72.7 million by 2000 (Lorimer, 1966:292,301-3). However, such a rapid decline in fertility is hardly to be hoped for, particularly in a population that is mainly Roman Catholic. Hence, Lorimer (ibid.) presents a third projection based on gross reproduction ratios halfway between the other two projections. This yields a population of 51 million in 1980 and 92 million in 2000.

Employment. On all of these projections, the labour force in 1980 will be double the level in 1960. Thereafter, even on the minimum projection the labour force would increase by more than half a million workers annually (Lorimer, 1966:308). The task of creating sufficient new employment opportunities will be immense in view of the existing backlog of unemployment. In the 1960 census, some 0.6 million Filipinos (7 per cent of the labour force of 8.5 million) were reported unemployed and another 1 million were said to be visibly underemployed since they were seeking additional work.

The provision of services, employment and income for a rapidly increasing population requires a very high rate of capital formation. The International Labour Office (1964:142) concluded that rates of investment of at least 20 per cent of national income must be sustained over long periods before growth is sufficient to raise incomes, demand and output enough to achieve full employment. However, in the period 1950-60, gross domestic capital formation in the Philippines ranged between 12 and 14 per cent of gross national product (GNP) at current prices and 30-40 per cent of the total was accounted for by capital consumption allowances and by imported capital (National Economic Council, 1969:44-5). Although from 1960 to 1967 gross

domestic capital formation rose to between 19 and 23 per cent of GNP at current prices, this in part reflected rising prices of capital goods following exchange decontrol and devaluation of the peso in the early 1960s. Expressed in constant (1955) prices, gross domestic capital formation did not exceed 18 per cent of GNP.

Ruprecht (1966) has shown that between 1957 and 1964 at least, the Philippine economy generated opportunities in excess of the rate of increase of labour, so that some of the surplus noted above has been absorbed. However, the manufacturing sector did not contribute much to this absorption since its growth was a response to inputs of capital rather than labour.

In the Philippines two major objectives of economic policy since independence in 1946 have been industrialisation and the achievement of self-sufficiency in rice. For 15 years after the second World War, manipulation of exchange rates, severe import controls and tax concessions facilitated a considerable degree of import substitution for industrial products. In consequence, the share of manufacturing in net domestic product rose from 13 per cent in 1950 to 18 per cent in 1959. At this point, because of the urgent need for external stabilisation, import controls began to be eased and in 1962 the peso was devalued. Consequently, industrial growth decelerated and in 1965 manufacturing fell back to 17 per cent of net domestic product (National Economic Council, 1969:60). Even before this, in 1959, it was estimated that, on average, industrial plants were operating at only about 50 per cent of capacity, due largely to lack of foreign exchange to import essential equipment, maintenance parts and raw materials (Treadgold, 1969:241, f-n).

Agricultural development. While the value of non-agricultural commodity output per head rose by 6 per cent between 1948 and 1961, the value of agricultural output per head rose by only 1 per cent. Over the same period, the share of net domestic product originating in agriculture (including forestry and fishing)[1] fell from 38 to 31 per cent, although the proportion of the employed labour force in this sector has probably remained close to 65 per cent (Population Institute, 1966:500-1).

Nevertheless, the agricultural sector has to a large degree assisted the growth of the non-agricultural sector through its earnings of foreign exchange. Copra alone has accounted for between 20 and 40 per cent of the total value of all exports in most post-war years. If processed agricultural products, such as coconut oil, refined sugar and canned pineapple are included, agriculture accounted for 84 per cent of all exports in 1949, 74 per cent in 1955 and 60 per cent in 1965 (Central Bank News Digest, June 27, 1969). Paauw and Tryon (1966:22-3) calculated that in 1949 42 per cent of agricultural export earnings were used to finance imports for the industrial sector and by 1964 this proportion had risen to 80 per cent.

Within agriculture, there has been a marked difference in performance during the twentieth century between food and commercial crops.[2] In their major survey of Philippine agricultural development 1902-61, Hooley and Ruttan (1969)

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1 Forestry and fishing accounted for 15 per cent of the value of this sector in 1948 and for 25 per cent in 1961 (National Economic Council, 1969:46-7).

2 The distinction here is in practice not entirely clear. For instance, some 30 per cent of corn output is used in animal feeds or other industrial uses (Golay and Goodstein, 1967:61), while a considerable proportion of coconut products is consumed on farms (Nyberg, 1966:12).

show that although total agricultural productivity did rise after 1945, it was the commercial, largely export crop sector that was largely responsible. Sugar yields rose sharply until 1960, when extension of cultivation into marginal lands led to a drop, and yields of coconuts have shown a slight but continuing upward trend.

The physical output of rice and corn has risen enormously since the 1920s, but up to 1960 the rise was almost entirely due to massive increases in the areas planted to these crops in regions of colonisation. Between 1926 and 1963 the area in rice (including double-cropping) rose from 1.8 million ha to 3.1 million ha and the area in corn from 0.5 million ha to 1.9 million ha. Yields of rice remained constant at about 1.2 metric tons per hectare between 1920 and 1960 while corn yields were about 0.7 tons per hectare. Philippine rice yields have long been among the lowest in the world and in 1963-7 only Puerto Rico, Brunei, Cambodia and Laos had lower average yields (FAO, 1968a:203-4). From the nineteenth century until 1968,

Table 1 Average yields of rough rice (paddy) in selected countries, 1963-7.

Country	Yield (metric tons/hectare)
Philippines	1.3
Thailand	1.6
Indonesia	1.8
West Malaysia	2.6
Taiwan	3.4
Japan	5.2
Australia	6.5

Source: FAO The State of Food and Agriculture 1968, Annex Table 16.

domestic rice output usually failed to meet requirements, so that imports were necessary in varying degrees from year to year. From 1947 to 1965, net imports of milled rice

averaged 112,000 metric tons annually, with a peak in 1965 of 560,000 tons. In addition, imports of wheat and flour rose from an annual mean of 84 metric tons in 1933-40 to 182 tons in 1946-55 and 275 tons in 1956-65 (Golay and Goodstein, 1967:48,52). In the post-war period, cereals and cereal preparations have accounted for from 4 to 12 per cent of the total value of Philippine imports (Central Bank News Digest, March 22, 1966).

After about 1960, price movements favouring export crops caused a slight decline in areas planted to rice and corn, but both recovered by 1967. In 1966-7, a little over 2 per cent of the rice area was planted to new high-yielding varieties; in 1967-8 the proportion rose to 21 per cent (Barker, 1969:2). Varieties such as IR-8 have optimum yields well over 6 metric tons/hectare and many farmers have achieved over 4 tons/hectare. As a result of increased output, the Philippines became a net exporter of rice. Also, in 1967 the share of agriculture in net domestic product rose to 31 per cent and the sector's annual growth rate rose from 6.1 per cent in 1965-6 to 8.1 per cent in 1967-8 (National Economic Council, 1969:2,37).

Although the aim of self-sufficiency in rice was thus achieved, this may not remain true in the long term. Golay and Goodstein (1967) have presented data on the investments necessary to maintain self-sufficiency and they stress that cheap new land will no longer be a major contributor to growth of rice output. They also note that the trend towards improved technology to achieve the higher yields will encourage pressures to increase the scale of enterprise. Since rural population growth will encourage an opposing trend, 'these pressures inevitably will intensify class conflict in high tenancy sectors of Philippine agriculture. Such conflicts...will tend to intensify resistance to better farm management' (Golay and Goodstein, 1967:71-2).

Wharton (1969) has pointed out other problems likely to arise from the success of the 'green revolution'. Because of these problems and uncertainties, the general issues considered in this thesis are not seriously affected by recent developments in agricultural productivity.

Land settlement. In the Philippines, as in many other countries with unevenly distributed population, great faith has been placed in land settlement as a major contributor to agricultural development. A major aim of policy has been to strengthen the family-operated small holding sector and much has been expected of newly developed areas where settlers were able to establish farms much larger than the mean in the densely settled parts of the Philippines. In a report as early as 1931, Field (1931:399, 409-11) mentioned the emergence of social and economic problems in the areas of new settlement, but until recently optimism over the role of the new areas in national development remained high in both official and public opinion.

In the past five or so years, there has been a widening appreciation of the problems of the areas of colonisation, stemming perhaps from a projection by Huke (1963:152) that by 1970 or 1975 there might be no agricultural land left for settlement in Mindanao. However, this recent concern has been more with the question of the reserves of vacant land than with the problems of the lands occupied in the past 60 years. In part, this has been due to a lack of information on recently settled lands. Although incidents in these areas are reported in the national Press, there are few coherent bodies of information covering broad aspects of conditions in the colonisation areas. The periodic censuses of population and agriculture provide valuable data for analysis, but serve mainly as bench mark data. Annual provincial reports on population and agricultural conditions are largely 'guesstimates', as one provincial agriculturist

put it. A nationwide study of farm management, land use and tenancy by von Oppenfeld et al. (1957) included data from parts of Mindanao but in aggregated form. The paper by Sandoval (1957) cited above was until recently the only published report of a study specifically among settlers. Sandoval's data on the range in farm sizes, the degree of tenancy, lack of capital, poor transportation and destruction by disease of the major commercial crop (abaca) all indicated significant problems in the settlement area, even though virtually all of the settlers felt their conditions had improved since migration. Sandoval's data and other scattered evidence all suggest that not only was Mindanao's role as 'safety valve' for densely settled areas declining by the 1950s, it was also likely in the future to experience the same problems as the other areas. Hardie (1952:2) foresaw this, commenting

> ...these newly developed areas are after all a part of the Philippines and subject to the laws and customs of the land. If not corrected, pernicious land tenure practices...in Luzon will continue being transported to the newly developed areas....

In the light of the above comments, it seemed worthwhile to examine the processes of colonisation in detail, paying particular attention to the acquisition, tenure and use of land and to the economic conditions of settlers. The role of government agencies in supporting, channelling or constraining the efforts of spontaneous settlers is also considered. The aim was to show what conditions now exist among the peasant colonists and how they have arisen. The following section describes how the investigation was carried out.

Methods used in fieldwork

The collection of information concerning the personal histories, property holdings and economic conditions of

peasants in an unfamiliar culture can only be carried out by personal questioning, and fieldwork planning took this requirement as a starting point. To reduce the possibility of significant spatial differences in historical development, the investigation was restricted to a small area. Requirements were that colonisation should have begun at least 25 years before; that some at least of the pioneer immigrants should still be living; that the area should contain representatives from each of the five main cultural-linguistic groups of migrants in Mindanao;[1] and that immigration should be either still continuing or only very recently completed. These criteria would yield a broad range of conditions under which individual migrants would have made locational and land use choices.

In the Philippine context, such an area was most likely to be found in the main area of immigration, southern Mindanao. Following reconnaissance in the provinces of Cotabato and Davao, the municipality of Mawab, in northern Davao province, was selected as it met all the criteria listed above.

Through the co-operation of local officials and schoolteachers, a list of residents of the municipality was obtained, and a random sample of 50 settlers was chosen. This sample represented approximately 3 per cent of the total number of settlers in the area in 1967. During the reconnaissance period, two questionnaires were designed, tested and revised. Using an interpreter, each questionnaire required up to two hours to complete. Each informant was interviewed three times, usually in his own

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[1] These are Ilocanos, Ilongos, Cebuanos, Boholanos and Leyteños. As will be seen in the following chapter, the last three groups have much in common, including the Cebuano dialect, but they regard themselves as distinct.

home, where other members of his household often assisted in responses. Information on land use by the sampled settlers was obtained from chain-and-compass surveys of their holdings and from aerial photographs. Apart from the selected settlers, information was obtained from a wide range of sources. These included other settlers; public officials such as barrio captains, the mayor and the municipal treasurer; commercial establishments; and several government offices in Mawab, Tagum, Davao City and Manila. Late in the fieldwork period, a seven weeks' journey was made through the main migrant source areas to observe conditions and obtain general background information, as well as collecting data specifically on economic conditions for comparative purposes. In these areas, discussions were held with relatives and friends of migrants, with some former migrants who had returned to their homes, with schoolteachers, public officials concerned with agriculture and, in some areas, with research workers.

Presentation

In addition to interviews and official records, data were derived from publications on the Philippines. Such material is used in Chapter I to trace in outline the background and origins of the spontaneous colonisation movement in the Philippines and in Davao province in particular. The broad demographic and institutional aspects are sketched for the nation as a whole. This is followed by a section describing past and present conditions in the main migrant source areas. Finally, the settlement and agricultural development of Davao province is described. Chapter II presents a brief outline of the evolution of Mawab municipality up to 1967, and a description of the physical environment, stressing those aspects most relevant to the topics discussed later, in particular the selection of sites and land use. A final section in Chapter II provides information on the 50 sampled settlers.

The fieldwork data are analysed in the next four chapters. Chapter III presents an account of how settlers acquired land and the areas they obtained, stressing the changes that occurred as good land became scarce. This chapter also examines the location of the selected sites of the sampled settlers. The evolution of crop distributions and present cropping patterns and land use are treated in Chapter IV, related to such characteristics of the individual farmers as length of residence in the area and tenurial status. Methods of production and disposal of crops are treated in Chapter V.

The major topic of the economic conditions of the sampled settlers is discussed in Chapter VI. This incorporates an assessment of the value of capital assets as well as the value of production on the settlers' farms in the year ending June 30, 1967. Income from farm and off-farm occupations is calculated for the same period, as are farm expenditures. The sources and uses of credit are also discussed.

In Chapter VII the course of colonisation in Mawab and in the Philippines in general is compared with spontaneous colonisation movements in certain other countries.

The final chapter summarises the main conclusions of the preceding chapters. These conclusions are viewed in the light of Philippine expectations regarding land settlement, demographic growth and agricultural development.

Chapter I

POPULATION GROWTH AND THE DEVELOPMENT OF PUBLIC LAND IN THE PHILIPPINES

The first section of this chapter sketches the growth and distribution of population in the Philippines, together with an outline of the main institutional arrangements that have influenced both the mobility of the people and the nature and directions of their migrations. No attempt is made to present an exhaustive summary of these or related topics, which have been treated at length by other writers.[1] The second section summarises past and present conditions in the main source areas of migrants to Mindanao and the final section presents a brief description of the development of Davao province, where the fieldwork area is located.

Population growth and the development of agrarian problems

Population growth in the Spanish period. In 1591, soon after the establishment of Spanish control over the Philippines, the islands had an estimated population of 664,000, giving a mean density of little more than two people per square kilometre (Concepcion, 1966:186). At this date, the bulk of the population lived on the coasts, practising fishing as well as swidden cultivation. This required a certain degree of mobility: as population growth

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1 The reader is referred to the following works:
Cultural history - Phelan (1959);
Agrarian and economic topics - McDiarmid (1953), Sturtevant (1958), Starner (1961) and Golay (1961);
Population and migration - Lasker (1931), Pelzer (1945), Pascual (1966), Population Institute (1966), and the Census reports of 1903, 1918, 1939, 1948 and 1960 as cited in the bibliography;
General - Wernstedt and Spencer (1967).

made it necessary, small groups would expand into neighbouring areas of forest or would migrate to a nearby island. The settlements, or barangays, thus created were largely composed of kinsmen, but also included dependents such as debtors and captives. In most parts of the Philippines such dependents formed the bottom stratum of society, having few rights of any kind. Above them were 'freemen' who could hold land but who owed economic services to the top stratum, the chief and the 'nobility' (Phelan, 1959:22).

For ease of administration, both secular and religious Spanish authorities attempted, in the main unsuccessfully, to compel the Filipinos to settle in the administrative centres (poblaciones) of the newly-created municipalities (pueblos). Although wealthy and privileged Filipinos (the traditional nobility) preferred to settle in the poblaciones, most people remained in their customary scattered units. In time these were officially recognised by the Spanish as sitios (hamlets) and barrios (villages) within the municipal structure (Phelan, 1959:44-9).

The Spanish recognised pre-existing rights to occupied and cultivated land, but declared all unoccupied areas to be Crown land, disposable in perpetuity by the Crown. Initially, little land was so disposed. Instead, the Crown granted encomiendas to favoured individuals. An encomienda gave the grantee (and two generations of his descendants) the right to collect tribute and to require labour services from specified groups of people. In return, the grantee had to provide both judicial and religious facilities for his charges. After three generations, the encomienda reverted to the Crown. In some respects the encomienda system perpetuated the quasi-feudal structure of pre-Spanish society (Ledesma, 1967).

For various reasons, including the opposition of the Church, the encomienda system was soon abandoned. However, educated and influential individuals (both Spanish and Filipino) and the Church in many cases retained control over large areas, becoming effectively owners of the land. When a land registration system was initiated in 1889, such people obtained titles as owners in fee simple. The concept of private land ownership was quite contrary to traditional land tenure, which recognised private rights only to the usufruct of the land. Where individuals and corporations obtained title to haciendas (large estates), the actual occupants became tenants on a crop-sharing basis. The tenants' conditions were such as to cause repeated tenant uprisings as well as less violent chiliastic movements, and the unrest has continued up to the present time (see Pelzer, 1945; Stubbs, 1951; Jacoby, 1961; and Sturtevant, 1958). Most of the large holdings were in central Luzon, but during the nineteenth and early twentieth centuries others developed in northern Negros, eastern Panay and western Leyte. In areas unaffected by the development of haciendas, there was little or no attempt to survey land or to educate the people in the technicalities of obtaining titles. The native communities grew and expanded into unoccupied lands according to traditional modes and without reference to the formal status of all vacant areas as Spanish Crown land.

The population of the islands grew steadily, reaching about 1.6 million late in the eighteenth century and 7.6 million in 1903 (Concepcion, 1966). By the beginning of the American period in 1899, population on some islands had grown sufficiently to cause the serious fragmentation of farm holdings into small lots, through the principle of equal inheritance. The long fallow periods necessary for successful swidden cultivation were no longer practicable, but no new techniques were devised to cope with declining

soil fertility. The increasing exploitation of marginal and sub-marginal land resulted in severe soil erosion and a continuous decline in crop yields. The combination of physical and social conditions was responsible for low incomes and indebtedness among small owners as well as among tenants. During the nineteenth century the low productivity of traditional agriculture became unable to supply the growing population and imports of the staple food, rice, were begun. Such imports remained necessary in varying degree up to 1967 (see Appendix Table 4). Many people in the most densely settled areas responded to increasing pressure on resources by migrating to vacant lands at some distance. The directions of such movements are described in the second section of this chapter.

Land administration, 1903-41. With the beginning of American control, various approaches were made to rural problems, including the provision of education and health services, and deliberate attempts were made to increase the scale of migration into vacant lands. The basic step in land administration came in 1903 when the Americans enacted the Philippine Public Land Law to regulate disposition of the public domain, or former Spanish Crown lands. The Bureau of Forestry was made responsible for classifying the public domain into land use categories. Land classified as 'alienable and disposable for agricultural purposes' was 'released' to the Bureau of Lands for survey, subdivision and subsequent transfer to qualified applicants, subject to various restrictions. Corporations were allowed to purchase or lease areas up to 1,024 hectares. Individuals could purchase a maximum of 16 ha or could obtain land up to the same limit by applying for it as a homestead. A homestead applicant had to locate his claim and describe its position and boundaries accurately; he was required to settle on his holding and cultivate the entire area before he could

receive his title. Small fees were payable on application and on receipt of the title.

The requirements of the 1903 Act that a homestead applicant locate, live on and fully cultivate his land before receiving title were soon recognised as deterrents to pioneering. Among the factors involved were the general Filipino custom of preferring residence in a village to isolation on a farm; the inadequacy of traditional technology to cope with large areas of land; and the problems for mostly illiterate peasants of complying with the legal requirements for locating and claiming land. Up to 1907 the average area applied for as homesteads was 11 ha and the average area patented was only 3.6 ha. Between 1910 and 1919, out of 59,296 homestead applications, less than 2,000 were patented. In the same period there were 5,078 applications for purchase and 1,686 for leases (McDiarmid, 1953:873, f-n).

In 1919, major amendments were made to the Public Land Law. The maximum area for homesteads was raised to 24 ha (which has remained the limit to the present day) and an applicant needed to cultivate only half the area desired for not less than two years after approval of his application. This concession was the first of several such steps towards overcoming the settler's difficulty in rapidly developing large areas with traditional techniques. Settlers were to be directed to lands declared open for settlement rather than to have to locate plots for themselves, and an applicant could now live anywhere in the municipality where his land was located or in a neighbouring municipality. Conditions for purchasing and leasing were also improved, notably by making it possible for an individual to purchase up to 100 ha.

Under the improved conditions, the numbers of land seekers increased rapidly, except in periods of national or

international economic recession. In the period 1921-33, 126,123 homestead applications were filed, covering a mean area of 15.8 ha. Over the same years, 12,865 purchase applications were made for a mean area of 55 ha, and 3,215 lease applications covered a mean area of 250 ha. In 1924, the upper limit of land obtainable by purchase was raised to 144 ha. In 1929, there was a further improvement in conditions for homesteaders, with lower fees and reduced requirements for cultivation.

However, as migration increased, so did problems in the settlement areas. Although in 1913 the Philippine legislature had enacted a law providing for cadastral surveys to speed up the registration of titles, in the following year the Court of Land Registration was abolished. As its duties were passed to the Courts of First Instance, which were already overburdened, cases accumulated rapidly. McDiarmid (1953:879, f-n) quotes the following passage from the report of the Governor-General for 1931:

> One condition which retards settlement of the public lands is the delay and uncertainty in obtaining titles. Administrative delays, ignorance of the applicant, fraud, failure of applicants to complete residence and cultivation requirements, wrongful efforts of piratical claimants to reap the benefits of others' pioneer work, and court delays, all combine to retard the granting of titles....Desirable pioneers refrain from taking up lands because of distrust, suspicion, and discontent growing out of present delays.

Vandermeer and Agaloos (1962:1-3) refer to the additional problems of malaria and banditry. The conquest of these two problems was impeded by the lack of roads, which also delayed penetration of vacant areas by settlers and hindered subsequent marketing of their produce. A further reason for the comparatively slow progress was the lack of information

on settlement areas. Nelson's formulation (1959:67) of a curve of migration, beginning at a low level and rising with swiftly increasing steepness as more migrants sent back information to the source areas, fits the Philippine case very well. After rather slow growth over 30 years, the rate of migration increased sharply in the mid-1930s.

In 1935, the Philippine Congress appropriated P1 million for a development programme in Mindanao involving clearing and preparation of land and granting of loans to settlers (Pfanner, 1958:4). However, in the following year, the government of the newly-established Philippine Commonwealth diverted the projected funds to a major road-building programme there, in the belief that provision of roads and other facilities promoted spontaneous colonisation without additional government assistance. The road-building began in 1936 and continued until the outbreak of war late in 1941. Despite its attitude in 1936 the government also soon engaged directly in colonisation work. There had been an attempt by the administration in 1913 to establish colonies in Mindanao and other islands, but the experiment was abandoned for financial reasons. Since 1918, official support of colonisation had been limited to providing free transportation for migrants. However, in 1939 the National Land Settlement Administration was created and it almost immediately started work on the large-scale Koronadal Valley project in Cotabato province, described by Pelzer (1945). It also designated another settlement area around Compostela in Davao province but did not start any operations there. The new facilities for settlement, and widespread publicity about them, led to a further increase in the rate of migration to Mindanao. Pendleton (1942:181) cited an estimate of 1,000 migrants arriving each month in 1939 through the ports of Davao City and Cotabato City alone, including both spontaneous and officially-supported migrants.

Post-war developments in land colonisation. Pioneering migration stopped abruptly with the Pacific war, which disrupted life and economic conditions throughout the Philippines. At the outset, many settlers returned from Mindanao to their home provinces where they hoped for greater security. Shortly after the war ended, the migration streams began again in unprecedented volume.

> This movement...[was] so fast that allocation of settlers could not be made orderly and immediately. Squatting became rampant and prohibited areas were invaded...valuable forests are being destroyed and the number of land claims and conflicts have increased. (Suguitan, 1952:27).

In the period from 1948 to 1960, some 1.5 million people migrated from Luzon and the Visayas to Mindanao, and over 60 per cent of these went to the provinces of Cotabato and Davao. Under 10 per cent of the migrants went to projects organised by government agencies (Wernstedt and Simkins, 1965:91-2). Although the National Land Settlement Administration was revived after the war, it did not achieve as much as in its pre-war phase and in 1950 it was succeeded by the Land Settlement and Development Corporation. This too failed to live up to expectations and in 1954 its role was taken over by the National Resettlement and Rehabilitation Administration.[1] This agency achieved more success but in 1963 it was dissolved in a general reorganisation under the new Land Reform Code, and the Land Authority became the agency responsible for settlement projects.

Apart from its work in organising large-scale projects, the government attempted, through the Bureau of Lands and

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1 A detailed account of the achievements and the failures of these agencies is presented by Pfanner (1958). Cook (1958) gives a frank account of the problems experienced by the National Resettlement and Rehabilitation Administration.

of Forestry, to supervise the process of settlement by independent migrants. However, the work was hampered by the wartime destruction of records, by lack of funds and by illicit intervention by politicians and others in the work of the Bureaux. Certain national politicians urged ex-guerillas to 'hang on to your guns and stick to your land', even if they were in fact squatters. In 1947, Republic Act 65, known as the Roxas Declaration, stated that ex-servicemen, former guerillas and tenants actually working the land before December 1946 should be given preference in occupying public and ex-alien lands. In practice such preference tended to be given to any squatter. For instance, a pre-war settler who had spent the war in his home province might lose his original holding if it was cultivated by a squatter in his absence.

At the recommendation of an economic survey mission from the United States in 1950, U.S. foreign aid funds were provided to assist in land surveying and the patenting and registration of titles. A programme was developed coordinating the efforts of all agencies concerned with the land.[1] A Presidential declaration in 1951 reserved land within 6 km of roads in Mindanao for small settlers, and the programme was to allocate land in these reserved areas in lots up to 10 ha for homesteading or purchase. Prior claims to ownership of land exceeding 10 ha were allowed, but no titles were given for land operated entirely by tenants. In areas other than along development roads, legally occupied lands were surveyed along the boundaries of actually developed areas even if exceeding 10 ha. Smaller areas were as far as possible expanded to 10 ha. This limit was a

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1 The programme became known as Philcusa-FOA, derived from the titles of the administering bodies, the Philippine Council for U.S. Aid and the U.S. Foreign Operations Administration.

compromise, since some of the programme planners favoured the legal maximum of 24 ha while others felt that 5 ha was adequate for traditional farming with animal power (Davis, 1957). The programme made possible a ten-fold increase in the patenting of titles between 1951 and 1955, when they numbered 46,000 (Davis, 1957:41). In the same period the number of homestead applications rose from 24,000 to 39,000 in a year and the area surveyed annually rose from 71,000 ha to 412,000 ha. In 1960-1, the Bureau of Lands issued over 55,000 patents, but progress slowed following jurisdictional conflicts with the Land Authority after 1963 (Bureau of Lands, 1966:38-40).

The rapid post-war growth of the Philippine population was noted in the Introduction. While the total population increased by 40.8 per cent between 1948 and 1960, there were marked regional differences as a result of internal migration. The areas of dense rural population increased at rates far below the national average. For instance, the population of Cebu increased by only 19 per cent, that of Bohol by 7 per cent, Leyte 16 per cent, Samar 15 per cent, Iloilo 18 per cent, Ilocos Norte by 14 per cent and Ilocos Sur by 22 per cent.

In contrast, the 'frontier' provinces of northeast Luzon and Mindanao experienced rapid increases. Isabela and Nueva Vizcaya grew by 67 per cent while the population of Agusan grew by 114 per cent, Bukidnon by 206 per cent, Cotabato by 134 per cent and Davao by 145 per cent. A significant feature of this period was that the northern Mindanao provinces of Misamis Oriental and Misamis Occidental became areas of out-migration, growing by only 5 and 20 per cent respectively. As these provinces were still areas of in-migration up to the second World War, this change suggests implications for the future of the present 'frontier' provinces.

Table 1:1 Population density and rates of tenancy in Mindanao provinces and the Philippines, 1960.

	Population		Farms	
	Total (thousands)	Per square km cultivated land*	Mean size (ha)	Percentage of farms operated by tenants
Agusan	271	297	5.07	30
Bukidnon	194	120	7.52	23
Cotabato	1,029	161	5.81	26
Davao	893	236	4.99	39
Lanao del Norte	271	326	3.30	51
Lanao del Sur	378	322	4.26	5
Misamis Occidental	248	359	3.20	40
Misamis Oriental	389	304	4.10	23
Surigao del Norte	195	287	3.68	14
Surigao del Sur	165	214	4.57	12
Zamboanga del Norte	281	235	4.58	34
Zamboanga del Sur	742	260	4.95	31
Philippines	27,088	383	3.59	40

* Includes land in temporary and permanent crops, pasture and fallow.

Source: Census of Agriculture, 1960.

Table 1:1 shows that in the Misamis and Lanao provinces, nutritional densities are approaching the national level. In several provinces, mean farm sizes and tenancy rates are close to or even exceed the national averages. The Mindanao Development Authority (1965:13) cited figures on land availability showing that whereas in 1939 there were 5 ha of land (including urban and uncultivable land) per head of population in Mindanao, by 1960 this had fallen to 2.1 ha. Comparable figures for the Philippines were 1.9 ha in 1939 and 1.1 ha in 1960.

Since 1960 the rate of population growth of the nation as a whole seems to have accelerated and the projected rate for 1970-80 is 3.8 per cent per year (ECAFE, 1967:226). One may assume that for a while at least people in the densely settled areas will continue to adjust to increasing population pressure by migrating. However, as Concepcion (1966:198) has pointed out:

> Given the achieved actual size of the base population and the rapidity of growth, planned transfers of population to untapped lands will not solve problems of population pressure and population growth.

Furthermore, Fonollera (1966:496) considers that the 'closing of the Mindanao frontier' is imminent - a conclusion reached also by Huke (1963:152) and Wernstedt and Simkins (1965:102).

Although it will be shown below that immigration is nevertheless likely to continue, there seems little doubt that conditions in Mindanao will become increasingly unfavourable to settlers.[1] A local historian has written

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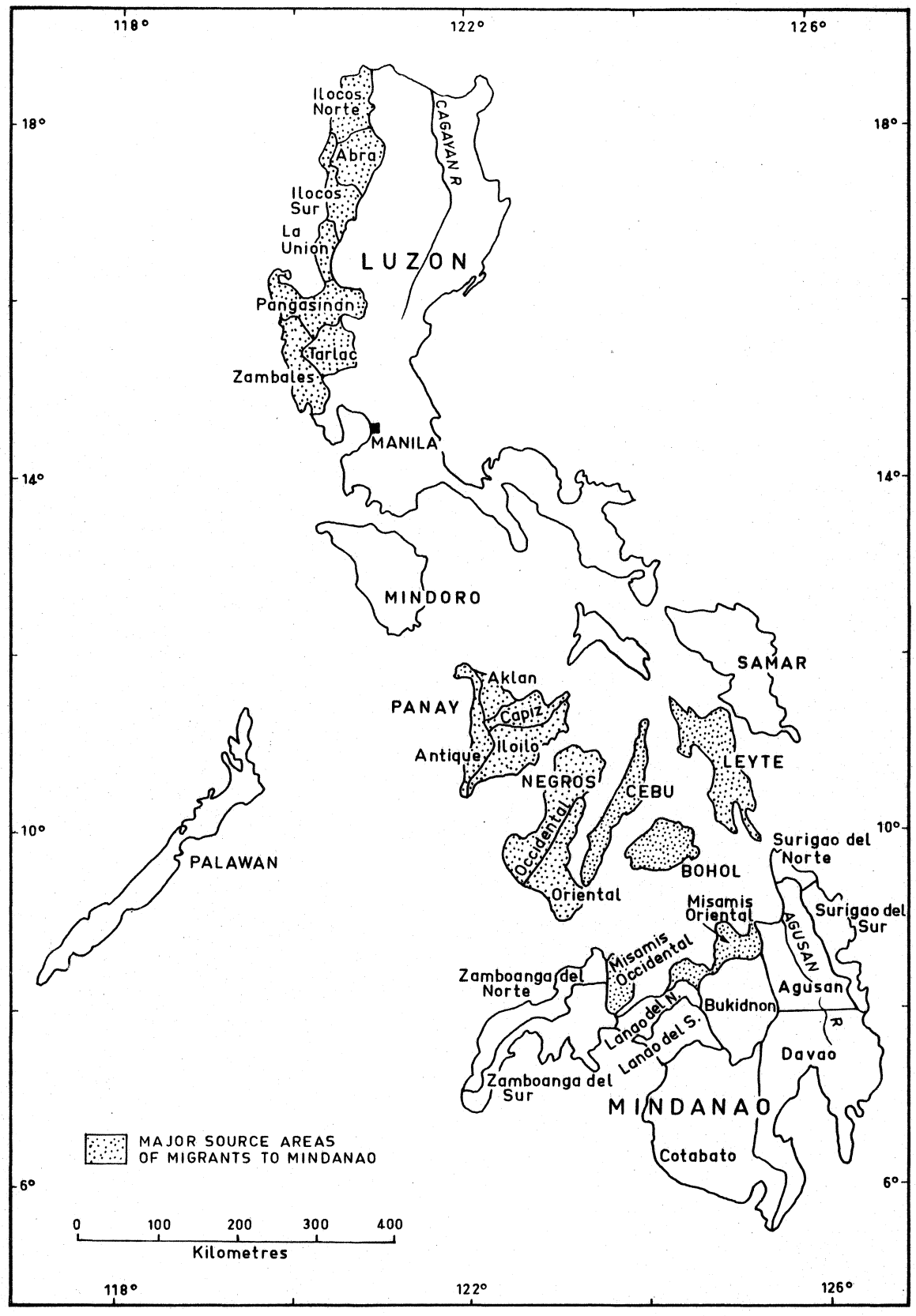
[1] In December 1968 a Small Farmers Commission was created by Presidential order, replacing the earlier, ineffective Small Farmers Protection Committee formed in mid-1967. Its functions are to investigate and settle the problems of small

(Angeles, 1964:72)

> Natural calamities like volcanic eruption; earthquakes; epidemics; yearly rat infestations; and mosaic infestation of abaca combine with man-made problems like smuggling, piracy, deforestation, class exploitation, dirty politics ...ghost schools, as well as graft and corruption in government offices to make life miserable for the common tao (man) in Mindanao.

Most of these problems lie outside the scope of this thesis, but other indicators of deteriorating conditions will be discussed in subsequent chapters.

(continued from p.12)
settlers and farmers arising from conflicts involving public lands and to assist and protect small settlers and farmers especially in Mindanao against land grabbers (Philippine Journal of Public Administration, XIII, 1:96).



Map 1. The Philippines: major source areas of migrants to Mindanao.

The source areas of migrants to Mindanao

The preceding section indicated that the major areas of out-migration in the Philippines have been the Ilocos coastal provinces in Luzon and the Visayan islands of Panay, Negros, Cebu, Bohol, Leyte and Samar, with the addition, in the last 20 years, of the northern Mindanao provinces of Misamis Occidental and Misamis Oriental.

The major migration streams from these areas over the period 1948-60 have been discussed in aggregate terms in several papers, most fully by Pascual (1966) and Wernstedt and Simkins (1965). Pascual notes (p.39) that there are no clearly defined streams from sources north of Manila. The Ilocanos have migrated in large numbers not only to colonisation areas in the Cagayan River valley in northeast Luzon but also to central and southern Luzon, and to Manila. Between 1948 and 1960 some 15 per cent of Ilocano migrants moved to Mindanao. In contrast, Mindanao has been the destination of 51 per cent of migrants from Panay and Negros and of 58 per cent of those from the eastern Visayas (Cebu, Bohol and Leyte). Conversely, 84 per cent of migrants arriving in Mindanao in the period 1948-60 were from the Visayan islands, 3 per cent from the Ilocos coast and mountains and 6 per cent from Central Luzon.

There are wide variations between the source areas in terms of their resource bases and the culture of the inhabitants, but there are also certain broad similarities such as man:land ratios which generally exceed the national mean of 383 people per square kilometre of cultivated land (Bureau of Census and Statistics, 1965), small farms and high rates of tenancy. The rest of this section presents information about economic conditions in the major source areas as a background to the settlers studied in Davao.

The Ilocano area. The homeland of the Ilocano ethno-linguistic group is the coastal plain in northwest Luzon, but since the nineteenth century Ilocano migrants have moved southwards into the provinces of Tarlac, Pangasinan and Zambales which in turn are now areas of out-migration. These areas are regarded in this thesis as being part of the Ilocano cultural region despite the marked differences in the physical environments.

(a) The northern Ilocano area. The Ilocos coastal plain has a maximum width of about 40 kilometres but in many sections the foothills of the Cordillera Central reach virtually to the sea. The soils developed on alluvial deposits of streams crossing the plain are mostly of moderate fertility and some areas have deteriorated or even been made uncultivable through coarse deposits of gravel resulting from soil erosion on the hill slopes, which are now almost entirely denuded of their former forest cover. The rainfall regime is markedly seasonal with about 90 per cent of the total falling between May and October. Mean annual rainfall throughout the coastal area exceeds 2250 mm. In the latter part of the wet season the area is swept by destructive typhoons.

Pressures on land have risen to very high levels: in 1939, total population per square kilometre of cultivated land was 804 in Ilocos Sur and 666 in Ilocos Norte (Pelzer, 1945:85). By 1960, conditions had further deteriorated (see Table 1:2). In addition, farms are highly fragmented; for instance, in Ilocos Norte only 15 per cent of the farms consist of one parcel while 23 per cent comprise at least six parcels. However, owners achieve a level of rationalisation by renting-out their more distant plots and renting-in land closer to their main plots. Part-ownership is therefore more common than renting of farms by

Table 1:2 Measures of population density and rates of tenancy in the Ilocano region, 1960.

Province	Population		Farms	
	Total (thousands)	Per square km cultivated land	Mean size (ha)	Percentage of farms operated by tenants
Abra	115	386	2.05	15.0
Ilocos Norte	287	690	1.26	31.4
Ilocos Sur	338	902	1.47	30.8
La Union	293	845	1.60	30.3
Sub-total	1,033	719	1.52	28.5
Pangasinan	1,124	690	1.93	50.2
Tarlac	427	380	3.24	62.2
Zambales	213	755	2.33	52.9
Sub-total	1,764*	581	2.31	53.6

* Ilocano-speakers (thousands): Pangasinan 528, Tarlac 224, Zambales 83. Total 835.

pure tenants. Even more than most Filipinos, the Ilocanos place immense value on ownership of land. Lasker (1931:234) noted the tendency for Ilocano migrants in the U.S.A. to save money in order to buy land on their return home (thereby inflating land prices above the level attainable by non-migrants). Lava (1938:86) considered that among Ilocanos 'the psychology of property is...such,...that they will enslave themselves merely to own land'.

In spite of this emphasis on land ownership, actual returns from farming are low and Lava (op. cit: 79) 'found a representative group of rural workers living a life of bare subsistence'. Lava's findings were duplicated by other workers such as Sacay and Naanep (1940) and Dayyo (1957). The basic product of most farms is lowland rice, but Lava found that the average family produced only half its annual rice requirements on its own farm, since areas are small and double-cropping rare. According to Gutierrez (1959:33), rice production in La Union and Ilocos Sur in 1958-9 was less than half their requirements and in Ilocos Norte only 64 per cent. A surplus in Abra was insufficient to compensate for these deficits. Some governmental irrigation networks and many well-organised communal systems serve the rice fields, but they are used chiefly for supplementary water control during the wet-season crop. For lack of water storage capacity only about 7 per cent of the rice land produces two rice crops a year. However, dry-season cropping of corn, vegetables and sugarcane has always been significant and since 1955 the dry-season cultivation of Virginia tobacco has attained major economic significance, under the stimulus of price supports and tariff protection. According to Wernstedt and Spencer (1967:337) 'the average family income has increased nearly fivefold since the introduction of Virginia tobacco production'.

Apart from crop production, the Ilocanos have traditionally turned to many other activities to increase incomes in the dry-season. These include in-shore fishing, furniture-making, weaving, salt-making and pottery as well as seasonal migration to the sugarcane *haciendas* in central Luzon. An additional source of income for many families has been remittances from relatives who have migrated to Mindanao or the U.S.A. Such remittances accounted for 10 per cent of annual income among 70 families in Lava's study.

Even with these sources of income as well as farming, the studies mentioned above reported that many families could not afford schooling for their children above elementary level, very few people wore shoes and most Ilocanos might eat meat only once in a month. Lava (*op. cit.*:26) found an average calorific intake of only 1,400 per day, compared with the intake of 3,150 calories per day recommended by the Philippine Bureau of Science for manual workers. He noted (p.77) that maintenance of farm output was so crucial that 'the farmer would rather see his wife than his *carabao*[1] sick'. The improvement in conditions following the adoption of Virginia tobacco production has been insufficient to alleviate the need for out-migration.

The stereotype of the Ilocano that is current both in the literature and among Filipinos generally is someone accustomed to simplicity and willing to accept privations for the sake of the future. The Ilocano is regarded as more industrious, patient and thrifty than other Filipinos and more adaptable in new environments. These characteristics might be considered ideal for pioneer colonists and their relevance to the performance of Ilocano settlers in the study area will become apparent in later chapters.

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[1] The *carabao*, or water-buffalo, is the main work animal on most Philippine farms.

(b) The southern Ilocano area. The rainfall regime of the central plain is similar to that of the Ilocos coast, except that mean annual rainfall is usually no more than 2000 mm and the dry season is slightly less severe. As in the Ilocano homeland, the major crop is rice, mostly rainfed, with only a small proportion of the land bearing an irrigated dry-season rice crop. The soils developed on the marine and alluvial sediments of the plain are more fertile than those on the Ilocos coast and rice yields are higher, exceeding 1700 kg/ha (although this is low by international standards). Tarlac produces two and a half times its own rice requirements, Zambales has a small surplus and Pangasinan is more or less self-sufficient (Gutierrez, 1959:33). During the last 20 years corn and vegetables have become common crops in the dry season as traders from Manila and nearby cities have extended their buying areas. Even so, there is still considerable unemployment during the dry season. Many of the Ilocanos that moved south into Zambales and the central plain of Luzon during the nineteenth century were able to become owners of vacant land. However, large areas of the plain had been pre-empted by hacenderos and the holdings obtained by the immigrant Ilocanos were mostly small. Simultaneously, Tagalog and Kapampangan immigrants were also claiming land, but many of these became tenants on the haciendas, producing rice or sugarcane. Conditions for both small owners and tenants deteriorated rapidly as population grew and farm sizes fell. Studies in Tarlac and Pangasinan during the 1930s suggested that on farms less than 3 ha in size 'it was not possible for a peasant farm family to maintain a standard of life above subsistence level' (Velmonte, 1934:463). The central plain became the focal point of agrarian unrest in the Philippines. This unrest occurred chiefly among the Tagalog and Kapampangan tenants and labourers and Lava (1938:87)

claimed that Ilocanos commonly furnished 'scab' labour during strikes. Nevertheless, Ilocanos too found conditions becoming oppressive and since the second decade of the century have been emigrating from the provinces of Pangasinan, Tarlac and Zambales.

The Ilongo area: Panay and Negros Occidental. Ilongo is a common alternative name for the Hiligaynon dialect of the Visayan language and for speakers of this dialect. The homeland of the Ilongos is the western Visayan island of Panay. Much of the island is hilly and there are only restricted lowlands in the province of Antique on the western coast and in the province of Capiz in the north of the island. However, there are extensive lowlands in Iloilo province, comprising marine and river sediments, and Panay has a centuries-old reputation for agricultural wealth. Iloilo in particular has long been an exporter of rice to deficit areas within the Philippines. The dry season is less severe than in Luzon. Mean annual rainfall at Iloilo City is 2278 mm and monthly rainfall is below 100 mm only from January to April.

Although rice has for long been the dominant crop in Iloilo, in the mid-nineteenth century a very wide range of crops was produced, among which sugarcane and abaca were important, as well as pineapple for the production of fibre. Population grew rapidly in the nineteenth century and spread into the uplands, which were soon denuded of forest. In these less-fertile and poorly watered areas, upland rice and corn became the staples. In the lowlands, large areas came into the ownership of relatively few families and the rate of tenancy rose.

In the last 40 years of the nineteenth century wealthy people, including aliens, began establishing sugarcane estates on the northern and western plains of the sparsely-

populated island of Negros, drawing their labour force chiefly from among tenants and landless families in Panay and to a lesser extent in Cebu. Between 1845 and 1903 the population of Negros rose from about 58,000 to 570,000. Some small-scale independent farmers settled in southwestern Negros, growing rice or corn and coconuts rather than sugarcane. Apart from these permanent migrants, a strong seasonal stream of sugarcane labourers still continues, playing an important role in the economy of small farm households in Panay.

In the Ilongo area rice is by far the most widespread crop, except in northern Negros Occidental where sugar is dominant. In Iloilo alone wet rice lands occupy over 100,000 ha, which is 43 per cent of the total farm area. One-fifth of the rice area is irrigated for a dry-season crop. Upland rice is also important, but less so than corn, which, allowing for double- and triple-cropping, now occupies half as much land as lowland rice. As well as corn, people in the uplands of Panay and Negros are coming to rely increasingly on sweet potatoes and cassava for part of the year. Apart from agriculture, many Ilongos derive their income from fishing, both from coastal fishponds and from offshore fishing. On Negros, extensive forests in the mountains support a major lumber industry which provides employment for several thousand workers.

When the American administration began to encourage migration to Mindanao, Ilongos were among the early settlers and in the National Land Settlement Administration's Koronadal Valley scheme in Cotabato the majority were Ilongos. (Pelzer, 1945:253). Since 1945 Ilongos have also been moving into Mindoro. Despite these outlets, population pressure on agricultural land and tenancy rates have continued to rise in Panay and to an increasing extent in Negros Occidental. Although population densities are below

the levels of the Ilocos coast and Cebu and mean farm sizes are larger, rates of land tenancy are mostly higher. Negros Occidental has experienced agrarian unrest among tenants and labourers, though not to the same extent as in Luzon, and it is now a significant source of migrants to Mindanao.

The Cebuano area: Cebu and Negros Oriental. The six and a half million speakers of Cebuano (Sugbuhanon) comprise the biggest single dialect group in the Philippines. By 1960, according to the Census of Population, only a fifth of the total were living in the island of Cebu, which, with 247 people per square km, is the most densely populated island in the Philippines. Negros Oriental and Bohol each contained about 9 per cent of Cebuano speakers and another 10 per cent lived in Leyte. Whereas those in Negros Oriental are still referred to as Cebuanos, Boholanos and Leyteños are generally known by their island names and regarded as separate to some degree from Cebuanos. In 1960, about 8 per cent of Cebuano speakers lived in other Visayan islands or Luzon while 44 per cent lived in Mindanao.

Cebu is a hilly island with only restricted areas of coastal lowlands. Most of the interior hills comprise limestone formations and there is a marked lack of surface water. Furthermore, rainfall is comparatively low, reaching only 1626 mm at Cebu City, which experiences a short dry season from February to April with monthly rainfall below 100 mm. The scarcity of both surface water and of lowlands makes the cultivation of lowland rice difficult. Traditionally, the food crops of the Cebuanos were millet, upland rice and root crops, with wet rice only in the small alluvial plains. The lack of surface water appears to have been responsible for the absence of malaria on Cebu (Vandermeer, 1962:245) and thus contributed indirectly to an unusually high rate of population increase on Cebu.

Table 1:3 Measures of population density and rates of tenancy in the Ilongo area, 1960.

Province	Population		Farms	
	Total (thousands)	Per square km cultivated land	Mean size (ha)	Percentage of farms operated by tenants
Aklan	226	408	2.66	30
Antique	238	364	2.60	26
Capiz	315	389	2.95	67
Iloilo	966	433	3.15	56
Negros Occidental	218	396	6.15	61

Table 1:4 Measures of population density and rates of tenancy in Cebu and Negros Oriental, 1960.

Province	Population		Farms	
	Total (thousands)	Per square km cultivated land	Mean size (ha)	Percentage of farms operated by tenants
Cebu	1,333	911	1.34	48
Negros Oriental	598	382	2.70	50
Total	1,931	638	1.82	48

By the sixteenth century, Cebuanos were extending cultivation of millet and upland rice into the interior hills and mountains which were soon deforested. The Spanish administration attempted to deal with increasing food deficits by encouraging the adoption of corn as a staple crop but the Cebuanos rejected it (Vandermeer, 1962:30-1; Phelan, 1959:111). However, by the nineteenth century the superiority of corn yields over those of other staples led to its adoption as the staple wherever lowland rice could not be grown. Corn also had the advantage of maturing swiftly enough for three crops to be produced in a year. By 1967, corn had become the staple of 84 per cent of the population.[1]

In the mid-nineteenth century, much of Cebu appeared agriculturally prosperous. Loney, writing in 1857, reported (MacMicking, 1967:239) that Cebu produced 'sufficient rice and native goods for its own consumption' while MacMicking (op. cit.:176, 180) referred to it as being a major Philippine sugar district and yielding some good quality abaca. Nevertheless farm sizes were declining and almost continual cropping of corn with very brief fallow periods led to falling yields and to severe soil erosion. Tenancy rates increased also. As conditions deteriorated, emigration to vacant lands in Negros Oriental as well as to the sugar estates of Negros Occidental became common. Western Leyte and the northern coast of Mindanao also became destinations for Cebuano migrants. All of these areas have now become sources of out-migration. In the twentieth century, Cebu has provided more migrants to Mindanao than any other province, while several thousand Cebuanos migrated to Guam, Hawaii and continental U.S.A.

Despite the massive out-migration which has kept the rate of growth of the population of Cebu well below the

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1 Provincial Statistician, Cebu City (1967).

national average, agricultural conditions have not improved. In 1954 the Soil Survey of Cebu Province revealed that only 8 per cent of the island had experienced no apparent erosion while 63 per cent of the area had lost at least three-quarters of its top-soil. In 1966-7, the mean yield of corn in Cebu was only 400 kg of shelled corn per hectare[1], compared with the national mean of 868 kg, and total provincial production amounted to only 36 per cent of consumption. Rice production was only 15 per cent of requirements. The chronic deficit of corn in Cebu and in Negros Oriental is met largely by imports from Mindanao, but root crops are also important for subsistence in many parts of these provinces.

Comparison between 1939 and 1960 agricultural census data indicates that the area under commercial crops such as coconuts, sugarcane, tobacco and abaca has fallen. Nevertheless, copra continues to be a major source of income in rural areas. Vegetables, fruits and livestock-rearing have become important activities near the main urban centres.

The main non-agricultural source of income in rural areas of Cebu is fishing. However, several mining and industrial projects are located in small towns, including a copper mine in Toledo, cement factories and coal mines in Naga and Danao and potteries and blacksmithies in various east coastal towns. Apart from commercial and industrial developments in Cebu City, there is little scope for employment of the increasing population in rural areas and emigration to Mindanao continues.

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1 Provincial Statistician, Cebu City (1967).

The geology, landforms and climate of Negros Oriental are similar to those of much of Cebu and the response of the early Cebuano settlers produced conditions comparable to those on Cebu, with a heavy dependence on corn leading to severe soil erosion and very low yields. Coconuts and sugarcane are the main commercial crops. Non-agricultural activities are more limited than on Cebu, but extensive hardwood forests in the interior mountains support a lumber industry that provides some opportunities for casual labour. As in Cebu, most small-scale farmers have a basic diet of corn and salted or dried fish. Pal considers that the levels of living of most Negros Oriental farmers have fallen in recent years and that 70 per cent are at subsistence level (Pal, 1963:270-1).

Bohol. The island of Bohol is physically more favoured than Cebu in so far as it has more subdued relief, slightly higher rainfall and a shorter and less intense dry season. Coastal plains are more extensive and the rolling uplands include considerable more or less level areas. Although calcareous formations are widespread, surface water in many areas is less scarce than in Cebu. Nevertheless, as its population increased Bohol experienced processes similar to those in Cebu. Crop yields in the lowlands were not improved to support the increasing population; instead, cultivation was extended into the uplands. With inadequate fallows and no techniques to conserve either the soil or its fertility, yields were not maintained and soil erosion became a serious problem. Although corn was not adopted to the same degree as in Cebu (Table 1:7), it is the staple of an estimated 40 to 60 per cent of the population (Gutierrez, 1960:11), and root crops are also of great importance to many upland farmers. As in Cebu, lowland rice is grown wherever possible and upland rice is also significant.

Lowland rice is in fact the most widely grown crop in Bohol. In some inland areas, complex terrace systems for rice cultivation have been constructed on steep slopes, largely by communal labour (field observations; Mojica, 1952:54). Some of these systems serve up to 1,000 ha.

Table 1:5 Measures of population density and rate of tenancy in Bohol, 1960.

Population		Farms	
Total (thousands)	Per square km cultivated land	Mean size (ha)	Percentage of farms operated by tenants
592	457	2.29	21

The mean size of farms in Bohol is 2.29 ha and 73 per cent of all farms are under 3 ha. Many farmers consume most of their output but some rice farmers sell their product and buy cheaper substitutes such as corn, sweet potatoes or yams. Despite the use of root crops and bananas as staples, Bohol imports 40 per cent of its rice needs and 58 per cent of its corn needs (Bureau of Plant Industry, 1967). The main agricultural source of cash income is copra, but pigs, poultry, vegetables and fruit are important locally. Fishing is also a major source of income in coastal areas. The main non-agricultural activities are various handicrafts, particularly the weaving of hats, baskets and mats, for which Bohol has a national reputation.

These sources of off-farm income have commonly proved to be insufficient to compensate for low farm production and for many thousands of Boholanos the answer has been emigration. During the nineteenth century, the main directions of emigration were to southern Leyte and to

Surigao and Misamis in Mindanao, but later the main stream of migrants was to southern Mindanao and, more recently, Agusan province. As a result of out-migration, the population of Bohol has increased very slowly and between 1948 and 1960 grew by only 7 per cent, compared with the national rate of 41 per cent.

Leyte. Leyte was for a long time occupied chiefly by speakers of Waray-Waray, a language common to Leyte and Samar. Until the nineteenth century, the sparse population was located in the lowlands. Although large parts of Leyte are mountainous, the island includes two large plains and several small deltaic plains. Annual rainfall at Ormoc City exceeds 2250 mm and there is no marked dry season. Only two months experience rainfall below 100 mm. Leyte is frequently subject to typhoons which may damage crops.

The main food crop of the early inhabitants was lowland rice while abaca was important for textiles and cordage for local use. By the mid-nineteenth century however, the island was exporting important quantities of abaca and coconut oil (Loney, in MacMicking, 1967:222-4). At this time, Cebuanos and Boholanos began to move into the lowlands along the western coast and this inflow, together with natural increase, resulted in growing pressure on the lowland agricultural areas. Moreover, large parts of the major Ormoc City lowland came under the control of large owners for the cultivation of sugarcane or rice and the rate of tenancy there increased. As in Cebu and Bohol, the uplands were occupied by farmers whose techniques could not cope with soil erosion and declining fertility and as pressures on the land increased, yields of the major crops fell to levels below the national averages. As farm sizes fell, the operators were less able to accumulate reserves to cope with the recurrent damage caused by typhoons or occasional

droughts. Rural living conditions quickly approached those in the central Visayan islands and by the second decade of the twentieth century Leyte had become an area of out-migration.

Table 1:6 Measures of population density and rate of tenancy in Leyte, 1960.

Population		Farms	
Total (thousands)	Per square km cultivated land	Mean size (ha)	Percentage of farms operated by tenants
1,173	406	2.86	44

Despite typhoon risks, coconuts are still the most widespread crop in Leyte. Corn and lowland rice are the next most widely planted. Both are primarily subsistence crops, but large landowners sell their surplus rice while some small growers also sell their rice output and buy corn. Leyte imports both rice and corn from other areas, particularly Mindanao. Abaca is still an important, though declining, cash crop that is grown by many small holders. Sugarcane, in contrast, is produced on comparatively few farms near Ormoc City, but the industry provides an important local source of employment. Non-farm employment is restricted by the limited level of economic development in Leyte and the commonest opportunities in the emigration region of western Leyte are in in-shore fishing and in lumbering.

Although poor conditions are general throughout Leyte, most emigration has been from the Cebuano-speaking areas of western and southern Leyte. 90 per cent of all Waray-Waray speakers are still resident in Leyte or Samar and emigrants have mostly moved northwards to Luzon rather than to Mindanao like the Cebuano speakers.

Summary. The brief descriptions above and Table 1:7 below indicate some of the variations in agricultural conditions among the main sources of migrants to Mindanao. These variations include both the staple subsistence crops and the commercial crops. Tangco (1951:30) remarked 'Hardly any exception could be made to the statement that all the Christian peoples of the Philippines...prefer rice for their staple food whenever this cereal is available'. If they eat corn, sweet potato (camote), sago or other foods it is because 'the coveted rice is beyond their reach'. Gutierrez (1960:11) referred to estimates that 21 per cent of the Philippine population relied on corn as a staple, under 3 per cent relied on root crops and the rest depended on rice. The great majority of corn eaters are in the eastern Visayan islands, but corn is important among Ilocano settlers in the Cagayan valley and to some extent in the Ilocos coast area also.

Differences in commercial crops have been related partly to physical conditions, partly to conditions of land tenure and partly to political considerations. The last factor, for instance, has been important in the development of Virginia tobacco in the Ilocos coastal region. Also, this region is physically unsuited to crops such as abaca and coconuts on account of both the severe dry season and the frequency of typhoons. Moreover, the intense emphasis on rice cultivation necessitated a cash crop that could be grown in the rice fields during the dry season.

Despite the differences between the regions in sources of income, they have in common a lack of opportunities to accommodate the increasing population in rural areas. They also have in common generally low levels of agricultural productivity that result not only from poor resource bases but also from low yielding crop varieties and inadequate

Table 1:7 Major crops in six source areas of migrants to Mindanao. (Thousand ha).

	Northern Ilocano	Southern Ilocano	Ilongo area	Cebu-Negros Oriental	Bohol	Leyte
Surface area of farms	157.1	313.2	813.9	321.2	134.8	302.7
Major crops, 1959-60*						
Lowland rice	97.6	223.7	273.2	14.6	39.9	70.9
Upland rice	6.2	18.1	86.3	7.1	5.0	12.3
Corn	16.5	25.0	137.9	298.2	24.5	76.8
Banana	2.8	2.2	21.9	8.2	6.1	11.9
Camote	2.7	2.9	3.6	3.2	4.0	9.0
Cassava	0.7	0.6	7.0	7.1	3.1	2.9
Abaca	neg.	0	2.6	2.3	0.3	17.9
Coconuts	2.4	8.8	65.6	67.3	29.6	107.7
Sugarcane	1.4	15.2	104.9	9.1	0.1	5.8
Tobacco	34.2	9.9	1.6	3.2	neg.	1.0

* Including areas cropped more than once.

neg. = neglible

cultivation techniques. Government action to deal with the situation has been tardy since both officials and farmers have looked to migration to vacant lands as the solution to population pressures on land. Although massive emigration has reduced the rate of population increase and provided a breathing space, in many areas the environments have been so depleted as to defy remedial action. As the colonisation areas cease to serve as an outlet for migrants, the rate of population growth in the former migrant source areas is likely to rise. Recent developments have shown the great scope in the Philippines for increasing agricultural productivity and incomes through improved technology but the application of such technology by peasants on very small and fragmented farms will be problematic. The relevance of this to the declining opportunities in the settlement areas will be discussed in subsequent chapters.

The development of Davao province

When the Americans took control of the Philippines in 1899, southeastern Mindanao was still very sparsely settled. There were some Moslem settlements along the west coast of Davao Gulf, some Visayans along the Pacific coast, a few Spanish and American planters in scattered coastal situations and several thousand shifting cultivators inland. Henry Savage Landor travelled through Davao at this time and described the east coast as being 'in a terrible state of abandonment' while 'in Davao (City) itself there is very little of interest...it is now a sort of tumbling-down place, with luxurious drinking saloons kept by Armenian money-makers or by Spaniards' (Landor, 1904:368). Inland, the inhabitants belonged to a number of ethnic groups who have been studied at varying depth by Fay-Cooper Cole (1913) and John Garvan (1931).

The inhabitants of the research area were Mansakas, who are closely related to the Manguanggans and the Mandaya. These groups occupied the area from the head of Davao Gulf and the Tagum River northwards to Compostela and eastwards to the Pacific coast. Despite their close cultural links, these groups were mutually hostile and their constant fighting led a French traveller to refer to the upper Agusan valley as 'le pays de terreur' (Garvan, 1931:139).

The Americans pacified these inland groups and the Moslems, and were able to institute a civil administration for the first time in the history of the area. However, it was not the Americans who were responsible for the economic development of Davao. A former Governor-General of the Philippines has stated that 'Modern Davao is indeed primarily a Japanese achievement' (Hayden, 1942:714). While not applicable today, this assessment was certainly true at the time it was written.

Commencing in 1904 as labour contractors to the American and Spanish planters in Davao, Japanese entrepreneurs soon organised their own highly efficient abaca plantations. By 1935 they had acquired control of 28,098 ha by legal means and a further 29,252 ha through leases by illegitimate corporations or by Filipino and American 'dummies' (Quiason, 1958:220). In 1936, the population of Davao included an estimated 12,250 Japanese compared with 79,900 Christian and 68,350 non-Christian Filipinos, 1,300 Chinese and 150 of other nationalities. Virtually all of the Japanese lived in the coastal lowlands but a few had moved north into the Compostela area. The Japanese corporations employed at least 12,000 Filipino labourers, at wage rates double those in Manila. Most of these labourers were Ilocanos, whom the Japanese regarded as more peaceful and industrious than Visayans. Two-thirds of the Japanese depended directly on the abaca industry, but others engaged also in lumbering, fishing, copra and commerce. In 1936, the Japanese paid 50 per cent of total government revenues collected in the province and contributed almost half of the capital invested in agriculture as well as over one-third of that in non-agricultural enterprises. Quiason (op. cit.:228) says the Japanese 'demonstrated how well the spirit of mutual cooperation, proper energetic leadership, effective organisation and adequate government financial assistance would work in an under-developed area'. However, at the end of the second World War, 'the famous Japanese abaca plantations were practically destroyed by...squatters and settlers, and by roving people with small stripping machines' (Suguitan, 1952:27), and the surviving Japanese settlers were all repatriated.

The speed of development of the province is illustrated by the figures in Table 1:8. Certain trends stand out from the generally rapid increases under most

Table 1:8 The development of agriculture in Davao province, 1903-60.

	1903	1918	1939	1948	1960
Total population (thousands)	65.5	107.4	292.6	364.9	893.0
No of farms (thousands)	1.3	6.6	26.3	35.4	92.2
Per cent operated by tenants	5.8	27.6*	26.1	31.3	38.9
Total farm area (thousand ha)	16.3	110.6	328.9	293.7	460.4
Mean size of farms (ha)	12.5	16.6	12.5	8.3	5.0
Cultivated area (ha)	3,769	34,092	152,040	132,457	377,679
Gross area+ planted to:					
Rice (ha)	1,124	2,568	n.a.	20,780	43,911
Corn "	5	755	16,498	55,936	249,520
Abaca "	2,499	24,432	n.a.	75,776	27,977
Coconuts "	282	6,775	n.a.	34,046	95,350
Coffee (thousand trees)	‡	2	n.a.	330	9,942

* Includes 18.7 per cent farming rent-free.
+ Includes areas double- or triple-cropped. Rice includes lowland and upland.
‡ 1903 Census reported coffee area only = 3 ha.
n.a. = not available.

Source: Census reports for specified years.

headings. The most significant of these trends are the population increase, the rising proportion of farms operated by tenants, the decreasing mean size of farm and the sudden collapse of the abaca industry together with the substitution of other crops between 1948 and 1960. Some aspects of these changes are discussed briefly in the following paragraphs while others are dealt with in greater detail in chapters II and III.

The early development of Davao took place in the coastal lowlands. The extension of government services to interior locations such as Monkayo and Compostela in the Agusan River valley led to a slow penetration by pioneers. Many of these were civil servants who had resigned in order to take advantage of the availability of public lands under the homesteading system. Although such pioneers were joined by a few kinsmen, the main penetration of the interior began only with the construction of the national highways towards Cotabato and Agusan in 1936. After 1945, migrants spread rapidly into the lowlands along these routes and along the shores of Davao Gulf. By the early 1950s most of the accessible plainland had been occupied and new arrivals began to move into the hill and mountain lands, although these areas were in most cases either classified as permanent forest or awaiting such classification.

With the rapid spread of settlement, the coastal areas served frequently as a first base for incoming migrants who later moved in one or more steps to more permanent locations. The areas more remote from Davao City, the main entry point, retain certain 'frontier' characteristics, such as a preponderance of males in the population, that are less noticeable nearer the city. In 1960, the built-up section of Davao City had a sex ratio of 96.7 males per 100 females, compared with the national average of 101.8. In

contrast, the ratio in Panabo, 30 km from Davao City, was 114.0; in Tagum, 50 km away, 112.6; in Asuncion, 55 km away, 117.4; in Mawab, 75 km away, 122.5; and in Compostela, 100 km from the city, 131.9.

Directions of migration were influenced by, though not confined to, directions of road development. In areas of poorer accessibility, land and commercial development was slower, notably along the east coast of the province. Residents of this eastern portion became the prime movers for the sub-division of Davao into three provinces that would be better able to deal with the special problems of their inhabitants. Eventually, in June 1967, the new provinces of Davao del Norte, Davao Oriental and Davao del Sur were established. Davao del Norte, where the research area lies, had an area of 813,000 ha and a population in 1967 of 336,800. The town of Tagum became the provincial capital.

The pre-war conditions of highly capitalised abaca plantations in Davao did not continue after the war. Both during and after the war, abaca plantations were neglected and diseases flourished. Although large areas of new abaca were planted by post-war immigrants, most of them had neither the knowledge nor the resources to control diseases, particularly the abaca mosaic. By the mid-1950s the only remedy for many people was to destroy their abaca and replace it with other crops. The substitutes varied with local conditions. Irrigable and other level lowland areas were mostly converted to rice fields, while drier lowlands and the uplands were planted variously to coconuts, coffee or corn. These crops were also planted in newly-cleared lands as colonisation continued. Although Davao province still imports some 20 per cent of its rice requirements from other provinces (chiefly Cotabato), it exports a large volume of corn to the deficit areas of the eastern Visayan islands. In 1959 this export exceeded 120,000 metric tons of shelled corn (Gutierrez, 1960:25).

Together with agricultural expansion, the province experienced a rapid growth in logging operations after the war. The number of sawmills rose from 9 in 1941 to 16 in 1947, 24 in 1960 and 28 in 1963, when 98 timber concessions covered over 783,000 ha. In 1962, over 17 per cent of total Philippine timber production originated in Davao province, and an increasing proportion is being turned into plywood and veneer in four factories in the province.[1] The rapid increase in logging operations has provided full or part-time employment for many people who would otherwise have been un- or under-employed and wages from such work have made possible the purchase of land by people who would otherwise have remained labourers or tenants. However, logging expansion has not been without its problems. Some, such as neglect of the laws on minimum wages and social security for employees, are common to many businesses; others have had direct bearing on the colonisation of land in Davao.

It has been claimed by both private and official investigators (for instance, Tutay, 1967a, 1967b and Chicote, 1967) that some logging companies have illicitly secured the release of their concessions from the classified forest zone and have then obtained pasture leases or planted the land to permanent commercial crops. Neglect of the timber licence provisions for selective logging and for replanting has been widely criticised by forestry officials, congressmen, journalists and foreign advisors. Destructive logging is held to be responsible for the denudation of watersheds, leading to soil erosion and flooding. While this is partly true, Agaloos (1965:14) has shown that the main blame for forest destruction lies with settlers who have squatted in

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1 The share of timber and its products in total Philippine exports rose from 3 per cent in 1950 to 26 per cent in 1965. Japan was the major market (Central Bank News Digest, April 5, 1966).

the public forest.[1] Logging roads have provided access routes for settlers to reach remote, usually hilly land and logged-over areas have frequently been occupied by squatters who in many cases have become permanent settlers. Where the loggers have removed even immature timber, they have usually ignored the subsequent squatting, but where selective, 'sustained-yield' logging was practised they have attempted, in accordance with the terms of their timber licences, to evict the squatters. Both sides to such disputes have tended to call on the support of politicians, and there appears to be an increasing trend towards violence in both pursuance of and resistance to eviction (field observations; see also Montaño, 1966 and Tutay, 1967b). Political pressure has led to the release from the forest zone of land totally unsuited to cropping, despite the provisions of the Bureau of Forestry's 'Revised Guiding Principles for Land Classification' (Bureau of Forestry, 1954:6) which state that land with slopes above 10^{o} should not be released for agriculture (cf Pelzer, 1958:139 for similar occurrences elsewhere in Mindanao).

As well as the widespread development of squatting, there has been a continuing increase in the proportion of farms in Davao operated by tenants. The Soil Survey report for Davao province (Mariano 1953:25) commented on the paradox of a 25 per cent level of share-tenancy in 1939 when vast tracts of land awaited occupation. The report noted that the Bureau of Lands discouraged settlement on unsurveyed lands, and it also referred to inadequate transportation and the problem of diseases in the interior as deterrents to settlement. In view of these deterrents,

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1 Field observations and aerial photographs of the research area support Agaloos' findings.

new settlers were tempted to stay for a period in the longer-settled areas, particularly as landowners offered liberal sharing terms to tenants in order to bring their lands into cultivation as quickly as possible. Disease and discouragement by the Bureau of Lands are no longer significant deterrents to interior settlement, but lack of transportation may be.

A point not brought out in the Soil Survey report, and elaborated later in this thesis, is that large numbers of the post-war tenants are in fact temporarily cultivating the land of kin while hoping to find land for themselves. This practice of farming the land of a kinsman is common elsewhere in the Philippines, except for the major hacienda areas of central Luzon and Negros Occidental (Landé, 1965:96; and cf Polson and Pal, 1956:83). This form of tenancy is perhaps less prone than 'impersonal' tenancy on estates to cause social unrest, but its presence in Davao nevertheless indicates a decreasing availability of land for ownership in the province. This shortage is now recognised in many of the migrant source areas. It is not uncommon for landowners in Davao to visit their home towns in order to recruit tenants. Whereas in the past recruits could be confident of obtaining their own land soon after migrating, it will be shown below that this is no longer the case.

Map 2 shows the proportions of tenant-operated farms in Davao by municipality and indicates those municipalities where the mean size of tenant farms is below the national average of 2.31 ha. As a result of deteriorating conditions among tenants, in 1967 the area of Bansalan was declared a Land Reform District. It thus became eligible for concentrated agricultural extension and credit services while share-tenancies were to be converted to leasehold with prospects of ownership (National Land Reform Council, 1966).

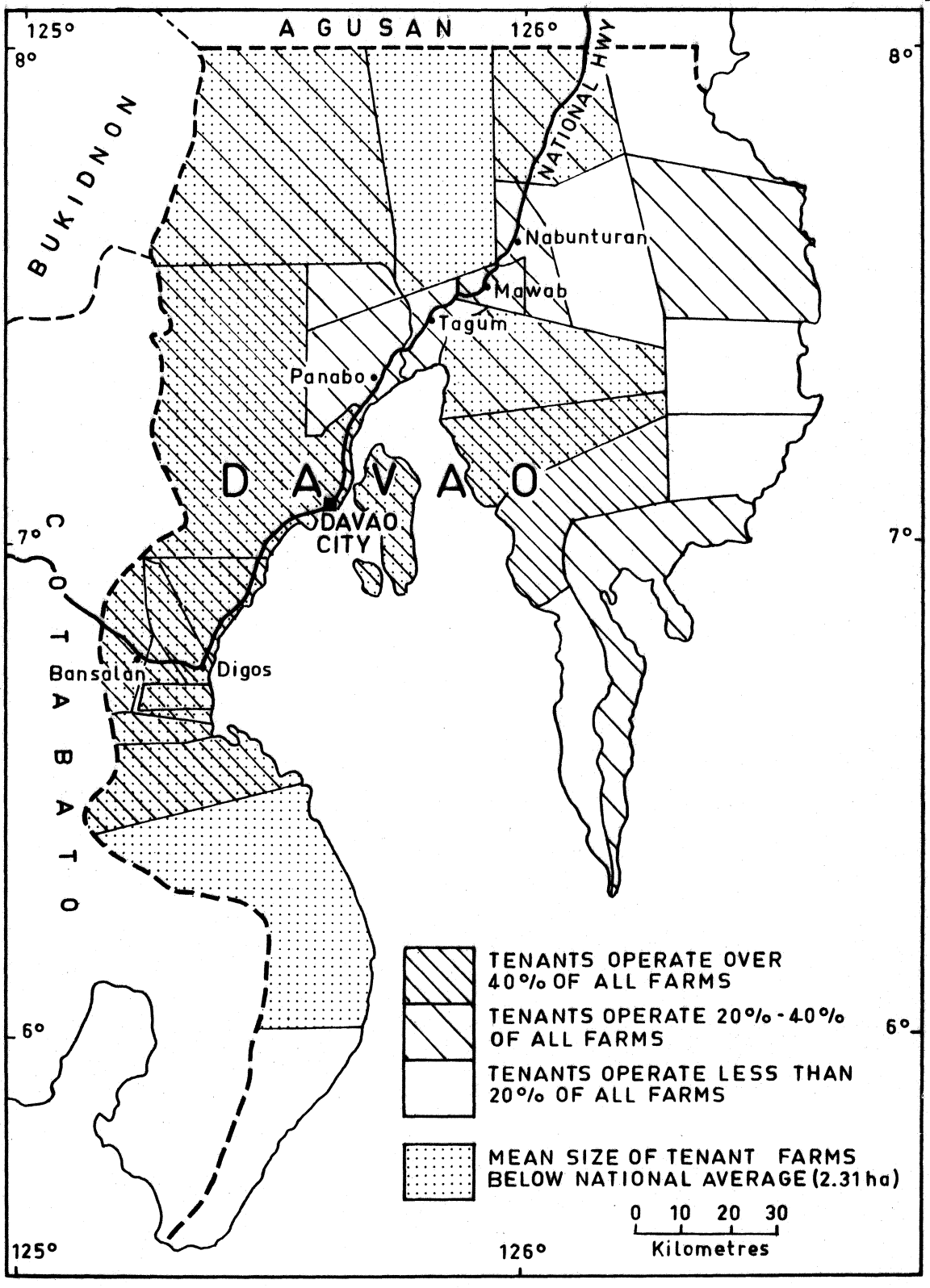
Another indication of the decreasing availability of land in Davao is the rapid fall in the mean size of farms, as shown in Table 1:8. Although in 1960 the figure for Davao compared favourably with the mean of 3.6 ha for the Philippines as a whole, the rate of increase in population in Davao (8.2 per cent annually, 1948-60) is much higher than the national average so that farm sizes may soon approach the national level.

While there is still vacant alienable land in Davao, grave problems have emerged in the areas already occupied, and the national Press frequently carries articles on land problems in Davao and the rest of Mindanao. A member of the Davao Provincial Board has claimed that

> In Davao, we are creating a fertile ground for communism....A little agitation among these poor and discriminated homeseekers will ignite a social disturbance....If Davao is ignited, Cotabato, Agusan and other nearby provinces will be devoured by the flames of social unrest. (Montaño, 1966)

The causes of such unrest are enumerated by Montaño as landgrabbing by wealthy and influential people; the deliberate loss or neglect of applications for public land; sales of land from the forest zone to privileged people; arbitrary demolition of houses and permanent improvements of pioneers who had entered the forest zone; delays in issuing titles; and extortion by Bureau of Lands personnel in return for speedy processing or favourable decisions on applications (Montaño, 1967).

The development of these, and other, problems could have been foreseen, if not averted, in the light of experiences earlier in the century in the settlement of Nueva Ecija and Nueva Vizcaya in Luzon (Miller, 1920) and in the Misamis provinces of northern Mindanao (Pelzer, 1958, 1968). This has not been an exhaustive catalogue of the problems faced by individual settlers and more will become apparent in later chapters.



Map 2. Incidence of tenancy in Davao province, by municipality, 1960.

Chapter II

THE FIELDWORK AREA

The first section of this chapter presents information on aspects of the physical environment that are most relevant to understanding the development of the research area. This is followed by a brief historical account of the growth and composition of the population of the area and its administrative development. Finally, the characteristics of the settlers in the research sample are discussed and related to the total population.

The criteria for selection of the municipality of Mawab as the fieldwork area were stated in the Introduction. Mawab lies 75 km northeast of Davao City, athwart the national highway to Agusan and Butuan City. It is about 20 km from Tagum, capital since 1967 of the new province of Davao del Norte.

The physical background

Topography. The municipality of Mawab is centred on a basin entirely surrounded by mountains which rise to over 1000 m in the east and above 700 m in the south. These are related to the Pacific Cordillera of Mindanao, and consist of igneous and metamorphic materials, particularly diorites, andesites, dacite and porphyry with minor inliers of Tertiary shales and limestones. Small deposits of gold and copper are worked at two points just outside the municipal boundary. The mountains are rugged and highly folded, lying along a major fault line that extends from Butuan City on the north coast of Mindanao to Cape San Agustin on the south. Tectonic activity continues to an extent that is perceptible

almost daily and the low divide between the Hijo, Saug and Agusan valleys lying north and east of Mawab has been cited as the most unstable area in Mindanao (Masó, 1904:205).

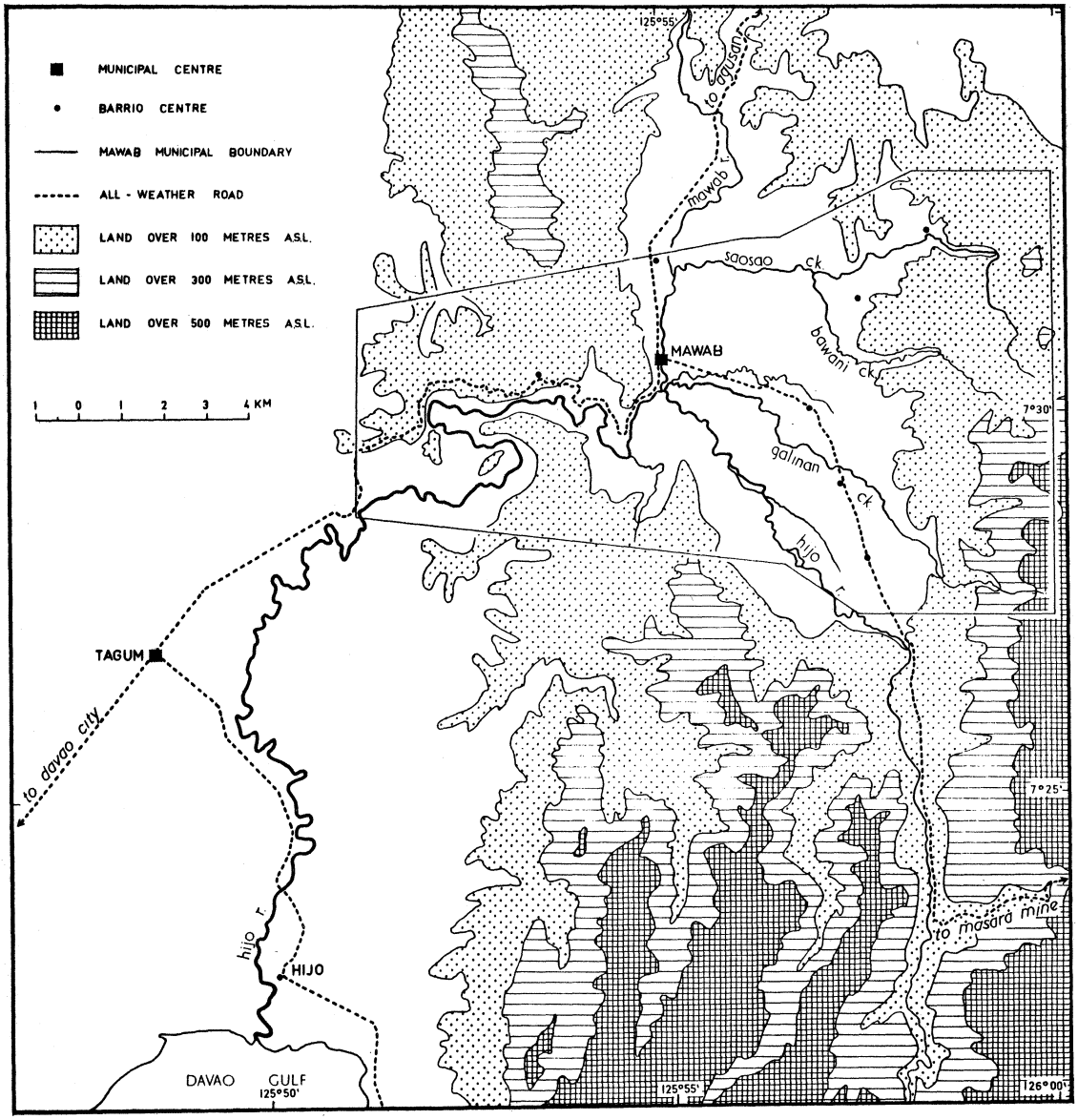
The hills west of Mawab are also folded and faulted, and their eastern face is formed by a fault running north-south. However, unlike the eastern mountains, they are formed of sedimentary rocks - Tertiary shales, limestones, sandstones and conglomerates - which reach heights of only 350 m. In places the limestones have been eroded to form extensive caves and farmers in these areas sometimes use the guano deposited by cave-dwelling bats.

The western hills are separated from those to the south by the deep gorge of the Hijo River. This gorge provides the route of the national highway from Davao City to Butuan City. In all of the hill areas, smaller streams have also cut deep valleys, so that most slopes in the hills exceed 20^{o} and sometimes 45^{o}.

Relief is particularly accidented in the eastern hills, thereby deterring their development. Although the remaining hill areas rise sharply from the central plain, they are lower in elevation and have rather gentler topography. Level areas are found on ridge tops and spurs, and are favoured house sites for settlers. In the northeast there is a small intermediate zone of rolling uplands between the hills and the plain, with slopes of $2\text{-}20^{o}$. This zone appears to have formed on deposits of red clay.

The Mawab plain is formed of alluvials derived from the surrounding hills and lies about 90 m above sea level. Three physiographic divisions can be recognised that are significant in land use.

1. In the south the plain is made up of arenaceous materials that become coarser-grained southwards until, at the extreme edge of the plain, large water-worn



Map 3. Mawab: location, relief and drainage.

rocks and pebbles come to occupy the upper layers or surface. This region has significant slopes up to 7^{o}, in contrast to other parts of the plain.

2. North of Galinan Creek (Map 3), finer deposits overlie the arenaceous horizons. The plain slopes westwards at an angle that seldom exceeds 1^{o}; the gradient is so gentle in the northeast that Saosao Creek and its tributaries are subject to flooding. Considerable areas of farmland are permanently saturated, preventing the use of ploughs; instead, the cultivation of lowland rice is undertaken entirely by hand tools.
3. The drier interfluves in the northern section of the plain are too high to allow for streamfed gravity irrigation, yet too badly drained for crops such as corn or abaca. Such areas are known locally as alangan, literally nondescript, neither one nor the other land.

Underneath the plain is an aquiferous bed that is only 10 m deep in the west and 20 m or so up to 2 km northeast of Mawab poblacion. Since discovery of the aquifer in 1953, 34 artesian wells have been sunk to provide water for irrigation and domestic use. Attempts to bore wells west of the Mawab River, or in areas more than 4 km away from the poblacion have failed to strike the aquifer at depths of 40-50 m.

Soils. According to the reconnaissance Soil Survey Report of Davao Province (Mariano, 1953), two soil series are dominant in the Mawab area. The soils of the plain are classified as silty clay loams of the San Manuel series, which forms on alluvium derived primarily from igneous rocks. It is usually high in organic matter, except under continuous cultivation, and has good internal and external drainage despite its generally subdued relief. San Manuel soils are among the most productive in the province, giving high yields for most crops, and they are rated as of first class quality in land use capability.

The other major soil type is the Camansa sandy clay loam found in hilly and mountainous areas; the parent materials are weathered mixtures of shale and sandstone with some gravels and sand. This soil has a moderate organic content and is easily penetrated by roots. Internal drainage is good, but external drainage is excessive due to the steep topography on which the soil develops. The Soil Survey Report states that relief limits the agricultural potential of the soil, but moderate slopes may be planted to abaca or tree crops if the demand for land warrants it (Mariano, 1953:50). Since the report was written, large areas of the hills have been occupied, and even the steepest slopes planted to annuals as well as to tree crops. Consequently, signs of erosion have become obvious on many exposed slopes.

In addition, personal observation suggests that the Cabangan clay loam occurs in the northern and western parts of the plain, being associated with level interfluves up to a kilometre east of the Mawab River. It forms on deposits derived from sedimentary rocks, such as those forming the upper catchments of the Mawab and Linda Rivers. It contains a moderate amount of organic matter and is easily penetrated by roots, although it becomes hard when dry. Surface drainage is poor, but internal drainage fair to good (Mariano, 1953:35-6). The soil is considered of medium to high productivity, and is particularly suitable for lowland rice. In places, a shallow water table prevents successful cultivation of corn or of abaca.

Climate. The nearest meteorological station to Mawab that records temperatures is Davao City, 75 km to the southwest. Records extend over 30 years. As is to be expected within 8^{o} of the equator, there is little monthly variation during the year in temperature levels, which range from 0.7^{o} above to 0.7^{o} below the mean of 27.0^{o}C. The figures for Mawab are

probably very similar, since the change in altitude is only 60 m and there is no maritime cooling influence.

Information on the rainfall regime of the Mawab area is rather unreliable owing to the short records of the nearest stations. Records for Odell Plantation, Tagum (19 km to the southwest) cover 11 years; those for Masara Mine, Mabini (17 km to the southeast) cover 12 years; and those for Compostela (25 km to the northeast) cover 18 years. According to Wernstedt and Spencer (1967:60), the Mawab area lies more or less on the border between the humid zone of interior Mindanao, the moist sub-humid zone of the Davao Gulf lowlands and the perhumid zone of the eastern coast and mountains of Mindanao. In the Thornthwaite classification these are types B3, C2 and A, respectively.

The lowest mean monthly rainfall at any of the three stations mentioned is 118 mm in August at Compostela (see Fig. 2:1). Thus every month comes within Mohr and van Baren's definition of wet climatic and edaphic conditions, that is, with a minimum of 102 mm (Mohr and van Baren, 1954:71). Mean annual rainfall at Masara is rather heavier than at Compostela or on the coast. However, Masara and Odell Plantation both have a coefficient of seasonal variation[1] of 0.18 compared with 0.38 for Compostela. The records for Masara are used to illustrate further details of rainfall in Mawab, since they include complete monthly figures over 12 years and daily figures for 1967.[2]

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1 The coefficient is the ratio of the standard deviation of the values of the monthly means to the mean of the monthly means.

2 Grateful acknowledgement is made to Mr George Doublay, former Resident Manager at Masara Mine, for making these records available.

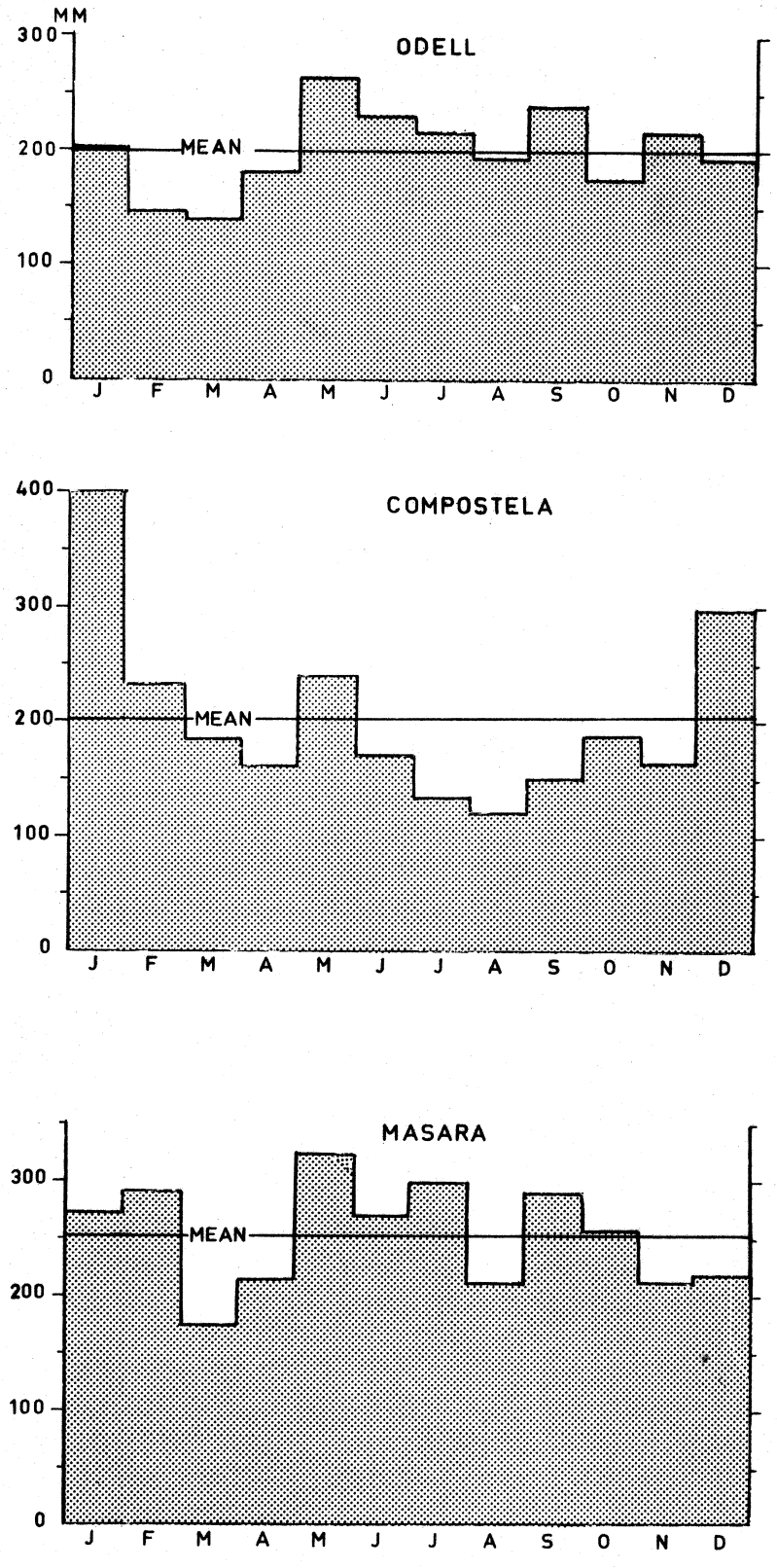


Fig.2:1 Annual rainfall regimes at Odell Plantation, Compostela and Masara Mine.

The mean annual rainfall at Masara is 3003 mm. From the graph (Fig. 2:2) it is plain that there is considerable variation about this mean, from a low point of 1704 mm to a high of 4355 mm. Similarly, although there is only a very slight tendency towards seasonality, there is a very wide range between the highest (790 mm) and lowest (18 mm) figures for monthly rainfall over the twelve years, both of these figures by coincidence falling in the month of February. During 1967, falls of 0.25 mm or more were recorded on 136 days, with a mean of 21 mm and a maximum of 133 mm in one day. The longest run of successive dry days was 14, in April, and the next longest 10 days in December. The second week of January 1968 was notable for the fall of a total of 331 mm of rain in five days. The consequent floods destroyed bridges and made most roads in northern Davao impassable. In Tagum municipality a 7 km stretch of the National Highway was negotiable only by small launches for several days.

The mean figures suggest that rainfall is well distributed throughout the year and is adequate for all agricultural purposes. In more detail, the records show that the area may be subject to droughts of sufficient length to harm growing crops - particularly rainfed rice. Crops are also liable to flood or storm damage. Fortunately, Davao, like the rest of Mindanao, is completely free of typhoons, although some storms are accompanied by violent winds that may damage standing crops as well as coconut palms and banana plants. The storms cause rapid erosion of exposed soil on slopes and may destroy or block roads through slippage on steep slopes. In addition, the Hijo River when in spate adjusts its braided channels, destroying crops planted on islands between the channels and undercutting its banks.

Vegetation. The climax vegetation of the entire Mawab area is lowland dipterocarp forest, and this is still present in

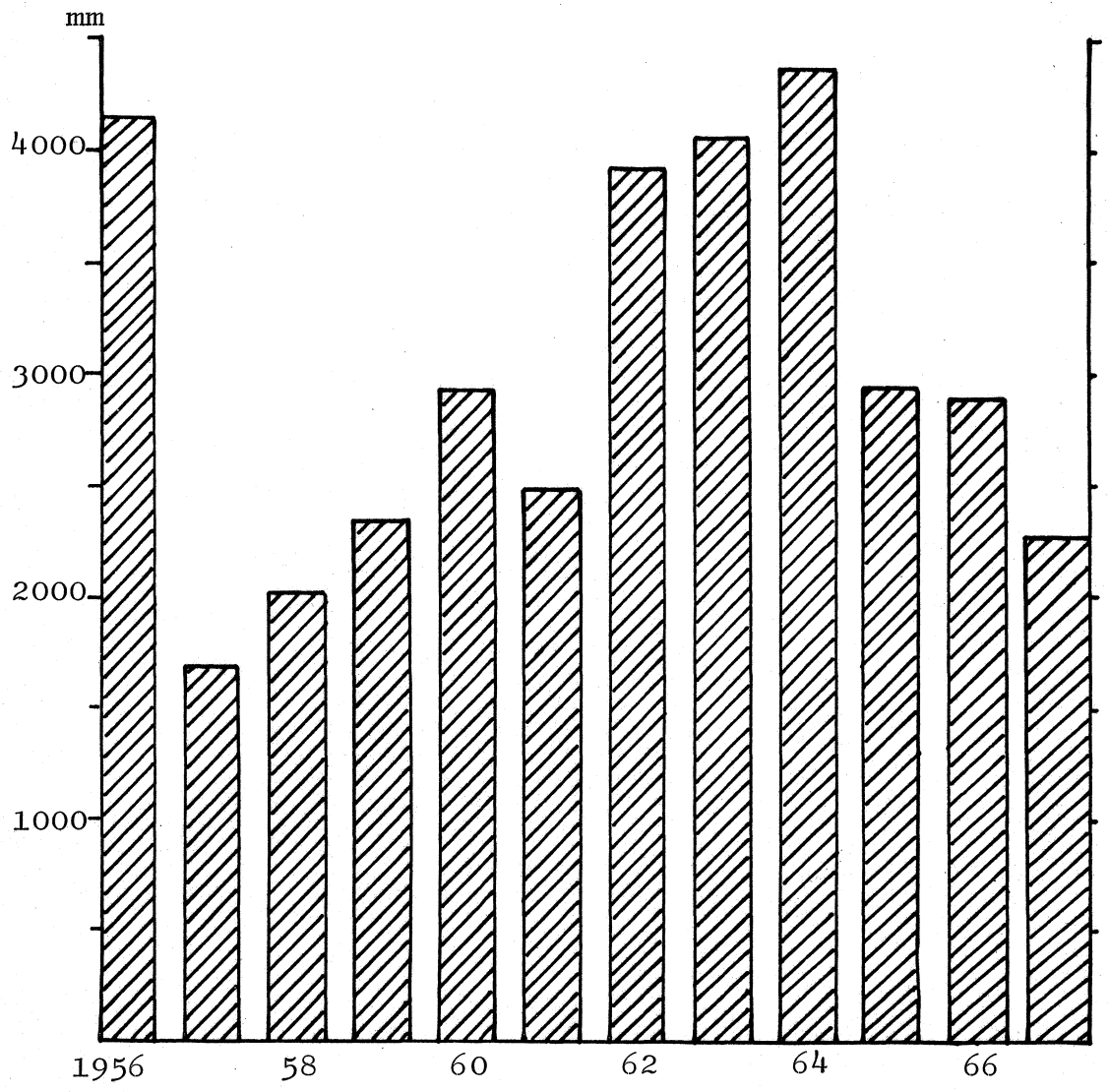


Figure 2:2 12 year rainfall graph, Masara Mine, 1956-67.

the few undisturbed areas of the mountains around Mawab. However, virtually all of the plain is now cleared of forest, except for small patches retained by the larger homesteaders as timber reserves or river bank protection. In the hills, most of the dipterocarp forest has been destroyed either by settlers or by logging operators, but considerable areas have developed second-growth forest. Sometimes this has grown undisturbed since first clearing, but more usually it is merely a forest fallow of a settler. Species favoured by the loggers include Dipterocarpus grandiflorus (apitong), Pterocarpus spp (narra), Shorea gisok (yakal), Shorea polysperma (tañgile), Shorea negrosensis (red lauan), and Hopea philippinensis (gisok-gisok). Rattans are common in the forests and are exploited for use in construction and in furniture-making.

When the twentieth-century pioneers arrived, considerable areas of the plain were already in second-growth as fallows of the native Mansakas. The secondary growth, or late, is of very variable species, many of little or no economic value. However, the bamboo is a prized plant that yields materials for construction as well as for storage baskets and rice-drying mats. Leucaena glauca (ipil-ipil) is highly regarded as a fast-growing source of firewood. In some areas of Mawab cleared land has been invaded by grasses, mainly cogon (Imperata cylindrica) and, in the riverine areas, talahib (Saccharum spontaneum). Such grassland areas are most common in more remote areas, including parts of the barrios of Sawangan, Tuburan and Saosao and presumably have resulted from poor management of land that is not worth reclaiming at present.

Wild life. Until the main inrush of settlers after the second World War and the consequent clearing of forest, the Mawab area supported considerable numbers of game suitable

for hunting, including wild pig (Sus cristatus), deer (Cervus philippinus etc.), monkeys (Macaca irus) and numerous bird species. Pigs and monkeys were destructive pests. Since about 1955 deer and monkeys have almost entirely disappeared and wild pigs are seen only rarely on the fringes of the settled lands in the hills. As cropping has expanded, new animal pests have become more noticeable. Flocks of white cockatoo may do serious damage to corn and fruit crops, and the maya bird (a kind of finch) attacks rice. Since 1953, rice areas in Davao and Cotabato have suffered from serious infestations of rats that have destroyed large quantities of standing rice. Mawab has in some years been among the worst-affected municipalities (Bureau of Plant Industry, 1964:13) although in other years it has escaped lightly compared with neighbouring areas. The Bureau of Plant Industry representative in Mawab believes that the large areas of uncultivated land, in particular that of absentee landowners, harbour the rats and make control more difficult. Officially-sponsored eradication campaigns during the 1960s provided free poisons, including 10-80, but free distribution has now stopped so use of poisons has diminished. Another factor in this decrease was the catastrophic effects of both baits and poisoned rats on farm livestock, even including work animals.

The development of Mawab as a municipality[1]

At the turn of the century, Henry Savage Landor travelled up the Hijo and Mawab Rivers in search of the native Mansakas. His report (Landor, 1904:838-91) showed that there were no permanent settlements along these streams. Nevertheless, according to leading Mansakas and the first

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1 Many aspects of the development of Mawab, and of Davao as a whole, are undocumented. The main sources of local

immigrant settlers, there were in 1920 between 100 and 200 families of swidden-farming Mansakas living in groups of eight to 20 houses at scattered points in the plain. The evidence of the pioneers suggests that the Mansakas were able to utilise long fallow periods, as the plain was covered in either primary or mature regrowth forest, with very few areas affected by cogon grass.

The beginnings of immigration date back to 1919, when a Visayan teacher was posted to the Mawab area to establish a school for the Mansakas. The school became the focus of the new barrio of Mawab, whose boundaries remained undefined until the area was surveyed in 1938. In 1929, there were less than 20 non-native households in Mawab but thereafter kinsmen and paisanos (province-mates) joined these pioneers in increasing numbers (see Fig. 2:3). Between 1929 and 1941, at least 185[1] households (individuals or families) arrived in Mawab giving a mean rate of 14 households each year.

At first, the only access to Mawab from the barrio of Hijo on the coast was by a trail across the mountains. However, the return journey to the coast was facilitated by the use of bancas (dug-out canoes) on the Hijo River. This route was used on journeys to sell abaca, coffee and eggs and to buy farm supplies in Hijo. In 1937, work began to extend the national highway from Davao City through the gorge of the Hijo River and Mawab barrio became a base for construction workers, some of whom later remained as settlers. The road was negotiable by 1939. Apart from stimulating further

(continued from p.54)
historical information used in this and subsequent chapters are the pioneers and government officials.

1 The uncertainty arises from the fact that the lists of 1967 residents provided by local officials did not include earlier residents who had left Mawab or died.

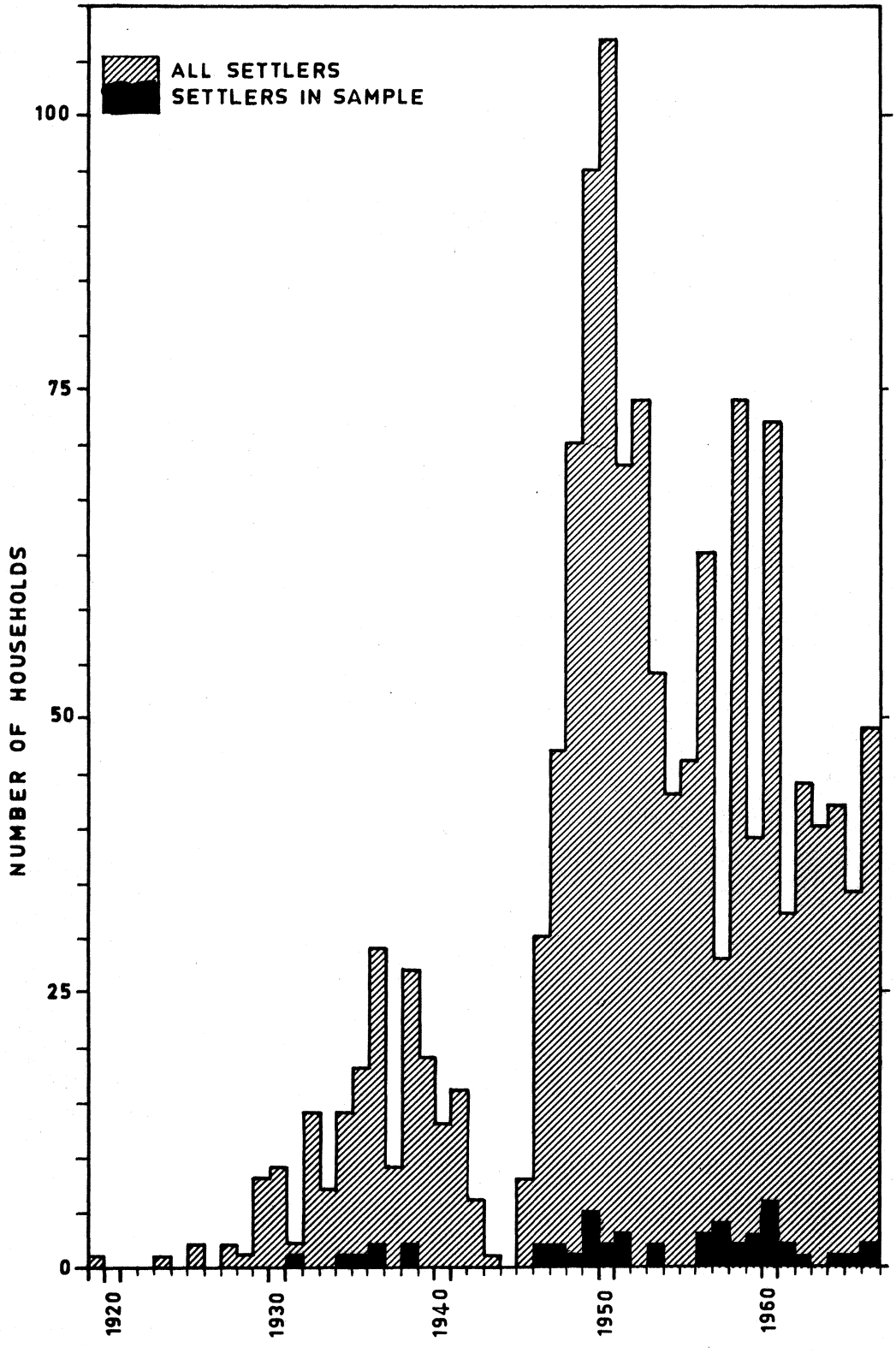


Figure 2:3 Number of households settling in Mawab each year, 1919-66.

immigration the road offered improved transportation. This, together with the arrival of several Chinese merchants, encouraged the wider planting of abaca. The new barrios of Andili, Nuevo Iloco and Saosao were established as settlers occupied the plain east of Mawab.

The rate of immigration and land colonisation was not reduced by early administrative delays or incompetence. Most of the Mawab plain was released by the Bureau of Forestry as 'alienable and disposable for agricultural purposes' by 1928, but it was not surveyed by the Bureau of Lands until 1938, by which time at least 144 settlers had claimed and begun cultivating land. One result of the delayed survey was that part of the surveyed barrio site of Mawab included portions of pioneers' homesteads. Since development of the 40 ha barrio site was slow, the pioneers have continued to utilise such portions and the issue has still not been resolved. North of the barrio, the survey team designated a 50 ha lot for a Bureau of Plant Industry nursery and this reservation delayed the northward extension of settlement. The nursery was never established and post-war development of the area by settlers has led to another unresolved dispute, with a prominent Mansaka leader claiming that the land should revert to Mansaka ownership. However, the dispute has not deterred the occupants from developing the land, thus reflecting the traditional Filipino custom of asserting rights to land through effective occupation.

In 1939, the entire area from the Hijo gorge north to Monkayo was designated as a settlement project by the National Land Settlement Administration (NLSA), but operations were postponed because of the vast task of forest clearance required. Although the NLSA established an administrative office in Nabunturan in 1946, no settlers

were ever installed by the NLSA. When the project was formally abandoned in 1949, most of the area had already been claimed by spontaneous settlers.

At the start of World War II, many settlers left Mawab for their home provinces, hoping to find greater security among kinsmen and friends. Many of the remaining settlers sought refuge in the mountains east of Mawab as the war continued and as Japanese administration became harsher.[1] After the war, some of the abandoned holdings were occupied by squatters, resulting in disputes when many of the original settlers returned. However, most cases were settled peacefully, with either formal purchase of land by the squatter or compensation to the squatter for his improvements.

Post-war immigration led to the rapid occupation of vacant areas in the plain, including level portions south of the Hijo River. By 1948, settlers had begun to occupy the lower hillslopes of this southern area, where the barrios of Sawangan and Concepcion were formed. The hilly area west of Mawab was occupied mainly by Leyteños who established the new barrio of Tuburan. The post-war expansion in migration is plain in Figure 2:3, which also demonstrates the increase of the 1930s and the virtual cessation of movement during the war. Since the early 1950s, migration has fallen from its peak but remains above the pre-war level. Between 1946 and 1960 at least 911 households arrived in Mawab at a mean rate of 61 each year, or more than one household each week. From 1961 to 1966 the rate has averaged about 40 households each year.

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1 These refugees included people who had been politically or socially prominent and afraid of being forced to collaborate publicly with the occupying power. The first three Ilongo pioneers in Mawab were discovered by the Japanese and compelled to form a local civil administration. In 1944 they were gaoled briefly by the Americans for collaboration.

In August 1959, after considerable discussion and political manoeuvering, Mawab was created a municipality, the smallest in Davao province. It incorporated barrios from the 'parent' municipalities of Tagum and Nabunturan and its boundaries were defined by cadastral survey monuments. Within two years, three new barrios were formed, bringing the total in the municipality to the present figure of ten. An eleventh barrio, Salvacion in the southwest, continues to be administered from Tagum, which is more convenient for the residents than the poblacion of Mawab. In addition, many other people remain uncertain about which municipality they belong to, because boundaries are not delineated on the ground or related to natural features. These uncertainties complicate the task of computing economic or demographic indices for Mawab.

The 1960 census reported 8,888 persons in Mawab, excluding Salvacion (pop. 308). By 1968, the Philippine Senate was considering a bill to transfer to Mawab the barrios of Panibasan and Masara from the neighbouring municipality of Mabini. In 1960 these barrios had a combined population of 3,044, so that when the transfer occurs, Mawab will become more comparable in size to others in Davao province.

Table 2:1 Population of Mawab municipality, by barrio, 1960.

Barrio	Population
Andili	1,717
Concepcion	367
Malinawon	922
Mawab (poblacion)	1,774
Nuevo Iloco	1,578
Saosao	1,070
Sawangan	780
Tuburan	680
	8,888

The establishment of barrios as political bodies does not imply the creation of barrio centres. Only three barrios - Mawab, Nuevo Iloco and Saosao - have surveyed and developed barrio sites and even in these barrios most settlers still live on their farms. As is normal in Philippine municipalities, the poblacion of Mawab is the most highly developed barrio. During the period when local farmers were earning high incomes from abaca, several Chinese opened stores along the main road. By the late 1950s there were also a few Filipino-owned mixed goods (sari-sari) stores, a rice and corn mill and a restaurant (carenderia) to serve passengers on long-distance buses. Further development has occurred since the creation of the municipality. The number of commercial establishments has risen rapidly (see Table 2:2), particularly food and refreshment suppliers serving the growing numbers of travellers and municipal and logging employees. Many of the smaller stores are run by the wives of small farmers, who are trying to augment inadequate family incomes by selling vegetables and a range of minor consumer goods (cf Wolfe, 1965, for a similar phenomenon in Latin America). Their turnover is small, and their prices often higher than elsewhere, but they retain a small clientele through links of kinship and friendship.

Apart from the commercial and administrative establishments, Mawab is the site of one public elementary school and two private high schools. These draw pupils from all ten barrios in the municipality, although the opening of community-built high schools in Nuevo Iloco and Andili in 1968 has provided more convenient educational facilities for people in the eastern barrios (Table 2:3). The poblacion has the only health centre in the municipality, but a full-time doctor was only recruited late in 1967, just before the municipal elections were held. There is also a private

doctor practising in the town. Most villagers outside the poblacion rely on traditional herbalists, masseurs and midwives for medical care.

The development of central facilities in other barrios has depended mainly on roads; sometimes the presence of a school has also exerted some attraction. Thus Concepcion and Sawangan, which are inaccessible for commercial vehicles, show no signs of attracting commercial, social or administrative establishments other than schools and chapels. On the other hand, the growth of Andili can be precisely correlated with road development. For a long time, it remained a barrio of dispersed homesteads, but after the war a road was built beside the Hijo River to Masara gold mine, and a primary school sited on a junction of this road with a barrio trail. Following a flood in 1952, the road was re-sited away from the river, a new school site was donated, and Chinese shops were established nearby. The new route was used by people from Andili, Concepcion and the upper Hijo valley to reach Mawab; commercial crops from these areas are traded at the Chinese stores along the road. With increasing traffic, more facilities have been established, including a public market and a petrol pump. By 1967, Andili was second only to Mawab as a commercial centre (Table 2:2) and all development has taken place on privately-owned land. Some local officials expect that the government will exercise its right of eminent domain and expropriate several hectares for future expansion.

The barrio of Malinawon illustrates a slightly different form of development. It was established in 1960 and lies across the national highway. After an elementary school was built in 1960 between the highway and the Mawab River, local farmers began buying residential lots from the owners of roadside land; by 1967 19 houses had been built. In

Table 2:2 Commercial establishments in Mawab, by barrio* 1967

Establishment	Poblacion	Andili	Bawani	Malinawon	N. Iloco	Saosao
General & mixed stores	25	13	2	2	10	5
Restaurants	8	0	0	0	0	0
Tuba stalls	7	8	1	3	2	4
Refreshment stands	15	0	0	0	0	0
Tailors, dressmakers	8	3	0	0	2	0
Rice and/or corn mills	3	2	3	1	3	1
Services[a]	4	1	0	0	1	0
Entertainments[b]	2	1	0	0	0	0
Barbers	3	0	0	0	0	0
Butchers	2	0	0	0	0	0
Photographer	1	0	0	0	0	0
Bakery	1	0	0	0	0	0
Pharmacy	2	0	0	0	0	0

* Apart from a few sari-sari stores and tuba stalls there are no commercial establishments in Concepcion, Nueva Visayas, Sawangan and Tuburan.

a Includes shoe repairer, blacksmith, vulcanising shop, petrol station, furniture workshop.

b Includes cockpit and billiards hall.

Table 2:3 Social and administrative facilities in Mawab, by barrio, 1968

Facility	Poblacion	Andili	Bawani	Concepcion	Malinawon	N. Iloco	N. Visayas	Saosao	Sawangan	Tuburan
Primary school*	1	0	0	1	0	1	2	1	1	1
Elementary school*	1	1	1	0	1	1	0	0	1	0
High school	2	1	0	0	0	1	0	0	0	0
Telegraph office	1	0	0	0	0	0	0	0	0	0
Puericulture centre	1	0	0	0	0	0	0	0	0	0
Doctor	2	0	0	0	0	0	0	0	0	0
Church or chapel	5	6	1	1	2	8	2	3	2	5
Market place	1	1	0	0	0	0	0	0	0	0
Reading centre	0	1	0	1	0	0	0	0	0	0
Platform or multi-purpose pavement	0	1	1	0	0	1	0	0	0	0
Agriculturalists office	1	0	0	0	0	1	0	0	0	0

* Primary schools cover Grades I to IV, Elementary schools cover Grades I to VI.

addition, a group of Ilocanos who have lived in the area since 1949 have, through cooperative labour, built another 28 homes and a rice mill. However, there are only three sari-sari and tuba[1] stalls in Malinawon, because most residents are as close to Mawab as to the barrio centre. Indeed, for squatters in the hills of western Malinawon (the sitio of Tanawan), Tagum town is as convenient an urban centre as is Mawab. Thus there is only limited scope for further commercial expansion in Malinawon, but the trend of residential development along the road seems likely to continue.

Since the completion of the national highway, most roads used by the people of Mawab have been built either by private corporations or by barrio people themselves. The most important of the private roads is that which connects Nuevo Iloco to the Masara copper and gold mine via Andili and the Hijo valley. It was built in 1953 by the mining company, which continues to maintain the whole road, except for the section between Mawab and Nuevo Iloco where costs are shared with two logging companies. The company charges tolls to defray costs. Although an alternative toll-free route was built by a logger in 1958 between Nuevo Iloco and Andili, this has always attracted less traffic than the more direct company route.

Most of the other private roads have been timber roads which are usually abandoned after logging operations. Very few have been maintained for subsequent use, and one was actually destroyed in a deliberate attempt by timber concerns to discourage the entry of squatters. Where the municipal government has assumed responsibility for private

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1 Tuba is a drink prepared from the fermented sap of the coconut palm.

roads, maintenance has been sporadic, usually undertaken only in the pre-election period once every two years. As a result, these roads are frequently impassable or in such poor condition that commercial vehicles prefer to avoid them. People in the barrios of Concepcion and Sawangan can only reach serviced roads by fording the Hijo River.

By 1967 the population of Mawab had increased to an estimated 12,500, according to the staff of the municipal health centre. As the implied 41 per cent increase since 1960 appears rather excessive, an alternative estimate has been made on the basis of the data collected during my research. Specially compiled lists of residents give a total of 1,704 households in the ten barrios. Multiplying by 6.34, the mean household size among the research sample, yields a total of 10,803 people. Adjusting for an arbitrarily assumed 10 per cent understatement in the listing of households, the total becomes 11,881. The changes in population densities between 1960 and 1967 are given in Table 2:4.

Table 2:4 Population density of Mawab, Davao and the Philippines, 1960* and 1967.

	Population/Km^2		Population/Km^2 cultivated land	
	1960	1967	1960	1967
Mawab	65	87[b]	158	171[a]
Davao	45	56[b]	237	246[b]
Philippines	100	113[c]	383	N.A.

* 1960 figures derived from Census of Population and Agriculture, 1960.

a 1967 figure of 6,947 ha of cultivated land estimated by Agricultural Productivity Commission, Mawab.

b 1967 figures for Davao derived from Annual Report of Provincial Agriculturalist, Davao City, 1966-7.

c 1967 population of Philippines derived from Annual Report of the Agricultural Productivity Commission, Manila, 1967.

N.A. = not available

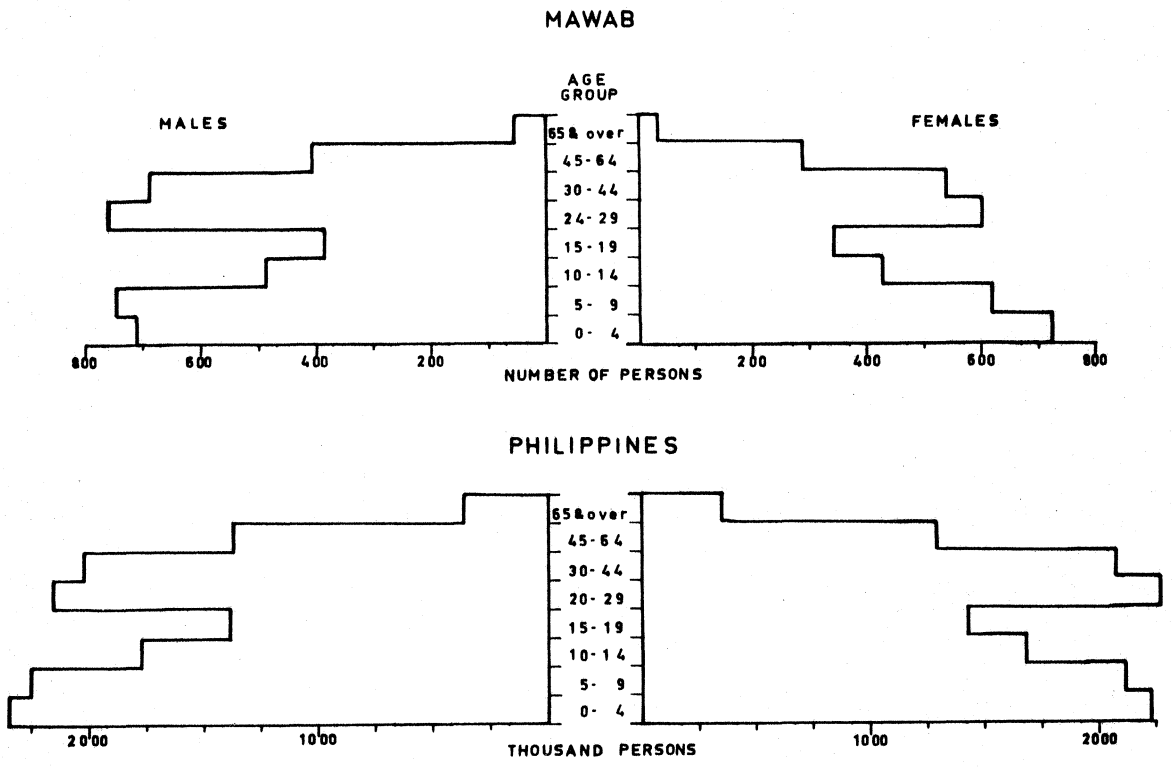


Fig.2:4 Age-sex structure of the population of Mawab and the Philippines, 1960.

The population of Mawab still exhibits certain features held to be characteristic of pioneer communities, notably a very high ratio of males to females (as noted briefly on p.38 above) and a comparatively small proportion of the population in the upper age groups. Unfortunately, the 1960 census does not give complete tabulations of age structure by municipality, but Figure 2:4 has been prepared from the available data. For purposes of comparison the data for the Philippines are shown in the same form.[1] The census classified 88 per cent of the population as farm population. The remaining 12 per cent are primarily engaged in logging

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1 The census tabulations of age and sex by municipality use 5-year age groups only up to age 19. Thereafter the class interval varies as shown in Figure 2:4. Standard age-sex pyramids for Davao and the Philippines are given in Appendix Figure 1.

undertakings, municipal employment or in commercial establishments such as stores and tailoring shops.

The research sample

It was noted in the Introduction that in order to obtain detailed information on the processes involved in colonisation in Mindanao it was necessary to use individual settlers as sources. Largely for logistical reasons, the number of settlers to be interviewed in detail was restricted to 50, chosen completely at random. There was no existing basis for selection apart from incomplete lists of registered voters and out-of-date topographical maps. Therefore, the captain and council of each barrio were asked to use their joint knowledge to compile lists of their residents. In two barrios the captains made a complete household census and in two others school teachers also helped compile the lists. The amalgamated list for the whole municipality totalled 1,704 households. No attempt was made to stratify the list. The random sample of 50 represented nearly three per cent of the total. The data obtained from these 50 form the basic subject matter of the following chapters.

Provincial origins. The sampled settlers represent all the major migrant source areas, as shown in Table 2:5. Settlers from Iloilo and the other Ilongo provinces on Panay and Negros Occidental are noticeably under-represented in the sample while Bohol and the Ilocano areas are over-represented. The sampled settlers fall into five cultural-linguistic groups, as shown in Table 2:6.

Step-migration. The years in which the settlers arrived are shown with the data for all Mawab households in Fig.2:3. In most cases, these are not the years in which people first

Table 2:5 Source areas of settlers in a) Mawab and b) the research sample.

Source Area	Mawab		Sample	
	No.	%	No.	%
Ilocano provinces	214	13	10	20
Other Luzon	23	1	0	0
Iloilo	172	10	3	6
Other Panay	49	3	0	0
Negros Occidental & Oriental	47	3	2	4
Cebu	205	12	5	10
Bohol	494	29	20	40
Leyte	195	11	6	12
Mindanao (non-native)	96	6	4	8
" (native of Mawab)	125	7	0	0
Unknown	84	5	0	0
TOTAL	1,704	100	50	100

Table 2:6 Cultural group and province of birth of 50 settlers in Mawab.

Province of birth	Cultural Groups				
	Ilocano	Ilongo	Cebuano	Boholano	Leyteño
Ilocos Norte and Sur	5	-	-	-	-
La Union	1	-	-	-	-
Tarlac	3	-	-	-	-
Zambales	1	-	-	-	-
Iloilo	-	3	-	-	-
Negros Occidental	-	1	1	-	-
Cebu	-	-	5	-	-
Bohol	-	-	-	20	-
Leyte	-	-	-	-	6
Surigao	-	-	-	-	2
Davao	-	-	1	-	1
TOTAL	10	4	7	20	9

left their home provinces because migration in several stages has been the rule. Only ten of the sample moved directly from their birthplaces to Mawab. Six others had worked in various places[1] outside their home towns, but when they migrated to Mindanao, Mawab was their first destination. The other settlers had all spent some time in other places in Mindanao before deciding to move to Mawab and 11 had stayed in four or more places. The maximum number of intermediate stops was ten and the mean, 2.8. The intermediate places were as widely scattered as Surigao, Bukidnon, Zamboanga and Cotabato, but 16 settlers had spent some time in the rural districts of Davao City and 11 in the municipality of Panabo, working usually as tenants or labourers.

The mean age on arrival of settlers who travelled directly to Mawab was 28 years, but for those who had made intermediate stops the mean was 32 years. These people were, on average, slightly under 17 years old when they first left home, so they had spent an average of some 15 years in the process of migrating and settling. As will be seen in the following chapter, some of the sampled farmers do not consider themselves as finally settled in Mawab. The selection of Mawab as a destination was almost invariably a consequence of chain-migration and the role of relatives in transmitting information and assisting new settlers will also be discussed in Chapter III.

Before leaving their home provinces, eight of the sampled settlers were farming their own land, 13 were tenants and 19 were assisting their fathers whether on owned or rented land. As far as could be judged, few were operating more than two hectares. Four settlers were

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1 These were mostly nearby towns, but one Ilocano had worked for several years as a farm labourer in California.

previously farm labourers, three were in non-cultivating occupations in rural areas[1] and the remaining three were students before migrating. At various periods, almost half the settlers had changed occupations. For instance, one had been a teacher, another had worked for the Malaria Eradication Unit and several had been war-time guerillas. On average, settlers had close to 17 years farming experience and less than three years in non-farm occupations on arrival in Mawab.

Twenty-two of the sampled settlers were single when they arrived in Mawab. Sixteen of these later married in Mawab and one in a neighbouring town. Six of them married women not from their own province, but only two of the wives had a different mother-tongue from the husband. Four of the single settlers returned temporarily to their home provinces to marry and only one man has not yet married.

Of the 28 settlers who were married on arrival, seven first came to Mawab unaccompanied in order to find land and housing before bringing their families. The period of separation was less than seven months in all but two cases. The mean number of dependents of these 28 settlers on arrival in Mawab was 4.8, with a range from one to 12.

In 1967, the mean age of the 50 settlers was almost 45 years. Forty-three of the settlers were then married, five widowed, one single and one had been deserted by his wife in 1966. The total number of children born to settlers' families (both before and since arrival in Mawab) was 281, of whom 237 were living and 181 were still living in the settlers' households. The basic household unit is the nuclear family, but many households include accretions, usually close consanguineal kin (such as parents or siblings)

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1 Potter, fisherman and tuba-gatherer.

of the husband or wife. In a few cases, the additional members formed the nuclear family of one of the offspring of the settler. All people who normally resided and took their meals in the house during the year July 1966 to June 1967 were counted as household members, although in a few instances some of these contributed little of their labour or their off-farm earnings towards the household economy. On this basis, the total population of the 50 households was 317, with a mean of 6.3 and a range from one (one instance) to 11 (three instances). In comparison, the mean size of all farm households in Mawab in 1960 was 5.5.

The age-sex structure of the sampled population is shown in Fig.2:5. The sex ratio was 124.8 males per 100 females - a little above the mean of 122.5 for the Mawab population as a whole. Out of 130 males between the ages of 10 and 64, 78 were considered part of the farm work force, 31 were students and three others were over 65 years old and took little or no part in farm work. The remainder were mostly occupied in casual non-farm employment, but one was a full-time schoolteacher. Two women were also schoolteachers. While women perform some farm tasks, particularly planting and harvesting of rice, they are not usually expected to engage regularly in farm work.

Although the Philippines has a high level of literacy[1] and education is highly valued, rural surveys have generally found that owing to poverty, the majority of farmers have received only a few years' formal education. The sampled settlers in Mawab correspond to the rule. Only one had attended college (to second year level) and two others had

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[1] The 1960 census reported that 72 per cent of all Filipinos ten years and over were literate. Wernstedt and Spencer (1967:689) cite an assessment that functional literacy is probably 20 per cent below this level.

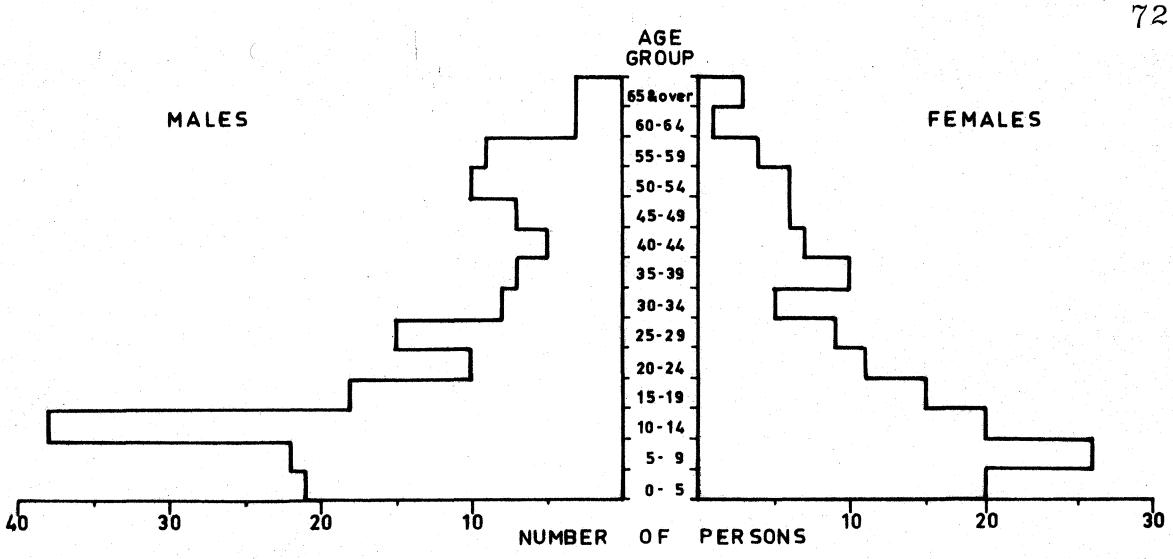


Fig. 2:5 Composition of sampled households by age and sex. (Total population = 317)

Table 2:7 Education level of 50 settlers, by cultural group.

Level Attained	Ilocano	Ilongo	Cebuano	Boholano	Leyteño	Total
0	2	1	4	2	5	14
Grades I-IV	3	1	2	17	2	25
Grades V-VII	0	0	1	1	2	4
High School (incomplete)	2	2	0	0	0	4
High School (complete)	2	0	0	0	0	2
College (incomplete)	1	0	0	0	0	1
TOTAL	10	4	7	20	9	50

completed high school. Almost four-fifths had got no further than the four primary grades. As Table 2:7 shows, there is a distinction between the cultural groups. The Ilocanos and, to a lesser extent, the Ilongos tend to have a higher level of educational achievement than the three eastern Visayan groups.

Table 2:8 Educational attainment of the population of Mawab, 1960 and of the research sample, 1967.

	Total population	No grade completed	Grades I-V	Grade VI to High School Class 3	High School graduate to college graduate
Mawab	7,818*	3,387	2,982	1,180	269
Per cent	100	43	38	15	3
Sample	317	107	147	50	13
Per cent	100	34	46	16	4

* The 1960 census report erroneously attributed the barrio of Saosao (pop. 1,070) to Nabunturan. It was not possible to obtain the barrio data to correct tables reporting for the municipality as a whole.

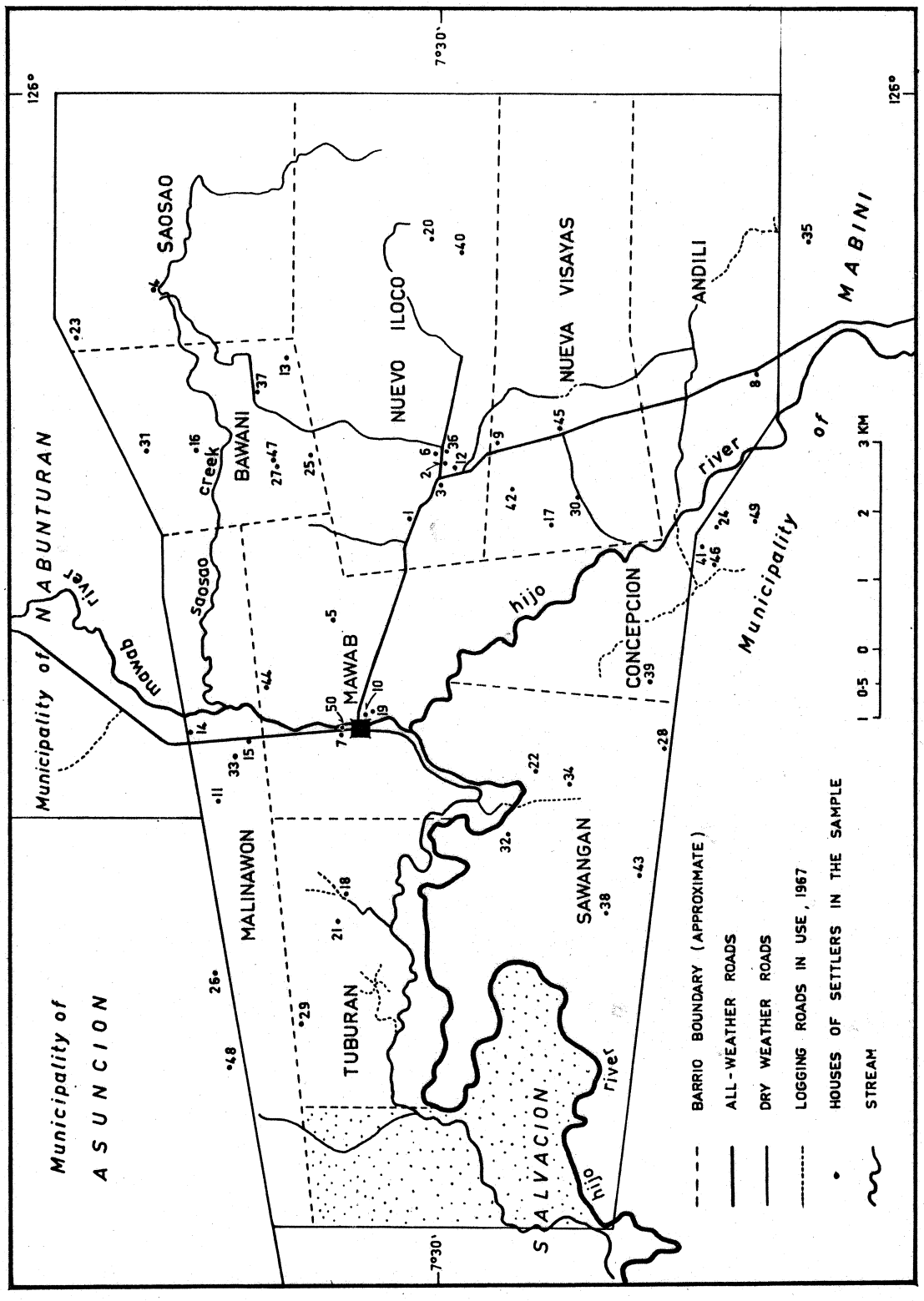
Compared with Mawab as a whole in 1960, the families of the settlers sampled in 1967 have received slightly more schooling at the lower levels, but there is no significant difference at the higher levels (see Table 2:8). In Chapter VI there is some discussion of the difficulty for the most recent settlers of affording schooling above elementary level for their children.

The locations of the houses of the sampled settlers are shown in Map 4, and in Table 2:9 the distribution of the settlers is shown in relation to the number of households reported for each barrio in 1967.

Table 2:9 Total and sampled numbers of households in Mawab by barrio

Barrio	All Households	Number in sample	Sample as percentage of total
Andili	170	2	1.1
Bawani	94	7	7.4
Concepcion	99	5	5.1
Malinawon	186	6	3.2
Poblacion	442	6	1.4
Nuevo Iloco	265	8	3.0
Nueva Visayas	111	5	4.5
Saosao	115	2	1.7
Sawangan	146	6	4.1
Tuburan	76	3	3.9
TOTAL	1,704	50	2.9

Other characteristics of the sample, such as their location in relation to the land they operate, their resources on arrival and in 1967 and their tenurial status, form the substance of the following four chapters.



Map 4. Location of sampled settlers, numbered in order of arrival in Mawab.

Chapter III

THE ACQUISITION OF LAND BY SETTLERS

Although the Philippine Public Land Act of 1903 (and later amendments) laid down formal procedures for the occupation of public lands, the responsible agencies of government never had enough funds or personnel to control either the rate or the course of colonisation. In practice, much was determined by the pioneer colonists with only partial regard for the provisions of the law. This chapter examines in detail the processes by which the public lands in Mawab were occupied and the land tenure situation that has resulted.

Initial stages

In about 1918 the Government of the Philippines sent over 100 college graduates from Luzon and the Visayan islands to establish 'settlement farm schools' among non-Christian peoples in Mindanao. Some of the teachers seem to have been moved rather frequently, and in 1919 an Ilongo was sent on his third posting to Mawab. There were then 14 Mansaka houses close to the Mawab River, about half a kilometre above its confluence with the Hijo. The school was sited close to these houses, and the present barrio of Mawab has developed around it. At first, it was difficult to attract and keep pupils, but after a year there were sufficient in residence to start a school garden; proceeds from sales of garden produce were used to buy clothing and equipment.

Two years later, four Mansakas who had not paid the Philippine residential tax (amounting to P2 per head),

asked the teacher to pay the double tax imposed on them as defaulters. In return, they gave him 24 ha of land near the school and cleared part of it. To prevent regrowth in the clearing, he first planted squash as a cover crop, following it up with 1,000 coconuts purchased from a coastal planter. In 1923, another Ilongo teacher (stationed at Bankerohan, 20 km north of Mawab), visited his province-mate or paisano at Mawab and noted the abundance of level forested land there. On request, the local Mansakas gave him a block of 24 ha, which he asked his paisano to develop after his return to Bankerohan. Shortly afterwards, another paisano, a Lieutenant in the Philippine Constabulary who was stationed at Monkayo, also visited Mawab; he too claimed land and arranged for the teacher to develop it on his behalf. Finally two more civil servants arrived, one an Ilocano from Tarlac and the other a Cebuano. Together with the earlier visitors, they set up the Cinco Amigos (Five Friends) Plantation, placing the teacher at Mawab in charge of clearing. Their intention was to start individual farming operations after resigning from the public service.

These pioneers, and others who arrived before the Philippine Government embarked on road-building and settlement programmes, were civil servants with above-average education and with comparatively well paid, secure positions (cf Field, 1931:413). They were quick to perceive the potential of the Mawab area and to initiate measures to gain a foothold there. In fact, they established themselves before the area had been classified, surveyed or released by the Bureau of Forestry for agricultural development. Only in 1928 was the Mawab plain certified as suitable for alienation, while the first cadastral survey was delayed even further, taking place in 1937-9.

In the initial stages, the native Mansakas gave land freely to immigrants. They even helped to locate and mark out suitable lots, and often worked as labourers on the holdings. For their services, they were paid mostly in kind; pioneers with shotguns were able to obtain wild pig, deer and other game, and paid their labourers with 2 kg of meat per day. As the number of immigrants rose after the mid-1930s, the Mansakas began to transfer land only for small sums of cash or, more commonly, for tobacco, clothing, tools or alcoholic drinks.

The parties involved in these early land transactions may have intended them to be in perpetuity. But even if the Mansakas meant to transfer rights to the land only on a temporary basis, they were often dispossessed of it through the operation of Philippine land laws, by which immigrants obtained permanent titles to land. As the Mansakas did not understand the legal system, they were frequently tricked out of their land by settlers pretending to hold titles. Others abandoned their land in fear of the arms that some immigrants used for hunting. Some Mansaka informants stated that complaints to the authorities were fruitless, as the investigating officials were themselves Christian immigrants and therefore biassed in the settlers' favour. Consequently, as immigration continued, many Mansakas moved away, eventually retreating into and beyond the hills around the Mawab plain. Those who have remained have tended to adopt new traits from the migrants, for example clothing, agricultural practices and commercial crop production (cf Yengoyan, 1966b). In 1967, there were about 130 Mansaka families in Mawab, most of whom were resident in hill areas.

Clearly, the native Mansaka people never formed any obstacle, permanent or temporary, to the settlement of the Mawab plain by Filipino migrants. Within a few short

years, the migrants effectively established themselves and their cultures on a permanent basis, easily displacing the Mansakas who either retreated before the dominant society, or chose to adopt many of its features.

Migration chains

Almost as soon as they had established their farms, the pioneers in Mawab began inviting relatives and friends from their home islands to join them. The resulting phonomenon of chain migration is well known from studies of internal movements in countries such as the U.S.A. and Sweden (see, for instance, Nelson, 1959 and Hägerstrand, 1957). More recent studies show the process to be operative in Asia as well, among others, in India, Malaysia, Thailand and Indonesia (ECAFE, 1967:32). It largely accounts for both the composition of the Mawab population and the ultimate location of most settlers in Mawab.

From the sample of 50 settlers it was found that only six had arrived with neither kin nor friends already in the area; of these, one was recruited by a landlord who wanted tenants from his province, while another arrived with a group of *paisanos* and acquaintances. Eleven migrants had been assisted by relatives or friends who paid for their transport. Forty-two people lived with kin or *paisanos* for at least some weeks, and in some cases for several years, after arrival. Of those who became landowners, five were helped by relatives to find suitable lots, one bought out his brother's share in a communal holding, and another was 'given' land in the forest zone by a kinsman of his wife. Fourteen people who began farming in Mawab as tenants were also helped directly by relatives or *paisanos* in finding land.

Similar findings were made by Wernstedt and Simkins in a study of the colonisation of the Digos-Padada valley in southwest Davao. Seventy-two per cent of their sample of over 900 settlers had relatives or friends in the valley before migrating and most settlers stayed with such acquaintances for the first few months after arrival.[1]

In an attempt to ensure that their neighbours were kin, or at least paisanos, the first five settlers agreed that future Ilongo migrants should be encouraged to settle in the western and northern parts of the plain, Ilocanos in the east and Cebuanos in the south. As people from other Visayan islands arrived they were also encouraged to move to the south. Some settlers made trails around neighbouring vacant land or put up claim signs to deter unwanted migrants. One pioneer applied for a pasture lease extending from Galinan Creek to the mountains, but allowed his paisanos to settle the strip, subsequently waiving his claim in order to allow them to file homestead applications. In the early years, these illegal or quasi-legal attempts to create cultural blocs were largely successful. Even though the system began to break down in the late 1930s as the Mawab plain filled up, the continued role of kin in helping newcomers to find land ensured that a considerable measure of cultural grouping was maintained.

By the time a settler had established a farm, or gained some form of employment, he had usually formed contacts with many people, thereby reducing his dependence upon relatives. Before this stage was reached, relatives were useful in, for example, supplying seeds or planting materials to new arrivals, or making interest-free loans of foodgrains if harvests were insufficient. Relatives

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1 Paul Simkins, personal communication.

commonly worked together in reciprocal labour exchanges (losong), especially for clearing forests, or for planting, harvesting and stripping abaca. However, in this respect the absence of neighbouring kinfolk was no real drawback because, from the very beginnings of permanent settlement, neighbours exchanged labour regardless of kinship or of provincial origins.

Distribution of population by cultural-linguistic origins

Chain migration has caused a marked clustering of people according to kinship and province of origin. Excluding the six migrants who had no relatives in Mawab on arrival, the mean distance from sampled settlers at first establishment to their closest relatives was only 0.87 km, and the median distance 0.22 km. In more general terms, this clustering according to area of origin can be seen from Table 3:1 which shows the area of origin of household heads now living in the 10 barrios of Mawab. The distribution of the Visayan groups is shown in Table 3:2.

It is clear that the only groups with a wide distribution are the Eastern Visayans and especially the Boholanos, who are represented in all barrios. In contrast, 90 per cent of the Western Visayans (mostly Ilongo speakers) are located in the contiguous barrios of Mawab and Bawani, while 80 per cent of Ilocano-speakers are found in Nuevo Iloco, Bawani and Malinawon.

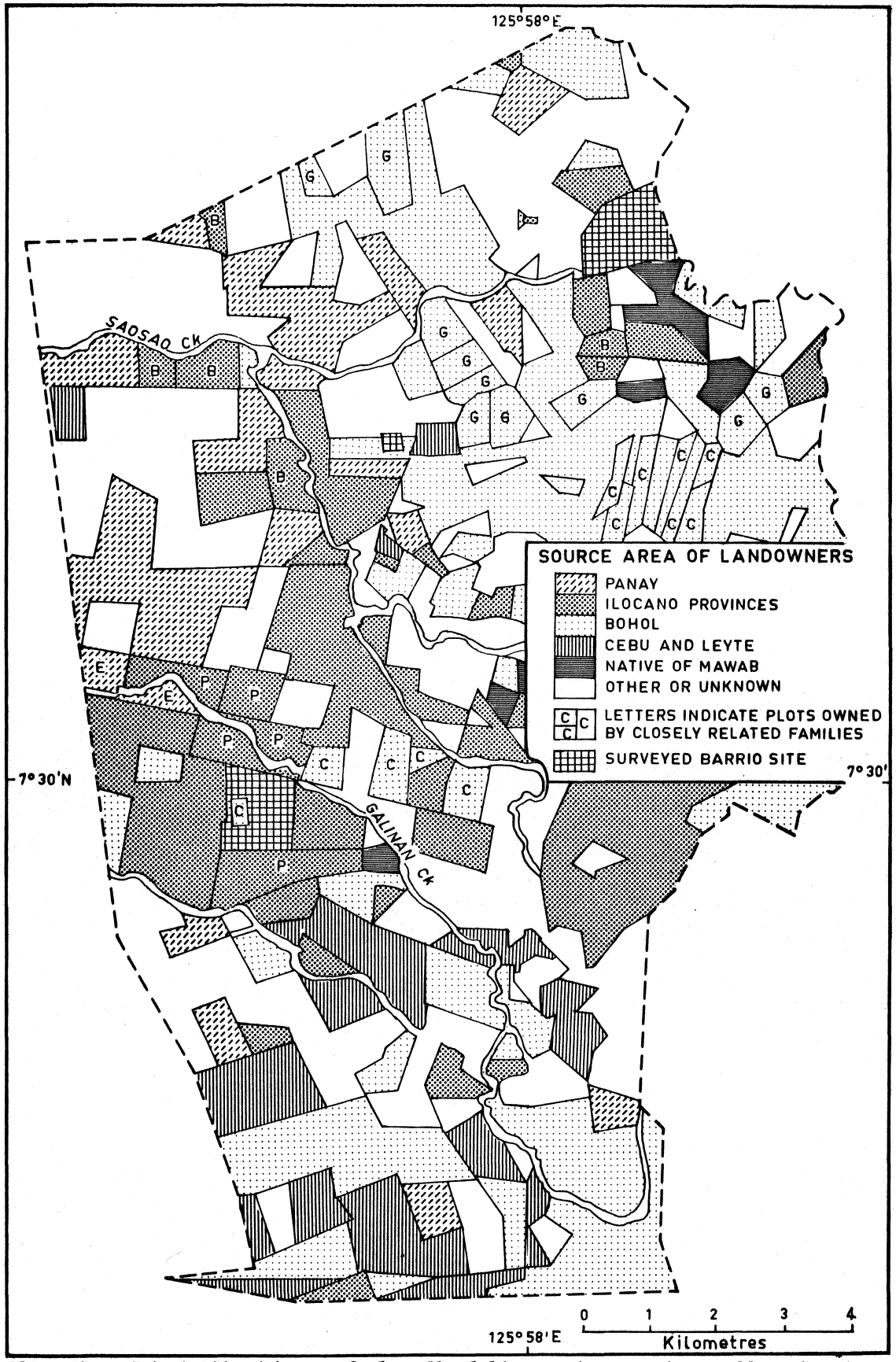
The data of Tables 3:1 and 3:2 were used with information extracted from barrio records, cadastral maps and real estate tax declarations to construct a map (Map 5) showing the ethnic origin of landowners in the eastern part of Mawab, the only area for which suitable maps were

Table 3:1. Area of origin of all household heads in Mawab, by barrio.

Barrio \ Area of origin	Ilocano provinces	Other Luzon provinces	Visayan islands	Mindanao provinces	Mawab (Mansaka)	Unknown	Total
Andili	2	4	145	10	9	-	170
Bawani	19	-	73	2	-	-	94
Concepcion	1	1	55	5	36	1	99
Malinawon	26	-	128	14	17	1	186
Poblacion	17	12	307	26	2	78	442
Nuevo Iloco	128	-	132	-	5	-	265
Nueva Visayas	3	5	83	18	-	2	111
Saosao	15	1	75	3	19	2	115
Sawangan	3	-	99	16	28	-	146
Tuburan	-	-	65	2	9	-	76
TOTAL	214	23	1,162	96	125	84	1,704

Table 3:2. Distribution of Visayan settlers in Mawab, by province of origin and by barrio.

Barrio / Province of origin	Eastern Visayans			Western Visayans				Total
	Bohol	Cebu-Negros Oriental	Leyte-Samar	Aklan-Capiz	Antique	Iloilo	Negros Occidental	
Andili	68	26	47	0	1	1	2	145
Bawani	16	0	0	2	10	45	0	73
Concepcion	22	29	3	0	0	1	0	55
Malinawon	40	36	43	1	1	3	4	128
Poblacion	41	49	37	10	22	118	30	307
N. Iloco	115	10	3	0	1	3	0	132
N. Visayas	25	38	17	1	0	0	2	83
Saosao	73	0	1	0	0	0	1	75
Sawangan	82	9	8	0	0	0	0	99
Tuburan	12	14	36	0	0	1	2	65
TOTAL	494	211	195	14	35	172	41	1,162



Map 5. Distribution of landholdings in eastern Mawab, by cultural origin of owners.
Note: individual plots are shown only for members of five families selected to illustrate clustering by kinship.

available.[1] This demonstrates in detail the spatial distribution of settlers according to their provincial origins. Although the map refers only to landowners, other evidence indicates that the tendency for cultural grouping concerns tenants too. It was found that out of 83 current tenancies, landlord and tenant were related by blood or affinity in 46 per cent of cases, while 14 per cent involved paisanos. A further 6 per cent of cases involved the fictive kinship institution of ritual coparenthood (compadrazgo).

The evidence suggests that Western Visayans and Ilocanos, who come from provinces where rice is the major crop and preferred food, have settled mainly in the central and northern parts of the municipality, or precisely in those areas most suitable for lowland rice. Similarly, it appears that Eastern Visayans, who are often considered by other Filipinos to be corn growers and consumers, have chosen the drier and sandier parts of the plain and the uplands. Consequently, some people in Mawab believe that an early settler's choice of location was dictated by its similarity to his home environment and its suitability for his staple crops.

This simplistic explanation may be queried on several counts. Firstly, the initial pattern of location by cultural groups developed from the agreement by the pioneers to direct different groups to different parts of the plain. The subdivisions devised by the pioneers were

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1 Map 5 is not an accurate record of the progress of land alienation since it shows only present owners, rather than the original settlers. In most cases, these are the same, but some of the original settlers have left Mawab, sold their land or died. A few late arrivals have been able to buy land in fairly central locations, while some earlier arrivals have purchased one or more plots of peripheral land since establishing themselves on their first, more central plots.

based on order of arrival and on convenience, not on soil fertility or crop potentials. They had little means of assessing these qualities at the time, since variations in soils or drainage were masked by the forests which occupied the Mawab plain. Secondly, discussion with the pioneers revealed that, from the start, their main interest was in cash cropping of abaca or coffee. Almost all the early settlers grew corn rather than rice as a food crop because it required less labour than rice and so left more time for commercial enterprise.[1] Rice was grown reluctantly by people whose land was unusually lowlying and too wet for abaca.

Finally, the stereotype of Eastern Visayans being corn growers and consumers was seen in Chapter I to lack validity. Thus, lowland rice is in fact the major crop in Bohol (Table 1:7). Similarly, most Leyteño migrants in Mawab originate from the rice-producing plains around Ormoc City or from the southwestern coastal area and are not particularly biassed towards corn production. Even in Cebu, where crop hectarages seem to support the stereotype, lowland rice is grown wherever topography and water supply permit. There is no doubt that the Eastern Visayans have been less reluctant than Ilongos or Ilocanos to occupy the uplands in Mawab, but it is also significant that among the sample all seven landowners who rent additional rice land are from Cebu, Bohol, or Leyte (Table 3:3).

By the late 1930s, the central portions of the Mawab plain were fully occupied. Groups from Panay were established in areas where they are still dominant - Mawab

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1 Similarly, the Cagayan valley in Luzon has been developed by Ilocano settlers into one of the major corn-growing areas of the Philippines. The corn is used as both a food and a cash crop (Wernstedt and Spencer, 1967:320-1).

Table 3:3. Tenurial status and cultural origins of 23 sampled rice growers in Mawab.

	Ilocano	Ilongo	Cebuano	Boholano	Leyteño	Total
Owner of rice field	7	2	0	3	0	12
Owner of rice field, also renting rice field	0	0	1	1	0	2
Owner of upland, renting rice field	0	0	0	3	2	5
Tenant	2	1	1	0	0	4
TOTAL	9	3	2	7	2	23

and the western part of Bawani and Ilocanos occupied the western part of Nuevo Iloco and southern Bawani. New immigrants had to settle further out but maintained the trend towards ethnic concentration. In this way, Boholanos came to occupy considerable areas of lowland along the mountain fringes between Nuevo Iloco and Saosao. People from Cebu and Leyte were moving into the southern part of the plain and had also begun to colonise areas along the road west of the Mawab River in the area now known as Malinawon.

By 1950, virtually all of the plain had been claimed. The continuing stream of immigrants then began to occupy the surrounding hills, although the land had not been released by the Bureau of Forestry. Most of the squatters were from Cebu and Leyte but between 1949 and 1951 they suffered encroachments by Ilongos. As the Ilongos were armed, many of the earlier occupants abandoned their claims. Shortly afterwards the Ilongos sold the same land to newly-arrived Eastern Visayans and moved away. In this way, the Ilongos resembled the 'professional squatters' described by Gill (1959) as people who migrate continually, selling their successive illegal clearings at a profit to later migrants. The episode caused such disorder that a special government team was sent to the area, with the result that it was released in 1953 and surveyed and sub-divided between 1953 and 1956. Further extensive areas of the western hills were released in 1956.

Settlers now found in the hills are almost exclusively from Leyte, Cebu and Bohol. Out of 58 squatters who unsuccessfully petitioned the government in 1966 for release of forest land in the most remote parts of Tuburan and Malinawon, 23 were from Leyte, 17 from Cebu and 10 from Bohol. In the steep hills south of the Hijo River, 32 out of 42 petitioners were from the same islands, and out of 19 petitioners in the eastern ranges, 16

were Eastern Visayans. The settlement of hill areas by these people stems from increasing pressure on land in Mawab and repeats processes that took place much earlier in the Visayan islands. Thus some Boholano settlers told an Ilocano barrio leader that since no flat ground was available when they arrived, they were prepared to farm steep slopes, exist on root crops and accept a low standard of living, as in Bohol itself. In like manner, a Cebuano leader pressed for the release of hill land for agriculture on the grounds that 'In Cebu, people farm even the steepest slopes'. There is little doubt, however, that Visayan immigrants would prefer lowland plots of land if a choice were available.

Means of obtaining and holding land

References above to squatting and tenancy have indicated that migrants did not simply move into vacant lands and become independent farmers on homesteads. Table 3:4 shows that in fact a minority of the sampled settlers started out in Mawab on their own farms. Only four of those operating their own land from the start were homesteaders. Two bought their land and the other four were squatters on land in the forest zone. The 23 people who did not start out as farm operators all eventually obtained land, whether as owners, squatters or tenants, but in some cases this took several years.

Table 3:4. Initial means of support for 50 settlers in Mawab.

Means of support		Number of settlers
Farming:	Operating own land	10
	Renting land	17
	Paid farm labouring	15
	Helping kin	5
Other:	Driving logging truck	1
	Working in survey team	1
	Operating store	1
TOTAL		50

The means by which sampled settlers first held land are shown in Table 3:5. This reveals a marked trend towards squatting and tenancy in the last decade and the following sections examine how this came about. Changes in farm sizes are also considered and the implications of these changes are examined.

Table 3:5. Initial means of holding land by 50 settlers in Mawab, by period of arrival.

Period	First held land as			Number of tenants who had not acquired own land by 1967
	Owner	Squatter	Tenant	
1931-35	3	0	0	-
1936-40	2	1	1	0
1941-45*	0	0	0	-
1946-50	5	3	4	3
1951-55	1	2	2	0
1956-60	3	3	12	6
1961-66	0	2	6	6
TOTAL	14	11	25	15

*Period of wartime disruption 1942-45.

Land ownership

Land acquisition up to 1941. The early paragraphs of this chapter gave a brief account of the process of land acquisition in the initial stages of settlement. Most of the earliest settlers in Mawab were able to acquire homesteads of the maximum size of 24 ha, either freely or at very low cost in payments to the Mansakas. Few people obtained land other than by homesteading, but two of those who obtained land by purchase acquired holdings much larger than the maximum for homesteads. In the early 1930s a Bureau of Forestry official named Salvilla obtained by sales application some 400 ha beside the Hijo River between Mawab and Andili. He was able to obtain more than the 144 ha limit on such applications by using his wife and a friend as

'dummies'. For a brief period Mr Salvilla engaged tenants to clear the land and plant abaca but in 1939 he leased the land to some Japanese, who brought in labourers as well as tenants to develop the land more rapidly. Once the abaca was bearing, the tenants were paid off and cultivation continued by hired labour up to the second World War. The other large holding comprised 48 ha in Andili and was bought in 1935 for P500 by a Boholano from another Visayan who wanted to move closer to Mawab poblacion. The buyer has since bought more land in barrio Concepcion and in barrio Panibasan and is now the biggest landholder in Mawab apart from the absentee plantation owner.

Apart from these two people, several homesteaders gained control of areas larger than 24 ha by claiming homesteads in the names of their wives and children. Although the Public Land Act specifically prohibited homesteading by dependents, this regulation and others were easily evaded, given the inadequate staffing of the controlling agencies and the venality of some of their officers. Several settlers commented that inspectors of the Bureau of Lands would always reach favourable decisions if well-fed and presented with a chicken or young pig. In at least one case, a surveyor actually advised a settler to claim more land by applying in his wife's name. All of the early homestead applications were approved but very few titles were actually patented until after World War II, largely because the Bureau of Lands' cadastral survey of the area was not begun until 1937 and processing of cases was completely in abeyance during the war.

As noted earlier, much of the land claimed in excess of the legal limit was later given freely to newly arrived relatives or friends of the owner. In this way, gaps

between holdings of the earliest pioneers were rapidly filled, so that by 1935 the central part of the plain was completely claimed.

In the five years before the second World War, developments in Mawab had reached the point where newly arrived migrants were able to become tenants on the Salvilla plantation (including one member of the sample) or obtain jobs as labourers while they looked for vacant land. Such jobs could be found either on the national highway or on the homesteads of earlier arrivals who were by then receiving cash incomes from mature abaca and coffee. After a few months, those who wanted land were able without exception either to locate plots for homesteading on the spreading fringe of the settled area or to save enough to buy more central land from earlier arrivals. Land became available for sale for a variety of reasons, including sickness[1] or death of the owner, desire to move elsewhere or return home and need for cash in emergencies.

What is perhaps surprising with regard to the immigrants of the late 1930s is that many were content to settle in the central portion, occupying comparatively small lots that were either unclaimed or portions of holdings sold by earlier arrivals, when by penetrating further into the forest larger holdings could be obtained freely. The main reason for this attitude seems to have been a reluctance to be too far from friends and communications, a reluctance felt particularly by wives. Even some of the wives who arrived after World War II remembered crying at the remoteness of their new homes, and from interviews in the migrants' hometowns it is plain

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1 Malaria in particular was prevalent and deterred many labourers on the highway from staying to find land.

that it was frequently the wife's attitude that caused a migrant to abandon his land and return home. In most parts of the Philippines the preference is for clustered rather than dispersed residence patterns. Under conditions of colonisation, residence on the farmstead was important in order to develop land rapidly,[1] but settlers still wished to minimise distances to neighbours. Contacts with neighbours were important for regular exchanges of labour as well as for social intercourse and in emergencies arising from accidents and sickness.

Such considerations seem to have been enough to outweigh the future advantages of larger holdings, and the colonisation 'frontier' tended to advance on a front rather than through 'leap-frogging' over stretches of forest. There were cases in Mawab of migrants moving to distant parts of the plain, separated from the main block of settlers by a band of forest, but such movements were by groups rather than by individuals. Thus in 1936 some 30 Boholanos, including one of the sampled settlers (No. 4 on Map 6), moved to the comparatively remote area now known as Saosao. The group, who had met while working on Japanese plantations near Davao City, built a large house as a temporary dormitory while they subdivided a block of land given to them by the Mansaka residents of Saosao. The subdivision was intended to yield holdings of equal size, but the approximate methods of survey and calculation resulted in a range from 10 to 24 ha. Much of the forest land separating these holdings from those of settlers in Nuevo Iloco was not claimed until after World War II. The other direction in which 'leap-frogging' took place was along the national highway where the BPI nursery reservation had restricted expansion north of Mawab poblacion. A small group of Mansakas were living near the confluence of Mawab River and Saosao Creek and between 1936 and 1939 a few

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1 In addition, until the survey in 1938 no barrio sites were designated.

Visayans took up land nearby. No large influx of settlers followed, however. Instead, in the years before the outbreak of war new immigrants moved further north along the highway into the area now forming the municipalities of Nabunturan and Compostela.

All the seven settlers in the sample who arrived before the war had claimed land within two years, the mean lapse being nine months. However, the process of acquisition was not always as simple as suggested by these figures and by Table 3:6. To illustrate some of the complications, two examples are given below.

Table 3:6. Initial means of support and land acquisition of seven pre-war settlers in Mawab.

Means of acquiring land	Initial means of support				
	Farm ownership	Tenancy	Labouring	Helping kin	Other
Homestead	2	0	0	2	0
Gift and homestead	0	0	1	0	0
Purchase of alienable land	0	1	0	0	0
'Purchase' of unreleased land	0	0	0	0	1

One of the two men who became owners immediately on arrival was an Ilongo (No. 5 on Map 6) who arrived in 1936. He claimed a homestead of 24 ha near the *poblacion*, but after a year returned to Iloilo at his parents' request. After working there for four years he returned to Mawab in 1941, to find his land had been claimed by another settler. For the first two years of the war he worked as a labourer for a neighbouring *paisano*. In 1943 he married the daughter

of another neighbour, who gave the couple 7.9 ha which was applied for as a homestead by the husband. Since then, this settler has frequently borrowed up to 1.5 ha from his wife's father as a rice seedbed or corn field.

Only one of the pre-war sample did not obtain a lowland holding. A Leyteño (No. 7 on Map 6) arrived in Mawab in 1938 as a member of the cadastral survey party led by his uncle. After a year, when the National Land Settlement Administration team proposed to make the area a settlement project, he bought 18 ha of upland beside the national highway close to the poblacion, the seller being a Mansaka who wanted to avoid contact with the immigrants that would arrive with the creation of a settlement project. Although the settler spent the war in Leyte, his holding was not occupied in his absence. On his return to Mawab, he gave 6 ha to his brother. In 1953 the land was released from the forest zone but because of technical details his homestead application has not yet been finally approved.

Post-war land acquisition. We have seen how migrants to Mawab before 1941 were able to obtain land as legal owners through homestead applications. This process operated while alienable land was readily available and the number of migrants was relatively low, but from 1946 onwards the rate of in-migration accelerated very sharply (see Fig. 2:3). As a result, the means of obtaining land began to change and migrants were unable to claim such large areas as the pre-war settlers had. Apart from the pressure of competing settlers, after 1951 the Philcusa-FOA land allotment and survey programme (see p. 9 above) limited new claims within 6 km of development roads (such as the national highway) to 10 ha. Although it was for a while still possible in remote parts to buy land cheaply from a Mansaka and then make a homestead application, immigrants wishing to obtain more centrally located land had to buy from earlier

settlers who valued their land increasingly more highly. Owing to the limited resources deployed by most immigrants - the mean for 43 post-war settlers was only P74 in cash - few could afford to buy land immediately. Those with little capital had to choose between renting land from established settlers, squatting in the hills or engaging in some form of hired labour. Disregarding how settlers first maintained themselves in Mawab, Table 3:5 showed that only nine of the sampled post-war settlers first obtained land in Mawab as legal owners. Ten people first obtained land as squatters and 21 as tenants. Subsequently, ten of these two groups later became owners. However, no settler who arrived after 1960 had become an owner by 1967.

Paths to land ownership. As Table 3:7 shows, 19 of the post-war settlers were landowners by 1967. Six squatters became owners simply by the legal mechanism of official release of their land from the forest zone, after which they filed homestead applications for the land. Paths to ownership for tenants and labourers were sometimes more complicated and are considered below.

Table 3:7. Initial means of support and land acquisition by 19 post-war landowners in Mawab.

Means of becoming owner	Initial means of support				
	Farm ownership	Tenancy	Helping kin	Farm labour	Other
Homestead	2	0	0	0	0
Purchase	2	1	0	4	0
Gift, marriage or inheritance	0	0	1	2	1
Release of squatted land	1	1	0	3	1

For the nine post-war settlers who first obtained land as legal owners, the maximum lapse between arrival and obtaining land was 6 years and the mean 1.7 years, compared with the mean of nine months for pre-war settlers. Compared with the pre-war situation, homesteading became less common than purchasing as a way of acquiring land and the areas obtainable were smaller. Although both the homesteaders shown in Table 3:7 arrived by 1949, neither was able to acquire more than 3 ha. However, one (No. 16 on Map 6) who settled in the lowlands of Bawani, later inherited another 1 ha lot. The other (No. 8 on Map 6), whose first land is beside the mining road in Andili, has rented a small plot as well as purchasing squatting rights to 6 ha in the nearby hills.

As regards those who purchased their first holdings, one belongs to a group of unusual Ilocano settlers who have been officially praised for their achievements. In 1947, seven related people from the municipality of Banna in Ilocos Norte arrived in Andili to work as abaca labourers. With the money saved from this and earlier work they bought 16 ha of land in Andili and 37 ha beside the Mawab River in Malinawon, which they worked communally.[1] In 1954, however, they decided that potential conflicts would be avoided if the land were subdivided.[2] The subdivision gave everyone,

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1 The group was strongly influenced by its leader, Juan Sebastian, who had worked in Hawaii and became a member of the Filipino Federation of America, founded by Hilarion Moncado chiefly among agricultural labourers. Mr Sebastian professes views similar to many nineteenth century utopians. Moncado's activities have been described in Lasker (1931) and, more critically, in Sturtevant (1958:139-42).

2 The land was subdivided into nearly equal lots and those who had paid less than the original par value contribution of P1,100 now paid more to a central fund to reimburse those who had initially paid more.

including later arrivals, a more or less equal start. By 1967 the group comprised 35 families. Some members have more than one share but none has more than three shares or a total of more than 6 ha. As will be seen in Chapter VI, in spite of the small areas owned, these farmers are among the most prosperous in Mawab.

Many investigators in the densely settled parts of the Philippines have noted that tenancy is rarely a step towards land ownership.[1] Tenancy in Mawab was insignificant until the mid-1950s and pre-war or early post-war migrants who rented land quickly found land for homesteading, purchase or squatting. People who became tenants after the mid-1950s have had greater difficulty.

Table 3:5 showed that 24 post-war settlers first obtained farms as tenants. By 1967 only five of these had become legal owners. Three bought alienable land, one inherited a plot through his wife and one squatted on forest land which was later released. Four other ex-tenants bought 'rights' to forest land where they are still squatting. Among this total of nine ex-tenants, the greatest lapse between arriving in Mawab and obtaining land as an owner or squatter was seven years and the mean lapse just under three years.

Eight of these ex-tenants rented only one piece of land before being able to claim their own land. The exception is a young unmarried Ilocano (No. 25) who first rented land from an uncle in Bawani, then worked in a sawmill in a neighbouring town. After two years, he returned to Mawab with substantial savings and rented from his uncle for a further two years before buying a neighbouring 2.4 ha plot of irrigated rice land. More

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1 See, for instance, Rivera and McMillan (1952:43), Velmonte (1952:214) von Oppenfeld et al. (1957:110-1).

recently he has again rented from his uncle a plot contiguous to his own. Two other settlers have continued farming their rented land since claiming their own land. In one case (No. 33), the rented land is close to the national highway and to the poblacion whereas his own land is 2 km from the highway. In the other case, the settler (No. 40) remains on rented land for the sake of the owner, who is his wife's widowed mother, while his own land is uncultivated.

Purchasing is now the major way of obtaining alienable land in Mawab but for new immigrants it is becoming increasingly difficult as land values rise. Irrigated rice land and established coconut plantations close to transport routes command prices as high as P1,500 per hectare, although the mean is closer to P1,000 per hectare. In view of the scanty resources of the average newly arrived migrant, most must look to other ways of obtaining land.

Most land that comes onto the market is bought by one of three classes of people. Wealthy, long-established settlers usually buy land for their heirs, frequently leaving it uncultivated or only partly cultivated by tenants. Only two of the sampled pre-war settlers did not purchase (or squat on) extra land after obtaining their first holdings, and one of these two would buy more land if he could afford it. A second, although small, class of immigrants has been able to buy good land in Mawab. These are people who formerly held land in the Moslem area of western Mindanao and who sold their holdings in fear of Moslem attacks. They have settled in most municipalities in northern Davao, bringing with them unusually large capital resources even including hand-tractors. No more than a score of such migrants have settled in Mawab.

The third major class of buyers of land comprises people who have not actually settled in Mawab. They are almost invariably senior civil servants or professional men such as lawyers and doctors rather than agriculturists. It is not possible to give the exact number of such owners or the area of land controlled by them, because there is no complete register of owners of land in Mawab. From the available tax declarations[1] in the municipal treasurer's office it appears that out of 852 owners who paid tax in 1966-7, 32 lived outside Mawab. Several of these were formerly resident or had inherited their land in Mawab, but 8 non-agriculturists can be identified. They generally select a local resident to supervise any tenants, but in a few cases the land is left entirely uncultivated. Although the old Salvilla plantation is owned by an absentee it is managed by a college-trained agriculturist and is probably the best-run farm in Mawab. No other holding of an absentee owner is farmed by modern methods and it is clear that the owners are not in fact interested in maximising returns on their investments.

This attitude is found widely among Philippine landowners (and those in some other countries) and has been discussed in several papers[2] as well as being the subject of a research project of the University of the Philippines College of Agriculture (Castillo, 1968:297). The consensus is that among lowland Filipinos land-ownership is probably the most important single source of status, and this is true even outside rural society. It is ownership, not the

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1 Some owners are delinquent in their real estate tax payments, but the number is unknown.

2 See, for instance, Anderson (1964), Polson and Pal (1956:54), Castillo (1964 and 1968), Takahashi (1969:38-41), Golay (1961:23).

produce of the land, that is important. For this reason, as studies such as that by von Oppenfeld et al. (1957) have revealed, land values are not as closely related as would be expected to variations in productivity. It is also suggested that in most parts of the Philippines investment in land is regarded as more secure than investment in commerce or industry since land is considered to be indestructible[1] and its value almost always appreciates. Although this appreciation may be slow, and even negligible when inflation is taken into account, its security outweighs these disadvantages.

In an area of rapidly increasing agricultural population, and of improving physical accessibility such as Mawab, appreciation in value has been rapid in the past ten years. The rate of increase has exceeded the rate of capital formation possible among tenants, labourers or squatters on small patches of hilly land, so that for most migrants who arrived during the last ten years the prospects of ownership have receded over time. Many of these recent migrants recognise the situation and their ambitions have been scaled down. They no longer expect to obtain land as legal owners; instead, their ambitions are limited to finding hill land to squat on, or finding a generous and lenient landlord who will rent the use of a lot that affords a reasonable income.

The development of squatting

Although a small number of people technically became squatters before the war, in virtually all cases these people merely settled on lowland in advance of its release by the Bureau of Forestry. The eventual classification of

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[1] The possible effects of bad management, such as loss of fertility or soil erosion, are not taken into account.

such land as alienable for agriculture was never in doubt. The situation in the hill lands that began to be occupied after the war was very different. In the first place, the rather crude and generalised pre-war land classification of the Mawab area had already reserved all the hill areas as permanent timberland since the steep slopes and deeply etched water courses made the land unsuitable for agriculture. Secondly, by 1949 post-war reconstruction in the Philippines and the recovery of Japanese industry led to a rapidly increasing demand for timber and a proliferation of logging companies in Davao. All land not released and alienated was leased as concessions to licensed companies which were empowered to cut timber under various conditions. The most important conditions concerned the allowable annual cut, the minimum sizes of trees to be cut and provisions for replanting. As the Bureau of Forestry was never adequately staffed, control of the concessionaires was virtually impossible. Most concessionaires proved to be more interested in swift returns than in sustained yield. Most of them were also under-capitalised so that they worked forests as near to existing roads as possible in order to avoid the costs of road construction. Such forests were just the areas then attracting the great wave of post-war immigrants.

Although the loggers always in principle opposed the entry of squatters into the forests, they frequently gave them permission to continue using such clearings as they had made in logged-over areas on condition they felled no more commercial trees. The squatters invariably ignored such conditions, in the hope, frequently justified, that petitions to the government would result in the land being released from the forest zone and declared alienable for agriculture. Following such petitions, large sections of the hill areas were released, surveyed and titled after 1953.

As the areas of readily accessible timber shrank, while Japanese demand for timber grew rapidly, loggers became more concerned to protect partly logged areas from the incursions of squatters.[1] Patrols of armed forest guards were increased and in some cases logging roads were destroyed to hinder access. Since 1966 arrests of squatters and destruction of their houses and crops have become common, although the concessionaires complain that political intervention on behalf of the squatters frequently results in their acquittal or mere reprimand by the courts. Thus many concessionaires do not find it worthwhile to remove squatters and merely try to frighten them into leaving by threats.

Until recently, the Bureau of Forestry has taken no firm measures to prevent the occupation of forest land by squatters despite early recognition of the problem. In 1951, a land classification report for the north of Mawab noted the 'wanton destruction' of commercial timber by squatters, as in most of the forest lands of Davao, and predicted the continuation of the trend unless the Bureau of Forestry and local authorities took remedial action.

> When this [destruction] was brought to the attention of the [saw]mill operators, they affirmatively accept it and declared that they do not mind it for security reasons taking into account that they are residing in an isolated place, where police protection is lacking. (Bureau of Forestry, 1951.)

In 1952 the Acting Chief of the Division of Forest Management wrote that

> ...there should be more care in the classification of logged-over areas into alienable and disposable lands...some logged-over areas (our future forests

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1 Concessionaires have also had to protect their lots against illegal loggers who rapidly strip areas of both commercial and immature timber.

> if prevented from being squatted on) need to remain as such even if found on land appropriate for agriculture. Otherwise there shall sooner or later be only watershed or protection forests under the jurisdiction of the Bureau. (Bureau of Forestry, 1952.)

It was noted in Chapter I that, notwithstanding official expressions of concern and contrary to the Bureau of Forestry's own regulations, many areas released have included very steep upland tracts with slopes exceeding 30°. In general, where an area was occupied by long-established squatters it was released for agriculture regardless of slopes, simply acknowledging a _fait accompli_.

At the time of the reports cited above, there were still extensive areas of forest in the Mawab hills untouched except by Mansaka cultivators who were retreating before the advance of the immigrants, but by 1960 most of the more remote parts of Mawab had been penetrated by settlers. For instance, four-fifths of the petitioners in the _sitios_ of Kantabo and Tanawan (barrios Malinawon and Tuburan) in 1966 were resident there by 1960. Although areas of forest were left, they were in scattered stands and were mostly claimed by squatters. By 1967 only the most rugged parts of the southern and eastern hills remained as the sole preserve of concessionaires and it was clear that it was only a matter of time before squatters entered there too.

During the early phase of squatting it was assumed by many of those trying to cope with the problem that the strength of the squatters' motive was based on the high price of abaca.[1] However, the continued willingness of squatters to risk eviction or gaol despite the virtual

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1 Personal communication from a concessionaire, Mr N. Estabillo.

disappearance of abaca as a major source of income shows that this is no longer the case. Depositario (1965) cites several workers who conclude that squatting is simply an expression of the need for subsistence together with a disregard for formal land classification in circumstances of land shortage. The fieldwork data show that this explanation is not fully adequate, because not all land claimants in the forest zone are poor. Several older residents in Mawab have claimed land as squatters simply to enlarge the area they will pass on to their heirs, while others have made essentially speculative claims. In some cases, barrio or municipal officials have acquired land as squatters. A forest guard stated that he was unable to prosecute several officials in a neighbouring municipality for squatting because they were related to the municipal judge. Such squatters, however, are the exception.

It is clear that most squatters consider they are exercising the traditional Filipino custom of obtaining land by actual occupation and clearance of forest. Furthermore, they believe that their occupation harms no-one (apart from the government). One Mawab squatter said, regarding his dispute with a logger, 'I need land and he only needs timber'. Although squatters in Mawab run the risk of arrest, eviction and loss of improvements, they have observed that in practice gaoled squatters return to their claims after completing their sentences (which rarely exceed six months). They have also noted that many petitions by squatters have been successful in the long-run, so the prospect of eventual ownership has outweighed the threat of possible failure. To strengthen their claims in the event of release of the land from the forest zone, most squatters have their holdings assessed by the Provincial Assessor and then pay real estate tax.

Among the sample, 19 people obtained plots of land prior to its release. Eleven of these had not previously held land in Mawab, but three were already owners of lowland plots and the rest had spent some time as tenants. Eight of the squatted holdings are in areas with steep slopes which have nevertheless been released as suitable for agriculture. In one case, the settler had been on his holding for eight years prior to its release in 1958. However, those who became squatters since 1956 are in more remote areas that have still not been released. Of the ten sampled people in this class,[1] four are paying real estate taxes to strengthen their claims in the event of release. All of the squatters have ignored warnings by forest guards to discontinue clearing and most of them have signed mass petitions to the government for release of their land. Three men are in areas only recently entered by squatters and there are not enough neighbours to make a petition worthwhile.

A final point to make about squatters is that most of them have been prepared to pay previous occupants for the 'rights' to their clearings (with some surrounding forest included). In some cases such payments have been nominal. For instance, one man (No. 7 on Map 6) who arrived in 1938 bought 18 ha of hillside fronting the national highway only half a kilometre from Mawab for P2 per ha. The present value of the land, which is now released, is about P600 per ha. Another man (No. 28) bought 10.5 ha in the mountains between Sawangan and Concepcion in 1958 for only P5 per ha, the seller being disgusted with losing crops to wild pigs.

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1 One other squatter is a special case, having purchased 'rights' to land within the Hijo River bed, which is permanently inalienable. Much of his holding has since been eroded by flood waters.

However, the valuation of hilly land is changing rapidly. One man paid P6 per ha for 12 ha of land in the western hills in 1960, but in 1966 he paid P144 per ha for a neighbouring plot. For the eleven squatters who had to 'buy' their holdings, the mean price was P33 per ha, the maximum being P73 per ha paid for a plot in sitio Lunoluno, Sawangan, in 1961.

On average, squatters (excluding those with fully owned land) waited for 1.8 years after arriving in Mawab before obtaining their land, but those who 'bought' it waited 2.5 years, reflecting their need to save first. This was usually accomplished through labouring, but four people managed to save enough as tenants. In view of the low price of unreleased land, saving was not such a task as it would be for the purchase of legally alienable lowland.

Tenancy

Although a few pre-war migrants worked briefly as tenants on the Salvilla plantation before obtaining their own land, tenancy was quite insignificant until the mid-1950s. Out of 18 sampled settlers who rented out land, only three did so before 1955, while out of 25 settlers who first held land as tenants, only six arrived before 1956. Up to then the role of the tenant was akin to that of a contract labourer. He was engaged by the owner of an abaca plantation and allowed to grow food crops free of rent while he planted one or two hectares to abaca as swiftly as possible. When the abaca was mature and shading out the food crops, he was paid a lump sum depending on the number of established plants and then dismissed. The mature abaca was thereafter maintained and harvested by hired labour.

When the mosaic virus began to decimate the abaca plantations, owners of lowlying land converted it to rice

which they let to tenants in lots of less than 2 ha. Land unsuited to rice was mostly let to tenants to plant coconuts, with corn as a subsistence crop. As with the abaca holdings, the tenants would have to relinquish the land when the coconuts were shading out food crops, a process which takes at least four years. Such holdings were usually larger than rented rice farms. The land was let to tenants because personal cultivation of holdings larger than about 4 ha by the owners was out of the question in view of the labour requirements of rice. The alternative of hiring labour would have required a large pool of available workers, constant supervision and a high turnover of cash for wages.

Table 3:5 showed that 25 settlers first operated land in Mawab as tenants. Nineteen became tenants within three months of arrival, the other six spending up to three years as farm labourers. Many established settlers invited kinsmen or friends to come to Mawab as their tenants or they arranged tenancies for them with third parties. Forty-four per cent of the tenants first rented land from kinsmen and 16 per cent from paisanos. Another 20 per cent rented from people known to either kinsmen or friends and only 20 per cent rented from complete strangers. Thus, some migrants came to Mawab expecting to spend some time as tenants, but until recently they also expected to find land of their own within a reasonable period. Table 3:5 showed that since 1960 this expectation has not been fulfilled.

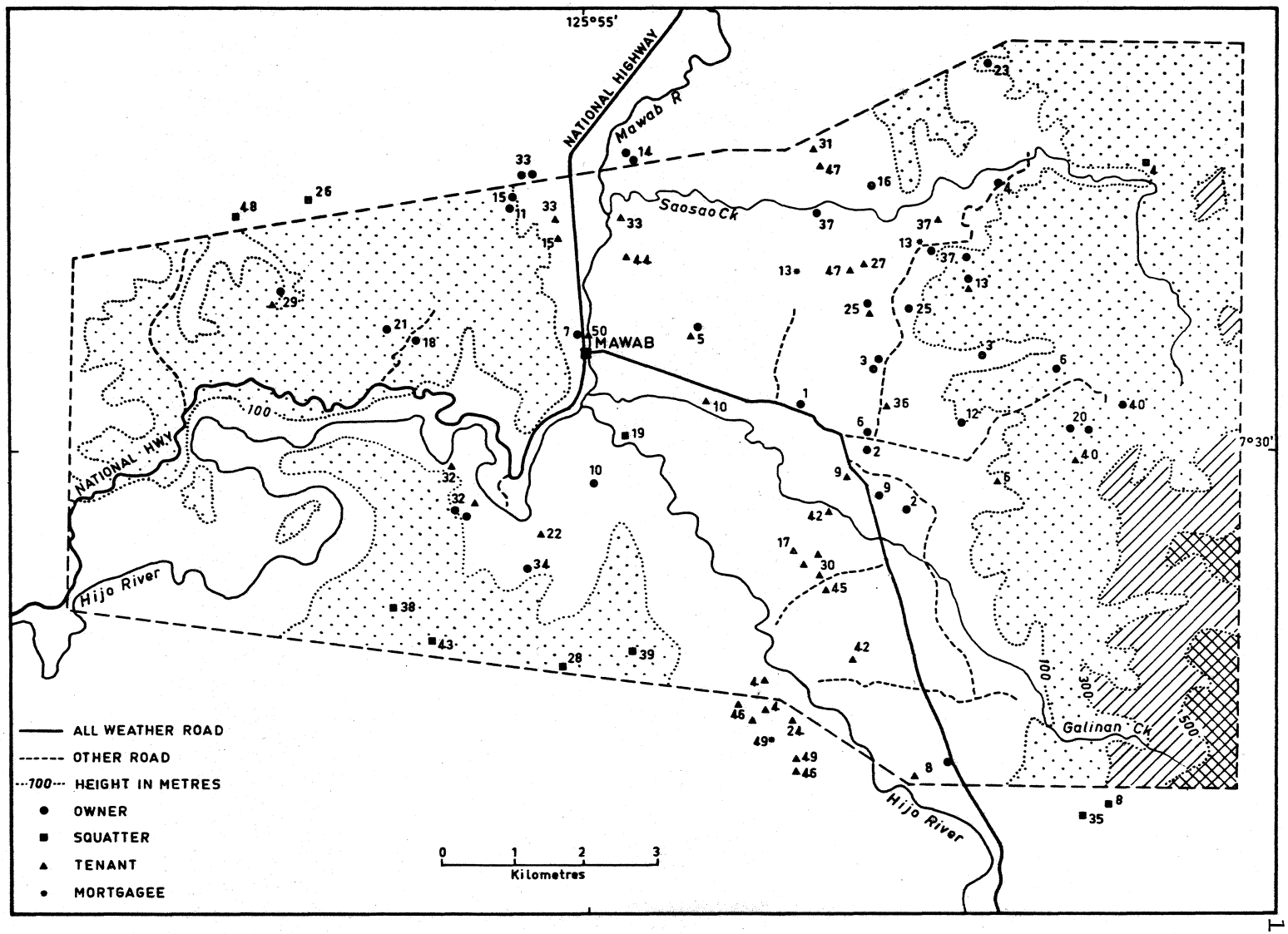
In the Mawab sample the five current cases of rent-free use of land all involve close kinsmen. However, the fact that most tenants rent land from relatives does not mean that they necessarily pay lower rents than tenants unrelated to their landlords. Polson and Pal (1956:83-7) and Takahashi (1969:66-8) have shown for widely different areas in the Philippines that sharing practices of related

landlords and tenants are usually comparable with others in the locality. On the other hand, privileges such as facility in borrowing and interest-free loans are much more common when owner and tenant are kinsmen. In Mawab, many tenants lived with their landlords for at least some months before beginning the tenancy, but this applies almost as much to those unrelated as to those related to the owner.

Despite the provisions of several Acts of the Philippine Congress regulating relationships between landlords and tenants, in practice much depends on the individuals concerned. A tenant may be evicted, or may abandon a farm with little or no notice. In Mawab, where considerable areas of land are still uncultivated, tenants have felt free to move from farm to farm in search of better prospects (see Table 3:8). This contrasts greatly with conditions in many of the migrant source areas, where tenants accept unfavourable conditions for lack of alternatives, and where the mean duration of tenancies may be over 10 years (Rivera and McMillan, 1952:125).

Table 3:8. Tenants' reasons for abandoning farms.

Reason	No. of cases	Total area abandoned (ha)
Obtained own land	4	6.50
Obtained non-farm employment	1	2.00
Land too far from home	2	1.25
Land quality	7	9.50
Landlord's perennial crops matured	2	4.00
Lack of carabao	3	4.00
Landlord's wish (or eviction)	4	8.23
Disliked conditions of tenancy	4	4.50
TOTAL	27	39.98



Map 6. Location and tenure of landholdings of sampled settlers (numbered in order of arrival in Mawab)

Excluding current tenancies, members of the Mawab sample had in the past held 21 plots for a mean of 1.7 years. When current tenancies are included, the mean becomes 4.8 years. In part, this is due to two people who have been tenants on large holdings since 1957 and have been content with the levels of living afforded by these holdings. The greater duration of continuing compared with completed tenancies also reflects the increasing difficulty of obtaining land, whether as squatter or owner, so that conditions in Mawab are approaching those in the migrant source areas.

Land tenure in 1967

The tenurial situation that has developed from the processes described above is shown in outline in Table 3:9. Of those described as full owners, ten possess registered titles to all of their land. The owner who is also squatting on another plot has title to his main plot.

Table 3:9. Tenurial status of 50 settlers in Mawab, 1967, by period of arrival.

Period of arrival	Full Owner	Part-Owner*	Squatter	Tenant	TOTAL
1931-35	3[a]	0	0	0	3
1936-40	2	2	0	0	4
1941-45	0	0[b]	0	0	0
1946-50	5	5	1	1	12
1951-55	3	0	0[c]	2	5
1956-60	1	5	6	6	18
1961-66	0	0	2	6	8
TOTAL	14	12	9	15	50

* Part-owner means an owner who also rents land from another owner.

a Includes one owner who also occupies a plot as a squatter.

b Includes one part-owner who also occupies a plot as a squatter.

c Includes one squatter who also rents a plot.

The other three owners have applied but are still waiting for patenting of their titles. It was not possible to discover the lapse between application and patenting in every case, but one settler waited for 20 years and lapses of 10 years are common. Two men stated that they had been told they could obtain their titles immediately if they were prepared to pay Bureau of Lands personnel various sums.

Part-owners. Fifteen settlers have used other people's land since becoming owners or squatters (one case only). Six of these people were tenants before becoming owners, though only two have retained the same plots both before and since. There are two major reasons given by owners for renting. Eight lots were rented in order to grow lowland rice, which the owners could not grow on their own land or only in inadequate amounts. The only other reason cited more than once was the convenience of location of rented land compared with the owner's own land. Only one man (No. 32 on Map 6) rented more than 2 ha. Although he owns 9 ha, it is hilly land and for the sake of his children he does not want the land to deteriorate through over-cultivation before they inherit it. He therefore rents a nearby lot of 17 ha which includes a large level area. Nine of the part-owners are using the land of relatives or friends and two of them do so rent-free - they are merely borrowing the land. One of the part-owners is more correctly a squatter, in the sitio of Kantabo, Tuburan. Although he lets a small piece of his own land to a son-in-law, he also farms a nearby plot belonging to another affine.

Seven of the part-owners have titles to the land they own and five are waiting for patenting of their applications.

Landlords. Fifteen settlers in the sample rent out a total of 74 ha. Sixty-seven ha are let by the pre-war settlers, three of whom cultivate very little land in person. Their holdings are let in small portions to a total of 38 tenants. One of the pre-war settlers (No. 5) lets out 4.5 ha but borrows 1.5 ha from his wife's father rent-free. Another (No. 6) rents irrigated rice land from another settler while letting out part of his own upland holding. The post-war settlers have much smaller landholdings and rent out only 3 per cent of their total owned land compared with over 56 per cent by the pre-war settlers. In absolute terms, eight post-war settlers (two of them squatters) let out a total of just over 6 ha to nine tenants. In most cases, these tenants are close kinsmen, commonly sons or daughters' husbands establishing themselves as independent households. One of the eight post-war settlers letting out land is No. 49, himself a tenant on the land he operates. However, he lent P200 to a neighbouring landowner who mortgaged his land as security on the prenda system. As the mortgaged land was superfluous to the lender's own needs, he let it to a compadre from whom he receives 25 per cent of the crop as rent. This serves as the interest on his loan, which has a three year renewable term.

The emergence of a tenancy problem. Although some landowners let land partly to assist young relatives attain economic independence, most do so simply because they have too much land to operate with available family labour and with their current techniques. Some owners whose land is unsuited to lowland rice have been prepared to plant permanent crops and to maintain and harvest these through supervised hired labour. Although such owners were at first the exception, in the last few years more and more tenants, particularly in the southern half of the plain, have been required by their landlords to plant coconut palms

with the understanding that the tenants leave when the land is fully planted. The continued expansion of permanent crops in Mawab will lead to a reduction in the area available for cultivation by tenants.

The same tendency is likely to appear soon in the rice-farming area in central and northern Mawab, though from a different cause. In mid-1967 one of the pioneers in Nuevo Iloco, a member of the research sample (No. 2), gave notice to his seven tenants that they would have to leave the land after the next rice crop as he was planning to mechanise the holding. Later in the year he bought the first power cultivator in Mawab, which enabled him to cultivate his 10 ha of rice land personally as well as hiring out the machine to neighbouring farmers. The evicted tenants laid a complaint with the Court of Agrarian Relations in Davao City, declaring that they did not receive the notice of one whole crop cycle required by law. They also claimed that they were not being compensated for improvements such as the construction of irrigation channels and dykes. The landowner denied these charges. In accordance with their usual procedure, the officials of the Court attempted several times to settle the matter amicably but without success. The case had still to be heard when fieldwork was concluded. Meanwhile, several other prosperous landowners were planning to buy hand tractors as soon as possible. In view of the declining availability of land, a significant extension of mechanisation could lead to a rapid increase in the number of landless labourers and to increasing numbers of landlord-tenant disputes.

In general, relations between landlords and tenants in Mawab have been without the bitterness that characterises these relations in the regions of large <u>haciendas</u> - central Luzon, Negros Occidental, Iloilo and western Leyte. This is partly because of the frequency of kinship links between

owner and tenant,[1] partly because land was until recently readily available and partly because the owners are themselves peasants, resident on and cultivating land and often involved in mutual labour exchange with the tenants. Nevertheless, disputes do arise, and more bitterness can be expected with more evicted tenants being left without land. Conflicts rarely get as far as the Court of Agrarian Relations. In some cases, the tenant merely finds another plot to rent; in other cases, a dispute may be taken to the barrio captain, municipal justice of the peace or police chief for arbitration. If the tenant is trying to resist eviction or a rise in rent, a common solution is for him to harvest the next crop free of rental payments and then surrender the land to the owner. In 1966-7, this solution was applied to two disputes involving members of the sample.

Just as an owner may be left without redress if a tenant abandons his land without warning for a better opportunity, so some tenants fail to receive justice. One member of the sample (No. 35) had planted several hundred coffee trees on a rented plot in Andili but, without warning, the landlord sold the land and the new owner, wanting to cultivate the land personally, evicted the tenant without notice and without compensation for the coffee trees. The tenant, who is barely literate, went to the Court of Agrarian Relations where he paid P30 to a man who said he would arrange for the case to come to the lawyers' attention. The tenant heard no more of the matter and was too uncertain of legal procedure to know what to do, though he realized the self-styled 'fixer' had taken his money illegally. Afraid of losing more money if he

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1 Kinship does not necessarily prevent bad relationships: in the case cited from Nuevo Iloco one of the evicted tenants was the landowner's brother.

pursued the case (which he might eventually lose), he dropped the issue and instead became a squatter by buying 4.9 ha from a Mansaka in the hills above Andili.

It is clear from such cases that tenants are aware of the protection and assistance afforded them by the law but that they are not necessarily able to take advantage of such protection even when the services of the Office of Agrarian Counsel are freely available. Until recently, there has been little need for this protection in Davao. However, the indications of increasing pressure on the land through continued immigration and the growing tendency of owners to dispense with tenants suggest that tenants will become more concerned to assert their legal rights. This process has already occurred in some parts of Davao and one municipality - Bansalan - has been declared a Land Reform area in order to alleviate distress among tenants. In this area, 80 per cent of the farmers declared their willingness to be resettled in government settlement projects. The implications of current tendencies in the tenurial situation are discussed below in Chapter VIII.

Areas of land obtained by settlers. The discussion the preceding pages has shown how some settlers progressed from labouring to tenancy and then to ownership of land, while others have remained as tenants. As the availability of land has decreased with growth of the population, so the areas of land obtained by immigrants have decreased in size, and the discussion now turns to the topic of the areas of land acquired under the various forms of tenure.

Table 3:10 shows that the 50 sampled settlers have some form of right to 89 parcels of land. Twenty-five of the settlers control only one piece of land and the remaining 25 control a maximum of four parcels each. Twelve of these are part-owners as described above, one a squatter

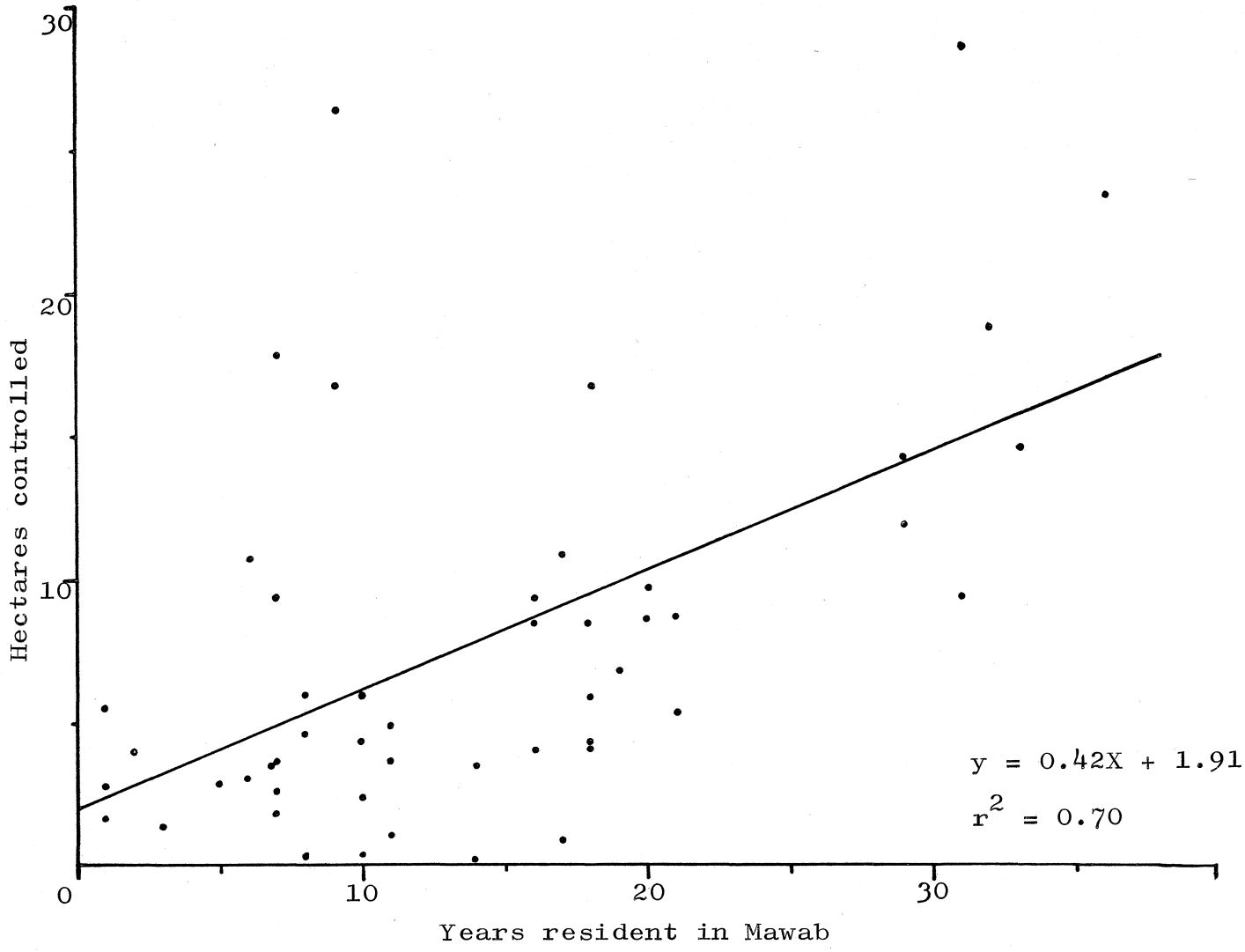


Fig. 3:1. Relationship between area controlled by settlers and length of residence in Mawab.

and five are tenants. Three of these tenants operate two or three parcels, each belonging to a different landlord. In most cases, settlers have obtained rights to several plots in order to improve their immediate economic conditions. However, some have been more concerned with benefitting their future heirs and in such cases a considerable portion of their land may be uncultivated, as will be seen in the following chapters on land use.

Table 3:10. Tenure and area of land held by 50 settlers in 1967.

Form of tenure	No. of parcels	Per cent	Total area (ha)	Per cent
Owned	37	41.6	244.55	63.3
Residual rights as mortgagor	1	1.1	2.00	0.5
Squatting	10	11.2	54.82	14.2
Squatting (sharing claim)	1	1.1	3.71	1.0
Usufructuary rights as mortgagee	3	3.4	4.41	1.1
Tenancy	35	39.3	74.85	19.4
Borrowed	2	2.3	1.92	0.5
TOTAL	89	100.0	386.26	100.0

Figure 3:1 shows that there is a positive correlation ($r^2 = 0.70$) between length of residence in Mawab and area of land controlled. The correlation would be much higher but for four migrants who have come to control exceptionally large holdings although they arrived only during the last

nine years.[1] Apart from them, none of the 31 settlers who arrived after 1950 controls as much as 10 ha and only six control more than 5 ha. The strong tendency towards diminishing farm sizes has pessimistic implications for recent and future migrants who hope to improve their levels of living through farming. This is particularly so for tenants, who must use part of their produce as rent. Table 3:11 demonstrates the economic advantage that earlier settlers have over later arrivals. They not only own their farms and so retain all their produce for themselves, they also operate larger areas. In addition, by renting out some of their land they receive a share of the produce without effort. The effects of this differentiation on income and levels of living will be seen in Chapter VI.

Table 3:11. Mean areas controlled[2] and operated by 50 settlers, 1966-7, by tenure.

Tenure	No.	Mean area controlled	Mean area operated
Owners	14	11.13	6.46
Part-owners	12	11.55	10.79
Squatters	9	4.61	4.53
Tenants	15	3.36	3.29
All operators	50	7.73	6.20

1 The correlation coefficient is significant at P = 0.01 but largely due to the four unusual cases the standard error of the regression estimate is 5.67 ha.

2 Area controlled is the total area to which a settler has any form of right, as listed in Table 3:9. Area operated is the settler's farm, that is, the land for which he makes the day-to-day management decisions. It may include uncultivated land.

The mean area owned by the 26 settlers who own at least part of the land they control is 9.48 ha. Whereas the largest owned holding is 23.58 ha and only seven of the 26 own less than 5 ha, only three of the 15 non-owning tenants rent more than 5 ha, the maximum being 9.49 ha in two parcels. However, in the next generation the favourable position of landowners may be drastically reduced through sub-division of holdings as a consequence of inheritance. In the Philippines the basic principle of inheritance is that of equal shares to all offspring. Among the sample, 17 families were presumed to be complete as the wives were more than 45 years old. Two of these families were squatters. The 17 families numbered 93 living offspring and had 188.25 ha available for sharing among these, giving an average of 2.02 ha for each heir. Thirty-six of the heirs were females who would as a rule not operate the land personally but add it to their husband's land (if any) on marriage. It might be assumed that one in five of the males would take up non-farm occupations, though remaining eligible for shares of the produce from their inheritance. The remaining male heirs would then each operate a mean area of 2.50 ha. Although some of the males would marry landowning females, it seems likely that the average size of farm per owner will soon fall below 3 ha.

When squatters and landowners likely to produce more offspring are considered, the total of 18 families had 114.98 ha to be distributed among 75 existing offspring, giving only 1.53 ha for each heir. In view of the likelihood of more heirs, it is plain that the children of such families, all of which arrived after 1945, will have very small areas to operate. Assuming that these families produced enough children to bring the mean up to the level of the already-completed families - that is, 5.5 children per family - the projected 99 children of these 18 families

would inherit only 1.16 ha each. Even relaxing the assumptions of the number of farm units actually created through inheritance, it is again unlikely that average farm size will exceed 3 ha. The diminished size of owner-operated farms will have many unfavourable consequences. First among these, assuming little or no change in farm productivity, will be the reduced possibilities of capital formation through production of surpluses. Secondly, there will be very much less land available for tenants and there will also be little need for hired labour, since landowning families will have sufficient labour resources to manage their land without assistance. Some of the economic consequences of small farm size will be treated in Chapter VI and the broader implications will be discussed in Chapter VIII.

Many of the settlers in Mawab are aware of the likely future trend in farm size and several members of the research sample stated specifically that they would like to obtain more land for the sake of their children. Only ten of the 35 owners and squatters did not intend to obtain more land and two had not considered it. Two settlers had already obtained land outside Mawab and planned to transfer to their new holdings. Among the tenants, four intended to return to their home provinces and another seven hoped to find land available for purchase, homesteading or squatting. Only three were content to retain their present tenancies.

These figures make it plain that many of the migrants are not yet settled. For some, residence in Mawab has proved to be merely another stage in the quest for their own land (cf Chapter II, p. 69 above). Others expect to stay in Mawab but they may still move from one plot to another. Up to 1967, only 11 of the settlers had never changed their residence within Mawab. Four settlers had left the town

and later returned and twelve others had changed holdings at least once. The reasons given by tenants for abandoning land were shown in Table 3:8. Owners and squatters too have at times relinquished plots of land, as shown in Table 3:12.

Table 3:12. Owners' and squatters' reasons for relinquishing land.

Reason	No. of cases	Total area affected (ha)
(a) Entire plot relinquished		
Sold because needed money	3	11.00
Debtor redeemed mortgage	1	1.00
Owner returned to home province	1	24.00
(b) Portion of holding relinquished		
Mortgaged under prenda	1	2.00
Sold to kinsman in return for assistance	1	2.00
Gift to kinsmen	7	28.52
Donated or resumed for public use	7	0.96
Surrendered to avoid trouble with squatters	1	4.50
TOTAL	22	73.98

In view of the total number of plots of land ever held by the sampled settlers, the table indicates that to date few owners or squatters have had to relinquish land through economic pressures. However, the data on incomes in Chapter VI will show that operators of small farms can rarely accumulate reserves of cash against major emergencies such as sickness or law suits. When such emergencies occur, the farmer must borrow and if the sum required exceeds about P100 he may need to mortgage some or all of his land as security. If the borrower has little land remaining, he may be unable to save enough to redeem the mortgage. This kind

of situation may occur with increasing frequency in the future as farm sizes become smaller and if productivity does not increase significantly. In that case, the wealthier settlers (mainly the pre-war homesteaders and their heirs) will make loans to an increasing number of small owners and probably foreclose in some instances. Their own landholdings will increase and so will the number of landless agriculturists. In effect, there are likely to be two trends in land sizes, as some of the wealthier settlers offset the effects of sub-division by acquiring land that the poorer owners are forced to dispose of. However, this pessimistic projection is based on the most unfavourable features of the present situation in Mawab, including trends in farm size and levels of productivity and income. The succeeding chapters will show that there is considerable scope for improvement within the present situation.

Chapter IV

THE EVOLUTION OF CROPPING PATTERNS IN MAWAB[1]

The role of abaca. Before the arrival of the first settlers, the indigenous Mansakas were basically subsistence cultivators, although their crops included abaca and upland rice which were occasionally traded with Chinese or Visayan merchants in small towns such as Hijo, Caraga and Compostela.

In contrast to the Mansakas, the immigrant settlers were from the outset concerned to establish permanent holdings of commercial crops. As homesteading regulations required them to cultivate at least one-fifth of their land within five years of official approval of their claims, there was an added incentive to develop their holdings swiftly. Without exception, forest clearance was by manual labour. Using family labour and cooperative groups (losong-losong), settlers were able to clear between 0.5 and 2.0 ha annually. Once cash crops were producing income, however, settlers could hire labour, thereby increasing the rate of clearing to over 3.0 ha per annum. Some settlers also received assistance from newcomers (particularly kinsmen or paisanos) in return for accommodation until the newcomers found land for themselves.

The main commercial crop adopted by pre-war settlers was abaca (Musa textilis Née). Several factors were responsible for this choice, which is unique among peasant colonists in the tropics. Firstly, abaca had been the main Philippine cash crop since the late decades of the

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1 For lack of documentary records this chapter depends greatly on statements by pioneers and officials and on personal observations.

nineteenth century.[1] Initially, it was grown mainly on smallholdings in Leyte, Samar and southeast Luzon, although small quantities were sold by the natives of Mindanao. From the first decade of the twentieth century, Davao became the leading abaca producer following the establishment of the large, highly-capitalised Japanese plantations. These stimulated migration by offering employment to Filipinos, many of whom subsequently became independent farmers. Their experience with abaca and the example of Japanese prosperity encouraged them to adopt the crop on their own farms.[2] By this stage, markets for abaca in Davao were highly developed as a result of Chinese and Japanese enterprise. In addition, abaca matures within $1\frac{1}{2}$ - 2 years, much sooner than either coconuts or coffee, which were the only other commercial crops with which most early settlers were familiar.

Finally, the botanical origin of abaca is in the southern Philippine islands; here optimum conditions prevail - constant warmth and an evenly-distributed rainfall of at least 2500 mm a year. Some varieties are suited to loam or clay soils, but all need well drained sites with a fairly high water table (Ochse et al., 1961:1167). Virtually all of the Mawab area is suitable for abaca, except for areas of impeded drainage in Bawani and Saosao barrios.

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1 Abaca formed 67 per cent by value of all exports in 1902 (Huke, 1963:324).

2 The Salvilla plantation, which was established in Mawab in the early 1930s, was developed by tenant farmers who were paid off when their 1 ha abaca plots reached maturity. This plantation thus served, like the Japanese plantations, to introduce newcomers to abaca cultivation.

By the late 1930s, abaca was grown in all the developed parts of Mawab, except in those wetter areas where the settlers had little choice but to grow rice. Even there, the landowners often rented drier land to produce abaca. Most other settlers grew corn rather than rice as a food crop, as it was less demanding of labour and enabled greater concentration on cash crops. A few settlers went even further by planting abaca to the exclusion of food crops.[1]

Early in the 1930s, the price of abaca fell to 3-6¢/kg (P2-4 per picul), thereby giving a marked price/weight advantage to coffee, which for a while sold for 60¢/kg. Although returns per hectare were lower than those from abaca, coffee was planted by those settlers who were most distant from the transportation route of the Hijo River. However, the situation was reversed later in the 1930s when the price of coffee fell while that of abaca doubled. At the same time, the extension of the national highway to Mawab provided a cheaper form of transport which reduced the price/weight advantage of coffee. Growers of coffee thereupon replaced it with abaca, which became the dominant cash crop of pre-war Mawab. The maximum area of abaca planted by the seven pre-war settlers in the research sample averaged 10.4 ha each.

During the second World War, trade in abaca ceased and the industry came to a standstill. Some farmers were compelled by the Japanese to convert their abaca stands to rice in an attempt to relieve food shortages. Others neglected or completely abandoned their holdings, which were quickly overrun by secondary vegetation. However, as commercial operations revived after the war, rehabilitation was rapid and by 1948 abaca had re-occupied all the

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1 See Caintic (1959) for a similar situation in the neighbouring municipality of Compostela as late as 1957.

pre-war abaca areas. Post-war settlers then began extending abaca cultivation into the hills, encouraged by rising prices which reached P0.85/kg in 1949 and a peak of P0.99/kg in 1951. At this time, it was said in the Visayan islands that 'gold grows along the roads in Davao'. However, increasing pressure on land limited the size of holdings developed after the war. Of the 43 post-war migrants in the research sample, 16 grew abaca and the average area of their abaca stands at maximum extent was only 3.5 ha each.

Unfortunately, although abaca grew easily in physical conditions close to the ideal, the cultivation practices of the Filipino peasants in Mawab were vastly inferior to those utilised before the war by the Japanese plantations with their experimental stations, chemical pestkillers and fertiliser treatments. Both fertilisation and disease control were almost totally neglected by post-war growers. The use of fertilisers, particularly nitrogen and potash, is advisable not only to compensate for the great loss of soil nutrients in harvesting, but also because it increases resistance to disease (Kirby, 1963:332). Several serious diseases attack abaca but the most damaging in Davao has been the abaca mosaic, a virus infection locally called '<u>alkuhiris</u>'. Badly infected plants do not grow to full size and yield little fibre. Although infected single leaves may be removed and burned, more serious infection requires destruction of the whole plant.

The wartime neglect of abaca plantations and the subsequent reluctance of growers to destroy affected plants helped to spread the disease very swiftly after the war. Entire holdings were infected and output fell. During the early 1950s, the Abaca Development Board attempted to educate farmers in methods of disease control,

including the use of chemical sprays. Unfortunately, some of the sprays used in demonstrations harmed healthy abaca or other crops close by, so there was little adoption by the growers. At the same time, prices fell to less than half the level of 1951 (see Figure 4:1). From 1955 onwards, prices began to recover, but by then the mosaic was so widely disseminated and costly to eradicate that increasing numbers of growers began to abandon the crop. In 1960, according to the Census of Agriculture, abaca was still the most widespread crop in Mawab, being grown on 535 farms and occupying a total of 980 ha (Table 4:1), but by 1967 it had declined to about 350 ha.[1] In the space of some 15 years abaca had changed from being almost the sole prop of development in Mawab to being only one among several alternatives.

Today, no growers rely solely upon abaca as a commercial crop. Abaca stands are now small and widely scattered, occurring chiefly in newly-developed hill areas. The effect of this dispersal in reducing the transmission of mosaic disease is partly countered by the common practice of interplanting corn with young abaca, since the corn aphid is a vector of the mosaic virus. Even so, it is now possible for growers to cope with the comparatively slow spread of mosaic, so that some individuals still find it a worthwhile crop.

In the research sample, 18 settlers still have some abaca, but four are no longer maintaining their stands. Only six stands exceed 1 ha each in size and these are mostly interplanted with coconuts or coffee. Only two out of the 18 plots are located in the lowlands and five

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1 Area estimated by the farm management technician in Mawab, who makes an annual report, incorporating crop statistics, to the Agricultural Productivity Commission.

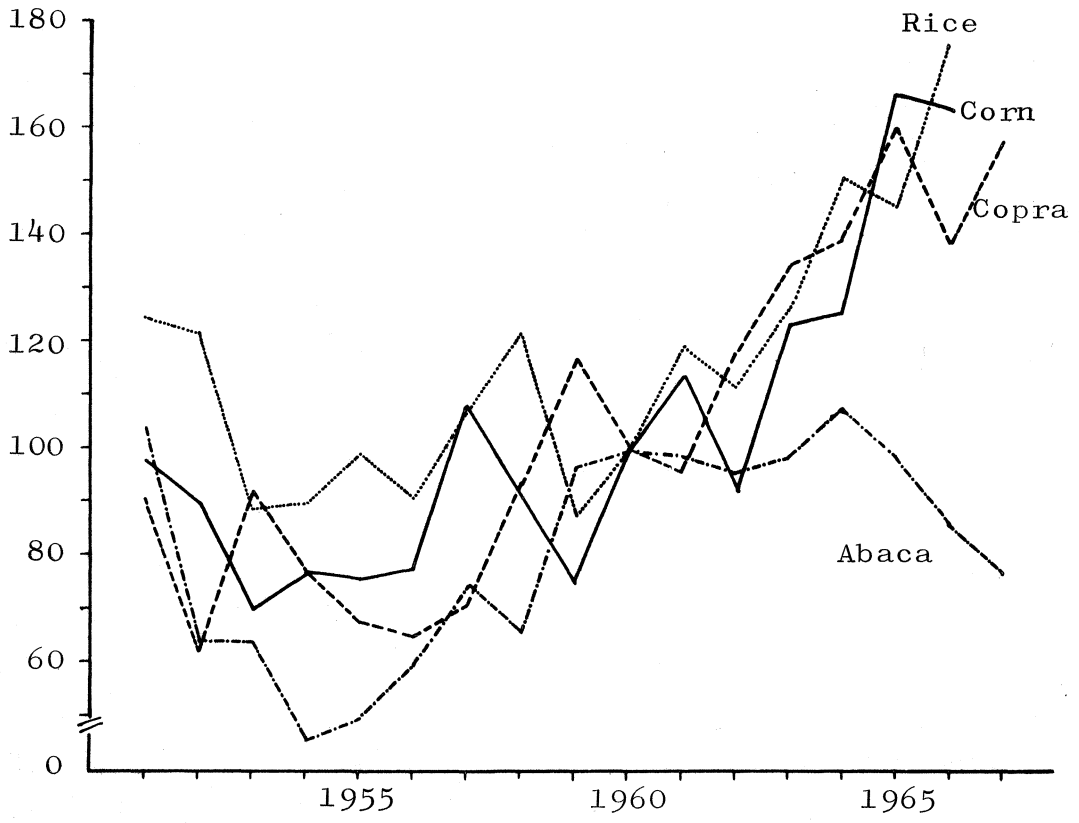


Figure 4:1 Wholesale price indices of selected crops in Manila, 1951-67. (1960 = 100).

Source: Adapted from Hicks (1967:Table 59); 1967 figures from Central Bank Statistical Bulletin, vol.20, No.4.

in the rolling uplands, on slopes up to 21°. The remainder are in the hills, with one plot on a 40° slope. In 1966-7, prices were falling back to the levels of a decade earlier and some farmers in the sample harvested their abaca only once or twice in the year.

As figure 4:1 shows, abaca is the only major crop in Mawab that has not experienced an upward trend in prices since 1960. By interplanting abaca with other crops, farmers insure themselves against a catastrophic fall in abaca prices. If the price trend continues, it seems likely that abaca, having helped stimulate the development of Mawab - and of Mindanao generally - will soon disappear from the landscape.[1]

The emergence of present cropping patterns. In a sense, it is only since the decline of abaca that most Mawab farmers have had to make significant land use decisions. During the first 30 years of colonisation, abaca was for most settlers the obvious source of income, and for some the exclusive preoccupation. When it was destroyed, there was no substitute that could be adopted on the same scale. Settlers thus had to assess the possibilities in the light of the nature of their land, the technical and labour requirements of different crops, price ratios, marketing facilities and their own experience and cultural preferences. In contrast to the earlier situation of virtual monoculture of abaca, the interplay of these factors has resulted in a marked diversification in the landscape.

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1 While it has remained an important Philippine export, the value of abaca exports fell by over 55 per cent between 1950 and 1966 and their share of the value of total exports from 13 to 2 per cent over the same period (Central Bank News Digest, June 27, 1967).

The effect of this by 1960 can be seen in Table 4:1. At the time of the census, both rice and corn occupied almost as much land in Mawab as abaca and, allowing for double- or triple-cropping, they accounted for a much higher proportion of the total farm area. Coconuts and coffee also occupied considerable areas. While many other crops are important to most farmers, in aggregate they occupy little ground. Such crops include bananas, root crops (especially sweet potato), pulses and green vegetables.

Table 4:1 Area planted to major crops* in Mawab, 1960.

Crop	No. farms reporting	Hectares planted	Per Cent of total farm area
Rice, lowland, first crop	451	856	12.2
second crop	122	325	4.6
Rice, upland	195	146	2.1
Corn, first crop	883	848	12.1
second crop	721	641	9.1
third crop	810	807	11.5
Abaca	535	980	13.9
Coconuts	625	501	7.1
Coffee, arabica	99	22	0.3
other	541	328	4.7
Sweet potato (camote)	207	23	0.3
Banana	778	53	0.8
TOTAL[a]	1,254	4,005	100.0

* Excepting arabica coffee, only crops planted on more than 100 farms are included.

a Totals are not the sums of columns. a) Total number of farms is the total in Mawab. b) Total hectares planted is area reported under temporary and permanent crops on the day of the census. c) Total farm area includes crops not shown and other uses of land (see Table 4:6).

Source: 1960 Census of Agriculture, Report for Davao province.

During 1967 detailed chain-and-compass surveys were made of 229 ha operated by 46 members of the sample.[1] 132 ha were under crops. 45 per cent was in temporary crops such as rice, corn, tubers and vegetables, 49 per cent in permanent crops such as abaca, banana, coconuts and papaya and six per cent intersown with both temporary and permanent crops.

Table 4:2 Major crops grown by 46 settlers, 1967.

	No. of farms reporting	Hectares planted	Percent of total surveyed	
			Crop area	Farm area
Rice, lowland	20	22.03	16.7	9.6
Rice, upland	8	1.52	1.2	0.7
Corn	31	32.21	24.5	14.1
Other temporary*	16	3.06	2.3	1.3
Abaca	10	8.96	6.8	3.9
Coconuts	15	23.85	18.1	10.4
Coffee	2	0.11	0.1	< 0.1
Other permanent[a]	18	31.56	24.0	13.8
Temporary and permanent	19	8.36	6.3	3.7
TOTAL	46	131.66	100.0	100.0[b]

* Includes rice and corn intersown with other temporary crops.

a Includes abaca, coconuts and coffee intersown together and with other permanent crops.

b Includes other land uses (forests, idle land, buildings, etc.) 42.5 per cent.

1 Due to other requirements of fieldwork, the surveys were spread over several months from July 1967 so some data on crop areas differ from those for the 1966-7 crop year discussed below.

The areas of intersown crops are primarily devoted to the major permanent crops, as illustrated in Table 4:3. Tables 4:2 and 4:3 together illustrate the continuing trend away from abaca towards corn, coconuts and coffee. It is noteworthy that the proportion of land in coconuts and coffee has expanded more rapidly than that in corn, while the proportion in rice declined slightly between the 1960 census and the 1967 sample survey. These tendencies accord closely with those at the national level, as illustrated in Table 4:4.

Table 4:3 Areas of major crops that are intersown. (Hectares).

Crop	Intersown with		
	Only temporary crops	Only permanent crops	Temporary and permanent
Upland rice	0.77	-	0.49
Corn	0.97	-	5.00
Abaca	-	17.62	0.19
Coconuts	-	29.55	6.31
Coffee	-	17.34	1.64
Other permanent*	-	18.15	0.78

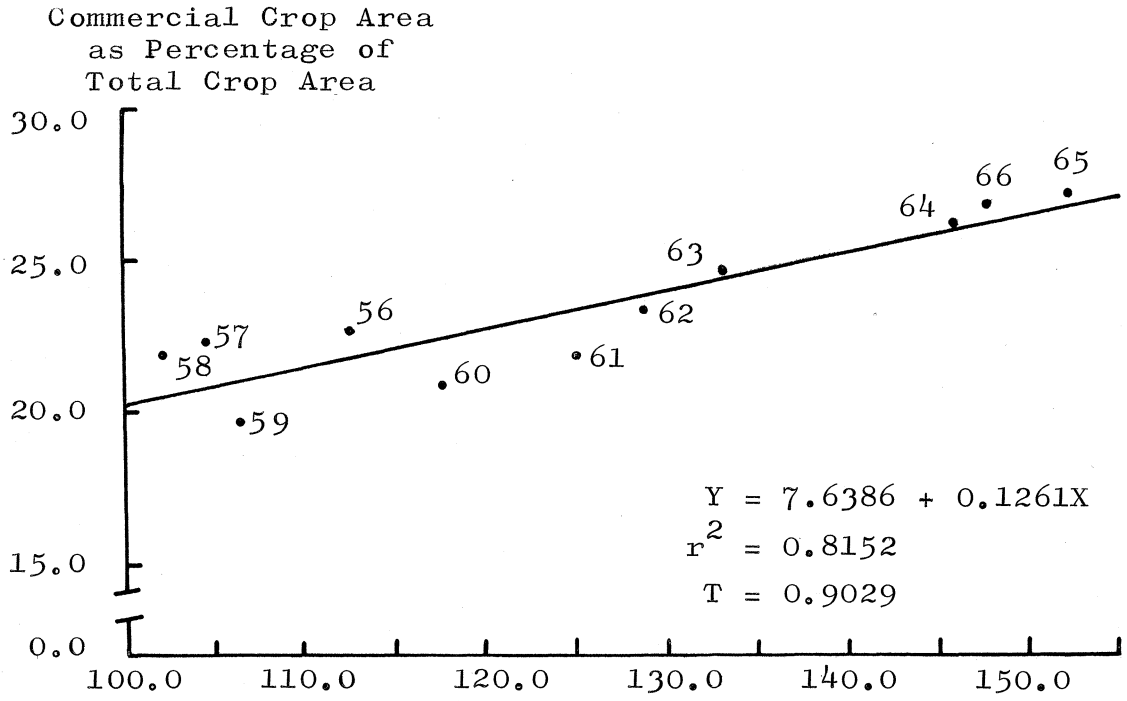
* Includes fruit trees, bananas, etc., intersown with abaca, coconuts and coffee.

Table 4:4 Areas planted to selected crops, in the Philippines, 1955, 1960 and 1965 (Thousand hectares.)

Crop	1955	1960	1965
Rice*	2,656	3,307	3,200
Corn	1,388	1,846	1,923
Coconuts	990	1,059	1,605
Coffee	19	31	44

* Lowland and upland

Source: Tryon (1968), Appendix Tables B-7 and B-8.



$$\frac{\text{Price Index Agricultural Export Products}}{\text{Price Index of Agriculture Products for Home Consumption}} \times 100$$

Figure 4:2 Relationship between land utilization and relative prices in agriculture

1. Crop area refers to area harvested (except for tree crops). Data are on a crop year basis; that is, year t refers to the 12 months ending June 30, year t.

Source: Bureau of Agricultural Economics, Department of Agriculture and Natural Resources.

2. Price indices refer to wholesale prices. Both indices have bases of 1955 = 100.

Source: Central Bank News Digest, Vol.XVIII, No.51, (December 20, 1966)

3. The price ratio plotted against the area data for any crop year t is the average of the price ratios for the three previous calendar years t-3, t-2, and t-1. In the chart the numerals alongside the plotted points identify crop years to which the relevant ratios relate.

Factors involved in the expansion of the four main crops that replaced abaca in Mawab - rice, corn, coconuts and coffee - are discussed in the following sections. For lack of documentary evidence on the Mawab area, considerable reliance is placed upon the testimony of the settlers. To a large degree, this testimony is compatible with explanations for trends observable at the national level, in particular the rapid expansion of the commercial crop area after 1959-60 at the expense of the food crop area.

Between 1959 and 1965 the area planted to rice and corn in the Philippines fell by six per cent while the area in export crops rose by 44 per cent (Golay and Goodstein, 1967 : 45). This expansion is attributed to price movements favouring export crops following the initiation of exchange decontrol in 1960 and devaluation of the peso in 1962 (Tryon, 1967:204). Treadgold and Hooley (1967:117-8) calculated that 82 per cent of the variability in the proportion of total crop area devoted to export crops in the period 1956-66 can be explained by variability in the ratio of wholesale prices of exportable crops to wholesale prices of crops (primarily food) for home consumption (see Fig. 4:2).[1] These assessments are supported by the findings of Mangahas et al (1966:2-3, 21) that the areas planted to rice and corn are significantly influenced by prices relative to alternative crops. They also noted that rice has fewer competitors than corn because of the heavy investment required for the supply and impounding of water.

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1 Acknowledgement is made to Dr M. Treadgold for kind permission to use this figure.


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unicipal boundary
R
MAWAB
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Rice. Several factors have influenced the selection of rice as a replacement for abaca in Mawab. Firstly, much of the land involved is too moist for corn, coffee or coconuts. Secondly, in the Philippines, rice is almost invariably preferred to corn or other crops as a food. Thirdly, in 1957 and 1958, when many abaca growers were deciding what other crops to plant, the price of rice rose sharply - more so than the prices of the main alternative crops. According to Hicks (1967:111) rice had been relatively more profitable than copra since the early 1950s. Fourthly, continuing rice shortages in the Philippines caused the government to operate price support schemes to encourage production. Although prices have continued to fluctuate, they have been less variable than those of export commodities such as copra. Finally, rice is a short-term annual crop and so avoids the problem of prediction of crop prices many years ahead as in the case of copra.

Consequently, the main trend since the removal of abaca has been the conversion of lowlands to rice fields wherever soils and water supplies are suitable. The southern margin of rice cultivation closely follows the course of Galinan Creek, south of which are deep sandy soils that cannot retain bunded water. The few settlers south of the creek who have suitable land have not planted rice because such isolated fields would bear the full brunt of attacks by pests.[1] North of this creek, rice is grown throughout the plain (Plate 4:1), except on the slightly elevated interfluves mentioned in Chapter II. These cannot be served by small-scale gravity irrigation from creeks and the aquifer supplying artesian water

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1 However, the 1967 survey of lowland rice in Mawab by the Bureau of Plant Industry inspector revealed that two settlers in Concepcion and two in Sawangan had taken the risk of growing rice in isolated plots.

elsewhere appears to be too deep here for economic tapping, as the pressure is very low. So far, no owner has been prepared to install a pumped irrigation system.

The area devoted to lowland rice fields expanded swiftly between 1955 and 1960, when 856 ha were planted to the main season or 'first' crop (June - December). Since then, expansion has continued as more abaca has been removed, forest remnants cleared and dyked fields extended upstream along small valleys to the point where further extension would require permanent terracing works. By 1967, there were 1,115 ha of lowland rice fields in Mawab. Gravity or artesian irrigation is applied to about 800 ha for the first crop, but to less than 600 ha during the palagad or second cropping season, when creek levels are liable to be low. Many rice fields in Mawab still contain isolated forest trees, mostly dead although still standing. Stumps and fallen trunks are more common, especially in fields cleared during the last five years and in permanently waterlogged land where anaerobic conditions delay decomposition for many years. These stumps and logs hinder cultivation, whether it is carried out by hand or by carabao - drawn plough and harrow.

Table 4:2 showed that of the 46 settlers whose lands were surveyed by chain-and-compass, 20 grow lowland rice, which accounts for almost 17 per cent of the total area in crops. Three settlers whose holdings were not surveyed also grow lowland rice. Nine of the 23 growers have rice plots of no more than 0.50 ha but the mean is 1.10 ha, with the largest plot being 4.66 ha. Eight of the settlers have more land suitable for planting rice (excluding land let to tenants), but are unable to use it for lack of available labour. Most of the farmers in the sample produce a wide range of crops, but four men, all in the lowlands of Bawani barrio, grow only rice.

Corn. In the sandy areas south of Galinan Creek, corn was widely chosen as an initial replacement for abaca. Demand for corn in the Philippines has been consistently high, both as a food grain and as animal feed in livestock-breeding areas near major towns. As figure 4:1 showed, corn prices were unusually high during 1957 and 1958. Thereafter, prices of coffee and coconuts improved and these crops began to replace corn as a cash crop. The rate of replacement was slowed by the common practice of planting corn between rows of young tree crops, but as these began to shade the ground, interplanting ceased.

Even so, replacement of corn was not complete. In the barrios of Andili, Nueva Visayas and Mawab, some tenant farmers have continued, on their landlords' instructions, to grow corn as their sole commercial crop in plots of several hectares each. Of the seven surveyed corn plots exceeding 1.5 ha, tenants operate six. In three cases, the landlords are ensuring a supply for their own corn mills. In other cases, the landlords are content with the low shares they receive from corn tenants (20 - 40 per cent of output, compared with 50 - 70 per cent for copra) largely because they can leave all decisions and costs to the tenant. An exceptional case is the large hacienda (the former Salvilla plantation) in Nueva Visayas, where over 50 ha are devoted to corn which provides feed for the owner's piggeries near Davao City.

While the corn area in the plain has contracted, the area in the hills has expanded as forest land has been occupied by squatters growing corn as their staple food. During 1966-7, 39 of the sampled settlers grew corn in 59 separate fields. 25 of the fields are in the plain and 19 of these are operated by tenants. In contrast, only five of the 34 upland corn plots are operated by tenants.

In total, the scattered corn plots in Mawab as a whole occupy rather less land than is devoted to rice,[1] but corn is certainly grown by more farmers than is rice. Furthermore, three crops of corn may be taken during a year, so the total area under corn over one year is greater than that under rice. Among the sampled corn farmers, 20 per cent grew a single corn crop in 1966-7, 44 per cent grew two crops and 33 per cent grew three crops. One man was able, exceptionally, to raise four crops.

Corn is raised as a more or less exclusive product only on the tenant farms mentioned above. On other farms it is only one of a number of products. It is mostly grown in pure stands, but Table 4:3 shows that a small proportion is intersown with one or more permanent crops, usually coconuts and coffee, and a very small proportion is planted with upland rice or mongo beans (Phaseolus aureus Roxb.).

Coconuts. It was noted above that there were drawbacks to the planting of coconuts as a substitute for abaca. The palms take 7 or 8 years to begin bearing and a further 6 or 7 years to reach full bearing capacity and it is impossible to make satisfactory predictions of crop prices so far ahead.[2]

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1 Unfortunately, the true corn area in Mawab is unknown. An estimate of 848 ha for 1967 made by the local farm management technician merely repeats the 1960 census figure.

2 As it happens, large incomes would have been earned by people who planted coconuts in the late 1950s, for average annual prices for copra rose considerably between 1961 and mid-1968, when they reached P96 per 100 kg. However, the unpredictability of export crop prices is revealed by the fall in the copra price to only P60 per 100 kg by September 1968 (Central Bank Statistical Bulletin, vol.20, 4).



Plate 4:2 Coconut plantings in southeastern Mawab. Note: coconut fields are bounded in black and mostly appear stippled.

In the late 1950s several of the owners with bigger holdings planted coconuts and as copra prices continued to rise during the 1960s more and more of the land south of Galinan Creek has been planted to coconuts. Coconuts now occupy over two-thirds of the cultivated land in Andili and over half that in Concepcion and Nueva Visayas (see Plate 4:2). Coconuts have also been planted as a cash crop by settlers in the uplands of Bawani and in the steep hills around the plain. Probably more than half these trees are not yet bearing. According to a report for 1967-8,[1] there are 2,501.4 ha of coconuts in Mawab - exactly 2,000 ha more than recorded by the 1960 Census. The figure is dubious, being based largely on estimates by barrio captains, but it nevertheless indicates crudely the rapid adoption of copra as a cash product during the 1960s. Farmers gave different reasons for choosing to plant coconuts - some said simply that there seemed to be no satisfactory alternative. Others felt that, as previously with abaca, by planting their land fully to coconuts, the cash return from copra would pay for purchased foodstuffs. Alternatively, they might rent a piece of land to grow corn or rice.

In the sample, 17 settlers have only a few coconut trees which are planted beside their houses. All but three are located in the plain. Another 19 settlers have less than 1 ha of coconuts,[2] including five whose trees are scattered rather than occupying compact blocks. 14 settlers have over 1 ha in coconuts and six of these have over 3 ha.

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1 Annual report of the farm management technician in Mawab to the Agricultural Productivity Commission.

2 The common spacing of coconut palms, between 9x9 m and 10x10 m square, gives approximately 100-125 trees per hectare.

Out of the total of almost 60 ha, only 24 ha are in pure stands. 30 ha are interplanted with other permanent crops, mostly coffee. The remaining six hectares of coconuts are intersown with catch crops such as corn, camote, rice and beans. Including the interplanted areas, coconuts now occupy more of the settlers' land than any other crop.

Coffee. The only other crop that has so far occupied significant areas of former abaca land in Mawab is coffee, almost entirely of the robusta variety. In 1960, coffee occupied a total of 350 ha. There has been considerable new planting since 1960 by settlers in the hill areas, but this has partly been offset by the removal of some coffee in the plain. The Philippines imports coffee and prices for local producers are influenced to some extent by world market prices. Farmers in Mawab have commonly reacted to major downward fluctuations in prices, such as occurred between 1960 and 1963, by replacing their coffee trees with coconuts or corn. During less severe recessions they may not harvest the crop. As it takes three or four years for coffee trees to begin bearing, it is difficult for farmers to take advantage of price increases, which are rarely sustained. Thus, planting land to coffee trees is a gamble that may prove to have high opportunity costs and coffee is almost invariably interplanted, with corn during the early years and then with coconuts (Tables 4:2 and 4:3). In this way the settler receives in turn income from corn, then from coffee and finally from coconuts.

Among the sample, 25 settlers have commercial stands of coffee occupying a total of 19 ha, of which only 0.1 ha is in pure stand. Only five of the plots exceed 1 ha and coffee is a far less significant feature of the landscape than coconut palms.

Crop combinations. The above descriptions in terms of single crops are not meant to imply that farms are commonly single-crop enterprises. The frequency with which interplanting has been mentioned suggests considerable diversification within individual farms. This is contrary to the statement of Wernstedt and Spencer (1967:531) that in the Davao-Agusan region 'one farm usually concentrates on the production of one crop only'. In Mawab this is far from being the case. Although many farmers, especially in the lowland rice areas, rely primarily on one crop for their cash income, those who grow only a single crop are almost entirely tenants on very small plots. Table 4:5 illustrates the situation and it is clear that most farmers grow at least three crops that are significant to their domestic economy.

Table 4:5 Crop combinations of 50 settlers in Mawab, 1966-7.

Combination	No. of settlers
Rice and/or corn only	9
Rice and/or corn and other temporary crops or homelot trees‡	7
Rice and/or corn plus coconuts	3
Rice and/or corn plus coconuts and other tree crops*	8
Rice, corn, other temporary crops plus coconuts or coffee	2
Rice, corn and abaca or coffee	2
Rice and/or corn, other temporary crops, coconuts and other tree crops*	18
Corn and coffee	1
	50

‡ Chiefly for domestic use but product may occasionally be sold.

* Usually includes coffee and/or abaca.

However, few settlers use their variety of crops in planned rotations. This situation occurs widely in the Philippines (Wernstedt and Spencer, 1967:187) and, outside the colonisation areas, is a consequence partly of lack of land within which to rotate fields, since a major proportion of the land on small farms is required to produce staple foods for domestic consumption. The lack of rotations is also sometimes attributed to the cultivators' ignorance of either the benefits or suitable methods (Pal, 1963:271-2). Among the Mawab sample, the rotation of crops occurs on a haphazard basis, so that corn may be grown for five years followed by sweet potato for one year and then corn again, or several years of corn may be followed by rice, vegetables or fallow as the cultivator considers necessary at the time. The course of rotation is rarely planned in advance (cf Vandermeer, 1963:176).

Land use in 1967. The preceding sections have discussed the areas of land devoted to the major crops in Mawab, with particular reference to 132 ha cropped by 46 sampled settlers. The discussion now turns to the use of all 310 ha operated by the full sample of 50 settlers and includes uses other than cropping. The uses of this land are shown in Table 4:6, compared with data from the 1960 Census of Agriculture.

Table 4:6 shows that both full- and part-owners have considerably more land in permanent than in temporary crops. Most of the permanent crops are in the uplands, where they are more profitable than alternative temporary crops. Tenants have a much smaller proportion of their land in permanent crops, because the average holding is too small to allow planting of permanent crops as well as producing basic requirements of food. Secondly, the tenants have no security of tenure and are seldom

Table 4:6. Generalised land use of 50 settlers in 1967 and 1,254 settlers in Mawab, 1960.

Use	Sample of 50 settlers, 1967						Mawab, 1960
	Owners	Part-owners	Squatters	Tenants	Total	Per cent	Per cent
	hectares						
Temporary crops	22.6	21.6	6.0	29.6	79.8	26	30
Idle (fallow)	14.5	29.3	9.5	9.9	63.2	20	23
Permanent crops	32.0	41.7	7.8	8.2	89.7	29	27
Permanent pasture	0.3	3.0	0	0.7	4.0	1	0
Forest	19.0	32.5	17.0	0.4	68.9	22	15
All other lands	2.2	1.5	0.5	0.5	4.7	2	5
Total	90.6	129.6	40.8	49.3	310.3	100	100

prepared to plant permanent crops from which they may obtain no benefit. Furthermore, crop sharing arrangements for permanent crops are less favourable to the tenant, who may, for example, receive only 30 per cent of the receipts earned by copra. Five of the sampled tenants occupy land on condition that it is gradually planted to coconuts on behalf of the owners, but the tenants are allowed to take catch crops of annual crops until the ground is fully shaded by the maturing palms (see Chapter III, p.108).

The major component of the idle land category in Table 4:6 is regenerating woodland - excluding regrowth, idle land forms only six per cent of the total farm area. However, this practice of bush fallowing does not imply the long-term adoption of shifting cultivation by settlers. Spencer (1966:82) believes that in colonisation areas farmers practise shifting cultivation only for initial subsistence, with the aim of establishing a permanent field system as quickly as possible. This has been the case in

Mawab, although some settlers may, in addition to their permanent cropping system, continue to operate some fields on a rotational basis.

Nearly all the settlers using a form of bush fallowing are post-war migrants occupying land in the hills. Among lowland settlers, fallowing is rare, although some corn growers with sizable holdings may leave some land uncultivated. This is commonly said locally to be due to lack of labour and time to cultivate it fully, rather than to considerations of fertility, but such more or less inadvertent fallow fields are nevertheless rotated. These lowland fallows usually support grass rather than tree or shrub growth, probably due to the scarcity of neighbouring sources of tree seeds. In the hills, on the other hand, both rainforest and regrowth tree species are still sufficiently widespread for their seeds to reach most land left uncultivated (cf Kellman, 1967:175).

Both in the plain and in the hills, some idle land is occupied by cogon grasses - mostly Imperata spp. with Saccharum spontaneum in lowlying areas. In the hills, cogonales (grass-covered areas) are increasing because fallow periods are brief.[1] A few of the hill farmers rent lowland rice plots and so are able to utilise fallows of more than three or four years duration on their upland holdings.

Most hill farmers, however, are unable to use sound fallowing practices, due to lack of space and to ignorance

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1 As Kellman (1969:46) has pointed out, the greater the intensity of cropping, and particularly of weeding, the fewer seeds of tree species remain viable to ensure a woody rather than grassy fallow.

of suitable practices.[1] Most holdings are too small to permit adequate fallowing and settlers could afford long fallows only if their entire holdings were devoted to food crops, that is, if they became purely subsistence farmers. At present, cropping periods usually equal or exceed the fallow. If fallow periods last only one or two years, the root systems do not develop sufficiently to tap subsoil nutrients that may later be incorporated in litter. Furthermore, if the fallow is too short to develop a full canopy, losses of nutrients by leaching and erosion may be considerable (Webster and Wilson, 1966:159-60).

In Table 4:6, the only significant difference between the 1960 and 1967 figures is in the proportion of forest land. The major reason for this difference is that between 1960 and 1967 a high proportion of new migrants settled in the forested hills and their land is not yet fully cleared. Forest accounts for 42 per cent of the land operated by squatters in the sample; only two squatters, those with the smallest holdings, had cleared all their forest. A second reason for the difference between the figures is that the 1960 census enumerators did not visit some of the more remote settlers. Instead, they merely asked for details of the settlers' crops from barrio officials or pioneers in the neighbouring lowlands, so that the area under forest was probably understated.

Some full- and part-owners with large landholdings maintain land in forest to prevent deterioration through cropping. Others have conserved forest remnants along streams to protect the banks and to reduce evaporation. Patches of forest have also been preserved as sources of

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1 Yengoyan (1963) contrasts the skilled methods of shifting cultivation practised by the indigenous Mandayas east of Mawab with the poor methods of immigrants (mostly Visayans) coming into the same area of the Pacific Cordillera.

constructional timber and firewood. Finally, as with the squatters, some owners with comparatively recently acquired upland holdings have not yet had time with their available labour to clear all of their forest.

Table 4:6 shows that permanent pasture occupies an insignificant proportion of land. Farmers do not need to allocate land permanently for pasture since their livestock - primarily carabaos - find sufficient grazing on fallow land, grass verges and the like. Few farms have more than one or two carabaos. Other uses of land such as roads, house lots and watercourses are also of minor significance.

Comparison with migrant source areas. Table 4:7 compares land use of the Mawab sample in 1967 with land use in the main migrant source areas according to the 1960 Census of Agriculture. There is a noticeable difference between the eastern Visayan provinces and the other areas in the proportions of land devoted to temporary and permanent crops, but there is no significant difference in the proportions of total cultivated area. In contrast, owing to the recent occupation of Mawab, only three-quarters of the farm area is as yet cultivated and over a fifth remains in forest. The relative areas of land devoted to permanent as against temporary crops resemble the eastern Visayan distribution rather than the other regions.

Summary. During its long heyday in Mawab, abaca was grown regardless of soils or topography except in restricted areas that were suitable exclusively for lowland rice. After the mid-1930s, abaca retained its dominant position up to the time when the combination of disease and unfavourable price movements led to its replacement.

Thereafter, the dominant considerations in the selection of crops seem to have been their price levels and labour requirements, although physical factors have also had some influence. For instance, the area that can be made into lowland rice fields is limited and use of the interfluves north of Mawab poblacion is inhibited by poor drainage. Aside from these aspects, physical factors, whether of soil type, slope or drainage, have been neglected in land use decisions. Thus, at different periods settlers have used the same land for corn, root crops, vegetables, coconuts, coffee and abaca. While settlers have responded to changes in the relative returns of different crops as determined by price levels, they seem not to have been influenced by any effect of the land on output of different crops. Nor, conversely, have they been influenced by the effect of the cultivation of certain crops on the land. Thus, coconuts are planted on steep slopes that may not have suitable soil water conditions, while corn and upland rice planted on steep slopes contribute directly to soil erosion which the settlers are unable to counter. The Soil Survey Report for Davao Province stated, 'The agriculture of Davao Province has not as yet reached the stage of development where the proper adjustment of land use and soil management are at all understood, much less practised.' (Mariano, 1953:66). This assessment is still as true as it was 15 years ago.

Chapter V

THE PRODUCTION AND DISPOSAL OF SETTLERS' CROPS

The preceding two chapters have discussed the forms by which settlers hold land, the amount of land they control and the ways in which they have developed this land. This chapter describes the methods of production of the major crops, including the organisation of labour, crop yields, the disposal of output and aspects of marketing. Changes in production methods used by the settlers are discussed. Finally, the non-farm occupations of settlers are briefly described.

Lowland rice

People in Mawab commonly refer to first and second cropping seasons in the terms ('regular' and 'palagad') used in Luzon, which has a markedly more seasonal rainfall regime. In Mawab the rainfall regime permits most stages of cultivation throughout the year and some rice is harvested in almost every month. Nevertheless, there is still some seasonality of rice cropping in Mawab, with harvesting concentrated in the periods November to January and May to July. Apart from the effect of habit, each farmer prefers to have his fields ripening at about the same time as his neighbours' in order to avoid the concentrated attacks of pests that might occur if his crop were well ahead or behind in growth. About 72 per cent of the rice land is irrigated and the rest rainfed. The second, palagad, cropping season (approximately January to June) includes a period of comparatively unreliable rainfall from February to April, so some rainfed fields are not sown and the irrigated proportion rises to 83 per cent. However, most rice growers

without access to irrigation take the risk of inadequate rainfall and do grow two crops a year.

Production methods. All of the lowland rice in Mawab is grown by the transplanting method. In broad outline, the system requires the preparation of a seedbed, over which the seed is broadcast thickly. During the next six to eight weeks, the main rice fields are ploughed, harrowed and rolled to pulverize the soil thoroughly. The seedlings are then transplanted, and may be weeded once, twice or not at all before harvesting. The crop is harvested by means of a yatab, a small knife used to cut each plant head separately, although some people now use sickles. The rice is usually threshed by trampling, winnowed in the fields and sun-dried before being stored.

Some farmers use techniques basically similar to those of their home provinces, but others have adopted techniques from their neighbours. There is, therefore, immense scope for individual variations within the framework just described. Furthermore, some farmers do not own work animals and others do not use them because their land is too soft or encumbered with logs to permit the use of a carabao and plough. Most farmers who cultivate by hand can maintain only about 0.25 ha and their land preparation is far less thorough than that done with a carabao. Carabaos are comparatively scarce in Davao and are highly valued (P300 - 600 for a mature beast).[1] Small owners or tenants can as a rule only hope to obtain their own through the practice of alima, that is, caring for a female carabao and in return keeping one of the offspring. Among the 23 sampled rice growers, six farmed without carabaos.

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[1] In Davao, the 1960 Census of Agriculture found an average, including immature animals, of 1.7 carabaos per farm, valued at P251 each. The national averages are respectively 2.0 and P194.

Table 5:1 Ownership of *carabaos* among 22 growers.

Tenure of operator \ Owner of *carabao*	Operator	Landlord	Other person	No *carabao*
Owner	10	0	1	2
Owner, renting rice field	2	0	0	3
Tenant	1	2	0	1

Aside from the preparation of land without animal labour, variations occur at every stage within the broad outline of rice cultivation given above. Farmers may use elevated portions of land as dry seedbeds instead of using portions of the rice field proper. Seeds are selected not only by variety but also by their bulk; they are not usually tested for germination quality or treated to give protection against pests. The customary seeding rate is 44 kg/ha, but in recent years, the more receptive farmers have adopted improved practices using rates less than half of this. Other farmers have compromised and use rates between 30 and 40 kg/ha.

In transplanting, the need to use a large labour force tends to reduce variations and most growers accept the traditional method of placing clusters of three to five seedlings at irregular, more or less random spacing. Only three members of the sample required labourers to plant seedlings in straight lines, and one followed the Masagana-Margate system of regular spacing with one or two plants per 'hill'. A few others had tested these methods but found they were too demanding of labour, a major drawback in an area of comparatively high wage rates (see below).

Once the rice is planted, water levels in irrigated fields may be carefully varied; by alternately draining and flooding, some weeds and pests can be controlled. However, manual weeding is the rule; despite the direct connection between weeding and yields (Webster and Wilson 1966:146), one-fifth of the farmers failed to weed their crops and almost half weeded only once. As manual weeding is laborious, chemical herbicides, particularly 2,4-D, have been one of the most widely accepted innovations (cf Ruttan, 1966:49-52). Nine of the sampled farmers used them in 1966-7; others had in the past and would like to do so more frequently but cannot afford the spraying equipment which costs between P40 and P80, and are unable or unwilling to borrow equipment regularly.

Pestkilling chemicals have been rather less readily adopted, partly because they are rather more expensive than weedkillers. In addition, farmers have found that some of these chemicals have toxic effects on mudfish in the fields and on farm animals such as chickens. This is particularly true of the ratkiller 10-80, which was even responsible for deaths of carabaos. Unfortunately, rats have been the major pest of rice in Mawab (and most other rice lands of Davao and Cotabato) since the mid-1950s. According to the Bureau of Plant Industry,[1] rat infestation in Davao reached a peak in 1963-4, when 51 per cent of the rice crop in Mawab was damaged. The BPI inspector in Mawab spends more time on rat control than any other aspect of his work. He believes that the uncultivated lands of absentee owners serve as a refuge for rats and thus negate control efforts. The maya bird, a kind of finch, may also cause significant damage. Other pests are occasionally as destructive as rats. They include

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[1] Bureau of Plant Industry (1964).

rice-bugs (piangao), rice stemborers (tamasok), army worms and leafhoppers, the last-named being vectors for several diseases. Apart from chemical controls, some people use lights suspended above water to trap the adult insects, but this is too laborious for most farmers who merely try to avoid planting later than their neighbours. Total expenditure on chemical pesticides and herbicides by the 12 sampled rice growers who used them amounted to P277. Eight Ilocano growers accounted for P239 of the total.

The use of artificial fertilisers is even more restricted. In 1966-7, only four growers - all Ilocanos - used some fertilisers, either complete (NPK) or ammonium sulphate alone, which cost a total of P337. Several other farmers have tested fertilisers but found that the extra nutrients merely caused lodging. Soil samples taken in 1964 during a campaign to increase rice yields[1] indicated that most Mawab soils benefit from fertilising, but only in conjunction with improved varieties of seeds.

Such seeds have been widely adopted - two-thirds of the sampled growers used them in 1966-7, and others had used them in previous seasons. The commonest variety is BE-3, grown in the main (July - December) season. One of the most recently introduced and highest-yielding varieties, BPI-76, was grown by only two sampled farmers in 1966-7. Filipino

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1 Due to its extensive rice fields, during 1964-5 Mawab was one of the municipalities involved in the government's 'Crash Programme' for increasing rice production. The town received the services of four farm management technicians and two Agricultural Credit Administration personnel as well as the officer from the Bureau of Plant Industry. However, political pressures from towns excluded from the programme caused re-assignment of the extra personnel so that since 1965 Mawab has had only its normal complement of the BPI officer and one farm management technician to serve over 1,200 farms. Their attentions are still devoted almost exclusively to rice farmers.

farmers have long been willing to experiment with seeds, exchanging samples with their neighbours or with visitors from other areas. Once new varieties have been introduced by the extension agents and adopted by a few people, they are spread by unofficial demonstration. Thus, those who grew IR-8 in 1967 received many requests from neighbours for seeds for next season. None of the sampled farmers bought certified seeds in 1966-7 but several planned to do so in the following season. In the past, some farmers have complained of poor germination rates of certified seeds obtained from government agencies. The new varieties need a whole 'package' of advanced practices to give good results, but such practices are commonly neglected. As a result, yields are well below the potential (see below) and many farmers plant two or three varieties, traditional as well as recommended, to insure against failure of any one variety. Thirteen different non-recommended varieties were planted by the 22 sampled growers in 1966-7, some being grown for the first time in order to assess resistance to pests and diseases, length of growing season, yield, taste, cooking quality, milling quality and selling price.

Yields. The yields obtained by the sampled farmers varied greatly. In the main crop season (July - December) the mean output of 21 growers was 2,108 kg of rough rice (palay)/ha, but the range was from 450 kg to 5,353 kg/ha. The second crop, grown by only 16 of the sample, had a mean yield of 1,375 kg/ha, with a range between 122 kg and 3,856 kg/ha. The second crop was unusually poor as a consequence of an early drought, severe pest attacks and, according to the farmers, a disease that customary chemicals would not control.

Explanation of the differences in yields of the sample is difficult.[1] As Ruttan (1966:62) has shown for rice farmers in Luzon, conflicting results are likely to emerge from attempts to determine empirical relationships between productivity, tenure and farm size in areas (such as the Philippines) experiencing great changes in technology and in economic and social orientation and structure. The same is true for other variables such as the cultivator's level of school achievement (Morrow, 1966:380-4). The Mawab data produced no evidence of relationships between yields of the main crop and the above-mentioned variables or certain other variables including the value of inputs of chemical weedkillers and fertilisers (cf Mellor, 1966:138) and the cultural origins of the growers. However, a marked relationship did emerge between yield and the cultivator's length of residence in Mawab (Fig.5:1). The coefficient of determination (r^2) is 0.86 but the standard error is high at 441 kg.

Several factors may be involved in this general relationship. Firstly, it is probable that the land of the pioneers is better than that of later settlers who have been progressively forced to take up land poorly served with water or waterlogged. Secondly, the pioneers, with larger holdings, have higher incomes and are better able to afford innovations. They are also the main focus of effort of the extension agents. Finally, they have greater familiarity with soil and cropping conditions in the area. As Geertz (1963:35) has pointed out, the ecology of wet rice

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1 Attempts to explain yield differences on the basis of a single season's crop are hazardous particularly where, as in the present case, data are lacking on important factors such as variations in soil fertility, water supply, labour inputs and the incidence of pests and diseases. Moreover, the sample of 21 growers is rather small.

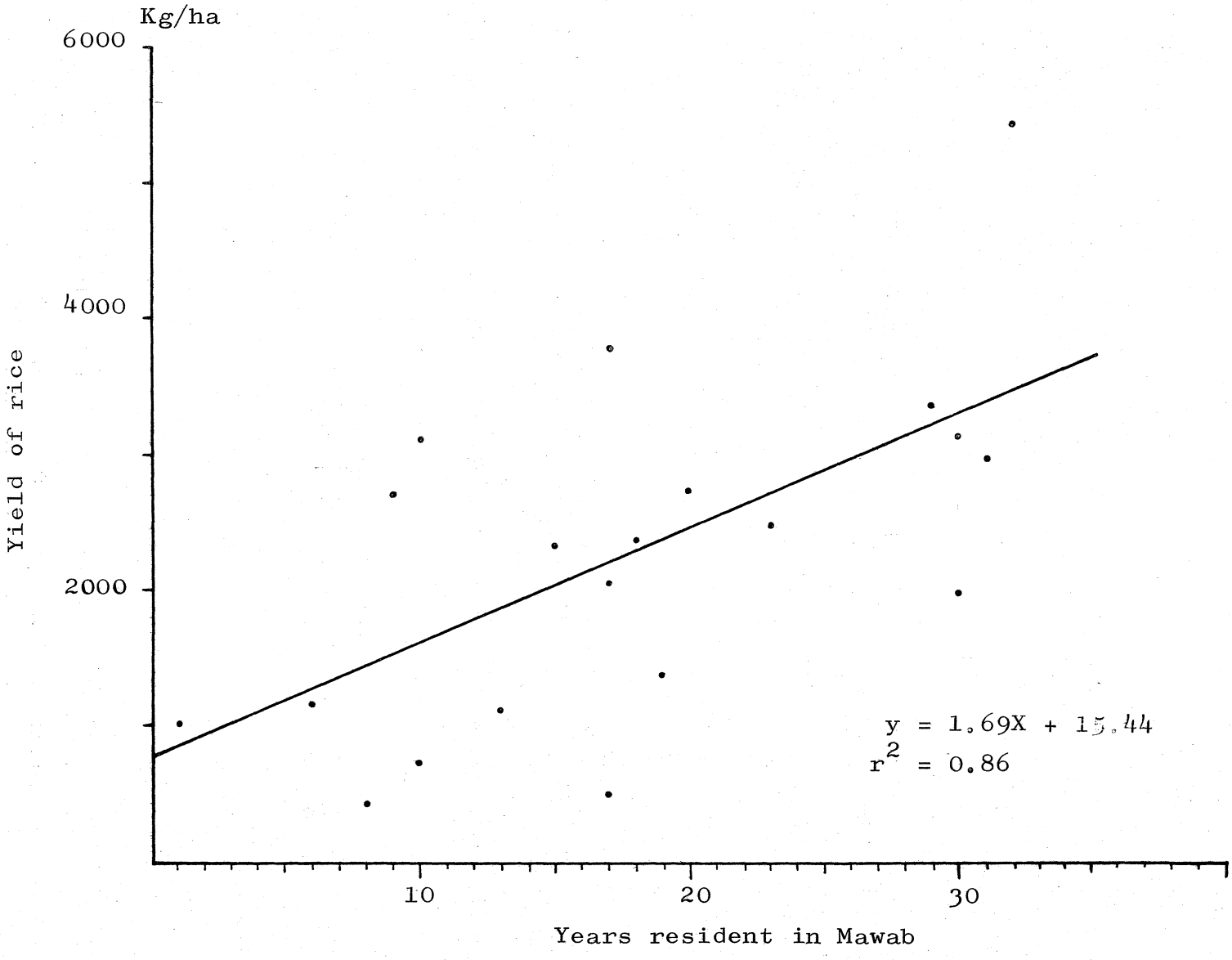


Fig.5:1 Relationship between yields of rice and length of residence in Mawab.

cultivation makes the crop particularly susceptible to yield improvements through continual refinements in techniques such as land preparation and water control. In an area of new settlement, previous experience with a crop may not immediately give good results. Rather, results depend on a long process of trial and error towards understanding the ecology of each variety of each crop.[1]

Labour. It is clear from the above description that capital in the form of equipment and chemicals plays little part in rice cultivation in Mawab. The only significant capital items in most cases are a carabao and plough. As regards labour inputs, several sources of labour are available to a farmer: himself, members of his household, neighbours and friends in losong-losong (reciprocal labour exchange) and hired labour. Most farm operators perform at least part of all tasks themselves. Assistance from household members is very variable. In the Philippines, wives perform little work in the fields except at the busiest times, namely transplanting and harvesting; however, some wives do assist in weeding. Other male household members over the age of about 14 may engage in any task, but there is often no compulsion to do so and many actually do little farm work. Children aged 10 to 14 may perform a wide variety of light tasks, including caring for carabaos, desultory weeding and harvesting.

Many of the earlier phases of cultivation are carried out by losong-losong. This is common for initial cleaning of the land, for ploughing, harrowing and other aspects of

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[1] This suggests that agronomic research stations would make a valuable contribution to spontaneous settlements. In this light, it is regrettable that the projected Bureau of Plant Industry nursery near Mawab was never developed.

preparation such as building up dykes and for planting. Reciprocal labour is used comparatively rarely in weeding and never in harvesting lowland rice. As in many other parts of the world (cf Erasmus, 1956), some farmers in Mawab have abandoned the use of reciprocal labour exchange. In part, this is because the need to return labour may occur at an inconvenient time, but more because of the large cost of providing food for their partners (cf Sibley, 1957:204). In order to avoid 'shame' (hiya), the food served by the host should be better than the usual diet and costs may be greater than those of hiring labourers at P1.50 or P2 a day each. Labour exchange groups rarely exceed eight people. The groups are formed by close neighbours who are commonly kinsmen as a consequence of the chain migration and clustering process described in Chapter III. However, this is not invariable and the principle of collaboration between neighbours applies even if they are not related. Such collaboration between people of different cultural origins is perhaps one of the major means of diffusion of agricultural information.

Those low-income farmers who dislike exchanging labour have to carry out all their operations with household labour alone. Wealthier farmers can afford to hire labourers, almost invariably for cash at a wage reaching P2 a day plus food in 1967. These labourers perform most farm operations, particularly transplanting. However, land clearing may be performed on a contract basis.

Harvesting is almost always carried out by hired labour, with or without the labour of the operator's household. When people volunteer to help harvest, the operator cannot refuse. Harvesters are paid in kind, with a proportion of the amount they reap. This proportion is variable but is usually between $1/5$ and $1/6$ of the total. If threshing is included, a further share of $1/11$ is given. Harvesters may be landless labourers but more commonly are

owners or tenants of small farms. Some depend to a considerable degree on harvesting shares for their subsistence; with a good crop, a single harvester can obtain over 12 kg a day, or enough food to last an average family for about a week.

It was, unfortunately, not possible to obtain precise data on labour inputs. Estimates by the sampled farmers of their own labour are unreliable, although their information on payments to hired labour is more accurate. The results of labour surveys in other parts of the Philippines are very variable and provide little guidance. Estimates of total man-days (excluding animal labour) for 1 ha of lowland rice include 86 days (Galang, 1950), 78 days (Sumagui, 1958), 100 days (Banogon, 1959) and about 60 days (Huke, 1963). Estimates by sample members ranged from 22 to 246 man-days/ha. It is, therefore, not possible to calculate the cost of labour inputs, apart from hired labour, and so it is not possible to calculate accurately cash returns per hectare for any of the settlers' crops. In Table 5:10 (below), the returns are calculated purely against cash expenses.

The disposal of output. Total output of rice by the 21 sampled growers in the main 1966 crop season was almost 42 metric tons of rough rice (unmilled palay) and by the 16 growers of the second crop, 22 tons, so that in total 22 growers[1] produced 64 tons. Of this, $1/_6$ or 17 per cent was paid out as shares to harvesters and threshers (see Table 5:4). This share is higher than that paid in most migrant source areas, where shares usually range between $1/_7$ (14 per cent) and $1/_{11}$ (9 per cent). The difference is due to the lower availability of labour in Mawab. There is no large

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1 15 settlers grew two crops in 1966-7; six grew only the 'first' crop and one grew only the 'second' crop.

Table 5:2 Estimates of labour inputs in the production of selected Philippine crops (8-hour man-days per ha).

Author	Lowland rice		Upland rice	Corn	Abaca	Coconuts
	Irrigated	Rainfed				
Galang (1950)	86		74	55	110	no data
Sumagui (1958)	78	70	68	37	38	24

Notes: a) Animal labour excluded. b) Galang's data converted from man-hours. c) Sumagui's data for abaca and coconuts exclude time spent on land preparation and planting.

Table 5:3 Disposal of lowland rice output, by tenure of rice land. (Metric tons of rough rice).

	Tenure of rice land			
	Owned		Rented	
	Tons	Per cent	Tons	Per cent
Harvesters' and threshers' shares	8.9	18	1.8	13
Landlords' shares	0	0	4.1	31
Seed	0.7	1	0.2	1
Creditors	0.5	1	0.1	1
Retained for consumption or later sale	18.3	36	6.2	47
Sold	22.4	44	0.9	7
TOTAL	50.8	100	13.3	100

Table 5:4 Percentage disposal of rice, Mawab 1966-7 and Mindanao and the Philippines, 1954-5.

	Mawab 1966-7	Mindanao 1954-5	Philippines 1954-5
Harvesters' and threshers' shares	17	14	11
Landlords' shares	6	4	35
Seed	1	4	3
Retained for consumption or later sale	39	68	35
Sold	36	9	16
TOTAL	100	100	100

pool of labour at all times as in the migrant source areas,[1] so competition for available labour raises rates of payment [cf Hester and Mabbun (1924:381) for similar conditions in the Cagayan valley colonisation area in the 1920s]. Although most sampled farmers calculate that on an annual basis they may do no work for up to one-quarter of their available time, their slack periods are naturally the times when other farmers also need little work done.

Like harvesters, tenants in Mawab enjoy more favourable conditions than those in more densely settled parts of the country. The demand for tenancies in Mawab is less than that in most migrant source areas and dissatisfied tenants can easily obtain alternative tenancies. Consequently, landlords tend to be more lenient both in general conditions and in the rentals they charge. In Mawab, landlords' shares amounted to 36 per cent of the produce of rented rice land after deduction of harvesters' shares, compared with up to 50 per cent elsewhere.[2] For purposes of comparison, the Mawab data are shown with those in von Oppenfeld et al. (1957:130-1). Von Oppenfeld's data show that the favourable conditions of tenants and labourers described for Mawab were general for Mindanao.[3]

Table 5:4 also suggests an increasing commercial orientation among rice farmers in Mindanao. In 1954-5, only

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1 This is not true of all source areas. In some, out-migration has severely depleted the local labour force and wage rates are consequently higher than usual. In Igbaras, Iloilo, in 1967 rice harvesters received 2/9 of the amount they harvested (field observations).

2 Von Oppenfeld et al. (1957:99) showed that 76 per cent of Philippine rice-growing tenants operated on a 50 per cent sharing arrangement.

3 The 111 rice farms in von Oppenfeld's Mindanao sample were located chiefly in Davao province.

9 per cent of output was sold. At that time, abaca was still the leading commercial crop in Davao and rice was grown, as the table shows, mainly for consumption. In contrast, over one-third of the rice output in Mawab is now sold, following its replacement of abaca as a cash crop. This is clearer in Table 5:3, which shows that owners of riceland sell 44 per cent of output. Tenants, on the other hand, sell less than a tenth of the output of their small farms, most being required for food.

Marketing. Rice in Mawab was at first marketed either through Chinese stores or rice mills. However, since 1960, commerce in foodgrains has been restricted by law to Filipino nationals. Since 1959, 10 rice mills have been established in the town (see Table 2:2, p.62 above). Small producers commonly sell a small amount to the rice-miller to pay the cost of milling and to obtain a little cash for urgent purchases. Larger producers mostly sell their rice unmilled but some receive a small premium by having the rice milled first.[1] It is very common for farmers to establish a close relationship, called suki-suki, with a miller or merchant. This allows the farmer to obtain goods on credit in return for which he feels (and may actually be) obliged to sell his produce to the merchant. The credit may be interest-free, because some merchants are content simply to ensure an addition to their turnover, but sometimes interest is charged, overtly or covertly, by paying a lower price for the farmer's produce. Credit may be advanced to small growers on the buyer's behalf by commission agents resident in the barrios and the agents collect the loans immediately

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1 For instance, a sack of palay might yield over 21 kg of milled rice, which could sell at P0.91 per kg. Deducting P0.60 for milling would yield P18.50. The sack of rice, unmilled, might have sold for P18.

at harvest. Large-scale growers are able to delay selling until prices rise. Apart from the millers, some wholesale dealers from Tagum and Davao City also buy rice in Mawab.[1]

Little rice in Mawab is now milled at home by mortar and pestle, except upland rice in the most remote areas of the hills. The process of having the rice milled appears to require a considerable sacrifice in time for those farmers most remote from the mills, and particularly for farmers who have no carabao that can carry several sacks at a time. Such farmers may spend a whole day simply to have a single sack of rice milled. In terms of opportunity costs, however, such labour is cheap in the post-harvest period. Moreover, visits to the mill are social occasions and also provide chances to acquire cash and buy necessities. This is true of visits to the small mills in Saosao and Bawani as well as those in the larger centres of Nuevo Iloco and the poblacion. The mills in the more distant barrios charge more for milling (up to P0.60 per milled can of 15.4 kg against P0.30-0.40 elsewhere). However, few farmers have sufficient output to warrant hiring a jeep at P1 per sack (of 49 kg) in order to take advantage of the cheaper milling costs and higher selling prices in the poblacion. This resulting differential in conditions according to distance from the poblacion is in effect economic rent and this accrues to the earlier, more centrally located settlers. As these also have larger holdings and higher output, their advantage over later settlers is augmented. The effect in terms of income will be seen in Chapter VI.

Corn

Production methods. As with rice growers, some settlers cultivate their corn fields with carabao and plough, but

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1 Neither the millers nor the dealers keep detailed records so it is not possible to calculate the total amount of rice 'exported' from Mawab rather than sold locally.

most use hand tools (principally *bolos* of varying shapes) because their fields are in the uplands where large areas are too steep for *carabaos* to work efficiently. There are therefore major differences in the quality of land preparation between farmers who plough and those who do not.

Table 5:5 Ownership of *carabaos* among 38 corn growers.

Tenure of operator \ Carabao owned by	Operator	Landlord	Other person	No *carabao*, or not used for corn field
Owner or squatter	6	0	0	16
Owner renting corn field	2	0	0	2
Tenant	6	1	1	4

In the lowlands, corn may be cultivated continuously or rotated more or less haphazardly with *mongo* beans (*Phaseolus aureus* Roxb.), sweet potato (*camote*) or a grass fallow. Land preparation presents little difficulty and the fallows are usually of short grasses rather than the *Imperata* type. Fields may be ploughed once or twice and then harrowed. Planting rows are made by the plough and three to five seeds planted at intervals about 35 cm apart. The seeding rate is generally around 9 kg/ha. The growing crop may be weeded once or twice, by plough or by hand. Shelling may be done as soon as the ears have been sun-dried or at intervals, and is almost invariably by hand. As with rice, home pounding of the grain is rare.

Upland farmers may grow corn for up to five years on the same piece of ground before planting sweet potato,

upland rice, a permanent crop or leaving the plot fallow. As noted above, the fallow is unlikely to exceed three or four years and on holdings under 5 ha with part in permanent crops the fallow may last only a few months and so will have slight restorative value. Recent occupants of hill land are still engaged in primary clearing of forest and their crops are planted in normal swidden fashion among the fallen logs and stumps. Cleared second-growth is more thoroughly removed and the crop planted in more continuous stands, though the soil surface is still not thoroughly worked. However, when the fallow is of grass, the farmer has to work over the soil thoroughly to eliminate roots. Thus, although grass fallows are effective in checking erosion, subsequent cultivation creates an extreme risk of erosion as over half (51 per cent) of the corn plots of the sample occupied slopes greater than 10^{o} (Table 5:6).

Table 5:6 Number of corn fields by slope category

Degree of slope	Observed (by level)	Estimated	Total	Per cent
0^{o} - 4.9^{o}	7	12	19	32
5^{o} - 9.9^{o}	3	7	10	17
10^{o} - 19.9^{o}	7	3	10	17
20^{o} - 29.9^{o}	3	4	7	12
30^{o} and over	6	7	13	22
TOTAL	26	33	59	100

Two of the sampled farmers try to reduce erosion by laying tree trunks across the slope, but make no effort to support or replace them as they rot; another farmer plants bananas across the slope to check run-off. Apart from these measures, the hill farmers say that they do not know how to cope with erosion, although almost all of them have

noticed signs of soil loss and some have deep gullies on their land.

Once a hill plot has been prepared, the corn is planted in holes made by a bolo or digging stick. The average seeding rate is again about 9 kg per ha. Weeding is carried out by hand, with the weeds left on the surface as a form of mulch. Thereafter, harvesting, shelling and milling are the same as for lowland growers.

The cultivation of corn has received very much less attention than rice from administrators, agronomists, extension agents and even, commonly, farmers themselves (cf Hooley and Ruttan, 1969:249). The Bureau of Plant Industry carries out pest and disease control work among corn farmers, but lack of personnel and their concentration on rice growers means that few corn farmers receive assistance. The BPI inspector in Mawab is never able to visit hill areas, despite their heavy population. Migrants continue to use the same methods and, as far as possible, the same varieties that they used in their home areas. Any changes that have been made have been minor ones.

The commonest change made is the use of DDT to treat the seeds before planting. Twenty-two of the 38 sampled growers used DDT and two others used kerosene as an insect repellent. Most of these had not used these methods before coming to Mawab. Some farmers buy DDT locally but many obtain it illicitly from the Malaria Eradication Unit spraying team. Apart from DDT, very few chemicals are used by corn growers. In 1966-7 two Ilocano growers in the lowlands sprayed Endrin on their corn against stemborers and some other growers claim to use sprays occasionally. The lack of pest control measures is the major cause of poor harvests, as stemborers and army worms are particularly prevalent. The former may reduce output by 50 per cent or more. The Ilocanos also sometimes use fertiliser, but not

during 1966-7. In the hills of Tuburan barrio, some farmers utilise guano from the limestone caves as fertiliser. While this practice is new to some farmers in the area, it is well established in many other parts of the Philippines with local sources of guano. Although corn is weeded more regularly than rice, none of the farmers in the sample use herbicide sprays to save labour. In part, this seems to be due to a feeling that the low price of corn does not justify the expense. In addition, corn is more susceptible than rice to 2,4-D, which must be applied before the corn reaches 50-100 mm height. Weeds can easily regenerate after such early spraying so that manual weeding is necessary later. Moreover, many weeds in dry land are not susceptible to 2,4-D or other hormonal weedkillers (Webster and Wilson, 1966:148-9).

As corn is milled into grits, all the varieties grown are 'flint' types. There are in fact very few varieties in Mawab, with Tinigib occupying over three-quarters of the area, Kalimpos most of the rest and Padada only a little. There is almost none of the constant exchange and experimentation as with rice varieties - largely, of course, because of corn's comparative lack of varietal richness in the Philippines. Agronomic experiments with corn are only just beginning to develop high yielding fertiliser-responsive strains for the Philippines comparable to the new rice varieties and they are not yet available in Mawab.

Yields. The utilisation of land recently cleared from mature or regrowth forest has given Mawab farmers a level of corn output far higher than that obtained in the depleted, long-cultivated and eroded lands of Cebu, Bohol, Leyte and Ilocos. Some farmers estimate their yields to be four times higher. Owing to the non-seasonal nature of the climate and the practices of double- or triple-cropping and rotation, there are in Mawab no clearly defined 'first',

'second' or 'third' crops whose yields can be compared. It is only meaningful to discuss the aggregate of output over the year. The mean yield in 1966-7 was 1,200 kg/ha, compared with the national average of 868 kg/ha and an average in Cebu of only 400 kg/ha (Bureau of Agricultural Economics, 1967). There is a wide range of yields from individual plots, with the highest recorded in 1966-7 reaching almost 3,000 kg/ha, but very few fall as low as the mean for Cebu. A few farmers achieve high yields fairly consistently, but for the majority yields are very variable, depending upon the interplay of many factors but particularly the frequency of cropping on the plot concerned, timing and adequacy of rainfall, thoroughness of cultivation and incidence of pests. Some of the highest yields from long cultivated plots are obtained after a crop of mongo beans or peanuts, but there has been little research to establish the most favourable cropping systems for upland farmers in the Philippines[1], in contrast with the situation in East and West Africa (Webster and Wilson, 1966:179-83). Consequently, the course of upland farming in colonisation areas as typified by Mawab seems likely to follow that of the uplands in other Philippine islands, leading to disastrous losses of soil and falling output (cf Chapter I).

Labour. Labour resources available for corn production are basically the same as for rice but corn requires much lower labour inputs (see Table 5:2) and also lacks the periods of urgency associated with transplanting and harvesting of rice. Lowland corn farmers with carabaos commonly use losong-losong labour for field preparation, planting and weeding. Farmers using hand tools to cultivate

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1 Thailand resembled the Philippines in this regard but an Upland Development Station was established there in 1967 (Chapman, 1967:14).

0.5 ha or less rely more frequently on household labour, though clearing and preparation of land and planting may be on a labour exchange basis. Hiring of labour is less common than among rice farmers except for those farmers with large corn areas or with considerable incomes from cash crops. Harvesting is normally carried out by volunteer labour paid in shares averaging rather less than one-sixth, but in Tuburan barrio harvesting is by losong-losong, while many small growers harvest their crops without the use of outside labour.

Disposal of output. Disposal of the corn crop is shown in Table 5:7. Total output in 1966-7 amounted to 78.6 metric tons of shelled corn. As with rice, the conditions for both labourers and tenants are more favourable than in the migrant source areas. The share of total output accruing to harvesters is about one-seventh or 15 per cent, but harvesters receive almost one-fifth of the output from tenant farms which are the major producers. Landlords receive 27 per cent of the amount held by tenants after deducting the harvesters' shares. Thirty-six per cent of total output is retained and under 30 per cent sold. In the main migrant source areas, shares for harvesters and landlords are similar to those among rice farmers, that is, 9 - 15 per cent for harvesters and up to 50 per cent for landlords.

Almost half of the small-scale farmers grow corn purely as a food crop and less than a fifth of the corn growers in the sample receive a major share of their income from corn. Nevertheless, many small growers depend on sales of part of their output to meet urgent cash needs and some may substitute root crops in their diet to make corn available for sale. Thus the economic importance of corn is much greater than might be assumed from the small impact made on the landscape by the small plots, compared with the extensive contiguous areas under rice or coconuts.

Table 5:7 Disposal of corn output, by tenure of corn land. (Metric tons of shelled corn)

	Tenure of corn land			
	Owned or squatted		Rented	
	Tons	Per cent	Tons	Per cent
Harvesters' shares	1.0	5	10.5	18
Landlords' shares	0	0	13.2	22
Seed	0.2	1	0.5	1
Creditors	0.5	3	1.1	2
Retained for consumption or later sale	13.7	72	14.8	24
Sold	3.5	19	19.6	33
TOTAL	18.9	100	59.7	100

There is a very marked difference between owners and squatters on one hand and tenants on the other in the marketed proportion of output. This largely results from the sizable tenant-operated farms in Nueva Visayas and Andili. Three tenants there sold 71 per cent of all the corn marketed by the sample. Only four other farmers each sold more than 625 kg (10 sacks) of corn, and 17 growers sold none at all. While corn, like rice, serves a dual purpose as both food and commercial crop, its comparatively low price reduces its value as a commercial crop. At the same time, its yield in local conditions makes it preferable to upland rice as a food crop, the latter averaging only 760 kg/ha.

Marketing of corn is basically the same as that of rice, except that the use of barrio agents by millers and dealers is less prevalent. One miller in Andili encourages use of his mill by providing free transportation along the roads

for both large and small-scale growers. As with rice, prices are higher in the poblacion and higher still in Tagum and Davao City, but most people find it more convenient to patronise the closest buyer, with whom they may have a suki-suki relationship. However, one of the comparatively large-scale tenant growers in Nueva Visayas sold 4,000 kg of corn in Davao City, making several journeys on a bus which allowed passengers to carry up to 7 sacks free. The price differential was 6-8 centavos per kg so that transportation costs were relatively insignificant. There is therefore considerable scope for increasing returns from sales of corn, but for most growers this cannot be realised until they can avoid the credit-and-marketing relationship with local storekeepers.

Abaca

The cultivation of abaca in Mawab today still follows the same practices as before the mosaic disaster, except that growers are now more willing to destroy diseased plants.

Except when interplanted, abaca is planted at a spacing of 2.5 m to 3 m. Weeding is carried out usually three or four times a year during the early stages of growth, but less frequently thereafter. Although fertiliser can increase both yields and resistance to disease, it is little used - only one sampled grower applies fertiliser regularly. At harvesting, the mature stems are 'tumbled' (cut down) and the fibre-bearing sheaths separated from the fibre-less core. The fibres are then stripped from the sheaths by hagotan.[1] The residual pulp, or bagasse, is seldom returned to the field.

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[1] The stripping machine or hagotan consists of a revolving spindle driven by a 5 or 10 hp diesel motor. In 1960 nearly a quarter of the abaca growers had their own hagotans, but most of these were sold as the growers abandoned abaca.

Apart from the very few growers practising fertilisation and chemical pest and disease control, there are no significant variations in cultivation practices. Nor is there now much experimentation with different varieties. Only two major varieties are grown in Mawab: Bungulanon, which is cited by Kirby (1963:329) as having an average annual yield of 651 kg/ha and Tangongon, with an average yield of 930 kg/ha. Despite its lower yeild and shorter life, the first variety continues to be popular because it is more adaptable to different soil types and moisture regimes; it also resists lodging and matures more quickly.

The estimation of yields is made difficult by the practice of interplanting abaca with other crops; also, a stand may contain plants in different stages of growth. In addition, growers do not necessarily harvest their abaca as often as they might, so actual yields do not reach the potential. In its Annual Report for 1964 the Bureau of Plant Industry Regional Office in Davao City estimated a fibre yield of 310 kg/ha at each stripping so that three strippings a year would yield 930 kg/ha. However, estimates in the same publication of area and output of abaca in Davao imply a mean yield of only 506 kg/ha. In the research sample, yields ranged between 253 kg and 885 kg/ha and averaged 553 kg/ha.

Farmers with small abaca plots perform most cultivation tasks themselves or in losong-losong, which may extend to carrying the stripped abaca bales to the nearest road for transport to market. For such farmers, the major cash expenditure arises from hiring a stripping machine, which costs up to 12 per cent of the value of output. More prosperous farmers can afford to hire casual labourers for planting and weeding, at P1.50 - P2.00 per day in 1967. These farmers also engage labourers to harvest and strip the abaca, usually in gangs on a contract (pakyaw) basis. They

are paid between 15 and 25 per cent of the receipts. Using a hagotan a man can produce 20-30 kg fibre per day. At P0.70/kg, 20 kg would yield P14.00, so a 20 per cent share would be P2.80. This sum also covers the period spent in harvesting the abaca. Thus, strippers' receipts may or may not exceed the normal daily wage, depending on abaca prices which fluctuate from week to week (cf Caintic, 1959:426-7). Some therefore prefer to receive the fixed daily rate if the employer offers it.

In 1966-7, 11 of the sampled farmers sold a total of 6,860 kg of abaca for a gross return of P5,068. Table 5:8 shows the cash expenses incurred by these producers. Most

Table 5:8 Receipts and expenses of 11 abaca growers, 1966-7.

Nature of expense	P	Per cent
Hired labour for cultivation	113	9
Hired labour for stripping	731	56
Fertiliser	30	2
Fuel for hagotan	22	2
Hire of hagotan	316	24
Landlord's share	4	neg.
Transportation	86	7
Total expenses	1,302	100
Gross receipts	5,068	

neg. = negligible. Only one tenant sold abaca in 1966-7. Total receipts were P16 and the landlord received 25 per cent.

growers sell their abaca to the Chinese store owners in Andili or the poblacion, with whome they usually have suki-suki relationships.[1] However, a few producers can

[1] Yengoyan (1966a) and Caintic (1959) have discussed respectively the marketing of abaca by the Mandaya in the Pacific Cordillera east of Mawab and by settlers in the nearby municipality of Compostela.

exercise freedom of choice and sell abaca in Tagum where prices may be 5-10¢ per kg higher than in Mawab.

In 1966-7, returns from abaca compared favourably with those from corn and copra, though not from lowland rice (Table 5:10). However, abaca requires rather higher labour inputs than either corn or coconuts (see Table 5:2). If hired labour and hired stripping machinery are used, the cash returns may be drastically reduced. In 1966-7, the six growers who hired both labour and machinery spent 28 per cent of their gross receipts on these factors. As labour is the major expense in production, and in view of both the ever present danger of mosaic virus and the price decline noted in Figure 4:1, it is not surprising that many farmers have preferred to accept lower returns from other crops.

Coconuts

Coconuts are frequently referred to as a 'lazy man's crop' since they produce nuts for many years with little attention. Like other crops, they respond to good maintenance and the use of fertiliser increases both yields and disease resistance. In the Philippines, however, there has been little adoption of good management practices by small-scale growers (Hicks, 1967:16). This is true of the settlers in Mawab.

The more wealthy settlers buy their seed coconuts from plantations on Davao Gulf, and some in turn sell seedlings to other settlers. Once some palms are bearing they use the nuts to extend their stands before commencing copra production. Spacing usually conforms to the recommended distances of 8 to 10 m and on larger holdings and level ground the lines are regular (Plate 4:2). Elsewhere, planting is less regular. New plantings are kept clean of weeds largely through catch-cropping of corn, upland rice or sweet potato or by interplanting faster-maturing

perennials such as abaca, banana, papaya and coffee. Once a good canopy has developed, the plot may be cleared only two or three times in a year.

Apart from the slashing of grasses and weeds, which are left as a mulch, the only maintenance carried out is the control of insect pests, particularly the Asiatic (Red) Palm Weevil [Rhynchophorus ferrugineus (Ol.)]. This is customarily controlled by cutting out affected tissues and 'smoking' the holes. This is a temporary remedy that also harms the tree and improved measures using cyanide poisons are being adopted by larger growers, though none of the sampled settlers used these in 1966-7.

Harvesting is usually carried out by using a pole, often with a knife attached to bring down the nuts. Some farmers prefer climbing the trees, which is also necessary in gathering tuba, and the trees may be notched to make footholds. Such notches often become sites of pest infestation. Some nuts are used domestically but the majority are used to make copra. All but three of the sampled farmers sun-dried their copra; the others have crude smoke kilns. Only a few of the largest producers in Mawab have properly-fashioned hot air driers.

In view of the small amount of labour required by coconuts and of the comparatively low returns, small-scale producers carry out all production operations themselves. Wealthier producers hire labour at any or all stages, but particularly for harvesting and preparing the nuts for drying. Planting and weeding is paid for at a daily rate of P1.50, but harvesters receive one-third of the receipts. As tenants are committed to pay the landlord at least 50 per cent of the receipts, they always do their own harvesting. However, few landlords, except absentees, care to operate coconut plantations through tenants because the sporadic labour requirements make the use of hired labour more economical.

three sampled growers sold tuba worth in total P235. One other man rented six trees which yielded tuba worth P730 in return for P72 rent. One of the sampled growers received P144 in rent from a tapper using his trees. The only cost in tuba production by tree owners is the opportunity cost of labour, and the returns are high.

Coffee

It is common for Filipino farmers to have a few unkempt coffee trees, as well as coconut palms, beside their houses to serve their family needs. When coffee trees are planted by these farmers in larger numbers for commercial reasons, the standard of cultivation and maintenance changes little. The trees may be planted at more or less regular (between 2 m and 4 m) spacing, but weeding is frequently neglected unless the crop is intersown with either annual crops, such as corn, or other permanent crops. Only four of the sampled growers claim to prune their trees. When coffee prices are high, as in the late 1950s and in 1967, it is common for growers to use pesticide sprays, the poorer growers borrowing the equipment from more prosperous neighbours. During periods of lower prices, as from 1960 to 1964, those growers who do not remove their trees neglect maintenance practices and rarely harvest the crop. In consequence, the trees are not in good condition when the growers want to revive production. Such periods of neglect lead in particular to severe pest infestation, which has on occasion required destruction of stands.

During 1966-7, the sampled growers used only family labour in coffee cultivation. In the uplands nearly all the sampled squatters planted newly-cleared land to coffee. For the same reasons as with the other tree crops, it is not possible to assess total output or average yields of the sample, but 17 of the growers marketed 273 kg, for a return of P641. One man spent P12 on a pesticide and the only other

cash expenses totalled P8 for transportation. Coffee can give good returns for little outlay of cash and relatively little effort in periods of high prices, but prices have proved too uncertain for growers to rely on coffee; hence, the new plantings are commonly intercropped with coconuts.

Comparison of returns from major crops

The comparative gross and net cash returns per hectare obtained from the major crops in 1966-7 are shown in Table 5:10. It should be noted in the light of earlier comments that the calculation of cash returns, as of physical yields, to abaca, coconuts and coffee is complicated by several factors and the values shown in the table are indicators rather than precise values. It is clear that lowland rice was by far the most valuable crop produced by the sampled settlers, even after deduction of expenses which account for 22 per cent of the gross value of output. The major expense is hired labour. Wages in kind (chiefly harvesters' shares) amount to P3,558 and in cash to P828. Total expenses on chemical inputs (fertilisers, pestkillers and weedkillers) are only P580 and expenses on irrigation fees and transport only P85.

The value of rice is further evident in the fact that upland rice ranks third in returns per hectare even though the average yield obtained by the sampled farmers was only 760 kg/ha, compared with 2.1 tons/ha for main crop lowland rice. Upland rice grown by comparatively isolated hill farmers is mostly harvested without hired labour and expenses account for only 12 per cent of the gross value of output.

Despite its current lack of popularity as a cash crop, abaca was the second most valuable crop grown by the settlers in terms of returns per hectare. In part, this was because two of the larger growers in the sample had their own stripping machines so expenses were comparatively low.

Table 5:10 Value of output per hectare of major crops of 46 settlers, 1966-7. (Pesos).

Crop	Hectares harvested	Gross value of output*	Total expenses[a]	Net value of output	Mean value per ha
Lowland rice	36.0	22,660[b]	5,052	17,608	489
Abaca	12.4	4,621[b]	1,187	3,434	277
Upland rice	5.2	1,342	159	1,183	225
Corn	63.9	14,469	2,905	11,564	181
Copra and tuba	25.6	3,115[c]	34	3,081	121
Coffee	5.5	438[c]	6	432	78

* Does not include abaca, coconut products and coffee consumed on the farm.

a Cash and kind (excludes rent and value of family labour).

b Data for one grower were excluded as his harvested area was unknown. Therefore, the total differs from that in Table 5:8.

c Data for two growers excluded so total differs from figure given in section on coffee.

In addition, the intensity of harvesting was unusually high because several of the growers harvested practically all their plants, including immature ones, owing to incipient mosaic infection. In normal years, returns would be rather lower.

Corn exceeds coffee and coconut products in both gross and net value of output per hectare, but production expenses are much higher, forming 20 per cent of the gross value of output. As with rice, these expenses consist mainly of labour costs, which amount to P2,835. However, 71 per cent of the labour costs, in cash and kind, are incurred by three comparatively large-scale tenant farmers in barrio Nueva Visayas who produce 54 per cent of the gross value of output. Labour costs account for only 12 per cent of the value of output of the other growers, many of whom do their own harvesting.

It was noted above that most of the settlers' coconut palms and coffee trees have not yet reached full bearing capacity, so the calculation of returns is rather hazardous. Thus, coffee appears to give a net return of only P78/ha although prices were unusually high (P2.50 - 3.00/kg) in 1966-7.[1] Similarly, returns from copra and tuba appear rather low in view of the comparatively high copra prices (Figure 4:1). The apparent returns from both crops are depressed by exclusion of the value of domestically-consumed coffee and coconut products (affecting coffee in particular). However, the main reason for the apparent low returns is the inclusion of immature trees in the area harvested.

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1 Data in Tryon (1968:Appendix Tables B-1, 3, 8 and 9) suggest an average 1966 price for coffee of P1.40/kg and a mean yield of 940 kg/ha, giving a gross return of P1,316/ha. This figure, based on estimates at the national level, seems dubiously high.

Other farm enterprises

The crops described in the sections above are those that have the greatest commercial and subsistence value to the settlers and that occupy the most significant areas of land. There are also many minor farm enterprises in Mawab.

Root-crops, particularly sweet potato, taros, yams and cassava, are of importance to many hill farmers and indispensable to some, though they do not occupy large areas of land. Such crops, together with cooking bananas, are known as duma, in contrast to 'real food', bugas, which is rice or corn. There is a small market for sweet potato, both in the poblacion and among some upland farmers whose own harvests have been inadequate. A marked dependence on root crops is a sign of poverty, particularly when cassava is a major part of the diet. Only one sampled farmer grew cassava, but three others relied heavily on other root crops. Farmers in this state are little, if any, better off than they were before migrating except in so far as they may regard a small plot of land as their own, even if only by squatting.

Other crops that are grown in very small plots include many kinds of vegetables, planted in 'kitchen gardens' or, less commonly, in small patches in the fields proper. Areally, such crops are insignificant but they are important dietetically and a few people earn considerable sums by selling vegetables, particularly onions and mongo beans, in the markets at Mawab, Masara and Tagum.

Tree fruits are similarly areally insignificant but often a valued source of income. This applies particularly to durian (Durio Zibethinus Mum.) and lanzones (Lansium domesticum Correa). These are so highly prized that dealers from Davao City employ agents to contract for the crop of even single trees. 200 lanzones trees might bring a P1,000 contract, with the buyer responsible for harvesting. A

durian tree may yield 50 fruits which might sell at P1 - 1.50 each. As yet, few farmers have planted such trees extensively. In total, 18 sampled settlers sold vegetables or fruits in 1966-7 for a gross return of P1,911.

Apart from the carabao, animals are of minor significance in Filipino agriculture and this is true in Mawab. Cattle are not kept and horses are very rare. Pigs are kept by almost all households, but they receive little attention, meriting the description of 'longnosed, narrow-bodied and flat-sided garbage collectors', (Rivera and McMillan, 1952:131). However, pigs have considerable social importance as a prestige food at barrio fiestas and other ceremonial occasions. Also, full-grown boars and sows may fetch P100-200 when sold, while piglets fetch P20-30 when sold as sucking pig (lechon). Farmers are thus keen to own pigs and the practice of alima, obtaining a 50 per cent share of offspring by caring for a sow, is very widespread. Unfortunately, pigs are very disease-prone and losses are high. In 1966-7 a pneumonia epidemic in Malinawon and Tuburan decimated pig numbers. There are two pig-dealers in Mawab who buy all the pigs locally available. They butcher some for sale in Mawab market, but most of the pigs are sold to larger dealers from Tagum and Davao City. Goats are owned by some settlers but are not widespread. Poultry are reared in small numbers on practically every farm, chiefly for domestic consumption, but chickens and eggs provide valuable sources of income for many small farmers. They are sold both in the markets and direct to consumers. Generalised livestock production in 1966-7 by the sampled settlers is shown in Table 5:11. Pigs accounted for over P3,300 of all livestock sales and P485 of livestock purchases.

Table 5:11 Total value of livestock production by 50 settlers, 1966-7.

	Pesos
Net sales	4,748
Consumption	2,355
Net change in inventory	-1,475
Total value of production	5,598

Innovations in crop production

It is natural that an area of colonisation should be one of changes in both crop patterns and in cultivation techniques, particularly when the colonists come from areas that are both physically and culturally diverse from each other and from the area where they settle. Moreover, as Mellor (1966:186) has commented, '...a new settlement project, with its lack of cultural traditions, may provide a more favorable environment for technological change than a traditionally settled area.'

On the other hand, on newly cleared land, old agricultural techniques may return much higher yields than in the source areas and this may inhibit changes. In addition, the generally larger farms of a colonisation area may produce a higher income than the cultivators were accustomed to, without the need for intensifying production techniques.

In Mawab, elements of both conservatism and innovation are present. New crops and new techniques have been adopted, but many people have made minimal adjustments in their farming methods.

The dominance of abaca in Mawab for thirty years and the restricted areas devoted to it outside Davao province (see Table 1:7) meant that up to the mid-1950s most immigrants adopted a completely new crop as their major

commercial undertaking. Only Leyteños were likely to have had experience with abaca before migrating, though others acquired such experience in Davao before reaching Mawab. Two-thirds of the settlers who grew abaca in Mawab had no previous experience with the crop and learned the necessary techniques by observation and consultation with neighbours and by working in losong-losong. Thus their subsequent practices depended largely upon those of their neighbours. The same is true of people who adopted other crops, at least up to the mid-1950s. At this point, the national government under President Magsaysay established effective agricultural extension services and innovative farmers were then able to obtain information and assistance from trained advisors rather than relying on their own initiative. Such farmers were then in a position to pass on changes to receptive neighbours.

Some of the changes that have taken place in Mawab have been almost universally adopted, such as the treatment of corn seeds with DDT. Others, such as the use of fertilisers and pesticide sprays, are still used regularly by only a few settlers. It is noteworthy that most of the widely-adopted improvements have been those requiring little or no cash expenditure, while several practices have been tested but rejected on grounds of expense. An outstanding example of the latter is the Masagana-Margate systems of rice planting. Utilising straight lines and accurate spacing, these methods require a larger labour force that works more slowly than with the customary casual methods. Although the new methods economise on seeds, these are rarely a cash expense. Furthermore, the open spacing of the Masagana-Margate systems is said to allow denser weed growth and hence further expense in either labour or herbicides. The increment in yield should more than repay any extra expense (Covar, 1960), yet very few of even the wealthiest

farmers have accepted this innovation (cf Pal, 1963:95). The reasons usually given locally are the expense of chemical inputs and the large labour requirements and it may be that the labour supply in Mawab is still insufficient for the widespread use of labour intensive methods.

Fertilisers too are not widely used. Most farmers consider fertilisers are only suitable for rice and that their use on Mawab rice soils will simply cause lodging. However, the increasing adoption of dwarf, stiff-strawed rice varieties responsive to heavy doses of fertiliser is likely to lead to increased use of fertiliser at least among the wealthier farmers.

Most innovations in Mawab that have significant direct effects on yields are those used in cultivation of lowland rice.[1] They are also, with the exception of improved seed varieties, those that require recurrent expenditure. It is, therefore, not surprising that the leading innovators are the settlers with the highest cash incomes, nor, further, that a high proportion of these are the pioneer settlers who occupied large homesteads and enjoyed many years of high incomes from abaca before converting most of their land to rented rice farms. Although these settlers use modern production inputs on their own farms, most do not require their tenants to do so and often are not prepared to contribute any of the cost if a tenant buys chemicals or fertiliser. Few tenants are willing to bear the full cost of such inputs when they receive less than the full benefit of any increment (cf Ruttan, 1966:47-8). Thus a landowner's well-kept rice plot may be surrounded by tenants' plots that

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1 This contrasts with the situation in some other parts of south-east Asia (cf Penny, 1964:166-7; Chapman, 1967:9) and reflects the importance of rice as a cash crop in Mawab.

have received less care and that may harbour pests which the landlord has attempted to eliminate from his own plot.

Not all the pioneers have become innovators. The leading innovators in fact belong in the main to two overlapping classes: the pioneers and the Ilocanos. The Ilocanos in Mawab bear out the group's reputation of being more hard-working, thrifty and productivity-oriented than other Filipino cultural groups. Of the ten sampled settlers who have adopted the widest range of innovations, five are pioneers, that is, pre-war settlers, and seven are Ilocanos. One thing is common to all ten: above average returns from their land and in nine of the ten cases, family incomes averaging over P3,750[1] compared with the sample mean of P1,500. One other characteristic is worthy of note. Only half of these leading innovators are Roman Catholics. Three belong to Protestant denominations, one is a Seventh Day Adventist and the last belongs to the Aglipayan church, a Filipino offshoot of the Roman Catholic Church. These settlers are in fact the only non-Catholics in the sample. Four of the non-Catholics are Ilocanos and this may be the more important element, but the research data are insufficient to draw firm conclusions.

The Ilocanos and other innovators have in recent years obtained information directly from the Mawab representatives of the Agricultural Productivity Commission[2] and the Bureau of Plant Industry. These are their most important sources of information, but most also listen regularly to Davao City radio broadcasts both for agricultural programmes and for

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1 The exception is an Ilocano tenant on one hectare, with a family income of P960.

2 The Agricultural Productivity Commission was known as the Bureau of Agricultural Extension until 1963.

advertisements by manufacturers of production inputs. A few also regularly receive newspapers and magazines.

In contrast, most farmers do not use primary sources of information. Out of 85 changes made by the sampled settlers, in almost half the cases the source mentioned was 'neighbours'. In several other cases, 'Ilocanos' were specified as the source. While this last point suggests that the extension agents are following the best policy by concentrating their attention on pioneers, particularly Ilocanos, it should be noted that these agents virtually never work outside the plain, and mostly only with the larger farmers (except at the initiative of smaller farmers), so that the receptivity of most farmers to advice from official agents of change has not yet been tested. It should further be pointed out that this is no fault of the official agents, as there are not enough of them and they have no transportation facilities except for a bicycle. Furthermore, neither is trained to deal with many of the problems that face upland settlers, in particular problems related to crop rotations, fallowing and methods of erosion control.

Non-agricultural occupations

Most settlers have a considerable amount of time available in which to undertake non-farm activities, whether self-employed or dependent on other people for employment.

One of the commonest opportunities for non-farm work is handsawing of lumber, the main occupation of one of the sample and a major source of income for several others. The only equipment necessary is a handsaw, worked with a partner. New houses are constantly being built by both immigrants and established settlers improving their conditions, and there is a large demand for sawn lumber. Handsawing is usually on pakyaw (contract) for a given

quantity of lumber but may be carried out for a daily rate. A concomitant of handsawing is the demand for skilled carpenters, who are rarer and are literally sought out by intending builders.

Several other activities give greater independence to those practising them. The most rewarding financially is trading, that is, buying produce for resale in the markets at Mawab, Andili and Masara. This is largely, but not exclusively, an activity of women, who may thereby become the main income earners in their households. Women also practise a traditional form of midwifery, and a small number of men (including two in the sample) practise herbal medicine and massage. Particularly skilled practitioners are in high demand and may be well rewarded, with payment of P10 or more. Some, however, work for merely token payment. A less rewarding activity is the manufacture and sale of home-made rice-baskets, mats and brooms, often on contract.

Casual labour is a valuable but unreliable source of income for poor families. Unskilled work for loggers is still common, though declining as more of the hills are logged-over and occupied by squatters. A rare source of casual employment (except just before elections!) is in municipal public works. Municipalities control very limited funds and can undertake few developmental, or even maintenance, works such as road or bridge-building. It is generally said in the Philippines that employment in public works projects is dependent upon either political affiliation or the operation of reciprocal obligations (utang na loob).[1] However, in a recent analysis of political aspects of public projects in Davao, Cariño (1967) produced evidence to show that these considerations are not always, perhaps not even usually, the case.

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[1] This term, meaning literally 'debt of gratitude', is explained in Lynch (1964).

Chapter VI

THE ECONOMIC CONDITIONS OF SETTLERS

In the preceding three chapters, differences have been noted between the settlers according to their time of arrival in Mawab, which influenced the location and areas of land they obtained, the tenure by which they hold land, and the production and disposal of their crops. This chapter presents information on the incomes received by settlers in 1966-7, the levels of their capital assets, and their access to and use of credit. The aim is to show the effect of these differences on settlers' economic conditions rather than to present a detailed farm business analysis as such.

Incomes in 1966-7

It is not possible to draw firm conclusions about the income levels of individuals on the basis of data for a single year which may be strongly influenced by chance events. Nevertheless, even within the small sample under discussion, the data in aggregate serve as a useful guide to the nature and range of variations in income between groups and they reveal some of the factors involved in these variations.

To derive measures of income, first of all the gross value of farm output[1] in 1966-7 was calculated for each

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1 No attempt was made to record total production of minor crops such as tubers, vegetables and fruits for which farmers' memories would have been too unreliable. However, sales of these products were recorded and included in the value of output. The exclusion of home consumption of these products may result in significant underestimation of income for those few settlers who rely on these products for a considerable part of their food supply.

settler. Crops sold were valued at actual prices received and those not sold were valued at average market value over the year. The value of livestock production, incorporating net sales, change in inventory and consumption, was included in the gross output. Production expenses and payments in cash and kind to non-owned factors of production were deducted from gross output to yield household income from the farm. Receipts in cash and kind as rent and as wages from agricultural work were then added to yield household income from agriculture. Finally, non-agricultural receipts were added to yield total income from all sources. It should be noted that no hypothetical receipts or expenses, such as the value of family labour or interest on capital, have been included. The data were obtained from 47 of the 50 sampled households.

Gross value of output. In 1966-7, the total gross value of output from the land operated by these 47 settlers was P56,337, with a mean of P1,199 and a range from P71 to P4,485. Just over half the total was received as cash from sales of produce, chiefly rice, livestock, abaca, corn and copra. Table 5:9 showed that rice is the most valuable crop (in terms of returns per hectare) produced by the settlers. Rice alone accounted for 40 per cent of the total value of output of the 47 settlers and corn for 26 per cent. 35 per cent of the rice output and 33 per cent of corn output was sold.

It is mainly the longer-established settlers, occupying large rice fields, who can double-crop rice. The six longest-established members of the sample produced 37 per cent of all rice grown by sample members. Some of these also occupy upland on which they have mature tree crops. Hence, the longest-established settlers mostly have very high values of output. In contrast, most of the

more recent settlers have below average outputs because they tend to have smaller farms, they grow comparatively low-valued crops and many of their tree crops are not yet mature.

Table 6:1 Gross value of output of 47 settlers in 1966-7, by length of residence in Mawab.

Length of Residence	No. of Settlers	Gross value of output (Pesos)
		Mean
29 years and over	6	1,838
17 - 21 years	11	1,769
12 - 16 "	4	745
7 - 11 "	18	945
1 - 6 "	8	730
Total	47	1,199

Farm expenses. Very little money is invested by the settlers in modern production inputs such as fertilisers. For the 47 sampled farmers, the total cost of such inputs is only P800, or 1.4 per cent of gross value of output. Only two settlers spent as much as 5 per cent of their gross output on fertilisers and chemicals.

In contrast, hired labour absorbs a much higher proportion of the settlers' resources. Payment of wages in kind amounts to over 10 per cent of the output of the 47 settlers, with the major part going to harvesters.[1] Operations other than harvesting are usually paid for in cash, which accounts for four per cent of total output. In 1966-7, 19 of the sample paid out sums between P2 and

1 Only ten people - chiefly isolated squatters - did not have their crops harvested by labourers.

P373 in cash wages. For a few people with high levels of output but insufficient family labour, wage payments in both cash and kind reached as much as 20 per cent of the value of their gross output.

Payments of rent in cash and kind amount to eight per cent of the total output of the 47 settlers, but form 16 per cent of the output of the 14 tenants and eight part-owners who actually pay rent. Only two people pay rent exclusively in cash and five pay partly in cash, which forms only a quarter of total rent payments. Two people alone account for 85 per cent of the cash payments. Twenty people pay exclusively in kind. It is natural for landlords who let out sizable areas to prefer shares of crops such as rice or corn rather than a share of the proceeds of sales. Individual tenants have low disposable quantities and commonly have urgent consumption needs, so they have low withholding power and sell crops immediately after harvest when prices are likely to be lowest. The share of the proceeds thus received by the landlord would be less than he receives by storing the produce accumulated from tenants until prices rise between harvests.

Table 6:2 Farm receipts and expenses of 47 settlers, 1966-7. (Pesos)

		Total	Mean
A.	Gross value of output	56,337	1,199
	Expenses		
	Production expenses	1,632	35
	Wages, cash	2,288	49
	kind	5,835	124
	Rent, cash	1,079	23
	kind	3,350	71
	Interest on loans	121	3
B.	Total expenses	14,305	304
Household income from farm (A - B)		42,032	894

Household income from farm. When production expenses, wages, rent and interest on loans are deducted from gross output, the mean income from the farm is P894, with a range from P51 to P3,653. As with gross output, there is a general tendency for more recent migrants to have lower farm incomes. Although the older residents spend a higher proportion of their output as payments to labour, these groups include fewer tenants and so make smaller payments of rent. Tenurial status has a marked influence on levels of income, as Table 6:3 shows.

Table 6:3 Household income from farm of 47 settlers by tenure.

	Settlers		Income from farm (Pesos)		
Tensure	Number	Percent	Total	Percent	Mean
Owner	12	26	14,841	35	1,237
Part-owner	12	26	13,316	32	1,110
Squatter	9	19	3,372	8	375
Tenant	14	30	10,503	25	750
TOTAL	47	100	42,032	100	894

The slight difference between owners and part-owners is entirely due to the payment of rent by part-owners. There is a wide gap between these two groups and those who do not own land, but there is an almost equally wide gap between tenants and squatters. This is largely due to the high incomes of the three tenants in Nueva Visayas who produce three crops of corn on comparatively large farms. Apart from these three, the mean income from tenant farms is only P447. Squatters have comparatively low incomes from their farms because these are mostly not yet fully developed. The mean area harvested during the year by squatters is only 1.56 ha, compared with 3.46 ha by

tenants, 3.60 ha by full-owners and 4.70 ha by part-owners. Furthermore, by the nature of their land squatters are unable to grow lowland rice and can only grow the less profitable crops. Hence, even with no deductions for rent and with low wage payments squatters receive lower farm incomes than the other groups, but their position may improve as their perennial crops come into bearing.

Other agricultural income. In order to augment their farm incomes, many farmers, or members of their household, obtain casual employment on neighbouring farms. The most widely available employment is harvesting of rice or corn for shares of the crop. Three-quarters of such receipts are consumed and the rest sold. Planting and weeding of various crops and stripping abaca are also common, with payment in cash.

A practice that is said to be growing in frequency is that called 'selling losong'. A man who hears of a casual job for a gang of men, such as stripping abaca, may call on people who owe him labour services through losong-losong to work with him and he will receive the full payment for the job. This arrangement is entirely ad hoc; the privilege does not 'rotate' because the collaborators do not usually comprise a stable group. Two of the sampled settlers used this arrangement in 1966-7, each earning about P250.

15 of the 26 people who obtained off-farm agricultural employment in 1966-7 have been in Mawab for no more than 10 years, but members of the households of some of the longer-established settlers also quite commonly work for others and one of the oldest settlers himself did some off-farm work even though large parts of his own land are idle. Apart from such long-established settlers most of the people obtaining agricultural jobs

have comparatively small cultivated areas on their own farms - the mean for such people is 2.28 ha compared with 3.45 ha for the whole sample.

Receipts from off-farm employment account for only 6 per cent of total household income from agriculture but a few people depend upon it very heavily either for subsistence or as their major source of cash income. Two people in the sample receive 57 per cent of their agricultural income from labouring and six others receive at least 25 per cent from this source. The mean area cultivated by these eight settlers is only 1.96 ha.

Table 6:4 Income from agriculture of 47 settlers. (Pesos)

	Total	Percent	Mean
Household income from farm	42,032	76	894
Other receipts from agriculture			
Wages, cash	1,971	4	42
kind	1,223	2	26
Rent, cash	174	1	4
kind	9,359	17	199
Other*	249	1	5
TOTAL	12,976	24	276
Household income from agriculture	55,008	100	1,170

* Receipts from hiring out equipment or carabao, plus interest on loans.

Table 6:4 shows that rent receipts account for 17 per cent of total income from agriculture. In 1966-7, ten of the sampled settlers received rent. The receipt of rent leads to marked differences in agricultural income between those owners and part-owners who let out land and those who do not (Table 6:5). However, the three earliest settlers

who let extensive rice fields alone account for 86 per cent of the total rent received and rent forms 65 per cent of their agricultural income. Two other pre-war settlers receive over ten per cent of their agricultural income from tenants on rice land. None of the other landlords receives significant sums in rent as each lets only a small plot to a single tenant.

The effect of adding to farm incomes these other receipts from agriculture is to widen the gap between the income levels of the longer-established settlers and those of the more recent settlers. Although the mean income from agriculture is P1,170, the median is only P750 and 14 settlers have incomes, in both cash and kind, below P500. Four tenants have agricultural incomes over P1,000; three of these are large-scale corn growers in Nueva Visayas and the fourth receives most of his income from sales of tuba produced from rented coconut palms. No squatter has an agricultural income exceeding P1,000. In contrast, eight settlers have agricultural incomes exceeding P2,000 and the highest is P6,268. Only one of these eight has been resident for less than 18 years.

Table 6:5. Income from agriculture of 47 settlers, by tenure. (Pesos)

Tenurial status	No. of settlers	Mean income from agriculture	
Owner, letting land	6	2,955	2,066
" not letting land	6	1,177	
Part-owner, letting land	4	1,784	1,226
" not letting land	8	947	
Squatter	9	418	
Tenant	14	839	
TOTAL	47	1,170	

Non-agricultural income. The major non-agricultural sources of income were noted above in Chapter V. In total, receipts from these sources account for over P17,500, or 24 per cent of total household income from all sources. For eight households, non-agricultural receipts form more than half of their total income. Although 21 separate households have non-agricultural incomes, two households that contain three schoolteachers receive almost half of all such income. Two households with members engaged in more or less full-time trading account for a further 21 per cent. Apart from these activities, handsawing of lumber is the most important source of income, earning over P3,500 for six households. None of the other non-agricultural activities is of general importance though some may be important for individual households. For instance, one squatter's household obtains three-quarters of its income from the practice of midwifery by the squatter's mother.

Table 6:6 Total income from all sources for 47 settlers. (Pesos)

	Total	Mean
Income from agriculture	55,008	1,170
Non-agricultural income		
Receipts (net) from self-employment	5,514	117
Wages, salaries, contract payments	12,040	256
Other	30	1
Total non-agricultural income	17,584	374
Total income from all sources	72,592	1,544

As with off-farm agricultural work, casual labour is sought by the smaller-scale farm operators themselves as well as by members of their households. Among the settlers with high levels of farm output it is usually not

the operators but other household members that have non-agricultural earnings.

It is notable that few of the smaller-scale farmers are able to compensate to any great degree for their lack of land through off-farm agricultural earnings. Most local jobs earn less than the legal minimum wage of P2.50 a day and they are also usually very short-term. Moreover, many of the settlers who are most in need of augmented earnings are those in the hills. Such people do not easily learn of available jobs because most opportunities occur on the land of big farmers in the lowlands (Table 6:7). The distance involved in the journey to work may also inhibit the more remote upland people from seeking work in the lowlands for more than very brief periods. The result is that the disadvantages of late arrival in Mawab, small remote farms, and inability to grow the most profitable crop combine to yield very low incomes to a majority of the settlers.

Table 6:7. Off-farm earnings of 34 settlers by location of household. (Pesos)

Location	Agricultural earnings		Non-agricultural earnings	
	No. households	Mean	No. households	Mean
Lowlands	12	164	13	1,155
Uplands*	3	238	3	390
Hills	10	51	5	279

* In this context, uplands refers to the lower slopes of the hills at the edge of the plain.

Total income from all sources. The range in total incomes is from only P51 to P10,628, but only a quarter of the sampled settlers have total incomes exceeding P2,000 and

the mean of the lowest income class, comprising 60 per cent of the settlers, is less than half the mean for the whole sample.

Table 6:8 Distribution of income among 47 households. (Pesos)

Income range	Households		Income from all sources		
	Number	Percent	Total	Percent	Mean
0-999	28	60	17,930	25	640
1,000-1,999	7	15	11,190	15	1,599
2,000-2,999	5	11	11,443	16	2,289
3,000-3,999	5	11	16,625	23	3,325
5,000-5,999	1	2	5,136	7	5,136
6,000 and over	1	2	10,268	14	10,268
TOTAL	47	100	72,592	100	1,544

There are, then, in income as in farm sizes, very marked differences between the settlers. The preceding sections have shown how most components of total income have been influenced by the settlers' time of arrival in Mawab and this is reflected also in total income from all sources (Table 6:9).

Table 6:9 Mean income of 47 settlers, by length of residence in Mawab. (Pesos)

Years of residence	No. settlers	Mean income from all sources
29 years and over	6	3,797
17 - 21 years	11	1,841
12 - 16 "	4	952
7 - 11 "	18	1,069
1 - 6 "	8	813
TOTAL	47	1,544*

* Standard error of mean = P246.

As is to be expected from the discussions earlier, there are marked differences in total incomes according to the tenurial status of the settlers. However, the figures in Table 6:10 mask some significant variations within the groups also. In particular, among owners those who receive rent have a mean income of P3,670 compared with P1,251 for owners who do not let land out. Among tenants, only the three large-scale corn growers in barrio Nueva Visayas have incomes above P2,000, while the only squatter who has an income above P2,000 earns nearly all of this by handsawing lumber and needs to buy foodstuffs for subsistence. No other squatter has a total income above P1,000.

Table 6:10 Total incomes of 47 settlers, by tenurial status. (Pesos)

Tenurial status	No. settlers	Mean income
Owner	12	2,460
Part-owner	12	1,798
Squatter	9	783
Tenant	14	1,031
TOTAL	47	1,544

In order to compensate for variations in the size and composition of settlers' households, the income data were calculated in terms of value per consumption unit, which was taken as one adult male equivalent.[1] When this

[1] The calculation of consumption units was based on data in Bureau of Census and Statistics (1966:39-40). Expressed as adult male equivalents, the figures by age group are:

Age	Under 1	1-4	5-9	10-14	15-64 yrs.		65 and over
					M	F	
Consumption Units	0.1	0.4	0.7	0.8	1.0	0.9	0.8

adjustment is made, differences by tenure are much less pronounced but present the same general picture. The mean figures for total income per consumption unit are: owners, P492; part-owners, P313; squatters, P157; and tenants, P215.[1] Thus the income data confirm the impression created above that most settlers who arrived in Mawab at a time when they could only occupy land as tenants or squatters suffer a pronounced disadvantage that is not compensated for by off-farm opportunities.

There are, however, exceptions that indicate possibilities for improvement. Thus, one Ilocano household (No. 25) that has been resident for only 11 years has the highest total income per consumption unit (P1,771) in the sample, achieved through both farm and off-farm earnings. Another Ilocano household (No. 45), resident for only five years, is third in order of income per consumption unit. Although the household head is a tenant on only 2.9 ha, his mother regularly trades fish and vegetables in the local markets for a high net return.[2] It is noteworthy that although Ilocanos form only three of the first ten settlers by time of arrival, they account for six of the first ten by total income per consumption unit.

An attempt was made to assess the adequacy of the settlers' incomes in terms of subsistence and certain kinds of expenses. It was not possible to obtain complete

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1 There is only one significant difference between the tenurial classes in consumption units per household. The mean figures are: owners, 5.0, squatters, 5.0, tenants, 4.8, but part-owners 5.8. There is no apparent reason for this difference.

2 This old lady commented, 'Many people think they are poor because they have no land here, but if we use our heads we can find an honest way of supporting our lives.'

data on non-farm expenditure by the sampled households but a rough classification of the settlers was made using the income data together with expenditure on education and medical needs and an essentially subjective assessment of other aspects of the settlers' conditions.

The basis of the classification is a calculation by Golay and Goodstein (1967:3, 59) that in recent years annual consumption of milled grain in the Philippines has been about 112 kg per person. Converting this to unmilled quantities (at the 50 per cent recovery rate considered normal in Mawab) gives about 220 kg unmilled grain (either rice or corn) per person. At 1966-7 prices, this would be worth P75 for rice, P43 for corn and P59 for a half-and-half mixture. To these basic requirements other food items, such as root crops, vegetables, fruit, meat and fish also need to be added, as well as expenses such as clothing, transportation, education and medical care.

On average, basic farm products (rice, corn and livestock) consumed on the farm account for 29 per cent of total income. Most settlers achieve self-sufficiency in food grains and minor items such as vegetables and root crops, though in 1966-7 eight of the sampled settlers had to make occasional purchases of rice or corn, accounting for P20 to P50 each over the year. Only two settlers relied almost completely on purchased staples: the squatter whose main occupation is handsawing lumber and the Ilocano tenant in Nueva Visayas who sells all his corn output and buys rice, using both his crop proceeds and the profit from his mother's trading operations. Apart from these purchases of grains, most settlers also buy salted or dried fish, or canned meat or fish when they can afford it. For some families these are the only regular form of protein intake, except perhaps for their own poultry.

It was assumed that a total household income of less than P100 per consumption unit provided a scant subsistence. The nine households in this class include two owners. Most have small cultivated areas and low output, with little available for sale. These households may rely almost as much on root crops and bananas as on cereals for their staple, and their outside earnings are barely enough to provide small additions to their diet as well as maintaining the settlers' stock of tools. There is no possibility of paying for secondary or higher education for their children or of accumulating reserves either for emergencies or for investment in farm improvements. However, five of these nine households arrived only recently in Mawab and their land is not yet fully developed, so some at least are likely to move out of this class. One other settler was absent for one crop season in 1966-7 and his income might otherwise have fallen into the next class.

There are 12 settlers in the second class, with incomes between P100 and P199 per consumption unit. Such people are above subsistence level, but insufficiently so to cope with emergencies or, probably, to allow repayment of major debts incurred in emergencies. Thus, one rice farmer with three hectares of land had to mortgage two hectares in 1966 to obtain money urgently. Consequently, in 1966-7 his income was greatly reduced, falling below P100 per consumption unit. Taken together, the first two classes include three owners, four part-owners, six squatters and eight tenants.

Twelve of the sampled settlers fall into the third class with incomes in the range P200-350 per consumption unit. Their output generally allows the sale of a sizable surplus above subsistence needs, and together with off-farm earnings allows a widening in the range of diet as well

as paying for secondary education of children, meeting moderate medical expenses and paying for small household improvements.

Six settlers have incomes in the range P351 - P500 per consumption unit. Such people can afford a wide range of investments, including modern production inputs, improved housing and secondary or college-level education for their children.[1] The eight settlers with incomes over P500 per consumption unit can afford greater expenses in these directions and may also save to buy extra land.

The settlers in the two poorest classes are in a precarious economic position where chance events can destroy any hope of future improvement. However, the colonisation situation is still some way removed from the conditions of widespread poverty and indebtedness experienced in the migrant source areas. Although Mindanao has not proved to be the 'Land of Promise' that many settlers hoped for, few are so disillusioned that they would prefer to return home.

Credit

In discussions of land settlement projects much attention is frequently paid to the question of whether new settlers need credit to assist their establishment. The common conclusion is in the affirmative. However, experience in

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[1] The Philippine Statistical Survey of Households (1964:31) shows that for rural families with incomes below P2,000, education amounts to no more than 2 per cent of total expenditure. From five per cent of incomes in the range P2,000 - 2,500 education accounts for an increasing share of expenditure, reaching seven per cent of incomes in the P5,000 - 5,999 range and ten per cent of incomes over P10,000. Using the Mawab sample mean of 5.1 consumption units per household, P2,500 yields P390 per consumption unit.

organised settlements is that large amounts of money are loaned but never recovered, mainly because the loans are not used for productive purposes. In settlement projects in Indonesia before 1941, experience led the administration to initiate a system by which new settlers were supported by earlier arrivals until they could make their own harvests (Pelzer, 1945:198-9).

This Indonesian system, which is unusual in organised land settlement schemes, is essentially that by which the spontaneous settlers in Mawab operated. Their initial needs were supplied by relatives, usually free of charge, rather than through institutional or other credit arrangements. Later, as settlers became independent farmers, they might borrow, free of interest, from relatives at times of poor harvests or health emergencies. As the township developed, storekeepers who bought cash crops began to play a part as sources of credit. Initially their rates of interest seem to have been low, because the borrowers were farmers with sizable holdings of abaca which established a high degree of creditworthiness. In return for favourable credit conditions, the buyer could ensure a greater turnover of both retail produce and, more importantly, abaca fibre. This situation has remained true for producers of considerable quantities of cash crops, but merchants tend to apply less favourable conditions when lending to small-scale farmers, since risks are high in view of their unreliable output. Thus, once again the more recently-arrived settlers are in an unfavourable economic position compared with earlier settlers, particularly in view of the fact that their generally small output renders them more likely to need urgent short term credit for consumption purposes as well as for medical expenses and life crises such as marriage.

Reasons for borrowing and sources of credit. Settlers who are essentially self-sufficient in basic foodstuffs and are also able to market some produce rarely need consumption loans and their occasional loans are promptly repaid. However, very few farmers in Mawab save significant sums to keep as liquid reserves, so that emergencies find even prosperous farmers in need of credit. Such emergencies are commonly connected with medical expenses, education or life crises. Sources of credit for the wealthier farmers in these cases are usually relatives or merchants - such farmers would be embarrassed to display their need to a friend. The major source of borrowing by these owners, however, is banks.

Although bank loans affect comparatively few people, the sums borrowed are large (Table 6:13). The main purpose of bank loans is stated to be farm development, usually through the purchase of major items of equipment, but until 1967 such loans were never supervised and parts at least of the funds were used for consumption, housing or expenses of education. As production rarely increased greatly, repayment of these loans has often been slow (see below). A condition of bank loans is security in the form of the land title. As few titles were patented by the Bureau of Lands before the Magsaysay regime, banks only became a common source of credit in the mid-1950s. Some settlers who used bank loans to buy stripping machines were unable to repay their mortgages when their abaca was destroyed by mosaic and they lost their land. Such experiences have strengthened the feelings of many settlers who sometimes need credit but are reluctant to borrow from banks for fear of being unable to repay. According to an official of the Davao City branch of the Philippine National Bank, the bank has large funds available for agricultural loans but few farmers are

willing to borrow.[1] Of the 17 sampled settlers in Mawab with titles to their land, six had at some time mortgaged their land to banks.

Table 6:11 Purposes of borrowing by 34 sampled settlers* in Mawab.

Purpose	No. settlers	Amount borrowed (Pesos)	Per cent of total	Per cent in cash
Consumption	23	857	10	2
Expenses of life crisis	5	155	2	100
Medical expenses	9	1,376	17	100
Education expenses	2	100	1	100
Production inputs	4	117	1	34
Farm development	5	4,324	52	100
Other +	3	1,310	16	100
TOTAL	34	8,264	100	89

* The other 16 sampled settlers did not borrow during 1966-7.

\+ Includes P200 for trading capital, P1,100 to redeem a bank loan and P10 undisclosed.

Few people borrow to obtain seasonal production inputs and unlike general farm development loans the sums are small. It was noted in Chapter V that only small quantities of chemicals and fertilisers are used and these are usually bought with cash in hand by the wealthier farmers, while the small-scale farmers are unwilling to borrow for such inputs with the risk of a crop failure.[2]

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1 In 1967, 27 out of all the farmers in Mawab borrowed a total of P45,000 from two of the three main banks providing agricultural loans in the area. The farmers were mostly rice growers. The banks are the Philippine National Bank, the Rural Bank of Tagum and the Development Bank of the Philippines (Davao City). The last named could not furnish data.

2 Barker (1966:265, 275) and Ruttan (1966:47-8) have illustrated the risks of financial loss involved in use of fertilisers in Philippine conditions.

However, during the Rice Crash Programme in 1964-5, when Mawab was well served by both the Agricultural Credit Administration (ACA) and the extension agencies, many more farmers were prepared to borrow and a high level of repayment was achieved. Table 6:12[1] indicates the result of intensive compaigning by an adequate number of personnel and the effect of the transfer of these late in 1965. The ACA loans are made with the crop as security, so they may be obtained by tenants. At the peak, a quarter of the rice growers in Mawab obtained such loans. In 1967 none of the sampled farmers borrowed from ACA, but one obtained fertiliser from the BPI on credit, repaying (at 8 per cent interest) after the harvest.

Table 6:12 Loans provided by Agricultural Credit Administration to Mawab 'Crash' Area, 1964-7

Season	No. Farmers	Amount Released (Thousand pesos)	Per cent repaid
Regular 1964	122	11.6	92
Palagad 1965	97	10.1	90
Regular 1965	120	14.8	82
Palagad 1966	26	1.5	97
Regular 1966	29	1.2	84
Palagad 1967	36	1.5	65
Regular 1967	22	2.1	28 *
TOTAL	452	42.7	84

* Data extend to 31 December 1967 only, so a higher level of repayment is likely later.

1 Datakindly provided by Agricultural Credit Administration, Branch Office, Davao City.

The comparative significance of the different sources of credit used by the sampled settlers is shown in Table 6:13. As noted, bank loans affect few people but the sums borrowed are large. Relatives and friends are very common sources of credit for a wide range of purposes. The most common of these is consumption, but the largest sums are obtained in emergencies. Thus, one man borrowed P1,100 in 1965 from his wife's brother just in time to redeem a bank mortgage on his land and the loan is still outstanding. Another mortgaged 2 ha of rice land to an affinal relative for P500 to enable his son to receive urgent hospital treatment. While most loans between relatives are interest-free, in the latter case the loan was of the prenda type, so the creditor has use of the land until the

Table 6:13 Sources of credit obtained by 34 sampled settlers in Mawab.

Source	No. Borrowers	Amount borrowed (Pesos)	Per cent of total	Per cent in cash
Bank	3	4,100	50	100
Government agency	1	66	1	0
Mutual aid group	3	110	1	100
Merchant*	13	1,336	16	55
Landlord or employer	2	90	1	100
Other farmer	4	78	1	90
Relative	15	2,271	27	95
Friend	9	213	3	40
TOTAL	34	8,264	100	89

* Includes storekeeper, miller and peddler.

loan is redeemed. In some parts of Mawab, groups of neighbours (especially Boholanos) have formed mutual aid groups (tinabangay) each for a specific purpose such as

house-building, marriages and similar occasional large expenses. Members contribute equally and in turn draw out equal sums to meet the cost of a marriage, or house-building. The tinabangay are informal savings groups, but they may lend money to members in emergencies. Such loans are small, by virtue of the restricted funds of the group. Included in such groups, though slightly different in character, is the chapel organisation, a group that contributes to a fund to maintain and improve the local chapel (bisita).[1] Members may not make withdrawals but can obtain small loans as from the tinabangay.

As is normal in exchange economies, merchants in Mawab provide a significant proportion of the credit used by farmers. In most cases, this means that a farmer may obtain supplies up to an agreed amount, which varies with the merchant's opinion of his creditworthiness. This is higher, and the period of the loan less rigid, if the farmer has commercial crops to sell to the merchant or, in the case of millers, if the farmer will mill his grain at the creditor's mill. In other cases, the farmer may be required to pay in cash whenever his debt reaches the agreed sum, which is unlikely to exceed P10 except for large-scale producers of commercial crops. Recurrent loans below this value have been excluded from the tables. Cash loans by merchants are much more rare (though they form over half of the value of merchants' loans) and when granted for emergencies they usually carry high interest rates as they are unsecured (see below).

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1 The bisita is a small chapel in a barrio or sitio, visited by the priest from the poblacion usually once a year during the barrio fiesta.

Repayment. Repayment on loans varies with their nature (apart from the borrower's ability to pay). High priority is given to debts with merchants on account of the importance of mutual confidence in the relationship, though the desire to keep interest payments low is also important. When farmers with good security receive large interest-free cash loans from merchants they are often quite dilatory over payment, but they continue to buy supplies and sell their produce to the creditor. The same is true of credit relationships with mutual aid groups and wealthier farmers. Small loans, particularly in kind, from friends or relatives are usually repaid promptly but large cash loans may be held over for many years with occasional instalment payments. Bank loans too may be continued beyond their usual term since borrowers take advantage of the bank managers' apparent reluctance to foreclose so long as occasional instalments are repaid. The lack of supervision of the loans means that farmers may not bother to take advantage of opportunities to increase their productivity and ability to repay.

Table 6:14. Repayment of loans by 34 settlers in Mawab, 1966-7. (Pesos)

Purpose of loan	Total borrowed	Amount Repaid			Outstanding* (including interest where payable)
		Kind	Cash	Total	
Consumption	857	300	382	682	192
Life crisis expenses	155	25	75	100	84
Medical expenses	1,376	208	433	641	859
Education expenses	100	116	50	166	0
Production inputs	117	21	112	133	0
Farm development	4,324	0	476	476	4,084
Other	1,310	0	210	210	1,100
TOTAL	8,264	670	1,738	2,408	6,319

* 18 settlers only.

Of the 18 loans outstanding at the end of June 1967, eight had been contracted several years earlier. Two of these were bank loans for farm development dating from 1956 and 1957 and in sum P2,200 were still outstanding in June 1967. Another bank loan had been redeemed at maturity in 1965 only with a loan of P1,100, still unpaid, from a relative of the borrower. One tenant was paying interest-free instalments on a carabao bought from his sister in 1961 and P124 was outstanding. Two settlers had debts to relatives arising from marriage expenses in 1958 and 1961. The principals of these debts totalled P120 and P60 remained to be paid. Another settler borrowed P600 for medical expenses in 1964 and had repaid P300 by 1967. The other outstanding long-term loan had a principal of P300 of consumption goods acquired over several years from a store operated by the borrower's landlord. In June 1967 P140 were unpaid. These eight loans account for P3,520 of the total outstanding. The remaining ten loans were all contracted during 1966-7. Four of these, totalling P83, were repaid in the four months following June, 1967.

Table 6:15 Outstanding debts of 18 settlers by source and purpose of loan. (Pesos)

Source \ Purpose	Farm development	Medical expenses	Life crisis	Consumption	Other	Total
Bank	3,900	0	0	0	0	3,900
Mutual aid group	0	24	0	15	0	39
Merchant	0	300	0	160	0	460
Landlord	60	0	0	0	0	60
Other farmer	0	0	24	0	0	24
Relative	124	500	60	32	1,100	1,816
Friend	0	20	0	0	0	20
TOTAL	4,084	844	84	207	1,100	6,319

Interest rates. While government agencies and banks charge a standard 8 per cent rate of interest, other creditors are very variable in their practices. Most people do not pay interest to relatives or friends but in the sample one man paid 100 per cent interest on a loan from a friend of 12 kg of rice seed over four months and another paid 50 per cent on a 3 month loan from a relative of a sack of rice for consumption. The most striking case, however, is the prenda loan mentioned above. Assuming a low yield of 1000 kg of rice per hectare in each of two harvests per year, at the 1966-7 average price of rice in Mawab the creditor could receive P1,330 per year or 265 per cent interest annually till the land is redeemed. However, in the instance under discussion, the land was let by the creditor to two tenants. Assuming that after payment of harvesters' shares the net value of output was P1,064, the landlord would receive about P350 as his share, giving an interest rate on his loan of 70 per cent annually.

Wealthy farmers who regularly lend money without security often charge very high interest rates, lending cash and requiring payment in produce calculated at a very low price. Thus one man borrowed P50 and after his harvest five months later repaid 7 sacks of rice worth approximately P116, that is with interest of 132 per cent. Because of the high charges, farmers only use such sources in emergencies. Creditors explain the high rates as compensating for high risks. It is said to be not uncommon for people heavily in debt (particularly tenants with no ties to land) to leave Mawab for unknown destinations. For this reason, one creditor in the sample now will not make unsecured loans. Instead, he makes prenda (mortgage) loans on coconut trees and the tuba and copra serve as interest. For these as for other lenders, the high nominal rates of interest are not the actual

rates of return, which are reduced by bad debts and by inflation. Nevertheless, by carefully selective lending, risks may be reduced and the interest on their loans may therefore be a useful source of income to those wealthy farmers who grant them frequently.

As regards loans by merchants, in particular storekeepers, information on interest charges is difficult to assess. In most of the cases incorporated in the tables above, the borrowers stated that no interest was payable; while this may have been true as far as they knew, it is quite probable that many were mistaken. Some storekeepers certainly give interest-free cash loans to favoured customers and may also allow some customers to run up debts to a certain sum free of interest. However, even if the customer is unaware of it, many such loans contain implicit interest charges in reduced prices for the borrower's own produce. When interest rates are explicit, they are commonly around 10 per cent monthly. For sizable unsecured cash loans, rates may be much higher, like those of the wealthy farmers. For instance, a tenant obtained, with the lender's brother-in-law as guarantor, a loan of P96 for his son's hospital expenses. Despite the good offices of the guarantor, the condition of the loan was that the tenant repaid 12 sacks of rice within two months. Thus the proposed price was P8/sack, compared with the mean over the preceding year of almost P17/sack, so the interest paid on a two-month loan was 100 per cent.

Summary. At the beginning of this section it was suggested that settlers were able to cope with the period between arrival and establishment on a farm without the need for credit for subsistence or planting materials. However, information in Chapter IV showed that the initial rate of farm development was generally limited by the

supply of family and exchange labour, suggesting that credit for hiring labour at that stage would have made possible much more rapid development.[1] Under spontaneous colonisation rapid development is not so important as in government-financed projects which need to recoup their heavy expenses as quickly as possible, but it is nevertheless an economically desirable aim from the viewpoint of both individual and national well-being.

For a long period, the only sources of credit open to settlers were other farmers and storeowners. Although state banks and state-supported rural banks now provide sources for much larger loans, these loans are available only against the security of land titles, excluding not only tenants and squatters but also the large numbers of settlers whose homestead applications are still being processed.

At the same time this is not such a great disadvantage as it might seem at first sight, since few farmers in Mawab (or elsewhere in the Philippines) are keen to incur loans for productive purposes. Although many are forced to seek loans for consumption purposes after poor harvests or for domestic emergencies, the ideal of Filipino peasants is to avoid incurring debts. Castillo (1968:303) reports that a quarter of the farmers interviewed in a study in Luzon said the hallmark of a progressive farmer is absence of debts. As Penny (1968) has pointed out, in such a situation it would be idle to establish expensive official credit schemes. Moreover, as the section on incomes showed,

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1 Fisk (1964) has shown that capital-intensive development, including mechanical clearing, could offer substantial advantages in developing small holders' rice farms in new irrigation projects in Malaya. These advantages are clearly dependent on the value of labour and the value of the additional crops produced with rapid development.

many farmers could afford productivity-increasing inputs from their own resources.[1] Nevertheless, small-scale farmers, whether owners, tenants or squatters, may be seriously hampered economically by their inability to obtain credit at reasonable interest rates. Their disadvantage is again not a lack of funds for productive investment but the fact that they must mortgage significant proportions of future output in order to obtain urgent short-term loans. Thus, for the most recently-arrived settlers in Mawab, their generally low output and the chances of unforeseen emergencies combined to reduce to a very low level their prospects of accumulating capital and improving their levels of living.

Capital assets in 1966-7

For the purposes of this thesis, capital is taken to be the stock of physical, renewable means of production. It comprises land, tools and equipment, livestock and farm structures. Structures include the farmer's house, which usually serves as a storage place and, being on piles above the ground, also as shelter for farm animals and equipment.[2] The settlers' holdings of these assets were all valued at their current market values, depreciated for age where necessary, and the tables below use the end-of-year data.

The value and composition of a settler's capital are not only one measure of his prosperity but also indicate the directions of past investment and suggest, to a limited

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1 Cf also Quintana, et al. (1964) and Barnard (1969:119).

2 Inclusion of the farmer's dwelling accords with usual practice in assessing capital value on Philippine farms (cf von Oppenfeld et al. (1957:63).

degree, levels of past income. It should be noted that although capital value is one parameter of development by settlers, it is not possible to use the difference between initial and present capital to calculate rates of capital formation since many contigencies can affect the level of a settler's capital at any particular point in time. The level of capital may move in large steps up or down. For instance, a settler may inherit a block of highly-valued land, or he may need to sell some or all of his land or livestock to meet urgent expenses. Furthermore, much capital accumulation in the 'frontier' context has arisen through appreciation of land values with increasing demand for land which has not necessarily reflected improvements on the land. Where values do reflect improvements, they are of course an indication of active capital formation. Another process affecting apparent capital formation is inflation. There are no fully adequate time series available to make a proper allowance for this factor, but the data for capital assets at the settlers' times of arrival in Mawab have been calculated at constant (1955) prices using a composite consumer price index covering the period 1937-67.[1] Although this index is for Manila consumers, it has been used by other writers to describe national conditions since it approximates regional indices which are available only for the period after 1957 (cf Ross, 1966:235).

Initial capital. There was no great difference between most of the settlers in the value of assets with which they arrived in Mawab, except for those arriving in the period 1951-5. The small size of this group may make it unrepresentative. It includes, among others, one illiterate

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1 The extension of this index between 1937 and 1941 was kindly made available by M.L. Treadgold.

man who came to Mawab as a labourer, a young man who came to stay with his uncle hoping to go to college in a nearby town and another young man who came to join his adoptive father. Notwithstanding these qualifications, the scanty resources of this group may indicate that the high abaca prices of the Korean War period and consequent prosperity in Davao encouraged unusually poor people to migrate, possibly with more ready assistance from relatives already established in the area.

Table 6:16 Assets of 50 settlers at time of arrival in Mawab. (Pesos, 1955 prices).

Length of residence	No. settlers	Mean value of assets
26 years and over	7	228
17 - 21 years	12	156*
12 - 16 "	5	22
7 - 11 "	18	148
1 - 6 "	8	193
TOTAL	50	156

* In addition, one Ilocano brought P500 worth of equipment for sale. This has been excluded as being a trading inventory.

The range in the overall total value of assets on arrival is from zero to P747 and the median value P62. Half of the total was in cash (range zero to P448). Virtually all settlers arrived with a few farm tools, mostly axes and knives (bolos), with an average value of P17. One Ilocano brought a stock of implements, which he quickly sold for about P500. Only five people brought carabaos with them, giving a sample mean value of P28, but the mean value of the five was P280. Twenty-five of the

settlers brough some other animals, mostly chickens and pigs, with a mean value of P33.

It is clear that the resources of the average migrant were far too scanty to enable him immediately to obtain land, build a house and support a family while waiting for his first crop to mature. In this situation the prior presence in Mawab of kinsmen or friends who could provide accommodation, food and, perhaps, employment was very important to the new settler. The fact that many individuals with very limited resources were subsequently able to establish themselves as prosperous farmers almost entirely through their own efforts indicates the scope for capital formation in conditions of spontaneous colonisation. In broader terms, it also illustrates how labour may be used to generate capital as Nurkse (1953) has suggested. While Nurkse's proposition relates specifically to group labour in areas of un- or under-employment, the general principle has wider validity, as Fisk (1961, 1962) notes in relation to spontaneous land development in Malaya and to economic development in New Guinea.

Table 6:17 Assets of 50 settlers at time of arrival and in 1967. (Pesos, 1955 prices).

	Time of arrival		1967	
	Mean	Range	Mean	Range
Land	0	-	4,186	0-36,000
Buildings	0	-	762	0- 6,000
Tools and equipment	16	0-156	120	6- 1,175
Livestock	61	0-620	355	0- 2,015
Cash	69	0-500	not ascertained	
TOTAL	147	0-767	5,422	8-37,015

Assets in 1966-7. The average scale of development that has been achieved is shown in Table 6:17, using 1955 prices for comparison with the data on assets at time of arrival. By 1967, there was a very large range around the mean figures, largely due to the influence of land values, which comprise on average 77 per cent of the total assets of the settlers and in 17 cases over 90 per cent. On the other hand, 15 settlers own no land. This overwhelming importance of land in total farm value is normal in peasant economies (cf Mellor, 1966:178).

The wide variation in the values of land owned is a function of not only the area owned but also its location and its quality although assessment of quality is not yet very refined in the settlers' present state of knowledge of the soils of the settlement area. Land is usually classified rather by the crop it supports than by its inherent characteristics, although one crop may easily be replaced by another. This applies to official valuations also. The 1965 schedule of values of real property in Davao[1] refers variously to abaca land, corn land, coconut land, etc. Official assessments are mostly between 50 and 70 per cent of current market values. Thus, irrigated rice land in Mawab, close to all facilities such as roads, is assessed at P710 per hectare, whereas such land commonly changes hands at prices between P1,000 and P1,500 per hectare. This is the most highly valued land in Mawab. The best corn or coconut land may fetch up to P1,000 per hectare if within 500 m of a road but otherwise is unlikely to exceed P750 per hectare. Land values fall with distance from roads and hill land is less valuable than land in the plain, but there are no

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1 Information provided by the Provincial Assessor's Office, Tagum.

precise gradations in prices according to degree of slope (see also Chapter III, pp.106-7).

Both the location and area of land obtained by a settler depended to some degree on the time of his arrival in Mawab. Those who arrived late are mostly either tenants on comparatively small plots or squatters in remote areas. The value of squatters' land is much lower than that of the earlier settlers occupying centrally-located rice land. Thus, in view of the major share of total capital contributed by land, the value of a settler's total assets tends to reflect the time of his arrival.

This relationship is also influenced by the quality and value of housing and farm structures. In total, buildings account for 15 per cent of the value of capital assets. This figure rises to over 80 per cent for some landless settlers even though the value of their rough-hewn timber housing is usually less than P200. In contrast, for the earliest pioneers who were in Mawab throughout the heyday of abaca, housing is less than five per cent of total assets despite the high values of the houses as such. At peak 1951 prices, pioneers with 10 ha of abaca were grossing around P9,000 a year. Their incomes were well above their current expenditure and the surplus was invested in higher education for their children, in construction of large cement-based carpenter-built houses and sheds and in the purchase of stripping machines. The expensive houses constructed during the 1950s are still standing in good condition. Seven of the sampled settlers occupy houses valued at over P2,000. For many of the pioneers, good quality housing was clearly a priority for investment - more so than land at the time, since the expenses of construction could instead have been used to buy land.

Schooling has been another high priority for expenditure, but only the longest-established settlers have been able to afford college education for their children. Excluding children who have not begun school, settlers resident for 17 years or more have had 81 children in school. 30 children terminated their schooling at no higher than elementary level, four at secondary level and six at college. 11 are continuing secondary schooling and six are still at college. In contrast, settlers resident for less than 17 years have also had 83 children in school, but 39 of these terminated at elementary level and three at secondary level. Only one is continuing at high school and none have started college level education.

There is very much less differentiation between settlers in the value of their equipment, which forms only 2 per cent of the total value of assets. Two people with abaca stripping machines have the highest values, around P1,000; in the past, several others owned stripping machines but sold them when they converted their abaca fields to other crops. No other members of the sample own more than P350 worth of equipment. The highest values occur among lowland farmers who own steel ploughs and harrows and perhaps spraying equipment. These are mostly long-established pioneers. Most settlers in the hills occupy

Table 6:18 Mean value of settlers' assets by item, according to length of residence in Mawab. (Pesos, 1967 prices)

	Length of residence (years)					
	26 and over	17-21	12-16	7-11	1-6	TOTAL
Land	17,827	4,019	1,150	1,679	373	4,240
Buildings	1,467	1,277	50	502	65	708
Tools & equipment	245	152	35	119	54	120
Animals	898	508	99	190	183	355
TOTAL	20,438	5,818	1,334	2,485	675	5,422

land that is too steep to plough, so their equipment consists simply of bolos and axes. Few could afford spraying equipment even if they wanted to buy it. Many tenants in the lowlands too have minimal equipment of their own, either because their landlords provide a plough and harrow or because their plots are small enough to work by hand. Apart from the earlier purchases of stripping machines there has been little tendency for wealthier farmers to invest in equipment significantly different from the poorer farmers. For instance, none of the sample possessed rotary weeders and the first hand tractor in Mawab was bought only late in 1967. If this yields good results it may lead to increasing purchases of labour- or time-saving implements by the wealthier farmers. Up to now, whatever changes in crops there have been, agriculture in the colonisation area has been practised with essentially traditional methods, as discussed in Chapter V and as reported for other colonisation areas described in Chapter VII.

Table 6:19 Livestock owned by sampled settlers.

Animal	No. owned	No. of owners	Mean value per settler (Pesos)
Carabao	32	20	591
Pig	95	34	113
Other	*	49	43
TOTAL		49 +	363

* 8 goats plus poultry.

\+ One settler owned no animals

Carabaos are by far the most valuable livestock owned by the settlers in terms both of monetary value and of labour potential. Most owners have only one carabao each but four long-established settlers have two each and four have three each. Only one carabao owner lives in the hills and he has an unusually large area of gentle slopes that can be ploughed. Owing to the high cost of carabaos, many of the smaller-scale farmers in all tenure classes have been unable to obtain their own.

In contrast, most farmers are able to obtain pigs either by purchase or by caring for another farmer's sow until it farrows and then receiving half of the offspring.[1] Eighteen of the owners have only one or two pigs but ten have four or more, including young animals. Virtually all settlers keep a few poultry, mostly for domestic use though some may be sold occasionally.

During 1966-7, additions to settlers' fixed assets were very small. One settler bought some galvanised iron costing P92, for the roof of his house, and one bought a 3 ha plot of hill land for P180. The only fixed capital item sold was an abaca stripping machine for P850. The total cost of replacement of tools during the year was P268. The total value of livestock was P1475 lower than at the beginning of the year, so that with the sale of the abaca stripper the total non-monetary and non-land assets of the 47 settlers declined by P1785 over the year. This was partly because the gross value of animal sales exceeded the value of purchases and partly because births of pigs and poultry were offset both by deaths from outbreaks of diseases and by home consumption.

In sum, the range of capital values results indirectly from the varying periods over which people have been settled in Mawab. However, the fact that there is a

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1 While this practice of alima is also used with carabaos, dispersal is slower because of the shortage of carabaos and their longer gestation period.

statistically significant relationship (r=0.69 at P=0.01) between length of residence and total value of fixed capital[1] does not imply that later arrivals will subsequently achieve the capital levels of the pioneers. Rather, differentiation is likely to increase because later arrivals are lacking in the basic resource of land and generally cannot afford the inputs necessary to raise productivity and incomes. In other words, with current techniques capital formation has become much more difficult for recent immigrants.

Table 6:20 Value of settlers' total fixed capital in 1967 according to length of residence in Mawab. (Pesos)

Length of residence	No. of settlers	Mean value
26 years and over	7	19,539
17 - 21 years	12	5,430
12 - 16 "	5	1,255
7 - 11 "	18	2,294
1 - 6 "	8	493
TOTAL	50	5,067

Table 6:20 indicates the low level of capital accumulation among the most recent migrants. The data for the 7-11 year residents are influenced by three unusual cases whose assets account for three-quarters of the group total. One of these men began his career in Mawab in 1960 as a storekeeper but in 1964 he married the widow of a pioneer, thereby taking over a well-established 15 ha

1 Fixed capital as used here comprises land, buildings and equipment.

holding together with a large house and a *hagotan*, with a total value of over P23,000. This settler apart, the mean for the group is only P1,058. The other two men achieved their positions above the average more by effort than by good luck. One, a young Ilocano, worked variously as a farm labourer and tenant in Bawani and as a factory labourer in a nearby town for several years. During this time he saved enough to buy a developed lowland rice farm of 2.4 ha, which in turn yielded enough for him to buy a nearby upland holding of 1.7 ha soon after. The third instance is a man in Sawangan barrio. After some years as an abaca labourer he began to assist an aunt on a 6 ha holding and quickly planted over half to coconuts and abaca. In 1965 he bought the land from his aunt so by 1967 he owned a sizable block of mature abaca and almost-mature coconut palms.

The influence of the availability of land when a settler arrived on the level of his assets in 1967 is particularly evident when the data are examined according to tenure. The favourable situation of owners, especially pre-war migrants, in comparison with squatters and tenants emerges once again. The only advantages that squatters have

Table 6:21 Value of settlers' total fixed capital according to tenurial status. (Pesos)

Tenurial status	No. of settlers	Mean value of fixed capital
Owners (pre-war settlers)	7	19,539
Owners (post-war settlers)	19	5,599
Squatters*	9	908
Tenants	15	135
TOTAL	50	5,067

* The value of land claimed by squatters is included.

over tenants are that they do not pay shares on produce and they have some prospect of becoming owners of their land. By virtue of their land claims, the total value of squatters' assets is greater than that of tenants. As regards housing, there is no significant difference between squatters and tenants. However, the mean value of tenants' equipment (P60) is more than double that of squatters', because several lowland tenants have their own ploughs and harrows, whereas the hill farmers are unable to use carabaos and ploughs.

Apart from their own limited capital, tenants may deploy some belonging to their landlords (apart from the land itself). Four tenants live in houses provided by the landlords and five use the landlords' ploughs and other equipment. The total value of such facilities amounts to P1,434 and the total value of the land rented by the 15 tenants is P40,307. Including the operators' contributions, the total value of fixed capital on the tenants' farms is P43,769 and the mean value P2,918. Four of the tenants are also provided with carabaos, worth P2,350 in total. These additions to the tenants' own capital raise their average income-earning potential well above that of the squatters, even after payment of rent, as shown in the section above on incomes (Table 6:5).

On average, tenants contribute very little to the capital value of their farms. This is true even for the longest-resident tenants. Table 6:22 presents data for the six tenants who have been in Mawab for the longest periods. The four tenants in the lower part of the table have very small holdings - the largest being 2.23 ha - and so have little, if any, surplus output after payment of rent. The first two tenants, however, have operated holdings of 8.5 ha, one for eight years and the other for ten years, yet have accumulated very little either in farm

Table 6:22 Capital assets on six tenant farms in Mawab. (Pesos)

Length of residence (years)	Landlord's capital			Operator's capital		Total
	Land	Work animals	Other*	Work animals	Other*	
18	8,500	850	200	300	258	10,108
16	6,000	600	407	0	50	7,057
14	112	0	0	0	70	182
11	1,400	0	55	0	155	1,610
10	2,200	0	0	200	435	2,835
10	400	0	500	0	8	908

* Mainly tools and equipment.

capital or in personal property. In part, this is again the effect of paying rent, but it appears to be due more to comparatively high levels of consumption of non-durables. Neither claims any monetary savings and one is in debt to his landlord. It is possibly relevant that none of the siz tenants in the table is schooled above Grade III and two have no schooling at all. Only one of them has positive ideas on how and where to look for vacant land, having heard on a radio of the release of uplands in a nearby municipality. Taking all the other 14 tenants into consideration, three expect to return in the near future to their home provinces and two others propose to look for land elsewhere. The rest have no firm plans and apparently (in a few cases explicitly) prefer the comparatively favourable conditions of tenancies in Mawab to the hardships of searching for vacant land elsewhere. The declining availability and increasing price of land have been

discussed above and the information on income levels indicated the poor prospects for most tenants of reaching a position where they can buy land of reasonable quality and location.

Summary. This chapter has shown how the early settlers in Mawab benefited economically from the opportunity of obtaining large farms in the most accessible and most fertile parts of Mawab. It has also shown that the disadvantages of small and remote farms have inhibited comparable development by the later settlers and that for such settlers the long-term benefits of migration are doubtful. Together with the preceding chapters this one has suggested that colonisation was carried out almost entirely according to traditional techniques and values. Thus, capital, whether accumulated rapidly by large-scale owners or with difficulty by tenants and labourers, has usually been invested in land, housing or children's education, rather than in productivity-increasing innovations or in non-farm enterprises. Apart from small sari-sari stores, most commercial enterprises in Mawab have been undertaken by people who arrived as non-agriculturists with considerable capital. Now that agricultural innovations are becoming more readily available and the potential benefits more widely known, the wealthier farmers are beginning to turn to these avenues of investment. Under present conditions, the result will be to emphasise the gap between the earlier and the later settlers and at the same time it will become increasingly hard for the later settlers to attempt to catch up, since they cannot afford such investments.

Many of the later migrants have been able to improve their levels of living slightly through resettlement without achieving the surpluses possible for the earlier,

larger-scale settlers. Any surpluses achieved by the later settlers are small and insufficient to make significant investments in housing or schooling. While they could be used for certain production inputs, the continuation of traditional consumption patterns, together with ignorance or distrust of such new inputs, ensures that surpluses are not put to productive uses. Meanwhile, the growth of families makes the production of a surplus continually more difficult, and real incomes will almost inevitably begin to fall, so that conditions for recent migrants will rapidly approach those from which they have migrated.

It is unfortunate that no comparative data on incomes exist for other parts of the Philippines for any period later than 1961. However, official reports and interviews with officials and farmers in the migrant source areas indicate that, on average, conditions in Mawab are still better than those in most of the source areas, with larger farms, better sharing conditions for tenants and labourers, higher crop yields and, almost certainly, higher farm incomes. Nevertheless, it has been shown that these average conditions are heavily weighted by the prosperity of the lowland rice farmers, who are also those to whom the new agricultural technology has been made available. Far less attention has been paid either to upland crops or upland farmers, and there appears small prospect of hill farmers in Mawab avoiding, over the next few generations, the disastrous losses of fertility and soil that have occurred in the uplands of the migrant source areas. This implies an increase in the tendency for lowland farmers to be more prosperous than hill farmers, a difference that could lead to social tensions even if the lowlands remained an area of primarily peasant owners rather than absentee landlords. Already, there is violent antagonism between upland squatters and logging concessionaires and on the northwestern border of

Mawab in 1967-8 both squatters and loggers were armed, although a confrontation was avoided. It appeared that Hardie's prophecy of 1952 (see Introduction, p.xxxii) was about to be fulfilled within less than a generation.

Chapter VII

SOME INTERNATIONAL COMPARISONS OF PEASANT COLONISATION MOVEMENTS

It was stated in the Introduction that the great bulk of research into the colonisation of new land has been concerned with completed historical movements. Research into recent or current colonisation has focussed chiefly on organised - usually governmental - settlement schemes. The unguided, or spontaneous, migration and occupation of land by individuals has been noted in many countries but has rarely been the subject of detailed investigation. Important points concerning specific areas have been made more or less in passing, for instance, by writers of regional descriptions, but coverage is very uneven. In this chapter, detailed attention is devoted to a very few areas where a considerable body of information on spontaneous colonisation by peasants has been built up, whether by geographers, economists, sociologists or others. The information on these selected areas is not always directly comparable.

The areas selected for detailed examination are Indonesia, Burma and Costa Rica. Apart from the availability of information, Indonesia and Burma were chosen because, like the Philippines, they are part of southeast Asia, while Costa Rica was selected to provide a comparison as a culturally distinct part of the tropics. In addition, Indonesia and Costa Rica have experienced colonising movements over the same period as the Philippines; although the main Burmese migration into the vacant lands of Lower Burma occurred several decades earlier, it may for this reason be instructive to observe

the conditions that developed from this movement. There are other points of similarity but also many differences between these countries. Thus, both the Philippines and Indonesia are archipelagos and in each case one large island (Mindanao and Sumatra respectively) serves as the major focus of migration. However, most inter-island migrants in Indonesia come from Java, whereas several Philippine islands are sources of migrants. Furthermore, the population of Indonesia is more than three times that of the Philippines, four times that of Burma and 100 times that of Costa Rica. Nevertheless, in each of these countries, either there has been localised population pressure on resources or the prospect of improved agrarian conditions in vacant areas has attracted migrants from long-settled areas. Further similarities and differences will become apparent below.

Indonesia[1]

Traditionally, the colonisation of new land in Indonesia has generally involved small-scale and short-distance movements within islands in response to local pressure of population on resources. In some areas these movements continue. In Java and Madura such movements led to the occupation of all arable land by about the end of the nineteenth century and to the initiation of the process of 'agricultural involution' (Geertz, 1963). Increasing numbers of people were maintained by a constant amount of land through increases of output per hectare while output per person remained stable or even declined. By 1961 the crude population density of Java-Madura had reached 477/square km and the nutritional density was over 1000/square km of cultivated land (Penny, 1969). Some of

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1 Major sources used in this section were Pelzer (1945), Djoko Santoso and Ali Wardhana (1957), Penny (1964), Wertheim (1964), Heeren (1967) and Kampto (1967).

the increasing labour force migrated to work on Dutch plantations in Sumatra and other islands, but the numbers were too small to affect conditions in Java and in many cases the migration was purely temporary.

More or less simultaneously with the early American efforts at organised colonisation in the Philippines, the Dutch began to establish colonies in southern Sumatra for Javanese settlers. Pelzer (1945) has described the background and early operations of these settlement projects. For a long time, there was little enthusiasm in Java for migration (or transmigration, in the Indonesian terminology) and at times the government resorted to compulsory recruiting. This was in marked contrast to the Philippines, where the establishment of the National Land Settlement Administration in 1935 led to great eagerness for migration under its auspices. In the late 1930s settlers were sent to the colonies in the Lampung area of south Sumatra just before the rice harvest so that they could earn enough money to subsist for the next few months, living with earlier settlers until their own farms were ready. Settlers paid their own travel costs but the government surveyed and cleared land and built roads and irrigation works. Each settler was allotted a farm of one hectare and the aim was to attract migrants by making possible the re-creation of a typical Javanese village. The land allotment was so small as to make inevitable the rapid emergence of the less favourable aspects of Javanese rural life, but in the early stages this was not clear. The largest number of migrants moved in any pre-war year was 53,000 in 1940. This figure represented less than ten per cent of the annual natural increase of the population of Java.

After the wartime hiatus, the republican government revived the system of migration. Government support was

expanded to meet all costs of resettlement including the settler's food before making his first harvest. Land allotments were increased to two hectares to facilitate cultivation of cash crops. The government found that the number of volunteers greatly exceeded the capacity of the colonies. Apart from the official scheme, spontaneous migration developed, with Javanese moving with their own resources and squatting in forest reserves or obtaining land from the natives. Simultaneously with the occupation of land by spontaneous migrants, the offspring of many pre-war settlers began to obtain land outside their parents' settlements in which no land remained for distribution. This process was known as 'local migration'.

The number of settlers moved annually by the government in post-war years did not reach pre-war levels. In the peak year of 1959, 46,000 migrants were settled, chiefly in Sumatra, and in the period 1957 to 1962 the average number moved was only 22,000. The number of spontaneous migrants is unknown. In Indonesia, the number of settlers in government schemes is roughly comparable with that in the Philippines, but there has been no comparably massive spontaneous movement in Indonesia. An official estimate is that between 1952 and 1963 there were 189,000 government-sponsored settlers and 65,000 spontaneous settlers (ECAFE, 1964:42). Spontaneous inter-island migration has been less important than migration to cities within Java (Jones, 1968:8-10).

Official settlements were established by formal agreement with the leaders of the native landholding groups (marga) and the agreements applied to specific areas of land. Leaders of groups of spontaneous and local migrants usually obtained forest clearance permits from the marga leaders also but the permission did not specify defined areas and conflict between groups of settlers was not uncommon as each

expanded its clearings. Leaders of groups of spontaneous settlers initially allotted land to their followers, usually in lots of one hectare for each family. Thereafter, individuals were free to add to their holdings if they wished by clearing more forest land, provided that their first lots were not neglected. The additions were rarely contiguous with their original lots. In one area of spontaneous settlement, Kampto (1967:295) found that after three or four years 38 per cent of 251 settlers had a mean farm area of 1.12 ha in a single plot; 42 per cent had a mean area of 2.02 ha in two plots; 15 per cent had a mean of 2.93 ha in three plots and five per cent had a mean area of 3.83 ha in four plots. After the first group of settlers began operations, it was common for relatives and friends from Java to join them. Heeren (1967:210) noted that over 75 per cent of his sample had travelled directly from Java rather than in stages as among the Philippine settlers.

People who wished to expand their holdings commonly let their established clearings to newcomers on a yearly contract. The tenant would have to plant the area to coffee or pepper but was allowed to harvest food crops free of rent until the land was fully planted. The owner sometimes gave the departing tenant part of the first cash crop harvest or even part of the land. Many settlers did not try to add to their initial clearings or to plant cash crops, remaining content with rice, soybeans and minor food crops. The spontaneous and local migrants initially received no assistance or services from the government and there was virtually no attempt to create wet rice fields (sawah) in the forests of south Sumatra by the settlers' own efforts (Kampto, 1967:297). In fact, even in the official projects the rate of immigration outstripped the provision of irrigation. Unaccustomed to sedentary dry farming, both official and spontaneous settlers had poor rice yields and

their expansion into nearby forests was essentially in order to augment their food supply from new clearings. Deforestation was rapid and invasion by grasses common. In some areas, land deterioration was so advanced by the mid-1950s that settlers were using cassava as their staple, as in the poorest parts of Java (Wertheim, 1964:189; Timmer, 1961:442-5).

All studies of Javanese resettlement have noted the small sizes of farms in the new areas, even where more land has been available. This phenomenon is generally attributed to a continuation of Javanese cultural ideals and 'subsistence-mindedness' (Penny, 1964, 1969; Heeren, 1967:175). In a survey among Javanese settlers in north Sumatra, Penny found that the mean farm area was 1.5 ha. Rice accounted for 77 per cent of farm receipts despite the fact that the settlers had formerly been labourers on tobacco estates and knew how to grow tobacco as well as realising how profitable it was. Although settlers in this area have often been able to achieve a marketable surplus from their wet rice fields, their holdings are too small to permit this to continue as farm population grows. Penny (1969:261-2) points out with reference to the settlements in general that landlords, money-lenders and landless labourers have already begun to appear, and he cites Kampto's finding that in an area settled for 30 years 73 per cent of the landholders owned less than 0.7 ha and 32 per cent of family heads were landless. Every study cited has revealed (implicitly or explicitly) that Javanese colonists have commenced their new operations on farms of inadequate size and their adjustment to the new physical environment has been insufficient. In attempting to re-create their home conditions the Javanese have (as Sumatrans claim) merely exported their poverty, and have more or less ensured the need for further migration from the

colonisation areas themselves within a generation. These areas do not have the fertility to support the 'static expansion' that has taken place in Java. Colonisation has not only failed to make a significant contribution to Indonesia's agricultural economy; it has also failed to alleviate the problems of rural Java.

Burma[1]

Lower Burma comprises mainly the Irrawaddy delta and the lowlands around the Sittang and Salween estuaries, together with the littoral strips north and south of these rivers. The coastal strips were annexed by the British in 1826, the delta in 1852. At this time, the lowlands were only sparsely populated, partly as a consequence of warfare and partly as a result of the Burmese kings' policies of compelling resettlement of the population in Upper (or inland) Burma. The British administration encouraged the re-occupation of the lowlands by tax concessions and by making land available under various forms of occupance, and the area under rice in Lower Burma grew from 27,000 ha in 1830 to 400,000 ha in 1855. The opening of the Suez Canal in 1869 made European markets for rice more accessible and the consequent rise in returns from rice stimulated more rapid development of the lowlands. Between 1855 and 1900 the area planted to rice in Lower Burma increased from 0.4 million hectares to 2.7 million hectares, growing at a mean annual rate of over four per cent (Cheng, 1968:6,25). Over the same period, the population of Lower Burma grew from 1.5 million to almost 5.5 million, and the density of population from under 17/square km to 42/square km. By 1886-7, rice accounted for

[1] The major sources used in this section were Furnivall (1957); Tun Wai (1961); Cheng (1968) and Richter (1969).

85 per cent of the value of all Burmese exports. Both the rice area and the population continued to increase after 1900, although at a slower pace, but as the economy diversified the share of rice fell to about 50 per cent by 1930 (Cheng, 1968:206fn, 221; Richter, 1969:145-6). It is clear from these figures that the colonisation of Lower Burma had an immense impact on the national economy.

One aim of the British administration in encouraging colonisation was to create a body of peasant proprietors. Furnivall (1957:51-7) has described the forms of occupance recognised by the British. The term 'squatter' was applied to people who were allowed to settle freely on vacant land subject to payment of annual revenue.[1] After twelve successive years and subject to continued payments of revenue the occupant could treat the land as private property and dispose of it at will. Although squatters were expected to cultivate the land on pain of ejection during the first 12 years, the law was not enforceable. Hence it was easy for speculators to acquire large holdings with the annual revenue tax as the only cost and hold the land undeveloped until land prices rose.

The administration introduced what was known as the patta system, by which grants of between six and 20 hectares were made to approved cultivators who were exempted from revenue payment for several years, during which mortgage of the land was forbidden. Although the aim was to control colonisation through processing of patta applications, the occupation of land proceeded ahead of cadastral surveys and conflicting or overlapping claims were common. In the event of conflicts the local revenue officials became the effective deciding agents and decisions were commonly influenced by bribery, placing genuine cultivators at a

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1 Although such 'squatters' were never formally approved, the use of the term here differs from that in other countries such as the Philippines and Costa Rica where squatting was clearly illegal.

disadvantage compared with speculating civil servants. Many of the cultivators who obtained patta lands lacked capital for development. Some borrowed the necessary funds on mortgage - infringing the conditions of the patta grant - and then found themselves unable to repay and thus lost their land. These tendencies were noted as early as the 1880s, but by the time the patta system was abandoned in 1910, much land had already passed into the hands of wealthy landlords and money-lenders (Cheng, 1968:148, 151).

Other systems of land release included leasing, which was quickly abandoned as ineffective, and grants of large areas for people possessing large capital resources for development. Speculators and non-agriculturists used such grants also to acquire large holdings at low cost. These holdings were often let in small plots to tenants, but most were eventually resumed, still uncultivated, by the government.

As colonisation proceeded during the twentieth century, the accumulation of land into fewer hands continued. In 1901, agriculturists owned 82 per cent of the land in Lower Burma; in 1920 they still owned about 75 per cent but by 1936 the proportion had fallen to 53 per cent, largely through the foreclosure of mortgages (Tun Wai, 1961:103-4, 117; Cheng, 1968:144). Although immigrant Indian money-lenders held mortgages over large areas of land, when they foreclosed much of the land was sold to rice millers aiming to ensure supplies for their mills, entrepreneurs wanting land to use as security to obtain loans for their enterprises, and people who simply wanted a secure form of investment. Burmese money-lenders tended to retain land that they foreclosed, though they did not usually cultivate it personally. By 1936, 39 per cent of the land in Lower Burma was controlled by absentee owners.

By 1931, owner-cultivators formed only 37 per cent of the agricultural work force while landless labourers accounted for 40 per cent and tenants for 23 per cent. (Richter 1969:149).[1] During the period from 1870 to 1930, Furnivall (1957:77) estimated that the level of agricultural wages had fallen by 20 per cent. It had become difficult for labourers to save enough to buy draught cattle in order to rent and cultivate land. It was also difficult for tenants to acquire their own land, so that permanent classes of tenants and labourers developed, in contrast to the position at the beginning of the colonisation phase when migrants served as labourers or tenants only long enough to locate and claim land for themselves. By 1935, 57 per cent of the occupied land in Lower Burma was operated by tenants (Cheng, 1968:157). Other aspects of deteriorating conditions were rising levels of rents and a great instability of tenure which resulted in poor methods of cultivation and, according to Furnivall (op. cit.:70), a lower income for tenants than for labourers.

The result of the uncontrolled systems of release of vacant land was that land in Lower Burma became controlled not by a strong class of peasant proprietors but by wealthy, and often absentee, landlords. The majority of the cultivators were tenants and labourers; small-scale owner-operators were in a decreasing minority. While it is not possible to assess changes in levels of living of the people who colonised the lowlands, nor to compare directly incomes of lowland farmers with those in Upper Burma, tenuous evidence suggests that the advantage to be gained by migration from Upper Burma had become dubious by

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1 These figures are for all Burma and understate the position in Lower Burma. By 1939, 59 per cent of farm land in Lower Burma was under tenancy, compared with less than one-third in Upper Burma (ibid.).

the 1920s and, according to Cheng (1968:234), by the 1930s the farmers in Lower Burma were definitely worse off than those in Upper Burma.

The main disadvantages to farmers in Upper Burma were the small size of holdings and the unreliability of rainfall which could lead to crop failures and famine. The proportion of tenants and labourers among agriculturists was comparatively small; tenants were commonly farming the land of kinsmen and there was no up-bidding of rents such as took place in Lower Burma. Although farms tended to be minutely subdivided, stability of tenure was high and cultivators, whether owners or tenants, were prepared to use more intensive methods than those used in Lower Burma. While the cultivator in Lower Burma had to protect his land against floods, he rarely suffered complete crop failures. On the other hand, the insecurity of most cultivators in the lowland areas led to poor cultivation methods (Furnivall, 1957:67, 80-1). Furnivall also related increasing social disturbance, expressed in rural crimes, to the insecurity and deteriorating conditions of tenants and labourers in the colonisation areas.

Costa Rica[1]

Although the population of Costa Rica in the late nineteenth century was less than 200,000, with a crude density of only nine people/square km, over 80 per cent of the people were concentrated in the rich agricultural area of the Valle Central lying between volcanic mountain ranges. Most of the Pacific and Caribbean lowlands were very sparsely settled. When coffee became a major crop in the mid-nineteenth century, much of the land in the Valle Central came into the hands of wealthy people. While many

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1 The major sources for this section are Sandner 1959, 1962, 1964 and 1967; Parsons, 1963.

people became tenants or labourers, others migrated to the edges of the valley. The peripheral lands were occupied by 1880 and migrants began moving out of the valley across the mountains towards the lowlands. In 1892, the Valle Central contained 80 per cent of the national population; by 1927 its share had fallen to 75 per cent and by 1959 to only 54 per cent, when the country's population had reached 1.1 million. As these figures imply, the main movement occurred during the second quarter of this century. During the period 1927 to 1959, the population of the Valle Central doubled and that of some of the lowland areas tripled. The crude population density[1] in the Valle Central rose to 142/square km by 1959 while densities in the main area of colonisation, the Pacific lowlands, reached 12-13/square km. While these densities appear low in comparison with those in the other countries examined in this chapter, the associated agrarian conditions have nevertheless led to great mobility. Thus in 1963 only 66 per cent of the population were resident in their native districts. Even in the areas of colonisation, between 8 and 13 per cent of the people have migrated at least once within the region and 13 to 17 per cent have emigrated from these regions (Sandner, 1967:15).

Many laws relevant to the occupation of public lands have been passed since the nineteenth century, but many have remained inoperative while some have contained conflicting provisions. Thus in the 1885 Fiscal Code, one Article specified 50 ha and another Article 500 ha as the limit freely obtainable from public lands. In 1939, arrangements for 10 to 15 year leases were codified, as well as a law

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1 The sources used do not give enough information to calculate regional nutritional densities. In 1963 Costa Rica had a crude density of 50 people/square km and a nutritional density of 87 people/square km of agricultural land, that is, land in crops or pasture (Sandner, 1967:24).

granting up to 30 ha to any adult not possessing fixed property. In 1941 people who had squatted on public lands for ten years were allowed to claim up to 100 ha for cropping or 300 ha for stockrearing. Shortly afterwards, squatters on private lands were allowed to retain the occupied areas while the owners were compensated with grants from public lands. Sandner (1962:157-8) cites a comment 'Leyes hay bastantes, pero faltan hombres para hacerlas cumplir' ('There are enough laws but not enough men to ensure they are fulfilled'). For the most part, it proved impossible to control the course of colonisation according to the law, particularly as colonisation did not advance in a continuous front but rather in many directions and in patches often separated from roads and administrative centres by forested hills.

The major reason for migration in Costa Rica has been to obtain land, especially land freely available from the public domain. Although legal processes for obtaining land existed, they were commonly ignored and migrants cleared or abandoned land without regard for regulations. Sandner (1964:5) suggests that colonists could be classed into those aiming to improve their long-term economic conditions as titled property owners, and those who wanted land primarily for subsistence and were unconcerned with the formal tenurial condition of the land they occupied. The majority of both classes were people with little or no capital. Although detailed processes of colonisation differed from area to area, broad similarities may be discerned.

As a rule, migrants moved in stages. Lacking capital and generally being remote from markets, they grew subsistence crops (rice, maize, beans or yucca) in temporary, rotated clearings. When yields fell, they might extend their clearings or, if the surrounding land had been occupied, they might move to distant areas being newly opened. At first, their clearings were often freely

abandoned but as the first clearers were followed by increasing numbers of migrants, the pioneers could sell their clearings to newly arrived colonists. By this stage, some links with markets could be established and the remaining pioneers and the secondary colonists could adopt a more intensive and usually partly commercial agriculture on holdings between 20 ha and 100 ha. As the potentialities of new areas became apparent, wealthier migrants in a third stage would buy larger holdings for ranches and some would set up as store owners and cash-crop buyers. The smaller owners could obtain capital as well as produce from these stores on credit, but many mortgages were foreclosed and the borrowers became tenants or labourers on the growing estates of the wealthy. Often, once the estates were fully developed as ranches or plantations, the tenants would be forced to migrate again (Sandner, 1962:54-6). Thus to some extent the social and agrarian conditions of the source area, the Valle Central, were re-created in the colonisation areas.

Meanwhile, pioneers were repeating the initial stages of the process in successively more remote areas. In this way, vast areas of land were cleared of forest, though not necessarily permanently settled, and the forest was succeeded by wild grasses or scrub on impoverished and eroded soils. It was mainly where roads provided links with markets that settlements became permanent, but these were also the areas that experienced secondary and tertiary stages by which land was concentrated into fewer hands. The third stage, however, has not yet applied to many colonisation areas and there are comparatively few tenants who do not also own some land. In many of the older areas of colonisation, subdivision upon inheritance has led to a high degree of fragmentation and of part-ownership as small owners rent each other's lots in order to achieve

some rationalisation (Sandner, 1964:77). In the colonisation areas 30 to 40 per cent of farms are less than 7 ha and between 20 and 25 per cent less than 3 ha (Sandner, 1962: Table 14). In the newer areas, squatting is the normal form of occupance. In 1963, out of a national total of 65,000 farms, 17,000 were squatted, with a mean size of 14.5 ha.

The majority of colonists are still basically subsistence farmers who sell occasional surpluses. Sandner (1967:15) considers that most of even the stable colonists do not achieve a level of living above the minimum of existence and in fact often have a lower level than before migrating. The acquisition of a large farm in remote areas raises a migrant's social prestige but may not benefit him economically.

According to Sandner (1967:25), both governments and the people of Costa Rica have viewed their land resources as inexhaustible and have looked to these to correct regional imbalances between population and availability of land for ownership. Ownership in itself is a major social value and appears to have taken precedence over more economic aspects of agriculture, leading to the wasteful features of colonisation during the past century. Further development of this kind will become impossible within a few decades as the remaining forest is destroyed. Between 1955 and 1963, during which period the population increased by 38 per cent, the area of secondary vegetation rose by 108 per cent while the productive area increased by only 33 per cent (Sandner, 1967:24). Since the second World War, the average yields of maize, one of the major staples, appear to have fallen from about 1.3 metric tons to 1.0 or 1.1 metric tons per hectare (FAO 1968:56), which is perhaps

related to soil impoverishment in the colonisation areas.[1]

The process of spontaneous colonisation in Costa Rica has in effect been an unguided and informal agrarian reform but it has brought neither permanent relief to the densely settled areas nor improved living conditions to most colonists.

Comparison of colonisation experiences

The above outlines of spontaneous colonisation processes and results in three countries suggest several close parallels to and some differences from those that operated in Mawab and in Mindanao at large. In all cases, migrants from relatively densely settled areas were attracted by vacant lands more or less freely available, though in the case of Burma before 1886 there was some degree of a 'push' factor. The institutional arrangements for disposing of vacant land varied considerably. None of the three countries described above has had a coherent system operating for as long as the system of disposal formulated in the Philippine Public Land Act of 1903 (and its later amendments). However, both Costa Rica and Burma at various times allowed the claiming of land in manners resembling the Philippine homestead provision (for instance, the Burmese *patta*), or the leasing and sales provisions and the granting of free patents (for instance, the recognition of squatters' rights). In Indonesia, on the other hand, arrangements outside government-supported colonies were basically *ad hoc*, reflecting the controlling importance of customary law (*adat*) in many areas.

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[1] The lack of regional data prevents assessment of the relative contributions of long settled and newly settled areas to this decline in yields.

Whatever the formal legal structures for the occupation of land, they were widely disregarded. A major reason for this was that the administrative services in all the countries considered were insufficiently staffed and procedures were too slow to cope with the speed of occupation. Delays in surveys and delineation of claimed lands were responsible for many disputes, and pioneers often found themselves cheated of their land by later claimants. A related issue was the scope for evasion of regulations and, at worst, for favouritism and bribery in allocating land, which occurred in both Burma and the Philippines.

Processes of migration and settlement

In all the countries examined, colonisation began slowly but developed rapidly as information about the availability of land and about economic opportunities spread to the source areas. While the role of governments was important in overcoming inertia during the earliest stages, later chain migration became the rule, with information passing along links of relatives.

In most areas the migrants moved in stages, as propounded in Ravenstein's fifth law of migration (Thomlinson, 1965:263), but the stages for land-seeking migrants were nearly always rural areas, so that Ravenstein's sixth law, that stages are generally rural area-small town-small city-large city, is inapplicable. Movement in stages did not necessarily imply mobility towards continually better economic opportunities; often it was related to continually deteriorating conditions in the colonisation areas. In Costa Rica and to a lesser extent the Philippines and Indonesia, land resources have so far been adequate to allow dissatisfied pioneers to move repeatedly in search of new land, whereas in Burma mobility

has been due more to the movement of dissatisfied or evicted tenants and labourers within areas already settled.

Except in some areas where government settlement schemes have been established, migrants have rarely been able to obtain detailed information about the quality of land and other resources of particular areas. Hence, directions of colonisation have sometimes ignored what later proves to be productive land, instead following the routes of pioneers and of public or private roads. The use of logging roads as access routes by settlers has often opened up areas unsuited to agriculture or remote from the markets that would give settlers an outlet for their produce (cf Budowski, 1966). In areas where major highways were built to stimulate development, results have sometimes been disappointing for lack of associated feeder roads.

Colonists have usually moved well ahead of survey teams and land has often been cropped and abandoned or sold before it has been registered as occupied and before requirements of occupance could be enforced. Native landholders in the Philippines have sometimes suffered at the hands of immigrants. Although pioneers often made small payments to native rightholders, the native valuation of forest land was unsophisticated in terms of the encroaching economic order. Native groups who have become minorities in their home areas have lost most of their land and many have moved to remote refuge areas. Only in the Moslem areas have native occupants resisted domination by immigrants. In the other three countries, most pioneers have been able to obtain land freely. In Indonesia, autocthonous groups have retained much of their land. In Costa Rica, ethnic divisions between colonists and earlier occupants of some lowland areas have been insignificant, and in Burma the pre-existing population was not thick on the ground. To some extent in Indonesia, but much more in the other three

countries, the mobility of settlers moving in stages led to high rates of turnover of land rights. Land values have usually risen swiftly, resulting partly from high values placed on land ownership, partly from speculation and only partly from the effects of capital improvements made on the land by successive occupants.

Results of colonisation processes

Land tenure and farm size. In all the countries considered, as in most tropical countries with colonisation schemes, the aim of legislation and government programmes has been to create peasant proprietors through land settlement. There have been differences of approach, motivations, and standards. For instance, in the Philippines, Costa Rica and Burma allowance was made for the creation of large capitalist farm enterprises whereas in Indonesia government schemes allocated two hectare farms and spontaneous settlers in many cases have been content with farms little, if any, larger than this. In Indonesia the explicit aim of the government was to enable the re-creation of the traditional Javanese village (without its unfavourable aspects) and migrants seem to have accepted a ceiling on their ambitions, at least as expressed in land holdings. In the other countries migrants seemed keener to obtain much larger holdings than they were accustomed to. Nevertheless, as land became less readily available, peasants in densely settled areas were not deterred from migrating by the prospect of obtaining only a few hectares. Nor were they deterred by changes in the prospects of immediate land ownership. In the Philippines in recent years many people have migrated to take up pre-arranged tenancies in the settlement areas. Although they have usually hoped to find their own land later, many are becoming resigned to tenancy in the colonisation areas. The same has been true in Costa Rica and Burma.

The emergence of tenancy (and of squatting) in areas expected to be occupied by peasant owners has been almost a general rule as colonisation proceeds. Many tenants are late migrants who are unwilling to move to the more remote areas or who need to obtain land quickly to support their families. Such tenants commonly rent land at least temporarily from kinsmen or friends. Many tenants, however, are migrants who at first obtained plots of land but who for one reason or another had to relinquish their rights to such land. In the areas studied, perhaps the commonest reason for losing land has been the foreclosure of mortgages, while land has also been abandoned after deterioration through poor cultivation techniques, inadequate fallows, soil erosion or invasion of wild grasses. The settler's returns from such land may prove poorer than those obtainable by renting better land.

Capital. An important factor in both the acquisition of land and the use made of it has been capital. In the great majority of cases, spontaneous colonists have possessed very little capital, whether in the form of money or equipment. While the initial acquisition of land has often required little expense, land development has been hindered since, in the absence of capital, it has depended upon labour supply and this is commonly scarce in areas of colonisation. In cases where a commercial product can be produced rapidly as land development proceeds, capital formation by peasant colonists can be rapid, as happened during the period of abaca cultivation in the Philippines or with rice in Burma. Where colonists cannot produce quickly-maturing crops or where marketing problems are a major constraint, land development and commercialisation are delayed and colonists are essentially subsistence farmers. There are also many instances where settlers aim at little more than subsistence from the start. In such cases, the

later provision of roads and transport to markets may ensure commercial development by the original settlers, as in parts of Mindanao and Sumatra. An alternative, and perhaps accompanying, process most common in Costa Rica, has been for more prosperous people to arrive in order to take advantage of the new developments. With greater capital resources they can buy land, at the same time encouraging land prices to rise. Those who operate as buyers of settlers' produce and as sources of credit may obtain additional land by foreclosing on mortgages. The former occupants may move to new areas or remain as tenants or labourers on the newly-developing estates. The richer settlers may develop a capital-intensive agriculture or they may, as in parts of Costa Rica and the Philippines, merely hold land as a speculative investment, perhaps operating cattle ranches at a low level of capital intensity. From a national point of view, one of the main advantages of spontaneous peasant colonisation over other forms is that it tends to economise on scarce capital by substituting labour. However, unless conditions make possible rapid capital formation by the colonists, it seems that they are prone in due course to lose the fruits of their labour.

Land use. The quality of land use by peasant colonists has been a major issue in studies concerned variously with agriculture, forestry and economic development in the tropics.[1] The opening of new land offers opportunities to improve agricultural techniques and avoid

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1 The literature on tropical land use is enormous and even that literature referring in whole or part to land settlement by peasants is too large for full citation. Works that have been particularly useful in writing this chapter are Budowski (1966), Pelzer (1945), Farmer (1957), Watters (1967) and Zelinsky (1967).

problems that may be almost insoluble in the migrant source areas. The size of farms has been an important factor in land use, since colonists in other than wet rice-growing areas have often adopted a form of bush or forest fallowing. Even for subsistence farmers several hectares would be necessary to allow adequate restoration of the soil while other parts of the holding were in crops. If the holding is to produce crops for sale as well as for food, the total area needs to be larger. The accounts above have shown that many settlers have areas that are too small for adequate rotation of fallows. In the absence of other means of restoring fertility, the quality of the land and its returns declines. Declining fertility of dry-cropped lowlands is a serious enough problem, but the effect of colonisation on upland areas is usually more drastic. With reference to colonisation movements in the circum-Caribbean area, Zelinsky (1967) concluded that

> When, as so often happens, the pioneering, haphazard and without official guidance, is the work of the ecologically ignorant in fragile, unfamiliar environments, the results can be catastrophic.

Budowski (1966:196) stated that when population pressure leads to the occupation of sloping lands

> ...it takes only a few years, usually less than five, to produce a great deterioration or complete loss of the topsoil when it comes to the marginal lands not favoured by natural fertility or inherent favourable soil structure.

While Budowski's time scale would be unduly brief in less marginal areas, the basic finding agrees with those of most other workers. Sandner's comments on the Costa Rican situation were reported above (p. 249-50). Watters (1967:34) said of Venezuelan colonisation zones 'In the absence of state action, it is indeed ironic that this process of destruction must run its course as a necessary prelude to the rehabilitation of the area'. Pelzer (1968:276),

referring to the uplands of northern Mindanao, said that it will be only

> ...a matter of three or four generations before large parts of Mindanao will be a replica of Cebu.... Where will the Cebuanos go after they have destroyed the forest soils on the hill and mountain sides of Mindanao?

While Watters related destructive land use to insecure tenure of squatted land,[1] it seems from field observations in Mindanao and from the literature on Indonesia and Costa Rica that in these areas at least it is more a case of ecological ignorance, since untitled occupants do not necessarily feel their positions to be insecure. Although Blaut (1959) has raised a dissenting voice, the consensus of students of tropical land use is that permanent cropping of uplands is only feasible with terrace systems and the investment required for these is beyond the capacity of most migrant peasants.

On the other hand, the skilful use of tree crops, with or without annual crops, may invalidate some of the strictures on peasant land use. Such land use is practised for instance in the settlement projects of the Malaysian Federal Land Development Authority (FLDA) (Ho, 1965). However, the FLDA projects have required enormous investments and close supervision of settlers by trained staff. Such facilities are nowhere available to spontaneous colonists and rarely even to government-supported colonists other than those in Malaysia.

As regards the establishment of wet rice cultivation, in Indonesia some migrants in favourable areas have created wet rice fields but many have felt that the

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1 In the colonisation areas on the lower Andean slopes in Venezuela 51 per cent of all farms were occupied by squatters and 21 per cent by share- or fixed-rent tenants (Watters, 1967:29).

construction of irrigation systems is beyond their capacity and have waited for government assistance, which has been very slow. Settlers in Burma and the Philippines have been more prepared to establish small-scale irrigation systems (communal or private) or to level and dyke fields for rainfed wet rice. The same has occurred among spontaneous migrants in Malaysia (Fisk, 1961) and Thailand (Chapman, 1967), and it is clear that with adequate water supplies from streams or rainfall and with land that does not require major terracing, peasant colonists can establish extensive rice fields without great difficulty or expense.

The effect of migration and resettlement on the cultivation techniques of peasants is not clear and depends on many other factors. It was noted above that in Burma techniques in the colonisation areas were poorer, though yields higher, than in the migrant source areas. In Indonesia it appears that techniques of Javanese colonists remain constant in so far as wet rice cultivation is concerned, but as a result of the different environment many colonists have been unable to continue their intensive techniques of wet rice cultivation and have turned to extensive and less productive forms of dry-cropping. Sandner's findings in Costa Rica are similar and suggest a deterioration in techniques. In the Philippines the Mawab data suggest that without marked stimuli from outside, settlers continue their traditional practices as far as possible. In most of the countries examined, it is the wealthier peasants that seem most inclined to innovate. This underlines the role of capital in financing innovations. At the same time, capital provides a measure of security in case of failure. Poorer peasants cannot afford to risk failure. However, in none of the cases examined has there appeared any great desire by the mass of colonists or even by the wealthier ones to take full advantage of the

opportunities of new conditions. In part, this reflects lack of information about opportunities, since spontaneous colonisation has usually preceded scientific investigation of resources of an area. However, it may also be related to a tendency, among early colonists at least, to be content with the higher productivity of newly opened land compared with the areas they have left. Watters (1967: 49-50) suggests that migrants might be prepared to adopt productivity-increasing innovations that would be comparatively ineffective in their depleted home environments and he proposed that governmental agencies should provide technical assistance from the early stages of settlement, before migrants were habituated to using their old techniques in the new setting. No such effort was made in any of the countries examined and in each case the scale and diffuseness of uncontrolled colonisation movements were beyond the capacity of the government service agencies.

Levels of living. The economic conditions resulting from settlement are very variable. In Mawab, it was seen that the earliest settlers have prospered but for later settlers there may be little if any improvement in the long term over conditions in their home provinces. While the same tendency appears to a certain degree in the other countries, in Burma and Costa Rica there has also been a pronounced tendency for pioneers to lose their land, for either ecological or economic reasons, and for later migrants with capital[1] to become more prosperous. In effect, pioneer peasant colonists have served as ground-breakers for wealthier people who have arrived when areas have indicated their potential for development. In Indonesia, the larger landholdings obtained by migration

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1 In Burma these were commonly not farmers but merchants or millers.

have yielded an improved level of living to settlers, but in view of the likelihood of rapid fragmentation of the new holdings through inheritance, and of the poorer soils compared with those in Java, the improvement is likely to be temporary. The same conclusion may be reached for those settlers in the Philippines and Costa Rica who have taken up small holdings in areas of precarious ecological balance that is likely to be catastrophically disturbed by repeated cultivation.

Judging from the examples studied and from reports dealing with other areas, peasant colonisation has successfully opened up and made productive millions of hectares of land at comparatively little capital cost. While colonists in areas of good soils, good communications and suitable crops have been able to raise their levels of living far above those they experienced in their home areas, it seems that possibly a majority have been unable to achieve this. The causes are varied, including amongst others lack of communication with markets, difficulties in producing profitable crops, declining productivity with continued cropping by unsuitable techniques and the development of unfavourable tenure conditions when the best lands are pre-empted by pioneers or bought up by a comparatively few wealthy people.

Contributions to the national economy. Many authorities[1] have referred to the belief of governments and of peoples that their countries possess vast resources of land that may be developed in order both to relieve, if not solve, the agrarian problems of densely settled regions and to make significant contributions to the national economy. It is clear that the latter aim has sometimes been realised. Thus in Burma and the Philippines production of commercial

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[1] For instance, Budowski (1966), Sandner (1967:25), Watters (1967) and Zelinsky (1967).

crops by settlers made major contributions to the nations' export earnings. More recently in the Philippines, Mindanao and the Cagayan valley have produced surplus rice and corn that relieve deficits in other regions. In Indonesia and in Costa Rica the output of colonisation areas has been far less significant to the national economies. The prevalence of subsistence farming by colonists has been widely reported in all areas. As for effects on the source areas, it seems that, apart from the possibly temporary relief of food deficits, emigration and resettlement have never been on a scale sufficient to provide more than a 'breathing-space' during which basic problems might be (but rarely were) tackled. Zelinsky (1967:17) has likened the effect of colonisation to

> ...the multiplication of yeast cells in a nutrient medium: an impressive gain in the bulk of living protoplasm, but no semblance of a stronger, more elaborate organism.

With few exceptions, spontaneous colonisation has been assessed as at the most only partly successful in terms of the common aims of relieving problems of densely settled areas and adding significantly to national wealth. It is worth examining briefly the contributions that have been made in these directions by organised colonisation schemes, whether by governments or private bodies. This examination will be through description and reference to relevant studies rather than through an attempt to quantify costs and benefits.

Organised land settlement

In the first place, it may be noted that settlers in organised schemes commonly experience many of the problems of spontaneous settlers, particularly where the organisation is loose and supervision slight. For instance, in some settlement schemes in the Philippines, the administration

has simply accepted as settlers people already resident on the land or people who arrived at the project as applicants with few or no credentials. Lack of supervisory and service personnel has allowed the development of tenancy even on five hectare blocks in settlement projects, and overlapping land allocations also occur (field observations; Land Authority, 1966; 1967:78-84; Bahrein, 1969). Problems of crops to be grown, techniques to be used and the availability of transport and marketing facilities may also resemble those of spontaneous colonists.

A more meaningful comparison to be made as regards organised settlement is with settlers in highly organised projects such as those of the Gezira scheme and the Malaysian FLDA. There is no doubt that such projects have developed sophisticated and productive forms of land use and that settlers have experienced levels of living well above those in neighbouring rural areas. However, these achievements may not exceed those of successful spontaneous colonists such as the pioneers in Mawab and, more importantly, they have been extremely expensive (Mellor 1966:188). For instance, Ho (1965:3) cited the cost of FLDA operations as over $US 3,000 per settler family (exclusive of costs incurred by other government agencies). Farmer (1957:319) estimated the cost of establishing colonists in Ceylonese projects at about the same level. Linares (1967:94,97) reported costs between $US 1,200 and $US 4,200 per family in organised projects in Bolivia and Frost (1964) found costs of $US 1,000 per family in Guatemalan projects. These and other students have pointed out that governments cannot afford to create enough schemes on this scale to cope with even existing overcrowding in poor areas, not to speak of future population increases. As Fisk (1961), Linares (1967) and others have pointed out, capital-intensive projects that benefit a small minority of

peasants are essentially a luxury in underdeveloped countries. Apart from their high financial cost, they tend to exhibit paternalism, rigidity in productive systems and a danger of errors in predictions of market conditions for the planned crops.

The question has often been raised whether the capital used in such projects could have been used more effectively in other directions - particularly in creating employment opportunities through industrialisation, in intensive attempts at thorough agrarian reform in densely settled areas, or in providing only basic services in sparsely settled areas and leaving further development to spontaneous settlers. No single answer could be valid for all the tropical countries faced with regional imbalance of population and rural poverty, nor need a country commit itself to a single means of colonisation or of creation of employment opportunities. However, the literature suggests that very few organised settlement schemes have been as carefully planned or administered as those of the FLDA[1] and much capital has been invested to achieve results little or no different from those of spontaneous colonists.

Conclusion

Spontaneous colonisation in the tropics has been responsible in total for the resettlement of many more people than organised schemes. At its best it has swiftly opened productive land through the use of labour where capital is at a premium, and has contributed to increased production of foodstuffs and raw materials whether for domestic or export consumption. It has, also at its best,

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1 For instance, Bahrein (1969:57) found that in a representative Philippine scheme there were seven service officers for 1,164 settlers, whereas in an FLDA project there were 24 officers for 655 settlers.

provided greatly improved living standards for many peasants as well as checking the deterioration of densely settled areas. However, this has often been achieved at the cost of much waste of resources. This has included human resources lost through sickness incurred by pioneering far from health services, or through disappointment of settlers and abandonment of land. It has also included waste of physical resources, for instance through the destruction of valuable timber and degradation of soil. At its worst, spontaneous colonisation has produced no permanent gain for the countries concerned and has merely transferred agrarian problems to new areas. It is rarely, if ever, possible to strike a balance such as may be partly feasible through cost-benefit analysis of organised, documented official projects, but in the concluding chapter the results of spontaneous colonisation in Mawab municipality will be summarised and discussed in the light of the economic and demographic situation in the Philippines.

Chapter VIII

SUMMARY AND CONCLUSIONS

Summary of fieldwork findings

The investigations among settlers in Mawab revealed that the majority had been dissatisfied with agrarian conditions in their home provinces and had migrated to Mindanao to obtain farms of their own. The process of chain-migration ensured that the composition of the population of Mawab was in large part determined by the provincial origins of the early settlers. However, migration in stages was also the rule and migration chains drew in people from areas of Mindanao where settlers stayed before reaching Mawab.

The phenomenon of chain-migration had a further consequence, in leading to a tendency for kinsmen to occupy neighbouring plots of land and so for extensive areas to be occupied by *paisanos*. However, clustering of houses was rare; until some time after 1945 the only settlement with even a slight degree of nucleation was Mawab *poblacion*. It was shown in Chapter II that the main factor influencing nucleation was the construction of roads, with the location of schools having a secondary effect since their associated social gatherings encouraged the construction of stores and of rice and corn mills nearby. These developments have been unplanned and in all barrios the majority of settlers still live on their farms.

The methods by which settlers acquired land differed primarily according to the period in which they arrived in Mawab. In the early stages, homesteading was the rule.

The land selected was invariably in the plain and settlers with lowlying land that proved too wet for abaca preferred to retain this for rice cultivation rather than claim land on the slopes around the plain. Even before the plain was fully occupied, some early settlers were prepared to buy comparatively small lots close to paisanos rather than move into isolated areas of forest. Land became available for purchase when pioneers returned home after sickness or becoming discontented with their new conditions. Many people occupied land before it had been released from the forest zone, and homesteading regulations were commonly evaded although legal procedures for obtaining title were followed. Due to delays in surveying land and in processing of applications, the actual granting of title patents was very slow.

Apart from the large hacienda in central Mawab, most of the plain was claimed by settlers as homesteads even though some of the homesteaders were in fact the second or third occupants. The most accessible parts of the hills were occupied in the same way, but the most remote parts have not been released from the forest zone and the occupants are still squatters. The squatters do not regard themselves as temporary occupants. Rather, they hope that their land will be released for homesteading and in the meantine they have resisted harassment by forest guards of the Bureau of Forestry and timber concessionaires. The hope of release of their land has led the squatters to plant permanent trees and to pay real estate tax as evidence of their claims.

In the early years owners frequently let part of their forested land in order to develop it more rapidly, and many settlers spent a brief period in Mawab as tenants before becoming landowners. More or less simultaneously with the occupation of the hills, abaca was increasingly affected by

mosaic and abaca fields were converted to crops such as rice and corn that were more labour-intensive. Many migrants arriving after 1958 became tenants on rice or corn land. As this process has continued the mean size of rented farms has declined, and after paying rent few tenants with less than three hectares can save enough to buy land as was common in earlier years. Many settlers are now resigned to permanent tenancy, partly consoled by the fact that their yields and incomes are higher than in their home areas. Those few tenants and labourers who manage to buy small plots of land rarely obtain more than three hectares, since most land available for purchase is bought by wealthy pioneers, merchants or non-agriculturists from other towns. Several pioneers have now accumulated land well above the limit set for homesteads and the range of sizes of farms has increased, with small farms becoming much more common. It was noted that the renting-out of land in small lots is a natural response to the continued use of traditional technology, since owners cannot cultivate more than about 5 ha with the constraint of family labour supply. In these circumstances the beginning of a possible trend towards mechanisation by richer landowners has serious implications for the welfare of tenants as well as for others who rely on casual labouring for an important part of their income.

The earliest settlers were able not only to obtain large holdings of fertile land in the centre of the plain but also to benefit from the high prices for abaca at certain periods. This double advantage made capital formation easy for the pioneers once their crops were mature. Their surplus funds were primarily invested in large houses, in abaca stripping machinery and in high school and college education for their children. In contrast, more recent settlers in the uplands have no such reliable commercial crop as abaca and find capital formation more difficult, even where they occupy over five or six hectares within half a kilometre of the national highway.

An additional advantage for many of the earliest settlers was the location of their land in the irrigable central part of the plain. When it became necessary to replace abaca they were able to adopt the most profitable alternative crop, rice, whereas settlers in areas unsuited to rice cultivation had to choose other crops such as corn, coconuts or coffee to replace their abaca. While none of these crops required the investment of labour necessary for rice growing, none was as profitable as rice. Moreover, agricultural extension work has been almost entirely confined to rice growers and only the biggest growers of coconuts, coffee or corn have asked for agricultural advice. Hence, productivity-increasing innovations have been adopted by rice growers more than by other farmers. This contrasts with the situation in most of southeast Asia where rice cultivation is usually one of the last crop enterprises to be modernised. Even so, in Mawab rice is still grown by most farmers essentially in the same way as in their home provinces. With good water supply and comparatively fresh soils, yields are higher than the national average, but are still low by international standards.[1] The same is true of corn: yields are high by Philippine standards but it appears that this is largely, if not wholly, due to the fertility of recently cleared soils, and some people have already reported declining yields.

From the agricultural viewpoint it is regrettable that little effort was made among the settlers to encourage the adoption of improved cultivation practices from the earliest stages, in order to avoid the probable repetition of

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[1] This situation may now be changing. As was noted in the Introduction (p.xxx above), Philippine rice yields have begun to improve significantly following the widespread adoption of new crop varieties and new production practices (see also p.273 below).

processes that have caused the agrarian problems of the densely settled parts of the Philippines. In the early stages of colonisation, many of the institutional problems of the source areas, such as tenancy, small farms and indebtedness were absent. They had barely begun to appear in Mawab when the conversion from abaca took place and are still not as severe as in the source areas. Hence there have been fewer obstacles to the adoption of innovations in Mawab. Nevertheless, except for a narrow range of predominantly labour-saving or crop-protective measures, innovations have not been widely adopted. The leading innovators have been Ilocanos, mostly pioneers but including some more recent settlers with farms of less than five hectares. The high productivity and incomes of these later Ilocanos in particular have indicated what can be achieved by small-scale farmers using improved methods, but the demonstration effect has not yet spread widely among small-scale settlers from other cultural groups.

Implications for the future

Mellor (1966:31) has pointed out that 'expanding the land area at constant productivity and incomes is not economic development in the usual sense - it is only a holding action in the face of a growing population.' Although many settlers have improved their personal levels of living since migrating, the mean income level in Mawab is within the normal range for Philippines farmers. As the population of Mawab grows from both natural increase and continued immigration, the labour force will grow and, in the absence of technological change, the productivity of labour is likely to fall. Simultaneously, farm sizes are likely to decline, chiefly through subdivision among heirs, and income levels will be lowered. Lower incomes are likely not only to reduce farmers' willingness to take risks but also to reduce the amount available for investment in innovations that would increase productivity.

The extent to which this process might occur among the wealthier pioneers is uncertain, because they have been able to afford the schooling for several, if not all, of their offspring that enables them to obtain non-farm employment. The pioneers' farms may therefore not be divided into separate operating units in the next generation. It is in fact more likely that such farms would grow in size. This would happen if economic pressures caused smaller farmers, with few reserves, to sell their land. With continually rising land prices, it would be increasingly difficult for any but wealthy farmers or non-agriculturists to buy land. If at the same time the wealthier farmers mechanised their farms or extended plantings of tree crops that require less labour than field crops, the displaced settlers would need to find either farms in other areas or non-farm employment.

The prospect of finding new farms is almost certain to become very faint as the remaining vacant land in Mindanao becomes occupied and, probably, experiences the same processes that are suggested for Mawab. The prospects for non-agricultural employment are not clear but there is at present no indication of any marked growth of non-farm activities in the Mawab area. If anything, the opposite is more likely as forested areas are logged-over and partly occupied by squatters. As logging operations settle down to a sustained yield basis there will be less demand for casual labour than in recent years when timber was cut as rapidly as possible. While commercial establishments may increase in number, there is no likelihood of these offering major avenues of employment.

If events follow the course outlined above it is likely that Mawab (and similar areas) will in turn become areas of out-migration like the Misamis provinces in northern Mindanao, but the migrants are likely to move to developing urban areas, where there is greater likelihood

of industrial employment, rather than to rural areas. Such urban areas include, in Mindanao, Davao City and Iligan. Whether these centres can provide sufficient opportunities to accommodate the increasingly rapid growth in the labour force remains to be seen and a detailed examination is beyond the scope of this thesis. It is, however, of interest that a recent sample survey in Davao City (Bayanihang Manggagawa, 1967) revealed an unemployment rate of 9 per cent, which was higher than the rate of 3.2 per cent for the whole province in 1960, while the survey also reported an underemployment rate of 24 per cent.

This summary and forecast of colonisation in Mawab has emphasised unfavourable aspects. These accord with the descriptions of colonisation in other countries given in the previous chapter. However, there are aspects of development in Mawab that may form the basis, albeit frail, of an alternative, more encouraging projection. The major element is the comparatively high level of adoption of innovations by small and medium-scale Ilocano farmers, that is, those farming no more than ten hectares. They all have incomes above the mean, whether measured absolutely or in terms of income per hectare or per consumption unit. These incomes have been used to buy both agricultural inputs and consumption goods, including manufactured products such as construction materials, furniture and packaged foods. So far, the demonstration effect has extended mainly among the wealthier farmers with large holdings, as the risks of innovation have deterred most of the small farmers. However, there are reasons for believing that innovations may become more widely adopted. Firstly, the Ilocanos have demonstrated to their neighbours that small-scale farmers can, with suitable work and consumption patterns, afford productivity-increasing inputs from their own resources. Secondly, up till now most landlords have done no more than encourage tenants to use high-yielding seeds, pesticides and fertilisers, and the tenants have not been prepared to pay

the whole cost of such inputs while sharing the incremental returns with the landlords. If landlords now become sufficiently impressed by demonstration effects, they may begin to assist their tenants to meet the costs of technological improvements. Whether or not land reform subsequently affected Mawab, both tenants and landlords would, other things being equal, become more prosperous as agricultural productivity increased. A third factor is that Philippine domestic production of agro-chemicals has only expanded significantly in the last few years. Previously, demand was greatly in excess of supply and often only expensive complete fertilisers were available.[1] The greater availability and lower price of such chemicals should lead to increasing use, particularly in view of the increasing availability of fertiliser-responsive crop varieties. This relates to a fourth factor, the increased attention paid by government to agricultural research and, to a lesser degree, extension. The main achievements to date have been in rice, with varieties such as C-18, BP1-76-1, IR-5 and the internationally known IR-8 ('miracle rice') being widely used since 1967-8. Although hybrid corn varieties for Philippine conditions have been available for some years, they have been expensive and little effort has been made to popularise them. In 1967, a new synthetic corn variety became available and was dubbed 'wonder corn' by reason of its productivity. No extension effort has yet been made for the new corn comparable to that for distribution of IR-8, but such an effort is likely following the success of the rice programme. The government is also proposing to establish a coconut research institute, though results from such an institute would naturally not be available in the short term.

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1 Nitrogen in complete fertilisers is three times as costly to the farmer as nitrogen in ammonium sulphate or urea (Barker, 1966:275).

A dynamic technology, then, is becoming increasingly available to Philippine farmers. The connections between the adoption of continual technological change and economic growth were summarised in the Introduction (p.xxi) and it is perhaps at this point that one may best assess, in general terms, the contribution to Philippine agricultural and economic growth of colonisation as typified by its results in Mawab.

Land settlement and Philippine economic development

Without detailed studies, it is impossible to assess the precise impact of large-scale emigration on the source areas of migrants. It is plain (see p.10 above) that in the main migration period 1948-60 population in the areas of emigration grew at rates far below the national average. Assuming a marginal productivity of labour above zero, emigration would have caused a relative slowing in the growth of output, but a more important effect would probably have been through the absence of migrants as consumers (cf Widjojo, 1961:336). Indirectly, emigration, while not actually reducing pressure on resources, nevertheless retarded the rate of growth in pressure and provided a breathing-space. For instance, land subdivision through inheritance was slowed when some heirs migrated and some owners were able to make innovations that would have been uneconomic if they had inherited smaller plots. Another important effect was that newly opened areas produced surplus foodgrains that helped relieve the deficits of areas like the eastern Visayan islands. It should be noted that this surplus was due more to the initially higher productivity of the land than to technological improvements in the colonisation areas.

It is in agricultural production that the colonisation areas have had their greatest impact on the economy. Recent studies[1] have shown that the major part of increased agricultural production in the Philippines during the twentieth century up until 1961-2 has been due to increased agricultural area rather than increasing yields. Although the Mawab data show rice and corn yields well above the national average, the studies cited indicate that in aggregate the improvement of corn yields on newly opened lands was offset by declining yields in the eastern Visayan islands, whereas improved yields of rice in the established irrigated areas were offset by lower yields in newly opened areas that were mostly not irrigated. At the national level, there was no significant increase in total agricultural output per capita and Hooley and Ruttan (1969: 219) suggest that agricultural stagnation offset the comparatively rapid growth of the non-agricultural sector, reducing the nation's rate of output growth by half between 1902 and 1961. Paauw and Tryon (1966:37) state that 'It is difficult to escape the conclusion that industrial growth has been primarily fuelled by intermediate goods from foreign sources largely financed by agricultural export earnings'. Up to 1955, a significant part of these earnings was derived from abaca produced in Davao. Copra from Davao and other colonisation areas was also important[2] as a direct export or intermediate input to the coconut oil industry. Without the contribution of the colonisation areas, export expansion would have been slower or even non-existent and the non-agricultural sector would have been unable to

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1 For instance, Lawas (1967), Hooley and Ruttan (1969), Oña and Hsieh (1966) and Tryon (1968).

2 Nyberg (1966:7) reported that coconut yields in Mindanao were about 20 per cent higher than the national average.

import necessary capital goods and intermediate or raw materials. Moreover, without the contribution of foodstuffs from newly opened land, a larger proportion of a smaller absolute quantity of foreign exchange would have been necessary for food imports. In addition, food prices might well have been higher, perhaps leading to a need for higher wages for workers, so that funds for industrial expansion would have been further depleted. In these terms, the role of colonisation and development of idle land was of crucial importance to Philippine economic growth during the period of extremely rapid population growth after the second World War.

Nevertheless, in the areas that were newly developing and free of some of the restraints of densely settled areas, the opportunity for initiating a dynamic technology at an early stage was missed. Conditions for the adoption of such technology are still rather more favourable than in the densely settled areas but if recent trends continue this advantage may soon be lost. In recent years references to the 'closing of the land frontier' in Mindanao have become common. This does not mean that immigration will necessarily cease but that population densities are likely to begin increasing rapidly. There are no remaining 'safety-valves' in the Philippines comparable to Mindanao in 1945. The main potentially productive agricultural lands are in Palawan and Mindoro and their absorptive capacity is not high. Failing a very rapid rate of improvement in agricultural productivity, the only outlet for increasing rural population will be migration to urban areas. In the Philippines such migration has hitherto been on a smaller scale than in many developing countries. If recent agricultural innovations do not produce a lasting effect but merely raise agricultural output to a slightly higher level of



Plate 1. Centre of Mawab poblacion, facing west. Structures on left mainly comprise sari-sari stores, refreshment stalls, a tailor's shop and a pharmacy. The larger structures on the right are homes of wealthier farmers and tradesmen.

Plate 2. Barrio road.



Plate 3. Settlers from barrio Sawangan fording the Hijo River.





Plate 4. Harrowing a rice field in Nuevo Iloco.

Plate 5. A squatter's corn fields, in varying stages of growth. Barrio Malinawon.

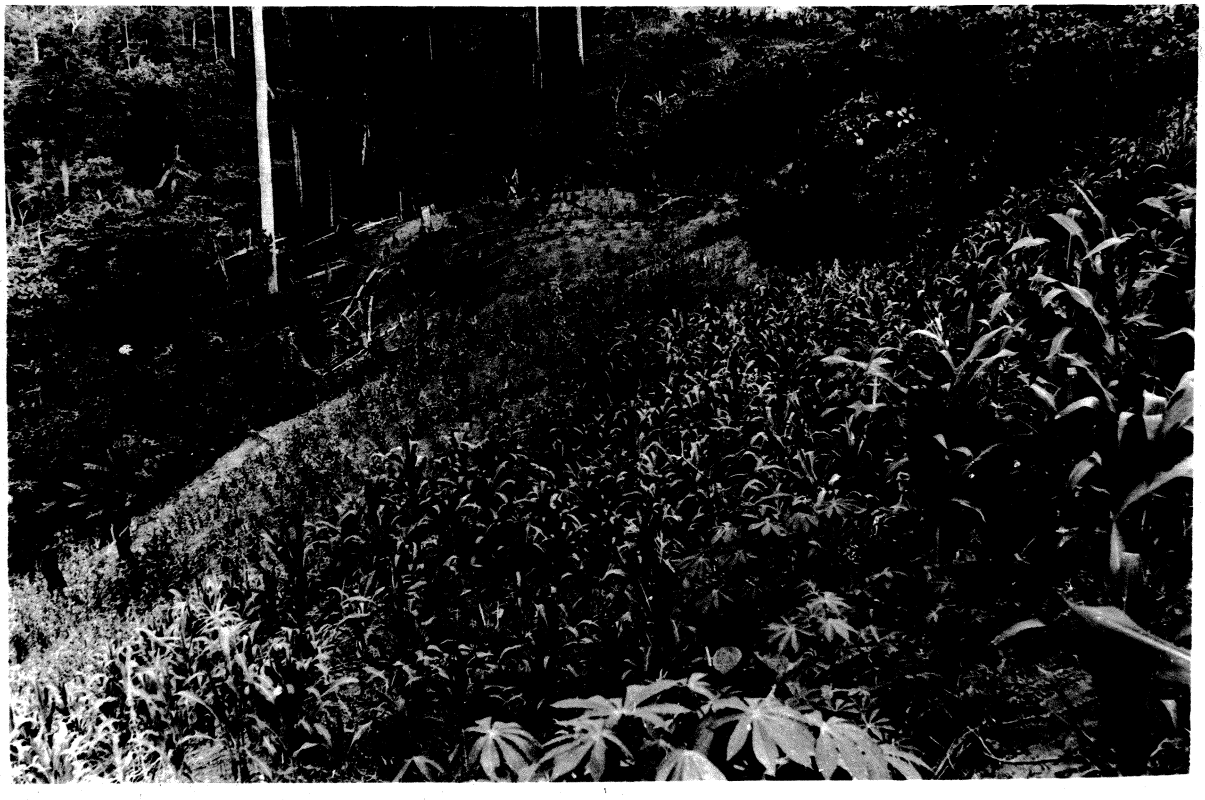




Plate 6. Lowlands rice fields in a small basin in the hills in eastern Nuevo Iloco. Logged-over forest occupies the hills.

Plate 7. The edge of the same basin, showing rice fields on level ground and corn and coconuts on the slopes.





Plate 8. Removing partly-dried copra from halved coconuts, barrio Nueva Visayas.

Plate 9. Newly-arrived squatter's house in an uncultivated absentee-owned abaca plantation, Santo Tomas, Davao.



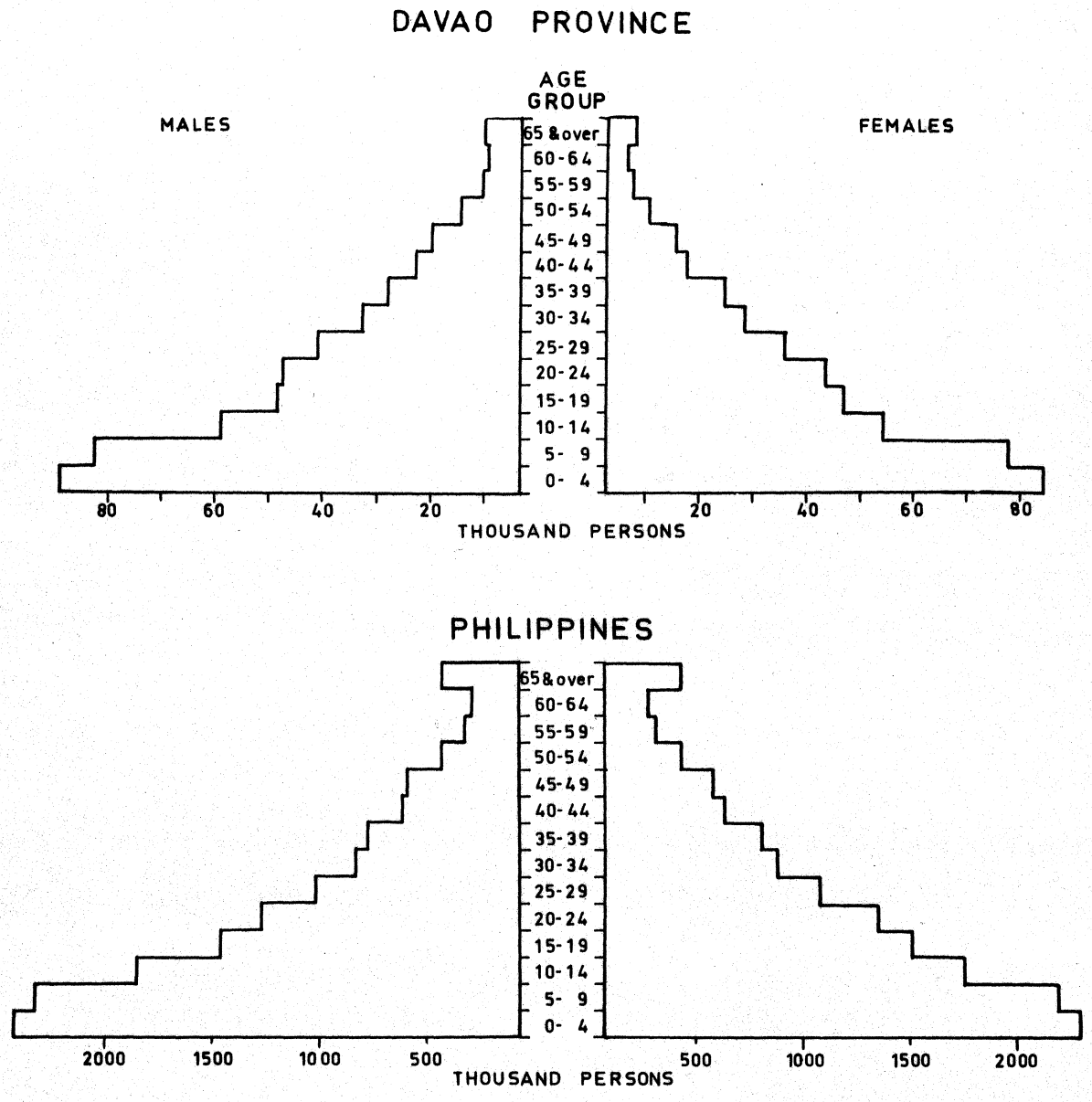
Plate 10. Gully filled with debris from logging and subsequent clearing by squatters, barrio Concepcion.



Plate 11. Squatters' houses on hill-top sites in logged-over forest, sitio Kantabo, Tuburan.



APPENDIX



Appendix Figure 1 Population pyramids for Davao province and the Philippines.

Appendix Table 1

Population projections for the Philippines, 1960-2000

	1960	1970	1980	1990	2000
Total population (millions)					
Hypothesis A	27.1	37.7	53.4	76.7	111.1
Hypothesis B	27.1	37.1	49.0	61.0	72.7
Hypothesis C	27.1	37.4	51.4	69.8	91.7
Per cent aged 15-64					
A	51.2	51.3	50.8	50.3	49.9
B	51.2	52.0	55.3	60.5	64.4
C	51.2	51.6	52.7	54.0	56.5
	1960-5	1975-80	1985-90	1995-2000	
Growth rate per 1000 people					
A	32.3	35.2	36.3	37.4	
B	32.3	25.9	20.7	17.1	
C	32.3	31.7	29.7	26.5	

Hypothesis A: Constant fertility as in 1960-5.
Hypothesis B: Progressive decline in fertility beginning in 1965 and accelerating 1975-95.
Hypothesis C: Age-specific fertility rates after 1965 are arithmetic means of rates in Hypotheses A and B, therefore gross reproduction ratios are midway between these two hypotheses.

Source: Frank W. Lorimer, 1966 'Analysis and projections of the population of the Philippines', pp.301-3 in First Conference on Population, 1965.

Appendix Table 3

Philippine exports

	Total (US$million; FOB)	Percentage formed by			
		Abaca	Coconut products	Logs, lumber and wood manufactures	Sugar
1950	331.0	13	57	3	14
1955	400.6	7	38	11	26
1960	560.4	8	32	18	24
1965	768.5	3	35	25	17
1966	828.2	2	34	29	16
1967	821.5	2	26	31	17
1968	848.3	1	28	31	17

Sources: 1950-60 International Financial Statistics, XIII,12.
1965-8 International Financial Statistics, XXII,12.
Logs, lumber and wood manufactures, 1950-68: Central Bank Statistical Bulletin, 20,4.

Appendix Table 4

Philippine imports

a) Mean annual imports of rough rice, wheat and wheat flour.

	Rough rice (thousand metric tons)	Wheat and wheat flour (metric tons)
1911-20	233.2	not available
1921-30	101.2	(1926-29) 71.9
1931-40	52.8	(1933-40) 83.8
1946-55	118.8	182.9
1956-65	193.2	274.9
1966	104.9	487.9
1967	290.4	541.5

Sources: 1911-55 Dalisay, 1959:229-30.
1956-65 Golay and Goodstein, 1967:48,52.
1966 FAO Trade Yearbook 1967: 110.
1967 UN Yearbook of International Trade Statistics, 1967:670-3.

b) The share of cereals in Philippine imports.

	Total value of imports (US$million; FOB)	Cereals and cereal preparations as percentage of total
1950	341.9	not available
1955	547.7	6.8
1960	603.8	4.1
1965	808.1	11.7
1966	852.8	6.2
1967	1,062.2	4.7
1968	1,150.2	2.4

Source: Central Bank Statistical Bulletin, 20,4.

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