

UNIVERSITY OF PAPUA NEW GUINEA
DEPARTMENT OF PRIMARY INDUSTRY

HISTORY OF AGRICULTURE
WORKING PAPER NO. 33

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The relationship between cash crop production
and nutritional status in Papua New Guinea.

July, 1979

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INTRODUCTION

Agriculture in Papua New Guinea is the mainstay of existence for the great majority of the population who live in the rural areas. Prior to the advent of colonialism, this agriculture consisted, almost exclusively, of subsistence food production. Trade in foodstuffs was largely restricted to the exchange of certain items within the country, and Papua New Guinea was almost entirely self sufficient in food.

The development of a government agricultural service has concentrated, almost entirely, on the introduction of cash crops as a source of income for the rural population. This role has been accepted until recently, by the Department of Primary Industry, in response to the widespread demand for income earning opportunities. Unfortunately the wholesale promotion of cash crops has led to many undesirable social consequences, albeit unknowingly in many cases.

CASH CROPPING IN PAPUA NEW GUINEA

For the purposes of this discussion cash cropping will be defined as the production of agricultural products with the prime intention of offering them for sale, either for export, or for domestic consumption. It therefore follows that the production of coffee, copra, cocoa, rubber, palm oil, cattle, pigs and poultry all fall into this category. The production of food crops such as sweet potato, peanuts or vegetables if done primarily for sale, will also be defined as cash cropping.

The introduction of cash crops has had a dramatic impact on the subsistence system. In some parts of the country large areas of land, usually where soils are most fertile, have been alienated for coffee, copra, cocoa, and cattle projects. Simpson has reported that 20% of the prime agricultural land in the Mulim area of the Southern Highlands is occupied by a cattle project, displacing food gardens whose presence was revealed by aerial photography in 1959.

In other areas where land is not short at present, labour requirements for cash cropping activities have meant that there is less male labour available for clearing and fencing new land for food gardens. Following the introduction of shot-guns there has, in many areas, been a considerable reduction in wildlife populations, and hence a decline in the amount of game meat in the diet. As men take up paid employment and children are enrolled in schools, there is also a reduction in the consumption of foods such as grubs, nuts and berries gathered from the wild.

The outcome of these changes would be less serious if a reasonable proportion of the income obtained from cash cropping activities was spent on nutritious foodstuffs. Unfortunately there is a reasonable volume of evidence that this is seldom the case, as is indicated by the spectacular growth in the sales of beer in Papua New Guinea, from 16,177,000 litres in 1970 to 46,739,000 litres in 1978, a rise of 289 per cent, (Bureau of Statistics, 1978).

A weighed food intake survey was carried out by the author in the Sina Sina area of the Chimbu Province to determine the effect of the widespread introduction of coffee in the area. The village which was selected, Jobakogl, had been surveyed in a similar fashion by Venkatachalam in 1956, just prior to the introduction of coffee in the area.

The results were somewhat disturbing. Overall there had been 33 per cent decline in energy intake between the two surveys, and in 1975 the diet was even more heavily dependant on sweet potato. Despite the fact that nearly half the families in the village grew coffee, and in all 78 per cent had some source of income, purchases food accounted for only 5.7 per cent of total energy intake in 1975. It has been suggested that seasonal variation may have accounted for the dramatic declines in food intake that were observed but the two surveys were carried out during the some months of the year. Three months prior to the 1975 survey there had been a big pig kill in the area and this may have contributed in part to the food shortage. However it was quite evident that most of the fertile, relatively flat land close to the village, which had previously been used for food gardens, was given over to coffee, displacing food gardens to more inaccessible, less fertile land.

High rates of malnutrition are also seen among groups producing food crops for sale in urban markets. A Health Department survey in 1976 among Goilala settlers at Brown River in the Central Province revealed that although the settlers had excellent food gardens, most of this food was destined for sale in Port Moresby markets, and over fifty per cent of the children seen under the age of five years were below eighty per cent weight for age compared with an average figure of thirty six per cent for the Port Moresby Area.

It has often been argued that, given high commodity prices, it make sense to grow coffee or other export crops and use the proceeds to buy food. However Anderson has calculated that it is possible to obtain a gross annual income of K870 (at 1975 prices) from 0.8 hectares of intercropped sweet potato, irish potato, cabbage and carrots. A similar area of coffee yielding 700 kg of coffee per hectare would give a gross return of K728 a year, at the then average buying price of K1.30 a kilogram.

Shand and Straatmans have calculated that there is a disparity of the order of 7:1 between the amount of energy which can be produced by cultivation of food crops, and the amount which can be bought with income from coffee produced from the same area of land.

In their report on the Chimbu Howlett et al estimate that in view of the fact that coffee would seem to be using some 10 per cent of the better land in the Sina Sina, those Chimbuses with little land would be ill-advised to continue to plant coffee. An analysis by Shaw of five Development Banks loans to individuals in the Eastern Highlands underlines the questionable profitability of smallholder cash crop production schemes. These loans, which were to customary land owners, were for cattle, pig, poultry, coffee projects and a mixed sweet potato, peanut and tobacco project. The first three projects lost money, the fourth broke even and the latter made a considerable profit.

There has also been a large increase in the pig population in the Highlands. Wadell has reported cases of "big men" in the Enga with as many as 200 pigs. Weighed food intake surveys have shown that pig contributes little to normal dietary intakes. However pigs consume considerable quantities of sweet potato, estimated by both Schindler and Brookfield to be between 50 and 60 per cent of total production, exacerbating land shortages and accelerating soil erosion.

RESETTLEMENT SCHEMES

In addition to the promotion of cash crops on traditional land the Department of Primary Industry, in conjunction with a number of overseas lending agencies, has established a number of resettlement schemes which concentrate on the production of a single crop for export such as rubber or oil palm. One of the stated aims of these scheme is to provide income earning opportunities to disadvantaged people.

A nutrition survey was carried out by Godderidge in 1975 no one of the most successful of these schemes (financially), the Hoskins Oil Palm Scheme in West New Britain. This survey revealed that 41 per cent of children under the age of five years living on settlement blocks were below 80 per cent of their standard weight for age, compared with 23 per cent of village children of the same age in surrounding villages. Following the findings of this survey a considerable amount of food crop extension work was done among settlers by the Department of Primary Industry. Benjamin reported favourably on settler's food gardens in 1977.

However the 1978 National Nutrition Survey revealed that while only 15 per cent of the 942 children seen at village maternal and child health clinics were below 80 per cent of standard weight for age, 51 per cent of the 974 children from the oil palm settlement blocks fell into this category. It appeared that much of the food produced by the settlers was being sold at Kimbe Market, and that most of money so derived was being spent on non food items.

What is not clear from this survey is whether the poor nutritional status of settler's children is primarily due to factors associated with the resettlement scheme. It is possible that the underlying cause of such high rates of malnutrition lies in the (mainly) disadvantaged areas from which these settlers came. Clearly more research is needed in this area.

The situation at the Gavien Rubber resettlement scheme in the East Sepik Province is more serious. A nutrition survey carried by Mellor in 1975 revealed that 66 per cent of children under the age of five living on the resettlement scheme were below 80 per cent of standard weight for age, compared with 36 per cent under fives in the nearby town of Angoram. More important this rate was worse than that observed in Kambaramba, a village on the Sepik river from which many of the settlers had originated, where "only" 52 per cent of children in this age group were below 80 per cent standard weight for age.

A dietary investigation revealed that the majority of the settlers were existing on a very poor diet. The main staple food of these people was sago, but due to the difficulties experienced in collecting sago in the middle of a settlement scheme they subsisted mainly on cassava. Being traditional fishers, hunters and gatherers their knowledge of agriculture was very limited, and while they were willing to grow legumes they were unable to obtain seeds.

Although the Department of Primary Industry expressed concern regarding this problem, and a willingness to rectify the situation, Maternal and Child Health Clinic data revealed that in January 1977, 80% of children seen were below 80 per cent of standard weight for age. The settlers were committed to a heavy land clearing and rubber planting schedule lasting several years, and the majority of them had undertaken Development Bank loans, often with a very poor understanding of their implications. It will be as long as seven years from the time of planting before these settlers gain any financial return from their rubber, and although they may earn some money from chillies and cocoa production in the interim period the future does not auger well.

Other social problems are frequently associated with such schemes and while the Hoskins Oil Palm Project may be a resounding success financially, the levels of crime, alcoholism and prostitution in the area are all of great concern.

CONCLUSION

There is a growing volume of evidence that indicates that the wholesale promotion of cash crops may result in increased rates of malnutrition, accelerated soil erosion, and a general increase in social problems such as tribal fighting, alcoholism, and prostitution.

Areas where land pressure is intense, and in which high rate of malnutrition are frequently observed, demand immediate attention if the whole subsistence agricultural system is not to break down. Existing problems will undoubtedly be aggravated by any increase in cash cropping activities.

Resettlement schemes would seem to create as many problems as they solve, and require considerable capital investment for each family resettled. Priority should therefore be given to improving and intensifying subsistence agriculture and creating appropriate income earning opportunities within land short areas to relieve land pressure.

The National Development Strategy emphasises the importance of subsistence agriculture, the mainstay of the economy for the rural population and highlights the dangers of over reliance on export crops. Any increase in the production of cash crops for export which results in the replacement of subsistence food production with imported food is no recipe for self reliance.

It is therefore essential that the evaluation of any agricultural development programme, should include a careful consideration of the possible social, nutritional and environmental impact of the project. While the author does not wish to deny the legitimate aspirations of the rural population for increased income earning opportunities, this must not be done at the expense of their, or their childrens well being.

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