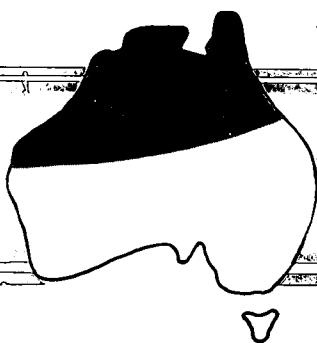
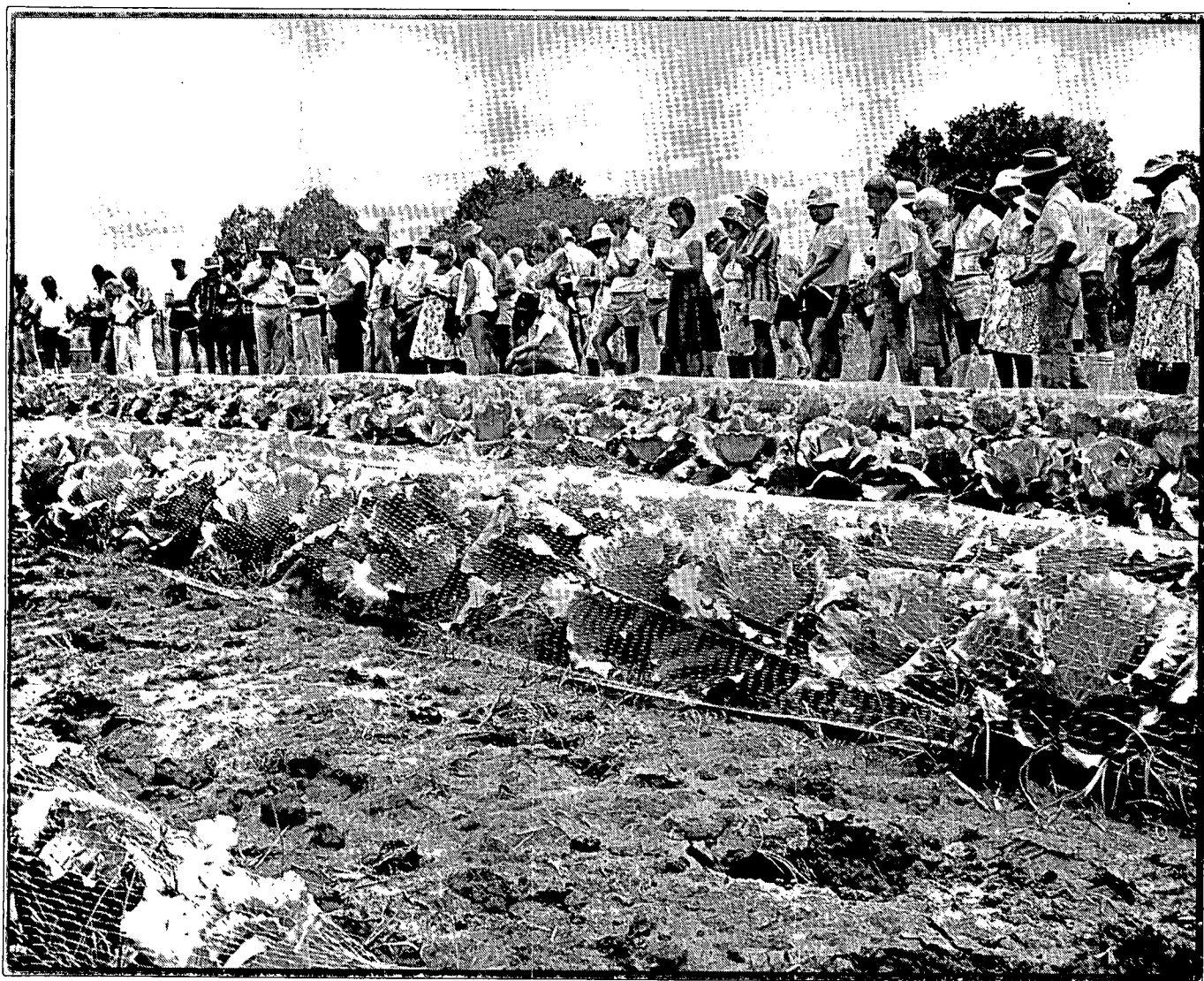


W.S. Mollah

**Government Services to
Primary Producers in the
top end of the
Northern Territory**



Australian National University North Australia Research Unit
Monograph
Darwin 1984

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in the top end of the
Northern Territory**

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Monograph 1984

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PREFACE

In 1982 the North Australia Research Unit carried out a survey of landholders in the Darwin-Katherine region in the Northern Territory to obtain information about government services available to them in the district. The landholders included agriculturists, pastoralists and horticulturists and the analysis of the data obtained is reported in the following study.

The North Australia Research Unit has published various historical accounts of agriculture in the North (Mollah 1980, 1982a, b; Skerman 1978, Bauer 1977). These revealed not only technical difficulties facing producers in the semi-arid tropics but also some of the social complications associated with their activities as promoters, investors, agriculturists and managers. It became obvious that these should be followed up and that particular attention should be paid to the managerial role of men on the land. In this role, producers rely heavily on services provided by government departments, especially information services. This topic links the present study with other work on service delivery which has recently been carried out in the North Australia Research Unit.

The survey in 1982 had six objectives:

- i to gather basic data about primary producers and their properties
- ii to identify the nature and range of rural services offered by the NT Government
- iii to ascertain the level of use of services available from Northern Territory government organisations in

- iv to ascertain the landholders' assessments of information or advice provided about these services
- v to ascertain what methods of communication are used to pass on information or advice to landholders
- vi to ascertain the methods of communication preferred by landholders

In order to achieve these objectives the position of the primary producer was considered to be central. He is the recipient of these services and it is he who decides if, when and how to act upon them. For the purposes of this study a basic question was 'Which government services?' Studies carried out elsewhere have concentrated upon information or advice provided by a State Department of Agriculture (or its equivalent) or perhaps a Soil Conservation Authority or some other similar body. That is, the orientation has been towards 'extension services' and while the term has been retained for this study its conventional interpretation has been broadened considerably. We asked ourselves 'Which NT departments or authorities have services that affect or have the potential to affect the commercial operations of a primary producer?'

Thus land tenure, marketing, water supply, training of labour and provision of finance were some of the matters included in addition to more traditional considerations such as technical advice on varieties of crops, fertilizer application or disease eradication. The services covered were available from seven NT government departments or authorities: Department of Primary Production (DPP), Department of Lands (Lands), Water Division of the Department of Transport and Works (WD), Northern Territory Development Corporation (NTDC), Land Conservation Unit of the Conservation Commission

(LCU), Agricultural Development and Marketing Authority (ADMA) and the Industries Training Commission (ITC).

CHAPTER ONE

INTRODUCTION

People - landholders and landusers - and information they receive from government departments are the focus of analysis in this study. The people are farmers, horticulturists and pastoralists who live north of approximately 15°S and the government organisations are those that provide a range of information on all aspects of the commercial operations of primary industries. Amongst these government agencies the Department of Primary Production holds a central position but divisions and units from other departments offer associated services. While the following discussion revolves around the Department of Primary Production the principles that are involved can apply to any government agency that serves primary producers.

Knowledge is the basic asset of a department such as the Department of Primary Production. It may be developed through research conducted by the department or it may be imported from external sources and perhaps modified to suit local conditions. But that knowledge is only valuable if it is put into practice by commercial producers because a department of agriculture is not a producer of crops or livestock except as an integral part of its research efforts. Therefore, the dissemination of information is one of the principal functions of the Department of Primary Production. This distinguishes it from many other government departments that deal directly with the public. A Department of Health, for example, provides facilities such as hospitals, treatment and medicines for the maintenance of the health of the people and a Department of Social Security makes direct welfare payments to eligible citizens. For departments such as these

information services are an adjunct to their principal functions. Departments like Primary Production can offer service functions such as testing livestock for diseases or providing finance for property development but in many of their operations provision of information is the service, or a very large part of it.

Of course, departments of government have always played a major role in Australia in providing infrastructure for agricultural, horticultural and pastoral industries as in other areas of economic life. Infrastructure has been defined by Wharton (1976, 109) as the:

Physical capital and the institutions or organisations, public and private, which provide economic services to and which have a significant effect, directly or indirectly, upon the economic functioning of the individual farm firm, but which are external to the separate, individual farm firm.

Its special character is not just that it is 'external' to the individual farm, meaning that it is not part of the landholder's property or under his control, but also that it is provided collectively or to users in common and, at least in Australia, is normally in the control or management of a department of government.

Wharton described three categories of infrastructure. Capital intensive infrastructure involves new roads, bridges, dams or silos, requires heavy capital investment and provides tangible evidence of government involvement. Capital extensive infrastructure consists of matters such as research, extension and conservation which require substantial input of

salary and other recurring expenditure. For example, in 1981-82 salaries consumed 54 per cent of the expenditure of the NT Department of Primary Production and operations and administrative expenditure made up a further 38 per cent (DPP 1983, 65). Institutional infrastructure covers legal, political and socio-cultural matters such as land and property rights. All of these forms of government involvement have been undertaken to assist agricultural production. However, the nature and volume of that production have changed with increased specialisation and requirements for capital in marketing of farm produce. More government agencies have become involved. Under the Australian constitution responsibility for agricultural production rests principally with the States and the key Commonwealth role is in international marketing. Yet Jessup and Dun (1982, 109) identified sixteen Commonwealth departments or agencies with inputs to the agricultural sector of the economy besides the Department of Primary Industry. Traditionally States have undertaken the expensive and uncertain function of research in agriculture. In addition they have been instrumental in the release of lands, development of irrigation and water supplies, soil conservation and provision of financial assistance. All political parties have recognized these as valid forms of government support for agricultural industries. Allocation of priorities varies from party to party and with variations in economic circumstances.

In providing services of these kinds in modern society government has acted as one of the major agents of change and development. It has also acted as one of the main agents for practical implementation of scientific research findings. Over recent years the need for contact between government and individual primary producers has increased dramatically because methods of both the production and the sale of produce have become

increasingly complex. In this context the dissemination of information, has grown rapidly as an extension service.

The kinds of activity common to departments of agriculture elsewhere in Australia, have an enhanced importance for the NT Department of Primary Production; it is a major instrument for government attempts to facilitate settlement on the land and thereby to expand the economy. It and its associated departments like Lands and Transport and Works have an important activist role, more so than in developed agricultural and pastoral regions where departments have a large, settled and experienced clientele of primary producers. In the Territory the settlement of a new population and the expansion of land use impose a leading role on the Department and its associated units.

But a second feature about the work of the Department sets it apart from most other Australian departments. It is operating almost wholly with land settlement and primary production in the tropics and the arid centre. For new settlers from more temperate regions and for the old ones who have had little research to draw on, much has to be learned if they are to survive and succeed. The Department has the task of helping them by first developing or refining techniques for the local environment. In other words, the Department is an agent of change both in promoting development and in helping settlers to learn new methods or ways of improving old methods of primary production. For the Department, one of its main tasks then must be to obtain information - if necessary by carrying out its own research - and disseminating it to settlers. They will all have idiosyncracies that will affect when and how they decide to adopt or not to

adopt a particular recommendation.

This has an important consequence for departments with the role of promoting change. They must persuade if they can; they cannot command without provoking resentment, resistance or noncompliance. The information services of these departments are therefore of the utmost importance to them and the sanctions they may have for some purposes must be used sparingly. Occasionally, things go wrong and conflict results between departments or between departments and their clients. But this has been exceptional in the Northern Territory, even though at times some conflict has occurred. It is not our purpose to follow that here, but merely to note the relative absence of public conflict in this field in the Territory.

The Theoretical Context

The theoretical bases for extension services is to be found in diffusion models (Hayami and Ruttan 1971, 36-9). This approach recognizes substantial differences in productivity amongst regions and amongst farmers in any region. Agricultural development sets out to increase production amongst the backward by introducing methods from the more productive regions or individuals. In the history of such development the first innovations came from farmers but in more recent times results from scientific research have helped to boost production. Through a greater interaction between traditional agricultural sciences and economics more has become known about this productive process through identification of those inputs that contribute to increased outputs from the land in various situations. In some cases a central agency may plan an extension program

to disseminate information about a topic throughout a region. This is organised or planned extension. On-demand extension consists of responses to requests for information or advice from growers who are confronted by a particular problem or set of problems. While this outline has been put forward as the academic basis for extension it has had practical limitations. One example well known in the Territory is that technology is not necessarily transferable from one location to another because of any of a range of influences, especially in the biophysical and economic environments.

Sociological research has led to further understanding of the diffusion process and has helped to improve extension services by revealing more of what is involved when people contact one another. In order to understand the role of extension services it is useful to start with a simple model of the communications process. The model recognises that a source (S) produces a message (M) for transmission through a channel (C) to a receiver (R) where it produces some effect (E):

S - M - C - R - E

(Rogers and Shoemaker 1971, 11)

In terms of this model, research organisations were the source and their results became the messages to be channelled through the extension services to the primary producer (the receiver) who effected changes in his methods of production. However, research was not fully effective unless it was passed on to producers nor was it fully effective unless it was related to some problem or operation in a practical farming situation. Feedback was essential and in terms of the basic model pastoralists, farmers and market

gardeners were the source with a message for transmission to research workers who would take action to try to find a solution or answer. For many years the Rogers and Shoemaker model was the foundation of understanding and explanation of the communications process in agricultural extension. Gradually various weaknesses in it became apparent and Rogers (1976) recommended its modification. The basis for recasting the model rests on its institutional orientation - the source dispenses knowledge or information to the receiver. This ignores an active search by the primary producer for knowledge or information from any of a wide range of sources. Furthermore, farmers refer to different sources according to the type of information that they seek.

Changes in the understanding of the communications process have been reflected by changes in the understanding (and subsequently and slowly the practice) of agricultural extension. The original didactic approach was gradually replaced and extension considered as a transaction between 'source' and 'receiver' (Drew 1974, 219). Recently Bardsley (1981, 17) advocated the replacement of earlier models of extension with what he termed a process or resource model. It recognized the full range of resources that are involved in information flow throughout farming. At various times and to different degrees primary producers will call upon their own experience and knowledge, appropriate government agencies (frequently the department of agriculture), other farmers, commercial representatives of, say, machinery and chemical companies, stock agents, bankers and accountants. This pool of knowledge is the first component of the resource model. The second is that it is the function of the extension process to facilitate the flow of information and knowledge throughout the

pool and to help all participants to incorporate this knowledge into their own operations.

In addition to a change in perception of sources and receivers the nature of the messages transmitted has undergone change. Originally information reflected the specialised, discipline-oriented training of scientists and the organisation of government departments. Career advancement depended upon assessment of performance within that organisation and discipline. 'Single issue' innovations such as a new hybrid or a novel pesticide application reflected the perspective from the organisational source. From the viewpoint of the recipient new information needed to be placed in terms of the whole operation of the property in terms of a farm business management approach to extension (Commonwealth of Australia 1974, 188). At this stage government and private advisory services on economics and marketing aspects of farms and stations began to feature more prominently. Hence approaches to extension altered from regarding livestock, crops or pastures as the sole target to a recognition that landholders are the clients for these services. Furthermore, upon receipt of the innovation they assess it and the risks associated with either its adoption or its non-adoption and act accordingly. The process for reaching this decision and the nature of the decision are also influenced by a matrix of social, cultural, personal and economic factors, such as personal values and long-term and short-term objectives.

Methods of communication are also important in the general scheme for they can have a large influence on whether the receiver heeds or disregards a message. It is the sender of the message who decides what channel will be used. This should be decided with regard to the objective to be fulfilled

in sending the message and the target for it. If the purpose is to inform a widespread audience, then a mass media channel can be used. But if the objective is to 'sell' some specific issue to an individual, especially by pointing out its applicability to the particular situation then interpersonal or face to face contact is preferable. Often no one method of communication will be entirely satisfactory and a combination of the various options available will be most effective with each method reinforcing the others.

In the design of this study an attempt has been made to depart from a strict institutional approach. From a landholder's point of view several government departments and agencies offer a range of services that affect farm and station businesses. A broad base of this nature involves abandonment of many narrower and traditional notions of what comprised extension services. Nevertheless, the approach is a useful starting point to ascertain the ways in which government services can be arranged to achieve greater interaction with primary producers.

CHAPTER TWO

THE SURVEY AND ITS ANALYSIS

The Study Area

This study was carried out in the northern part of the Territory (Map 1). Marked variations in the natural environment in this area enable landholders to produce cattle, buffaloes, fodder, horticultural and field crops. Diversity of land use and production spells diversity of service requirements. Rain is the key climatic variable and over a period of five months or so sufficient falls to promote growth but for the rest of the year the availability of water restricts where farmers can operate and where livestock must concentrate their grazing. Temperature, humidity, evaporation and day length all have subordinate influences. So concentrated is the wet season that the five months - November to March - account for over 90 per cent of total rainfall at Katherine. This seasonality of rainfall is more pronounced inland from Katherine whereas at Darwin higher falls in October and April spread the season a little. June, July and August are virtually rainless and any falls in these months are incidental to the wet season. The long term seasonal average for Katherine is 951 mm and for Darwin it is 1572 mm. Landforms and land quality also vary markedly. In general better grazing country occurs towards the southern limits of the study area and all cropping is restricted to selected tracts of better quality lands.

Broadacre crops are rain grown. Sowing takes place in late December or early January to allow harvesting to start from April onwards, although the timing varies with conditions within any one season. Irrigation, usually from underground reserves, is used for horticultural crops especially during the dry season. Production of some varieties at this time of the

year can exploit seasonal advantages on export markets. Conditions within each wet season affect the start and duration of killing seasons but in general abattoirs open from April until December.

Some properties in the district had been included in previous studies that encompassed part of the study area. Surveys of the Victoria River District (Hill 1974; Hill and Pearson 1977; Robertson and Hill 1978; Robertson 1980), the Elsey and Gulf Districts (Michell 1978, Michell and Stockwell 1982) and a Buffalo Industry Survey (Lemcke 1981) all concentrated on grazing industries and on particular aspects of government services. Most of the properties in the region selected for this study could be reached easily from either of the two main centres, Darwin and Katherine. The region had an area of 71444 sq km which was smaller than in some other recent surveys but it involved the most interviews (Table 2.1). Areas of overlap with these three recent surveys are shown in Map 1.

Table 2.1

Comparisons of four surveys in study area

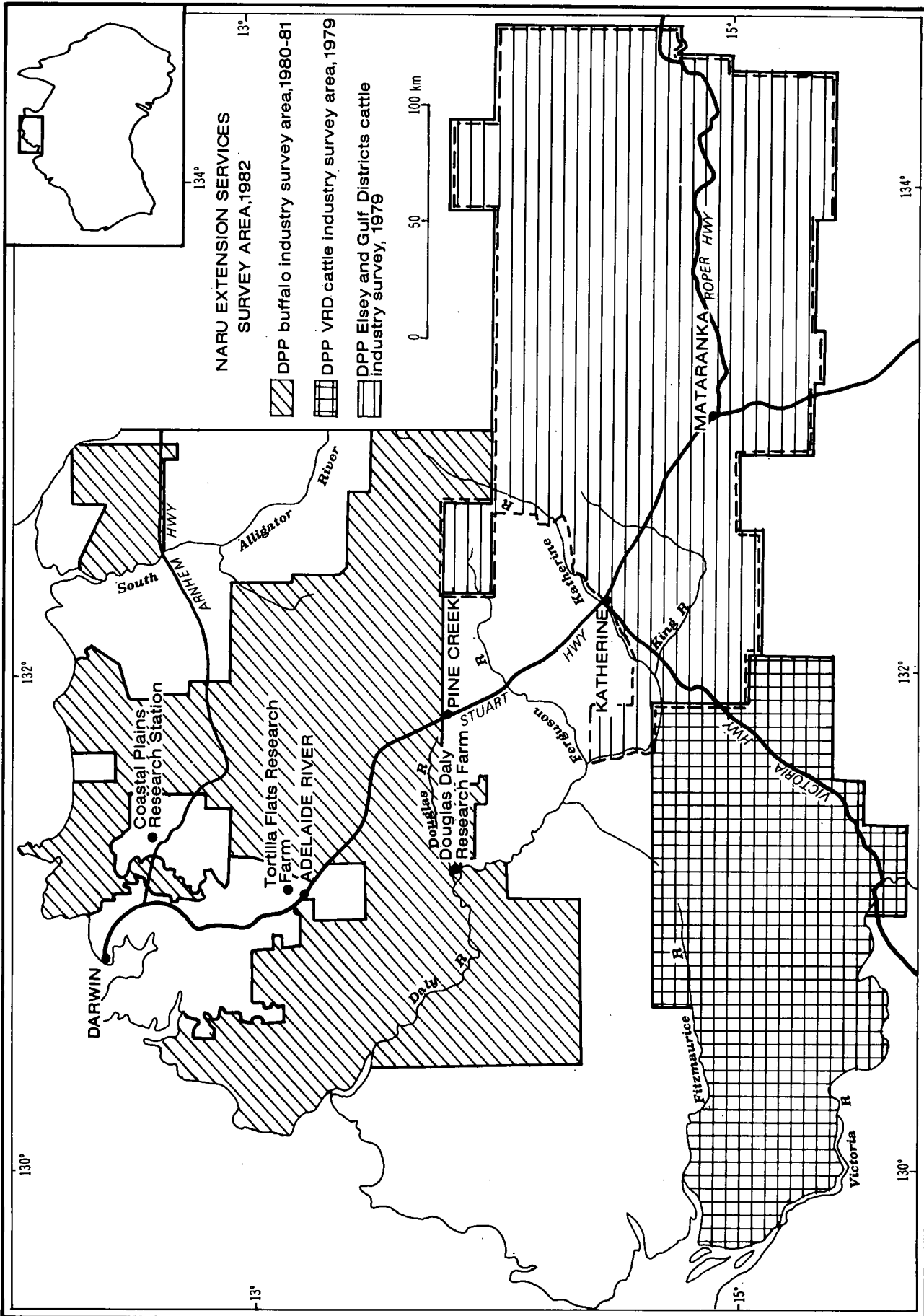
Survey	Area (sq km)	No. of Properties
NARU 1982	71 444	72
Victoria River District 1979 ¹	134 747	30
Elsey and Gulf District 1979 ²	136 000	40
Buffalo Industry 1980 ³	36 603	24

Sources: ¹Robertson 1980, p3

²Michell and Stockwell 1982, p7

³Lemcke 1981, p3

Map 1



Preparation

Since the response rates to mailed questionnaires are often quite low, it was decided to visit the primary producers and to conduct a structured interview with each of them. This study broke new ground, especially in the Territory, in terms of the variety of types of production and the range of government organisations included. Each of the seven government agencies was invited to suggest topics to be broached with landholders. With the cooperation of the government agencies assured, it was also necessary to gain the cooperation of the landholders, many of whom were interviewed in the previous surveys. The first announcement of the project to primary producers was by letter to growers' organisations. They were advised that a member of the research staff of the North Australia Research Unit would like to contact their members individually and would be available to attend a general meeting of the organisation to discuss the project. This was done in three cases.

Advice about the survey was then sent by mail to all commercial primary producers before direct contact was made (by phone, radio, etc.) to set up an interview time. As a result 72 interviews were carried out, in most cases on the individual properties. This number does not represent all properties or producers in the region for a range of reasons: individuals who own or manage more than one property were interviewed once; a couple of properties had wound down operations and were in the hands of a caretaker and in other instances owner-managers could not be contacted or it was not possible to arrange a suitable interview time.

The interview schedule

In the design of the interview schedule topics were presented in much the same order as they would be encountered by a settler who migrates into a new region to set up some type of pastoral, agricultural or horticultural enterprise. Amongst the first matters that have to be considered are the natural resources available. Some of these such as seasonal patterns of rainfall, temperature and daylength are regional in character. Others such as land quality and the availability and quality of surface or underground water supplies also relate directly to individual properties. In addition land title matters arise. Freehold title is reasonably straightforward but leasehold arrangements carry covenants for maintenance and development. Here government should interact with the landholder. Secondly issues of production arise, many of them season after season. For crops, techniques of land preparation, sowing, crop protection and harvesting are examples. The third and final group consists of 'commercial' matters such as assistance with finance and marketing.

Nevertheless, as a result of this general approach the interview schedule was arranged into three broad sections. The first dealt with general background information on the interviewees (position, length of time in the Territory), the property (title, area), familiarity with land tenure matters and resources available for use (labour employed, land quality, dams and bores). Questions in the second section dealt with types of production (livestock, improved pastures, field crops, fodder crops, and horticultural crops) and with services related to the production or marketing of these. In the third section questions were asked on methods of communication (printed and electronic media, visits by government

officers) and the types of services provided and respondents were asked to assess services that they received. A few more socio-demographic variables concluded the interview.

Throughout the schedule every effort was made to keep open ended questions to a minimum without limiting the options available to the respondent. The pre-coded questions were based on knowledge of local conditions and substantial background research. In practice this approach worked very well, especially as the questions were administered in an interview and not in a mail questionnaire. All pre-coded questions included an 'other' option.

The schedule was subdivided so that each respondent was asked to answer only those questions appropriate to his particular kind of land use and so, although the schedule consisted of 434 questions, no respondent was required to answer all of them. For example, the same questions applied to field crops, fodder crops, and horticultural crops but few respondents had to answer all three sections. The broad nature of the study in dealing with services from seven government agencies added to the length. A draft of the schedule was pre-tested by role-playing by the three main interviewers and it was also pre-tested with the help of two primary producers, a pastoralist and a farmer-horticulturist.

Data analysis

Many of the data collected are valuable for the profile they establish of the landholders in the study area. However, the data about the services provided and the form of interpersonal communications between government agencies and producers are central for this study. The service areas assessed were land assessment, water availability and quality, tenure

conditions, animal production, animal health, pasture production, crop production, plant disease and pest control, chemical analysis, soil erosion control, farm and station economics, industry economics, market promotion, price support and guarantees, financial assistance and incentives. Services were rated as satisfactory or unsatisfactory with the option for an indefinite, 'don't know' response. These responses were analysed for the whole population and were then considered in terms of both economic or production variables and socio-demographic characteristics.

The economic variables were made of production, use of services, and maintenance of detailed production records. Three modes of production were nominated - livestock only (category 1), a mixed group with both livestock and crops (category 2) and crops only (category 3).

Comparisons were made between producers who had and those who had not received information or advice on a particular subject from a government source during 1981-82. Because appropriate specific data were not gathered or were not available for all of the 15 services, analysis of the effect of use of services was only possible for nine topics - land assessment, water availability and quality, animal production, animal health, pasture production, crop production, plant disease and pest control, soil erosion control and market promotion.

Marketing advice usually came from some non-government source and therefore marketing information received from any source was included in the 'services' category. The final economic variable was whether detailed

production records were maintained or not. Age, education, length of time that the respondent had been in his current position as owner or manager and the total duration of previous practical experience made up the four socio-demographic variables.

CHAPTER THREE

SOURCES OF GOVERNMENT SERVICES

Provision of government services to land based primary industries has a well established tradition in Australia. Before federation all colonies had set up a department of agriculture or its equivalent. Under the federal constitution that became effective from 1901 the States retained their previous agricultural research and advisory functions but the Commonwealth assumed responsibility for overseas trade. As primary production has become more specialised, more capital intensive and more oriented to international market forces, Commonwealth and State government infrastructure has adapted to new demands. Jessup and Dun (1982) show that although the Commonwealth has relatively limited responsibilities some 17 federal departments or agencies provide services. In the States the major responsibilities are borne by the Departments of Agriculture. Departments of Lands, Education, Treasury, Water Supply and Irrigation, Soil Conservation and Rural Banks (or their equivalent) provide various subsidiary or supplementary services.

In the Northern Territory, since self government on 1 July 1978 the government has taken over state type functions. Some of these it inherited from the previous Commonwealth administration of the Territory but others represent initiatives of the new government. The institutional arrangements for the implementation of these functions tend to follow recognizable State government lines. However, with greater experience and different conditions changes have already been made to the organisational arrangements that stood at self government (Heatley 1979) and further changes will occur as government sees the need arising. This study

includes services from seven government organisations that were considered to be of key importance, especially in the direct provision of services. These are the Departments of Primary Production (DPP) and Lands, the Agricultural Development and Marketing Authority (ADMA), the Northern Territory Development Corporation (NTDC), the Land Conservation Unit (LCU) of the Conservation Commission, the Water Division of the Department of Transport and Works (WD) and the Industries Training Commission (ITC) - recently renamed as the Vocational Training Commission. A brief summary of their major operations in 1981-82 follows.

Department of Primary Production (DPP)

The largest government organisation with direct contact with pastoralists, agriculturists and horticulturists is the Department of Primary Production (Department of Industrial Development until 2 July 1979). In addition the Department's responsibilities encompass fisheries. Internal organisation is along divisional lines with Administrative, Technical Services, and Fisheries Divisions responsible to the Department Secretary. Agriculture and Stock (North) and Agriculture and Stock (South) are responsible to the Deputy Secretary, and thence to the Secretary (Department of Primary Production 1983, 60). Professional staff with duties related to rural industries number 83 out of a total of 373 (22.3 per cent).

Departmental operations include regulation, research and extension and in general follow the broad, traditional interests of departments of agriculture. A large campaign for the eradication of brucellosis and tuberculosis from the Territory by 1992 comprises the major part of animal health services. Rural research into livestock, agricultural and horticultural production, economics and management is conducted by the

Division of Technical Services and the two Divisions of Agriculture and Stock. Central scientific laboratories are operated at Berrimah and regional research is conducted at the six research farms or stations: Berrimah Research Farm (Darwin), Coastal Plains Research Station, Douglas Daly Research Farm, Tortilla Flats Research Farm, the Victoria River Research Station and the Arid Zone Research Institute (Alice Springs). As shown in Map 1 four of these are located within the study area. A district office operates from Katherine where research is conducted in conjunction with the Katherine Rural College run by the Department of Education. The Agricultural Quarantine Services bears responsibility for international plant and animal quarantine (on an agency basis for the Commonwealth Department of Health), interstate quarantine, livestock export and export control of fruit and vegetable consignments.

Extension duties are undertaken by all professional officers in their particular discipline. General support is provided by an Extension, Training and Information Section which, in particular, oversees the production of video films and the publication of NT Rural News and the more technical Agnote and Technical Bulletins. Technotes are primarily issued to fellow research workers and the Katherine district office publishes the Katherine Rural Review for widespread circulation. Field days on research facilities or private properties and displays at district shows such as Darwin, Katherine, Tennant Creek and Alice Springs are used to disseminate information to producers and the public.

In addition to the broad functions of a department of agriculture, the DPP is involved in specific moves to develop local industries. It has worked

with ADMA in the selection of a range of crops for commercial development and with NTDC in a crop contract scheme (see below). Freight subsidies are available for harvesting equipment and fertilizers and a crop competition - the Champion Crop Competition - was instituted for the 1981-82 season. In addition DPP officers have been involved in the promotion of NT beef and horticultural produce.

Department of Lands (Lands)

The Department of Lands is responsible for planning, development and administration of all land in the Territory, except lands held by Aborigines under the Aboriginal Land Rights (Northern Territory) Act 1976 and Commonwealth lands (Department of Lands 1982, p.5). In effect departmental responsibilities lie in the three main areas - land administration and usage, planning and urban development and survey and valuation. These are administered through five divisions: Planning and Development, Lands and Buildings, Survey and Mapping, Policy and Administration and Southern Region. Each of these divisions operates in some matters that impinge upon rural lands but the services of the Lands and Buildings Division through the Land Administration Branch were of most interest in this study (relevant sections of the Crown Lands Act 1980 appear in Appendix A).

Rural land is held under two main types of title - freehold and pastoral lease. Grazing licences are granted on an annual basis to graze stock on unalienated Crown lands where in some circumstances, the licensee may be allowed to effect specific improvements. From January 1981 most rural leases - agricultural leases, miscellaneous leases and pastoral leases of less than 150 sq km - were automatically converted to estates in fee simple

(freehold). (Urban lands were also converted to freehold at the same time.) Some 270 agricultural and miscellaneous leases and nine mini pastoral leases were affected. Pastoral leases are usually granted for fifty years and impose covenants on development and maintenance of land and other capital assets. Four pastoral officers of the Land Administration Branch inspect pastoral properties to assess compliance with lease conditions and to assist when applications are made for modification or renewal of pastoral leases. Amendments to the Crown Lands Act which commenced in 1982 provide for conversion of term pastoral leases to perpetual pastoral leases in specific circumstances.

In addition two statutory authorities have responsibilities affecting rural lands. Applications for new pastoral leases or for renewal or modification of existing pastoral leases are considered by the Land Board. This administrative tribunal consists of a Chairman, a Deputy Chairman and a panel of twelve members. Any application referred to the Board by the Minister or Administrator is considered by the Chairman or Deputy Chairman and three members. Effectively the Land Board and the Department of Lands determine the nature and rate of development and improvement of the Territory's pastoral lands. Outside the interests of this study, but relevant to the acquisition of lands for rural development, is the Lands Acquisition Tribunal established by the Lands Acquisition Act, 1980. It recommends to the Minister whether an acquisition should proceed when a landowner objects to compulsory acquisition of his land and determines the level of compensation when the government offer is rejected. The Tribunal is composed of a Chairman, Deputy Chairman and a panel of 11 members. Disputes are considered by the Chairman or Deputy Chairman and 10 members.

Agricultural Development and Marketing Authority (ADMA)

The Northern Territory government commissioned a study by economists and scientists of the Queensland Department of Primary Industries into existing production and marketing of agricultural and horticultural produce in the Northern Territory and requested them to make recommendations concerning possible expansion and improvement (Queensland Department of Primary Industries 1979). As a result of the findings of that study the Agricultural Development and Marketing Act 1980 was passed to set in train a two-stage program of agricultural settlement. Initial proposals for Stage 1 involved both the use of existing farms in the Adelaide River area to ascertain the viability of commercial rice production and the establishment of up to four project farms in the Douglas-Daly district for production of crops such as grain sorghum, maize, soybeans and peanuts. Progress was to be assessed by 30 June 1985 when a decision would be taken on whether to proceed with Stage 2. It was envisaged that this follow-on phase would span some ten years during which a total of up to 160 farms would be set up in the two areas.

An Agricultural Development and Marketing Authority was created to implement Stage 1. It had two broad objectives: to act as the settling authority and to provide a range of marketing services that would include building grain receival depots and operating marketing pools. A chairman was appointed in October 1980 and he was assisted by two part-time board members and, by June 1982, a staff of 17. In the first stage of settlement, project farms would be used to help work up commercial farming systems and to provide information on costs and returns.

Farms in the Douglas-Daly district were selected to include 1000 ha of arable land in a total area of 4000-5000 ha and would allow both crop and livestock production. Areas were cleared for first year crops and a house, domestic water supply, machinery shed, electric power plant and fencing were provided on each property. Advertisements were placed nationally calling for applications for contract-share farmers. ADMA would underwrite costs and the farmers would provide machinery and would hold options to purchase their blocks after a developmental phase. One of the three successful applicants withdrew at an early stage but the remaining two grew their first crops in 1981-82. Consultation with other Northern Territory government agencies led to the acquisition of Oolloo, Fish River and Mataranka pastoral leases for further settlement. Planning and preparation began for the establishment of three more project farms in the Douglas-Daly district in 1982-83.

The second facet of the ADMA charter - marketing - embraced both broadacre and horticultural crops. Growers of grain sorghum, maize, peanuts and mung beans were required to register their crops with ADMA which published indicative prices for these crops throughout the season. Crops were pooled on delivery to the new ADMA grain receival depot at Katherine, the exception was mung beans which were handled on a separate account basis to allow for differences in quality. Within fourteen days growers received 70 per cent of the indicative price. Further payments followed and the final price was determined by where the grain was sold. For this first season Territory grain was largely sold to local consumers. In addition ADMA took steps to try to expand the local, higher price market and to explore interstate and export markets for the larger tonnages expected in future seasons. With horticultural produce emphasis was placed on production

packaging and presentation of quality fruit and vegetables and their promotion on local, interstate and overseas markets. Assistance to horticulturists is on an individual or voluntary basis.

Northern Territory Development Corporation (NTDC)

At the time of its inception on 1 July 1978 the NTDC took over the accounts and clients of the Primary Producers Board and thereby inherited the role of 'lender of last resort' to primary producers. During 1978-79 provision of financial assistance was expanded to include other sectors of the economy while the Department of Industrial Development undertook industry and trade promotion and economic research. From 1 July 1979 the Corporation assumed the promotional and research functions and hence its role became ... 'to assist development of industry in the Territory by the provision of money, resources and advice' (Territory Development Act 1980 Section 15).

In general, in 1981-82 the NTDC had the following roles:

- to identify and study potential development opportunities for private capital in the NT
- to promote investment opportunities in NT
- to provide financial assistance for viable private development where other financiers are reluctant to do so
- to provide marketing and trade assistance to NT based industry
- to provide a comprehensive Small Business Advisory Service

- to administer in the Territory the Commonwealth legislation, the States and Northern Territory Grants (Rural Adjustment) Act, and to provide finance to eligible rural producers (NTDC 1982, 1).

Applications would be considered from rural, fishing, processing, manufacturing, mining and tourism businesses, but only in special circumstances would assistance be given to retail, wholesale, building and tertiary (other than tourism and general transport) operations.

The Corporation was headed by a Chairman and a board of five part-time members drawn from NT industry. Daily operations were carried out by a General Manager and a staff of 38. Table 3.1 shows the levels of financial assistance NTDC has provided to rural enterprises throughout the Territory. Furthermore, since October 1980 the Small Business Advisory Service has held a small but increasing number of consultations with primary producers. NTDC was also linked to primary industries in three other specific ways. From 1 July 1980 the NT became a formal participant in the Commonwealth-States Rural Adjustment Scheme and NTDC operates this scheme in the Territory. Assistance can be provided for debt reconstruction, farm build-up, farm improvement, carry-on assistance and household assistance for those leaving the industry. In 1981-82, \$528 421 was approved for debt reconstruction, farm build-up and for farm improvement.

In 1980-81 NTDC purchased broadacre crops at a guaranteed price on behalf of the NT government. A pilot Crop Contract Scheme was introduced in 1981-82 to improve farmers' experience with crops, to protect farmers from financial losses in early stages of development, to improve crop husbandry

Table 3.1

NTDC loans outstanding by industry

	1978-79		1979-80		1980-81		1981-82	
	\$	%	\$	%	\$	%	\$	%
Rural*	5 586 923	80.0	6 653 554	67.6	6 696 090	44.1	6 562 331	33.7
Fishing	252 164	3.6	796 389	8.1	1 225 508	8.1	1 706 756	8.7
Tourism	880 161	12.6	1 694 161	17.2	5 379 625	35.4	9 090 032	46.7
Mining	48 744	.7	114 741	1.2	95 626	.6	97 822	.5
Secondary	178 085	2.5	501 428	5.1	1 732 490	11.4	1 616 939	8.3
Other	43 935	.6	79 817	.8	53 949	.4	329 811	2.0
Total	6 990 015	100.0	9 840 090	100.0	15 183 288	100.0	19 466 691	100.0

*Includes agriculture, market gardening, pastoral, rural adjustment scheme from 1 July 1980.

Source: NTDC 1980, p18; NTDC 1982, p22.

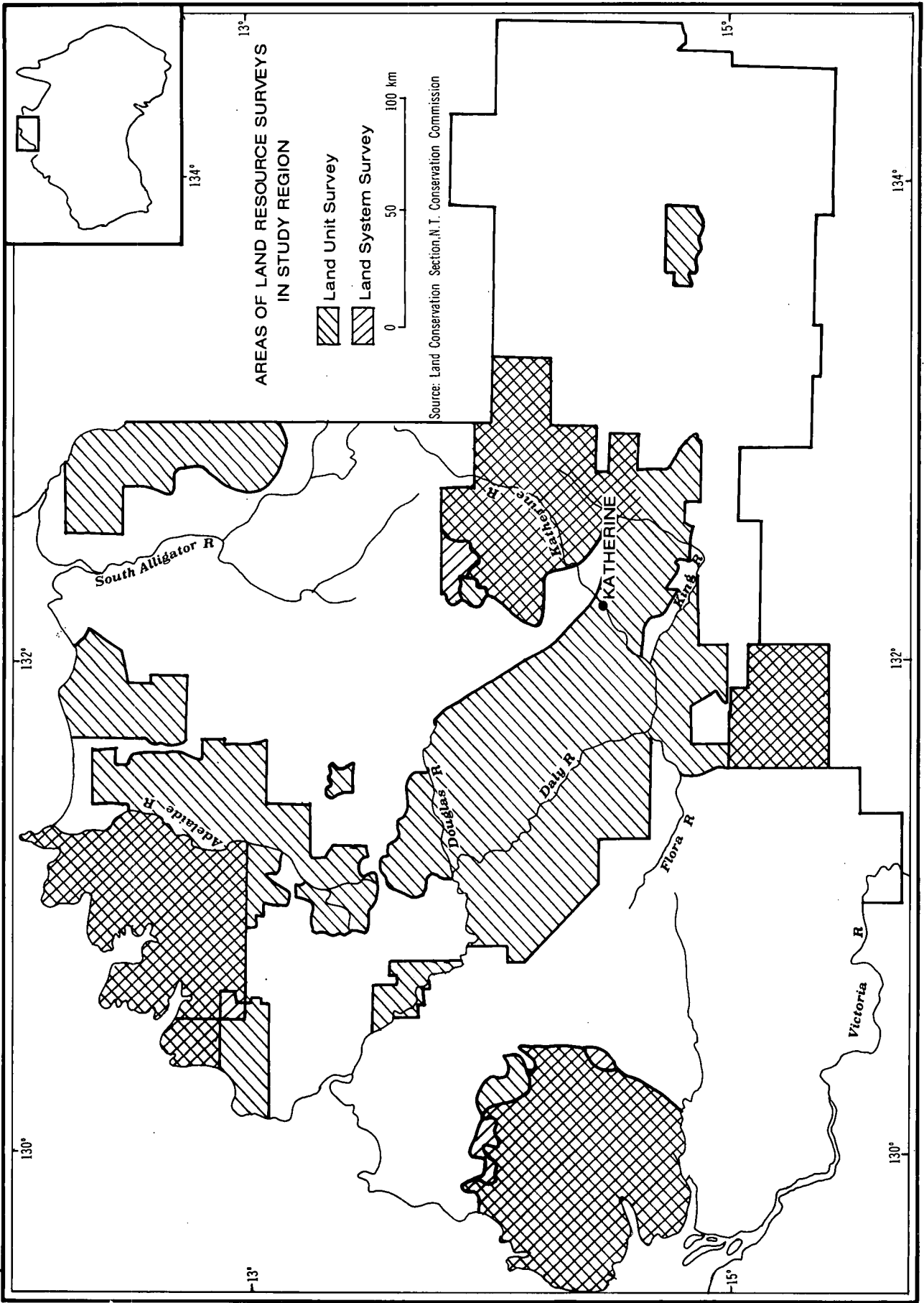
and to encourage increased crop production. The DPP gave technical advice, and NTDC provided loans for cropping inputs. Advances were to be repaid and surpluses were distributed among participating farmers. Eight farmers cropped an area of 866 ha under the scheme.

Land Conservation Unit (LCU)

Responsibility for soil conservation and land resource evaluation rest with the Land Conservation Unit of the Conservation Commission of the Northern Territory. Land resource evaluation and mapping is carried out for a variety of current or potential land management purposes. In general this work is based on classification and description of the biophysical features of the land surface - landforms, soils, vegetation - in terms of land systems or their component land units (Christian 1952, 142; Christian and Stewart 1953, 21). Areas that have been surveyed in the study region by LCU as either land systems or land units are shown in Map 2. The scale of surveys has varied according to particular requirements for different types of land use. Most of the 17 professional officers have been stationed in Darwin or Alice Springs but in recent years some have been located in the mining province at Kakadu and in Katherine.

Under the Soil Conservation and Land Utilistion Act 1980 an Advisory Council that consists of the Commissioner for Soil Conservation and up to eight part-time members, advises the Commission on matters relating to existing and potential soil erosion. In its working relations with landholders the Unit can advise on, provide practical and financial assistance, or carry out soil conservation works on Crown or private lands. Furthermore it can carry out research into causes of erosion and methods of control. Finally, a Soil Conservation Order can be issued to prevent,

Map 2



wholly or partially, operations by landholders that cause degradation of land.

Water Division (WD), Department of Transport and Works

Government services that deal with water resources are provided by the Water Division of the Department of Transport and Works. As with the Department of Lands a large proportion of operations are associated with the development of new urban areas and settlements. Services that apply to rural landholders include the assessment, planning, development and management of surface and groundwater resources. In particular they involve the location and assessment of groundwater supplies for major rural developments such as those in the Daly River Basin where the ADMA farm settlement scheme has been prominent. The Rural Advisory Service can help to site, install and equip bores, wells, weirs, dams and storage tanks and ancillary works. Under the Water Supplies Development Act 1980 loans of up to \$20 000, but not exceeding 90 per cent of the costs of the works, can be granted for suitable projects. These loans can be made for up to 20 years and bear interest at the prevailing bond rate. Costs may be borne by the Department in circumstances where its advice has been followed but the drilling proves to be unsuccessful. Other information can be obtained from the Division about water quality and the frequency, height and mitigation of floods. Officers located in Darwin respond to inquiries and requests for assistance as they are received but as part of a general extension service a rural advisory officer began periodic visits to Katherine in 1981-82.

Industries Training Commission (ITC)

Under the Industries Training Act 1979 the Industries Training Commission was set up as a corporate body to report to the Minister for Education. The Commission consists of seven members - two public servants, two employers' representatives, two employees' representatives and one person with suitable qualifications or experience in post-secondary education - one of whom is appointed Chairman. Its functions include research into workforce and training needs of industries and the co-ordination and supervision of appropriate training courses for them. In this latter role the ITC may well use the training facilities of other organisations. Furthermore, it can set up and supervise standards of training for industry and where appropriate it can grant accreditation for training courses. In this way a major portion of its responsibilities lie with the training of apprentices.

However, its interests extend beyond the traditional field to the manpower and training needs of rural industries. These topics were the focus of a special workshop held in Darwin in November 1981 and attended by representatives of industry and education (Sri Pathamanathan 1981). One of the recommendations from this meeting was implemented when the ITC conducted a study of manpower and training needs of primary producers located south of the area of the NARU survey. This will serve as a guide to train personnel to meet needs for a skilled workforce in these industries. Since this study the Commission has undergone a name change to Vocational Training Commission and now has a larger role to play in the coordination of training.

CHAPTER FOUR

PRIMARY PRODUCERS AND THEIR PROPERTIES

The government departments and authorities described in the preceding chapter were the sources of services and the communications associated with them, in terms of the standard communications model outlined in the first chapter. We turn now to the receivers of messages and services, that is, the owners and managers of properties in the study area. We examine first the social and demographic characteristics of the group of people and then the nature of their properties and finally the types of production on those properties.

Personnel

Owners, owner-managers and company directors made up 55 of the 72 interviewees (76 per cent), 15 were managers (21 per cent) and the remaining two operated in some other capacity. For the purposes of analysis these two were placed with the managers. Of the 70 respondents who indicated their age all were over 20 years and their age distribution is significantly older than for all Territory males over 20 years (Figure 4.1). Two explanations for this can be put forward. In general employers and the self employed such as those interviewed tend to be older than the population at large. Secondly the NT population is heavily concentrated into a few urban areas and throughout Australia, rural groups tend to be older than urban dwellers. As shown in Table 4.1 owners have been resident in the NT longer (average 23 years) than managers (average 14 years). Furthermore, owners have had longer associations with their properties. More than half the managers (9, 53 per cent) worked elsewhere in the NT for up to 28 years before starting work on the property where

they were interviewed, although not necessarily as manager; another 3 came directly to the property and subsequently were promoted to manager and for 5 their first job in the NT was in their present position.

Table 4.1

Numbers of owners and managers and their association with the NT and their properties

Owners, etc.	Years						
	<10	10-19	20-29	30-39	40-49	50-59	60-69
Period in NT	8	13	17	11	3	2	1
Period owned property	28	19	6	1	0	1	0
Managers, etc.							
Period in NT	5	8	2	2	0	0	0
Period managed property	13	3	1	0	0	0	0

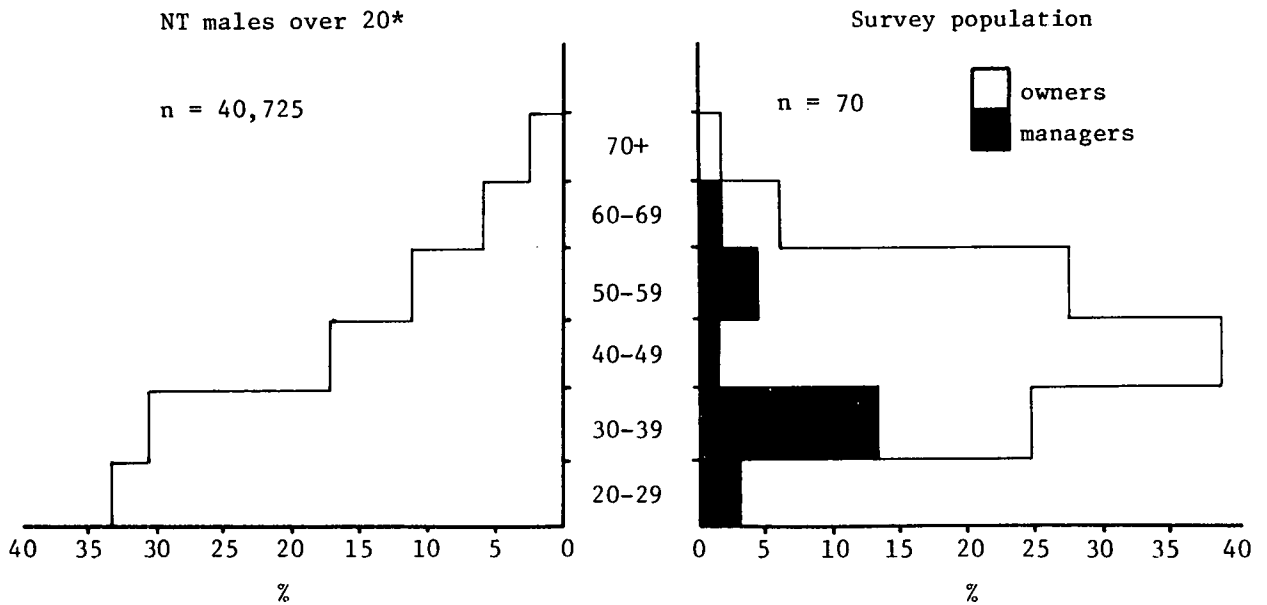


Figure 4.1 Age distribution of survey population and Territory males over 20 years

*Source: Census 1981

Experience

Tables 4.2 and 4.3 show the distribution of previous farm and station experience of owners and managers. Out of the two groups 38 (53 per cent) reported experience elsewhere in the NT and/or Queensland (including a combination of places). In terms of duration of previous experience owners as a group are not significantly different from managers.

Table 4.2

Location of previous experience on farm or station
as owner, manager or employee

Location	Number	
	Owner	Manager
Nil	10	1
NT	11	2
Qld	4	6
NSW	3	2
Vic	2	0
Tas	0	0
SA	4	0
WA	1	0
Overseas	8	0
Combination	12	6

Table 4.3

Duration of previous experience on farm or station
as owner, manager or employee

Period (years)	Number	
	Owner	Manager
0	10	1
1-4	8	1
5-9	8	4
10-14	6	5
15-19	5	2
20-24	6	3
>25	12	1

Education

All but one of the respondents gave information on education levels that they had reached (but not necessarily completed). More than half, (43, 61 per cent) had been educated to secondary school level, 11 had only primary schooling and 17 had been educated to tertiary level. Three respondents had attended tertiary diploma courses and five had undertaken degree courses in agricultural or pastoral sciences. Another four had attended diploma courses and three had attended degree level courses in commerce, accountancy or economics. Two more had undertaken a degree course in other fields.

Marital Status

The majority of respondents (61, 85 per cent) were married but most wives (41, 67 per cent) did not have a farm or station background. Nevertheless, the same proportion (41, 67 per cent) took an active part in operational, accountancy or managerial aspects of running the farm or station. Of these three had attended degree courses (one in an agricultural science), five had studied at a tertiary diploma level (one in agricultural subject) and the remaining 33 had attended secondary school. Ten of these 41 wives had been educated to a higher level than their husbands but distinctions were not drawn between differences within the same level (eg third year secondary school compared to second year secondary school).

Other Family Involvement

Other family members took an active part on 19 properties (26 per cent) and in all but five of these the interviewee's wife was also involved. A son or sons worked on nine properties and a range of parents, sons, daughters and other relatives worked on the remainder.

Employees

During 1981-82 full-time or part-time/seasonal labour was employed on 53 properties (74 per cent). These included 34 where the wife and/or some other family member also worked. Table 4.4 shows the levels of employment. Stockmen (47 per cent) and farmhands (43 per cent) constituted the majority of employees but the figures show a strong emphasis on part-time/seasonal employment. Only 25 per cent of farmhands and 39 per cent of stockmen were employed full-time. In comparison with the previous three seasons the employment increased on 22 properties in 1981-82, decreased on seven, remained constant on 42, and one newly arrived manager, who was unfamiliar with trends, replied don't know.

Table 4.4

Levels of employment during 1981-82*

Employee	Full-time		Part-time/ Casual		Total	
Stockmen	86	(17)	133	(20)	219	(29)
Farmhands	51	(22)	150	(33)	201	(42)
Tradesmen	19	(11)	10	(4)	29	(13)
Trainees	15	(7)	2	(2)	17	(9)

*Numbers in brackets represent numbers of properties

Table 4.5 gives the estimated numbers of extra employees that will be required over the three years 1982-83, 1983-84, 1984-85. These are from 29 properties, including seven which employed no outside labour in 1981-82. The total estimated increase is 284 (61 per cent) with the largest expansion to occur in farmhands (110 per cent) and smaller increases expected to take place in trainees (53 per cent), tradesmen (41 per cent) and stockmen (19 per cent). Again the emphasis is on part-time/seasonal employment, especially in the two largest categories where estimates of

extra full-time stockmen represent 37 per cent of the total and for farmhands the full-time estimates are 28 per cent of the total.

Table 4.5

Employee	<u>Estimated extra employees for the seasons</u>				Total	
	<u>1982-83, 1983-84, 1984-85*</u>					
	Full-time		Part-time/ Casual			
Stockmen	15	(6)	26	(7)	41	(10)
Farmhands	62	(10)	160	(17)	222	(23)
Tradesmen	7	(4)	5	(1)	12	(4)
Trainees	9	(3)	0	-	9	(3)

*Numbers in brackets represent numbers of properties

Membership of Growers' Organizations

The overall proportion who were members of one or more growers' organisations 46 (64 per cent) was spread evenly amongst those from freehold properties (29, 63 per cent) and pastoral leases (26, 66 per cent). Membership was spread across 10 different groups of which five accounted for most members (Table 4.6).

Table 4.6

<u>Membership of producers' organisations</u>	
Organisation	Membership*
Northern Farmers and Pastoralists Association	12
Katherine Farmers Association	10
NT Cattle Council	8
Cattlemen's Union	12
Brahman Breeders Association	6

*Includes multiple memberships

Properties

The holdings in the study fall into seven different land title categories (Table 4.7) but for the purpose of analysis they have been placed into two broad categories of 26 pastoral leases (22 pastoral leases, 2 pastoral leases-freehold, 2 pastoral leases - grazing licence) and 46 freehold made up of the remainder. The distribution by area within these two categories is given in Table 4.8. Total area of pastoral leases was 72 184 sq km (average 2 776 sq km) and the 45 freehold properties (excluding the Aboriginal freehold area) covered a total of 1 270 sq km (average 28.2 sq km).

Table 4.7

Land titles applying to properties in study area

Category	Number of Holdings
Pastoral Lease	22
Freehold	40
Aboriginal Freehold	1
Pastoral Lease - Freehold	2
Pastoral Lease - Grazing Licence	2
Freehold - Grazing Licence	3
Other	2

Table 4.8

Distribution of properties by total area

Area freehold (ha)	Number of properties ($\epsilon = 46$)	freehold %
1 - 100	10	21.8
101 - 500	6	13.0
501 - 1000	3	6.5
1001 - 2000	4	8.7
2001 - 3000	6	13.0
3001 - 5000	6	13.0
5001 - 10000	10	21.8
10000<	1	3.2
Area pastoral leases (sq km)	Number of properties ($\epsilon = 26$)	pastoral leases %
1 - 500	4	15.4
501 - 1000	5	19.2
1001 - 2000	8	30.8
2001 - 3000	0	0
3001 - 5000	6	23.1
5001 - 10000	3	11.5

Two of the pastoral leases were to expire within 20 years, five had 20-29 years to run, six would be in force for another 30-39 years and four had 40-50 years before they would expire. Nine respondents (seven managers and two owners) did not know when their current lease expired. Freehold title had been granted to 12 holdings before 1 January 1981 and 27 properties had been granted freehold title on or after that date. In seven cases operators had taken over existing freehold and did not know when title had been granted.

Sixty-five holdings were operated full-time and seven were run part-time. On 15 of the pastoral leases owners were interviewed and in 11 cases managers were the interviewees but for freehold properties 40 owners and six managers were interviewed.

Production

One of the reasons for the selection of the study area was that it offered a variety of modes of primary production. Frequently these occur on one property to create a regional complex of 'mixed' operations. Table 4.9 indicates the range of production.

Table 4.9

	<u>Numbers of producers in the study area</u>					
	Beef Cattle	Buffalo	Improved pastures	Field Crops	Fodder Crops	Horticultural Crops
Beef Cattle	57	22	41	9	19	4
Buffalo		22	19	3	7	1
Improved pastures			44	11	16	2
Field crops				15	6	1
Fodder crops					23	2
Horticultural crops						14

The numbers of producers in two categories are found by reading across the rows. Beef cattle x beef cattle shows the total number of producers in this industry is 57. The next column shows that 22 of the 57 beef cattle producers also raise buffalo. Column three shows of the 57 beef cattle producers 41 have some areas of improved pastures, column four shows that on 9 beef cattle properties field crops were also grown, and so on.

Most producers (57) reported some involvement with livestock - beef cattle and to a lesser extent buffalo (22) - and their numerical dominance is reflected in the related aspects of improved pastures (44 producers) and fodder crops (23 producers). Field crops and horticultural crops had the fewest growers (15 and 14 respectively). Seventeen respondents were engaged in only one of the forms of production, 19 were involved in two categories, 25 in three categories, 10 in four categories and 1 worked in five categories. The following account of production is along industry lines but with attention to interactions between different sectors, although it is not possible to deal with the fine detail of the complexity of production from all properties individually.

Production Records

While the forms and amounts of primary production provide worthwhile information about the recipients or potential recipients of government services it is also useful to consider the extent to which producers record in detail the production from their properties - a managerial aspect of their work. Detailed production records were maintained by 40 respondents (56 per cent) (Table 4.10). Property managers were highly involved in keeping production records (16 out of 17) whereas only 24 out of 55 owners (44 per cent) kept detailed records. Half of the owners of pastoral leases kept detailed production records whereas more than half the owners of freehold land did not. Maintenance and non-maintenance of records were independent of size of either freehold properties or pastoral leases (chi square = 3.72 at the .05 confidence level), and age of respondent (chi square = 5.45 at the .05 confidence level).

Table 4.10

Maintenance of detailed production records

	Freehold	Pastoral lease	Total
A. Keep detailed production records			
Owner	17	7	24
Manager	5	11	16
Total	22	18	40
B. Do not keep detailed production records			
Owner	23	8	31
Manager	1	0	1
Total	24	8	32

Intuitively, the proportion who keep detailed production records seems low but it is difficult to make direct comparisons with other sectors or other regions. The structure of the question could have affected the figures. Given the diverse nature of the production categories, criteria for what constituted detailed records were not specified and interpretation was left to the individual. In some cases those who maintain general production records may have taken a stringent view of 'detailed' and believed that their records did not constitute detailed production records. This would have lowered the proportion who gave a positive response. Conversely, if standards had been specified some existing records may not have met these requirements and then the number of negative responses would have increased. Although these are valid qualifications of the results, it is interesting to note that by their own standards 44 per cent of producers did not keep detailed production records in an area and at a time when primary production is exposed to increasing commercial pressures. However

in these circumstances maintenance of records requires more specialised skills which larger operations can afford to hire on some suitable basis. Smaller operators charged with the daily workings of their holdings may not be able to hire these services or to learn the necessary skills.

Livestock

All 57 properties that ran some type of livestock during 1981-82 carried beef cattle and 22 also ran buffalo, two of them for the first time. Dairy cattle, horses, pigs and poultry were of minor importance. The reported distribution of beef cattle and buffalo herd sizes are given in Table 4.11.

Table 4.11

Total reported numbers of beef cattle and buffalo

	Number beef cattle properties	Number buffalo properties
0 - 100	12	4
101 - 500	17	5
501 - 1000	6	2
1001 - 3000	7	7
3000 - 8000	8	4
>8000	7	0
	57	22
Total beef cattle	207 900	Total buffalo 42 130
Average beef cattle on property	3 647	Average buffalo per property 1 915

A general trend of increasing total livestock numbers over the three years 1978-79, 1979-80, 1980-81 was reported in 18 cases whereas numbers decreased on 16 properties and remained relatively stable on another 21. Two managers who arrived on pastoral leases shortly before the interviews were unable to indicate trends for the period. The overall estimated

decrease in numbers, 21 580 head, far exceeded the 7 330 head estimated as the increase in numbers. Increases were most frequently attributed to seasonal conditions and natural increases (7 cases), general property development (4 cases) and market conditions and prices (3 cases). More diverse reasons were given for decreased numbers but those quoted most frequently were that destocking was appropriate for property development (4 cases) and market conditions and prices (4 cases).

The different effects of markets and prices need to be considered further. During 1981-82, for example, 44 properties in the study area marketed beef cattle whereas 13 did not. This latter group tended to be smaller producers as their herds represented only 3.5 per cent of the district total (11 carried fewer than 1 000 head). Of the buffalo producers, 14 sold animals and eight reported no turnoff but these were spread more evenly through the range of production and their herds represented 20 per cent of the regional total. Export abattoirs were the most frequently used outlet for beef cattle and buffalo (Table 4.12). It is useful to place this information in a wider NT context. Total beef cattle turnoff through abattoirs and shipments interstate and overseas reached record levels in 1979-80 largely as a result of favourable prices on the US market (DPP 1982, p. 6). Buffalo turnoff for slaughter and export more than doubled over the three seasons (DPP 1982, p. 23). Some properties have been unable to replace livestock populations as they have increased turnoff whereas others have been able to expand their herds in anticipation of continued firm markets.

Table 4.12

Frequency of use of outlets for livestock, 1981-82

Outlet	Ranking					
	Beef cattle			Buffalo		
	1	2	3	1	2	3
Export abattoirs	26	9	4	9		1
Other abattoirs	9	4	3	1	6	3
Live exports	5	4	2		1	
Other stations	2	3	1	1		
Other	2	6	2	3	3	1

Different perspectives of market potential are further shown in plans for the years 1982-83, 1983-84, 1984-85. Definite plans for increasing the total herd size were held for 23 properties and the most frequent reason given (in 12 cases) was that this was appropriate at this stage for overall property development. No definite plans for increasing the total livestock numbers were held for the remaining 34 properties where, in 13 cases, larger herd size was believed to be inappropriate for the current stage of development of the property, and in 10 instances anticipated market conditions and prices were given as the reason for having no plans for expansion. For some, destocking would take place as part of the brucellosis and tuberculosis eradication campaign (BTEC).

Improved Pastures

The numbers and area of the major introduced grasses and legumes reported from the 44 properties with improved pastures are given in Table 4.13. Other species are also grown but in smaller areas and on fewer properties. New species or combinations of species were planted for the first time in 11 cases in 1981-82 and of these signal grass and verano were the most

Table 4.13

Areas and numbers of growers of improved pastures

Pasture	Number of Growers	Total area (ha)
Verano	24	3 366
Townsville stylo	16	30 218
Buffel grass	9	5 510
Calopo	9	2 723
Urachloa	8	1 380
Pangola grass	7	1 074
Signal grass	5	420

popular. On 18 properties (41 per cent) areas had increased over the seasons 1978-79, 1979-80, 1980-81; they had remained relatively constant on 23 properties and on three other holdings they had decreased. Three respondents were unable to estimate areas of either increase or decrease. The total area of increase, 3170 ha, exceeded the 800 ha estimated decrease. The most frequently given reason for increases was that these were appropriate for and an integral part of overall property development. Previous favourable experience with improved pastures and the need for better herd management under the BTEC were also specifically mentioned as reasons for increase. Other factors included such things as good markets for cattle, availability of better pasture species, better techniques for pasture establishment and availability of finance. Uncontrolled fires and overstocking of improved pasture areas were the reasons for decreases in areas.

Definite plans were held for expanded areas of improved pastures on 29 properties including 17 where livestock numbers would also be increased. Major reasons for expansion were that it was part of overall property

development (15) and that favourable markets for livestock were anticipated (9). Other reasons given involved factors such as the availability of more suitable pasture species, better techniques for their establishment and the availability of finance. Fifteen respondents held no definite plans for increasing other areas of improved pastures. The major reasons for these decisions were that current levels were satisfactory, the market outlook for livestock was not favourable and that better techniques were needed for establishment on the particular properties.

Fodder Crops

During 1981-82, 800 ha of fodder crops were grown over 23 properties, 19 of which carried beef cattle or beef cattle and buffalo (Table 4.9). Freehold title applied on 16 and seven were pastoral leases. Forage sorghums (281 ha on 13 properties) and bulrush millet (180 ha on 11 properties) were dominant with lablab and a range of improved pastures species of lesser importance. On 16 properties more than one species was grown either separately or in combination with other cultivars. Again the majority of growers, 17 (73 per cent) reported larger areas over the three seasons 1978-79, 1979-80, 1980-81, in one case the area declined and areas were stable on five properties. In 13 cases new species were grown for the first time in 1981-82. Estimated increases in area totalled 368 ha. The predominant reason for an increase was that it was appropriate for overall property development. Specific reasons given included favourable markets/prices, availability of capital and previous success with fodder crops. An inability to employ suitable labour and a resultant encroachment of weeds led to the reduction of 9 ha on one property.

Definite plans to enlarge areas under fodder crops were reported on 11 properties, again principally as part of general property development but financial reasons such as the availability of finance and firmer market prospects were specific reasons. Where expansion was not definitely planned five growers were satisfied with their current production whereas others identified poor market prospects and insufficient returns as reasons for not planning to sow larger areas. Plans to expand were spread across the spectrum of large and small producers. Only eight growers sold fodder crops (as hay, etc) and the majority of sales were direct to other primary producers. On this basis it seems reasonable to assume that interpretations of market prospects reflect views of livestock markets.

Field Crops

A total of 15 properties grew broadacre crops and these were in mixed modes of production - nine also ran cattle, three of whom also carried buffalo, 11 grew improved pastures, six grew fodder crops and one was also engaged in horticulture (Table 4.9). Broadacre crops were grown in conjunction with another type of production on two properties, five producers grew field crops along with two other types of production, seven produced four commodities and one grower of field crops undertook four other modes of production. The total areas for field crops in 1981-82 was 1 999 ha of which the largest grower contributed 334 ha.

Grain sorghum was the most important in terms of numbers of growers (11, 73 per cent) and area (1 307 ha, 66 per cent). Maize was grown on 490 ha (25 per cent of total area) by six interviewees. Fewer growers had smaller areas under seed crops, mung beans, sunflower, soybeans and peanuts. In

ten cases the areas represented an increase over the previous three seasons (1 456 ha, 73 per cent of the total area) and one decrease of 80 ha was recorded. Diversification took place on eight properties where a new crop or new crops were grown for the first time. This was the first season for the project farmers brought into farming in the region by the ADMA scheme and their activities accounted for much of the expansion and helped to encourage others. Subsidiary specific reasons included market prices potential, availability of capital and the crop contract scheme. Marketing of maize, grain sorghum, peanuts and mung beans was handled through ADMA and small quantities of other field crops were usually sold by direct negotiation with buyers.

Reports of definite plans for growing more field crops over the next three seasons were received from 12 growers. The influences of both the settlement and marketing aspects of the ADMA scheme appear in the reasons given for these plans. Sounder market/prices prospects were the most important followed by general property development. Encouragement offered by government in other ways such as the crop contract scheme and the champion crop award was also mentioned as were previous satisfactory experience with crops and improvement in farming techniques. Those who held no definite plans for expansion attributed their decisions to a lack of suitable land or satisfactory farming techniques, insufficient returns from cropping or insufficient financial assistance to expand. One grower intended to retire.

Horticultural Crops

All 14 horticulturists operated on freehold land and they tended 118 ha - cucurbits (47 ha, 40 per cent of total area), bananas, lettuce, crucifers, tomatoes and other vegetables and other fruits. Only three growers had specialised in one of these crop categories and 11 grew at least two different types. In addition all were engaged in some other form of primary production. The largest area any one grower had under horticultural crops was 25 ha. New crops were grown on six properties and ten growers reported that they grew larger areas (46 ha, 39 per cent of total area planted) in comparison with the previous three seasons. On four properties areas of production remained stable. Increases were attributed to two main reasons - general plans to upgrade operations and sound market/prices. Produce was sold to wholesalers, retailers or both. In some cases interstate sales were handled through wholesalers. Strong markets/prices outlook was the major reason given by the 11 who held definite reasons for growing bigger areas in the future. Of the three who did not plan to enlarge their areas, one thought the markets/prices prospects uncertain and the other two had particular reasons associated with their current blocks.

Conclusions

Production on the 72 properties is generally mixed and at low levels when considered on a national basis. Nevertheless, it is largely from this base that government hopes to expand production, particularly in plant industries. In all types of production the trend has been for expansion over the last few seasons and plans have been made for this trend to continue. Table 4.14 summarises the situation for each mode of production

and the overall situation. Plans for expansion (90) outnumber the absence of such plans (58) and this is true for all sectors except livestock. For the total situation the chi square test (10.07) shows that a relationship exists between past expansion and definite plans for future expansion.

Table 4.14

Past and future trends in levels of production

Mode of production	Expansion in the past		No expansion in the past	
	Future expansion	No future expansion	Future expansion	No future expansion
Livestock*	9	9	14	23
Improved pastures	15	3	14	12
Fodder crops	10	7	5	1
Field crops	9	1	3	2
Horticultural crops	9	1	2	2
Total	52	18	38	40

*In two cases insufficient information available to allow categorization

The alternatives - no definite plans to expand, to remain at current levels, or to reduce operations - do not preclude improvement in the quality of product or concentration on greater efficiency. In some cases respondents found it difficult to, or were reluctant to identify specific reasons for past or future enlargement of their operations and frequently it was said that it was appropriate for and part of property development. This in itself is a comment about confidence in the various industries in terms of the technical and capital means of expansion and the adequacy of returns for increased production. Where specific reasons were given these rarely dealt with 'technical' matters (eg the varieties available, techniques of production, previous experience with that particular product) and dealt more with 'commercial' aspects such as markets and prices, financial matters and availability of capital.

Aggregated figures for livestock, improved pastures, fodder crops, field crops and horticultural crops show where the emphases lie. When primary, secondary and tertiary reasons for definite plans for expansion were weighted 44 per cent said that these were appropriate for and part of current stages of development. Of the remainder 27 per cent believed that markets/prices prospects warranted expansion and 7 per cent had formulated their plans because of availability of financial support. The remainder, 22 per cent, identified a range of reasons which generally were of a technical nature or related to particular property or personal circumstances. A similar ranking of reasons occurred in the minority who held no definite plans for increasing herd size or areas under production. Thirty-five per cent of these replies alluded to the fact that current levels of operation were satisfactory or that expansion was inappropriate, while a lack of confidence in markets/prices made up another 25 per cent of responses. Unavailability of financial support comprised 17 per cent and the residual 23 per cent spread across a range of technical, property or personal matters.

CHAPTER FIVE

THE SERVICES RECEIVED

Services from government have been placed into three broad categories according to their role in development or maintenance of farms and stations. The first includes those that allow a property to be brought into production. These may not be used directly in every season but their influences remain. Land title has been important and the granting of freehold title to many properties removed the influence that lease conditions had on the course of development. In addition some government services deal with the assessment of natural resources - land and water - and their sound use in the long term. This first group of services, from an organisational viewpoint, come from Lands Department, the Land Conservation Unit in the form of both land assessment and conservation and from the Water Division.

The second group of services deals more directly with the day to day operations and conforms more to the conventional definition of on-demand or general extension services. These services are provided principally but not exclusively from DPP, and from other sources such as private consultants, contractors, CSIRO or fellow producers. As livestock production has been established longer in the region and is a less intensive mode of production, the relevant questions tended to be more wide ranging. Production of improved pastures or crops on the other hand is more intensive, requires more inputs in the productive process and topics covered are more detailed.

Marketing services make up the third group. Under existing arrangements these come from a wider range of sources than government. Where produce is

sold, the markets have been discussed above, and the focus here is on services related to the marketing process such as advice about demand levels and prices.

Grouping of the services along these lines has been undertaken to assist explanation within the overall emphasis on end use rather than administration at the source. By the nature of the services some overlap occurs between categories and it is their interaction that is important for the management decisions made on each property.

Group 1

Land Title

A frequently cited theme in the history of land settlement in Australia has been that the type of land tenure available has had a large bearing on development. Respondents were asked to identify effects of either freehold title or the covenants in pastoral leases on their operations. Also knowledge of general conditions that apply to pastoral leases was tested amongst those who operated properties of this sort.

Freehold

From the 46 freehold properties 20 respondents (44 per cent) said that freehold title carried with it no immediate effects and another eight held no opinion. Hence 18 (39 per cent) identified some immediate effect of which greater freedom for subdivision (6) and increased access to finance (6) were equally popular. Subsidiary effects were identified as greater security (4) and an increased flexibility in land use options (2). When they were asked for long-term effects 18 (39 per cent) said that freehold

title conferred no advantages or disadvantages on the landholder and of these 14 had also been unable to specify any immediate effects. A further five offered no opinion as they all had been unable to do for immediate effects. Hence for 19 interviewees (41 per cent) freehold title definitely held no immediate or long-term effects or none that they could identify. The most frequently mentioned long-term effect was the greater security offered (9, 20 per cent) with other effects reported as increased access to finance (6) more flexibility in land use decisions (3) freedom to subdivide (2) and 3 gave other answers. Greater stability within rural industry, confidence to improve and potential for amalgamation of properties were given as other effects.

Pastoral Leases

Conditions written into current pastoral leases did not impede operations on 16 properties (62 per cent). Of the remainder seven believed that current lease conditions demanded too much in the way of development, whereas three respondents held the opposite view that current lease conditions allowed too few options for development. As shown in Table 5.1 most respondents knew the legislation contained provisions that would allow leases to be modified and more than half of these knew of the procedures to follow to initiate these changes. The lowest overall positive responses were in relation to alterations to the term of the current lease and to the boundary lines. Knowledge of these provisions is important for planning in the medium to longer term but would have little direct effect on day to day operations. Since the survey was conducted the Crown Lands Act has been amended to allow pastoral leases to be granted in perpetuity in certain circumstances.

Table 5.1

Awareness of general provisions for modifications
of pastoral leases

Provision	Not possible	Possible		Don't know
		Aware of procedure	Unaware of procedure	
To change specific conditions in current lease ¹	3	15	6	2
To extend term of current lease ²	5	13	4	4
To grow crops ³	3	14	8	1
To engage in other commercial enterprise ⁴	3	12	8	3
To alter boundaries of lease ⁵	9	11	5	1

¹Appendix A, section 23H, 23J, 37A

²Appendix A, section 48

³Appendix A, section 40A

⁴Appendix A, section 40B

⁵Appendix A, section 59A

Land Resources

The LCU conducts land resource surveys that help in land-use planning and management. Thirty-four interviewees (47 per cent) acknowledged that land resource mapping and evaluation surveys had been conducted on their properties, 34 respondents were definite their properties had not been surveyed and 5 could not say. Where surveys were known to have been conducted 13 had been requested by the current owner or manager (in 11 cases specifically to help with current work or with planning for the future). In 9 other cases previous owners or managers had initiated the survey, while the LCU had included 5 properties, wholly or partially, as part of a wider survey. The surveys on the remaining 7 were initiated by other agents or agencies. Of the 13 present owners or managers who had asked for the survey work, only 7 recognized the LCU as the surveyor and 6 had engaged other, private, consultants.

A report on the survey had been received at 20 properties (59 per cent of those where surveys were known to have been done). Generally, the reports were well received and in only one or two instances were reservations or dissatisfaction expressed about clarity or presentation although four respondents felt that assessment of the quality of their land was too conservative. Where surveys were not known to have been carried out (38), 22 interviewees knew what such a survey would show, 10 believed that a survey would be of use in their current operations and 12 would like their properties to be surveyed.

Soil Erosion

Half of all respondents, 36, reported that soil erosion occurred on their properties - 20 freehold (44 per cent of all freehold) and 16 pastoral leases (62 per cent of all pastoral leases). Seven estimates of areas of cropping land subject to gullying ranged up to 160 ha and another 7 recognized its occurrence but were unable to estimate areas affected. Gullying on pasture land was reported in 24 cases of which 11 could estimate areas affected and 3 of these were in excess of 1000 ha. Fewer reports of rilling or sheet erosion were made - 11 on cropping lands and 14 on pasture lands. Areas affected ranged up to 80 ha on cropping land (6 could not provide estimates) and to more than 1000 ha (2) on pasture lands for which 11 could give no estimate. One third of those who reported erosion (12) judged it to be a problem in their current operations. The total areas of these properties (although not the total areas affected by erosion) were 23083 sq km on eight pastoral leases and 7629 ha on four freehold properties.

Soil conservation structures were present on 20 properties - but on only four of the 12 where soil erosion was rated as a problem. Where structures had been installed this had been done during the terms of 13 current owners or managers. Six of them had designed their structures and for the remaining 7 outside help had been received as follows - LCU 5, DPP 1, other 1. In no cases had any special financial assistance been obtained to help build these structures. Twenty-three received some form of soil conservation information or advice - LCU 15, journals, magazines etc. 8, DPP 3, (includes 3 from more than one source). Although 22 reported LCU personnel visiting their property during the year some visits by LCU officers were for reasons other than to give advice on land conservation structures.

Water facilities

Water supplies for both domestic and commercial purposes are extremely important in the region and 59 properties (82 per cent) are equipped with dams/weirs or bores/wells or both (Table 5.2). Dams/weirs have been built on 27 holdings with five properties each equipped with six or more. Bores/wells occur more widely on 51 properties and are more numerous with six or more sunk on each of 10 properties. With so many properties and installations involved, questions about services from government were restricted to the last facility installed by current owners/managers. This reduced the numbers of dams/weirs to 17 and the number of bores/wells to 33.

Table 5.2

Numbers of properties with man-made water facilities

Property type	Numbers of Properties			
	Dams/Weirs	Bores/Wells	Both	None
Freehold	7	21	9	9
Pastoral lease	1	11	10	4

One of these dams/weirs had been built as far back as 1968 and 5 had been built in 1981. Current owners/managers had relied very much on their own resources and expertise in site selection, design and construction. Only one had received Water Division assistance in these three aspects, and another had received LCU assistance in site selection and design. Private contractors had built 5 dams/weirs; only 2 producers had received special financial assistance, both from non-government sources. Most of the current owners/managers (12) reported that their dams/weirs were operating satisfactorily, four found that the capacity was too small and one who had received no assistance in its siting, design or construction reported siltation problems.

Government services had been used much more with bores/wells, of which the first had been sunk in 1965 and seven were put down as recently as 1982. Water Division had helped in the selection of 16 sites (49 per cent), in the sinking of 7 bores/wells and had provided information on pumps in 2 cases. Private consultants or contractors had helped in most other cases. Water Division had provided financial assistance in four cases and NTDC had helped fund two. Only 2 bores/wells presented problems - one had collapsed and the other gave an inadequate flow.

Group 2

Livestock services

The second group of services is introduced by livestock services. Some 39 livestock producers (69 per cent) received information and advice. The 18 who received no information or advice in this year were spread across the full range of production in terms of numbers of livestock carried and so the receipt or non receipt appeared independent of the size of operations. Of the recipients of services, 18 (46 per cent) received information or advice on a single topic. For the full range of services 76 per cent were from NT government departments or agencies, especially DPP (58 per cent, Table 5.3). More than one-third of all services received were for pasture improvement or livestock diseases. Half of the 26 pastoral leases in the survey received information/advice concerning their leases. Nine reports were made of information/advice that was wanted but not available and these dealt with managerial aspects (BTEC and destocking of cattle associated with it) and technical matters (animal diseases and calving percentages).

Table 5.3

Specialist information/advice received about livestock

Topic	DPP	Lands	Water Divn	Priv. Con.	Other
Grazing systems	8			1	2
Pasture improvement	13			1	3
Livestock diseases	21			2	
Livestock breeding	5			3	2
Fencing	7	1		4	
Bores/pumps	1		8*	3	
Farm/station economics	6			4	1
Lease conditions	2	11			

*includes 4 who appear in Table 4.2

Improved pastures

Specialist information/advice was taken by 26 (59 per cent) properties with improved pastures and of these 10 received information/advice in only one topic. DPP has direct involvement with improved pastures and accordingly provided 78 per cent of all services received (Table 5.4). The major topics, fertilizers, varieties and weed control, impinge directly on the quantity and quality of production. In five cases information/advice was not available or arrived too late to be of use in that season.

Table 5.4

Specialist information/advice received
about improved pastures

Topic	Source		
	DPP	Priv. Con.	Other
Location/size of pasture area	5	1	
Land preparation/planting methods	6	1	4
Machinery	4	2	2
Fertilizers	11	1	2
Varieties	13	2	1
Weed control	16		1
Pests	6		
Diseases	6		1
Farm economics	3	2	

Crops

Only two of the smaller producers of field crops out of a total of 15 did not receive any information/advice and DPP supplied most of the information/advice that was received (Table 5.5). Higher proportions of growers received services for horticultural crops (88 per cent) than for fodder crops (70 per cent). For all three types of crops the focus was on fertilizers, varieties, weed control, insect pests and diseases.

Table 5.5

Specialist information/advice received about field
crops, fodder crops and horticultural crops

Topic	Field crops		Fodder crops		Horticultural crops	
	DPP	other*	DPP	other*	DPP	other*
Site of cropping area	4	2	3	1		
Size of cropping area	2	1	1		2	
Land preparation	4	1	5	3	4	
Planting methods	9		5	3	4	
Machinery selection	3	1		1	2	
Fertilizers	10	2	9	3	7	
Varieties	10	2	3	3	6	2
Weed control	10		6	1	5	1
Insect pests	7		3	1	8	1
Diseases	8		3	1	8	1
Feral animals/wallabies	3					2
Harvesting	5	1	2		3	
On-farm economics	4	2				

*Includes CSIRO, private consultants, other producers etc.

Emphasis has been placed on the production of broadacre crops and horticultural produce and as a result of this stimulus growers are looking for more assistance than with fodder crops whose importance has been relatively underplayed. An increased demand for information/advice has been created but it has not always been satisfied. Six growers of field crops and four horticulturists made a total of 17 reports of requirements for information/advice that were not met whereas only two producers of fodder crops reported failure to be provided with satisfactory answers.

Group 3

Marketing

Marketing introduces the third groups of service topics. From the variety of production covered by this study all but improved pastures are marketed or can be marketed. However, in the past either the nature of production (livestock) or the small amounts available for sale (fodder crops, field crops, fruit and vegetables) left the producer to sell where best he could and orderly marketing has not been practised. A Producers Co-operative with grain handling facilities at Adelaide River operated in previous years, largely with field crops. Livestock producers benefitted in seasons when buoyant prices prevailed and some horticulturists through their own assiduous efforts have been able to do well. By 1981-82 the situation was beginning to change. ADMA had its role with the marketing of field crops, DPP and ADMA assisted with marketing of horticultural produce and DPP had undertaken some promotion of beef and buffalo meats. Nevertheless, the fragmented nature of marketing is reflected in the level of marketing information or advice sought by those surveyed.

During 1981-82, 44 of the 57 livestock producers sold beef cattle and 30 of these received marketing information or advice. In response to a question that sought the most reliable source of information 17 identified direct contact with abattoirs. The remainder gave a variety of sources - live exporters 2, DPP 3, ABC radio 3, newspapers 2 and others 3 (agents, private consultants etc.). Information sources were not tapped frequently and 22 received information on a monthly basis, irregularly or only at the time of sale.

The situation with buffalo producers was much the same as it was with cattlemen. In a total of 22 producers 14 sold buffalo and eight of these received marketing information or advice. Again a majority, 5, relied on direct contact with the abattoirs, one dealt with live exporters and two gave other sources. Information was received on a monthly basis or less frequently by seven of the eight sellers.

Sales of fodder crops were made by 8 of the 23 growers of whom 5 acknowledged some marketing information or advice. The sources of this information were diffuse although 2 growers identified ADMA as the most reliable. Information was received less frequently than monthly. Six of the 11 horticulturalists received marketing information, generally from direct contact with retailers, or agents and again on an irregular, infrequent basis.

Conclusions

The implications of this chapter are reasonably clear cut. Understandably the highest levels of services received have been in the areas that require most in the way of specialist expertise or external inputs in the production process. For all types of production the use of the 'preparatory' services has been greatest in land assessment and the installation of bores (although not necessarily all in 1981-82). These reflect regional changes in quantity and quality of production.

Most of the services received related to what may be termed technical aspects of production (disease control, selection of varieties) for livestock, crops or some mixture of these. Lowest levels of services from government were reported in the marketing and economic areas and

information was received infrequently and then from private buyers or agents. So far we have discussed the current use of services and in a later chapter we ask whether the services are regarded as satisfactory by landholders.

CHAPTER SIX

METHODS OF COMMUNICATIONS

So far we have dealt with the sources of information or advice, the characteristics of the receivers and the types of messages passed between them. This chapter turns to the channels along which messages are sent from government to primary producers. DPP puts out three different publications especially for Territory primary producers and other organisations issue newsletters or brochures on an irregular basis to advise about the services they can provide. In addition DPP conducts field days each year as a means of communication with the rural community. Other organisations have taken part in some of these. Displays at district shows are another general outlet for departmental information but these also reach the wider audience of the general public. In addition the ABC includes regular rural programs in its radio and television broadcasts. DPP and LCU have made use of videos to pass on information about their operations. Furthermore, direct personal contact is made through visits to properties by departmental officers. These methods of communication are examined in terms of the levels of their use in 1981-82 and the degree of satisfaction that their recipients, the primary producers, feel about them.

The Written Word

Most producers (63, 88 per cent, 38 on freehold land and 25 on pastoral leases) receive rural journals, magazines, newspapers or bulletins. Of these two receive only a single publication each and the remainder receive up to nine different titles for an overall average of four per reader. Some 40 different publications are involved which reflects the diversity of backgrounds of the respondents and the range of their operations. Four of

the publications are produced locally - NT Rural News, Agnotes and Katherine Rural Review by DPP and the Northern Territory Agricultural Newsletter by ADMA. The four are designed to cater for different needs. NT Rural News is published about every two months and serves to cover general conditions and trends in production in all rural industries. In this way it approximates to the journals or gazettes published by State Departments of Agriculture. Agnotes report technical details of specific aspects of production and is published as new information becomes available. Katherine Rural Review is a news-sheet that can pass on topical news about a wide range of issues that are of interest to the Katherine district. The Agricultural Newsletter reports progress in the settlement program and includes information about aspects of marketing Territory produce.

In addition to questions about readership we also asked respondents to evaluate content in terms of general industry wide information and technical information. Table 6.1 gives the results for all titles - local and imported - that were ranked most valuable for either technical or general information.

Each of the local titles is widely distributed; the NT Rural News reaches all 63 respondents who received magazines and 54 of these people also took Agnotes. These relatively high readerships can be partially explained by the ease of availability as each is distributed free on request. In addition, however, 37 readers indicated that the most useful feature of NT Rural News was its coverage of local events and conditions. Criticisms of it were fewer and more diverse but nine interviewees expressed a view contrary to that of the majority and said that articles were too general or

Table 6.1

Rating of all magazines

Magazine	Recipients			Most valuable for			
				General		Technical	
	P	F	Σ	Info.		Info.	
				P	F	P	F
NT Rural News	25	38	63	5	9	3	5
Agnotes	19	35	54		1	5	5
ADMA Newsletter	10	21	31				1
Katherine Rural Review	8	20	28	1			
Queensland Country Life	16	25	41	7	7	2	3
National Farmer	11	25	36	2	5	1	
Weekly Times	9	2	11		3		
CSIRO Technical Bulletins		3	3				1
Farm	4	5	9	1	1	1	2
Country and Farm	3	5	8		1		
Commercial Horticulturalist	1				1		1
World Farming Magazine	1		1			1	
Power Farming	1	4	5			1	
Queensland Grain Grower	1	2	3		1		
American Farm Journal		1	1				1
American Vegetable Grower		1	1				1
CSIRO Rural Research	1		1	1			
Commodity Letter	1		1	1			

P = pastoralist; F - freeholder

largely irrelevant for their operations. Specific ratings of the two show NT Rural News to be rated as useful or better for general information (52, 84 per cent of recipients) and although this rating drops for technical information it remains at 39 (60 per cent) (Table 6.2). For technical information, Agnotes rates very highly (47, 87 per cent of recipients). Some explanations may be possible for the seemingly high rating of NT Rural News as a source of technical information given its more general role. At

the time Aqnotes - the more technical publication - was less well known but since then promotional efforts have been made to increase awareness of its availability and the value of its contents. Furthermore, the arrangement of the interview schedule asked for ratings of NT Rural News as a source of general information and as a source of technical information in consecutive questions. This arrangement may have had a 'flow-on' effect encouraging respondents to rate it highly for its technical information as well as its general information.

Table 6.2

Specific ratings of NT Rural News and Agnotes

Rating	Rural News	Agnotes
General information		
extremely useful	16	
useful	36	
little use	9	
useless	2	
Technical information		
extremely useful	6	17
useful	33	28
little use	19	5
useless	5	2*

*2 no opinion

These two local publications also compare favourably with more widely distributed publications of which the most popular are Queensland Country Life and National Farmer (Table 6.1). Both NT Rural News and Queensland Country Life receive 14 ratings as the most valuable source of general information but the smaller readership of the Queensland based paper gave

it a higher percentage acceptance (34 per cent compared with 22 per cent). As a source of technical information Agnotes has the highest rating (19 per cent) ahead of NT Rural News (13 per cent) and Queensland Country Life (12 per cent).

Radio and TV

Rural radio and TV programs are broadcast by the ABC from Darwin and more than half the survey population (41, 57 per cent) reported radio reception as always satisfactory and slightly fewer (34, 47 per cent) reported TV reception as always satisfactory. Conversely, 18 (25 per cent) could never receive radio satisfactorily and a similar situation applied to 31 (43 per cent) for telecasts. Indifferent radio reception at various times occurred in 13 cases and for TV five reports were made of variable reception. The most convenient time of the day for a rural radio broadcast was noon - 1pm (23, 32 per cent), 14 preferred a broadcast after 7pm but 22 had no preferred times. More than half (37, 51 per cent) hold no preferred time for any rural TV program and 32 specified after 7pm. The vast majority, 67 (93 per cent) for radio and 61 (85 per cent) for TV, held no preference for broadcasts on any particular day of the week.

Figure 6.1 shows the frequency of listening to the ABC Country Hour broadcast on weekdays from 12 noon to 1 pm. In 41 cases (57 per cent) the program was heard daily or several times per week but 21 producers (19 per cent) rarely or never listened to it. A slight discrepancy appears to exist between those who reported that radio reception was never satisfactory (18) and those who never listened to the program (15). The explanation lies with the term satisfactory for although the quality of

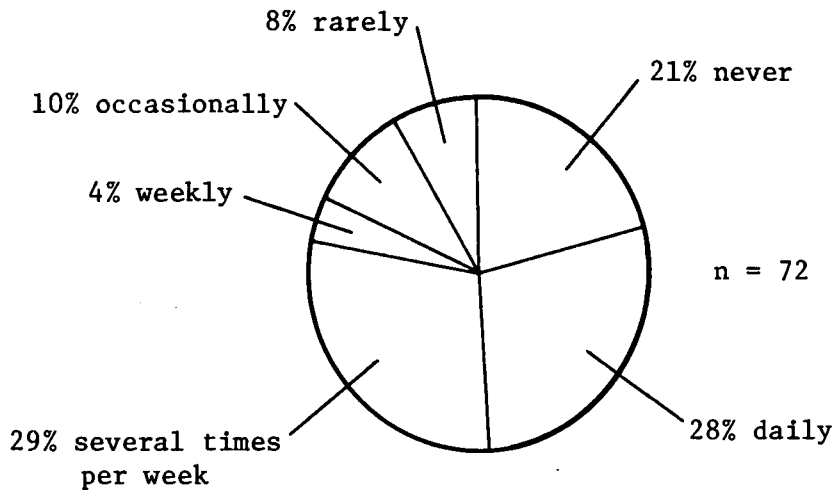


Figure 6.1 Frequency of listening to ABC Country Hour

reception is not what the listener would like it may still be possible at times to hear broadcasts. At other times it may be that the program is heard while the primary producer is away from his property. In these instances the Country Hour would be heard occasionally or rarely. These overall frequencies compare favourably with those from another survey conducted in 1979 which showed the maximum listening audience in Darwin at the time the program was aired to be 8.2 per cent (ABC 1979). Doubtless the content of the program has much to do with the difference.

Video Films

DPP has produced several video films on various themes about NT primary production, principally for viewing at agricultural shows and in schools. Only 10 interviewees could identify specific subject areas that had been dealt with although three named films made by other organisations. However, 47 respondents gave more than 70 subjects (including several repetitions) that they felt could be covered. Some of these (e.g. the hardships and pitfalls of life on the land) would be suitable for a

basically non-rural audience. Many others were on specific, technical matters (e.g. cattle breeding, use of farm machinery, plant diseases) that could be used in extension projects for landholders or for training courses. One suggestion was made that videos on such topics should be made available for loan to primary producers.

Agricultural Field Days

Field days conducted in 1981-82 at Tortilla Flats Research Farm and in the Katherine and Douglas Daly districts were used as the basis for assessment of services of this sort. A total of 41 interviewees (57 per cent) attended; 30 attended one of the field days, 10 were present at two and 1 went to all three. The most valuable feature of field days quoted most frequently (16) was that they provided an opportunity to learn of the results of the latest field trials. Related to this was the opportunity to assess overall seasonal performances (6). Other significant features reported were the opportunity to discuss problems, trends etc. with other landholders (9) or with departmental officers (3).

All respondents, regardless of whether they had attended a field day or not, were asked how field days could be made more useful. Nearly half were unable to give any suggestions (18, 13 of whom had not attended any of the three field days) or said that no improvements were necessary (17, 14 of whom had attended). The most frequently given suggestion (11) was for more emphasis to be placed on the commercial applications of research work. Specific mention was made for visits to be made to private properties in conjunction with visits to research farms. Mention was also made of the need for the economic impact of various technical changes to be spelt out. Another six replies suggested that a wider range of topics should be

covered, particularly livestock and horticulture. Others believed that field days should be held more frequently or at more convenient times. Amongst the miscellany of other improvements suggested were those for participation by appropriate business houses and other government departments.

District Shows

District shows were held at Darwin, Fred's Pass on the outskirts of Darwin, Adelaide River and Katherine and departmental displays were provided for some of these. Attendance overall was high as 57 (79 per cent) of the survey population attended at least one show with 23 of these attending two or more. Katherine Show was the most popular with 37 attendances followed by Darwin (23), Adelaide River (18) and Fred's Pass (10). The DPP displays were rated as the best of the government exhibits by 21 respondents and 15 believed them to be useful. For all displays appreciation was expressed for the overall layout (8), thorough treatment of a particular theme (7) and overall coverage (6).

Interpersonal communications

Visits were reported to 65 properties by a representative or representatives from one of the three organisations that can provide specific technical services - DPP, LCU or WD. DPP officers visited 64 properties and for 30 they were the only departmental callers. The other property of the 65 received a single visit from a LCU officer. Hence, 34 properties received calls from at least two of the three organisations. Frequencies of visits are shown in Table 6.3. In addition to visiting more properties DPP has the highest frequency of visits which is to be

Table 6.3

Frequencies of visits to properties by DPP, LCU and WD personnel

	DPP		LCU		WD		
	No. of visits	No. of properties*	No. of visits	No. of properties	No. of visits	No. of properties	
	1	2	1	8	1	6	
	2	6	2	3	2	3	
	3	11	3	1	3	4	
	4	5	4	3	4	4	
	5	3	5	1			
	6	7	6	2	6	2	
	7	3					
					8	1	
	10	2			10	3	
	12	6			12	1	
	15	5					
	20	4	20	1			
	24	1					
	30	2	30	1			
	35	1					
			40	1			
	50	1					
	>100	3	>100	1			
Total	1175	64	336	22	102	24	
				DPP	LCU	WD	
				Initiated by Landholder	25.9%	16.4%	23.5%
				Specific purpose	33.4%	29.2%	50.0%

*2 were unable to give estimates of numbers of visits

expected given the nature of its functions and its larger staff numbers. For the same reasons LCU had more on-property contact than WD did. A higher proportion of DPP visits were initiated by the landholders (26 per cent) than for WD (24 per cent) and LCU (16 per cent). This order was altered with reference to visits for specific purposes for which 50 per cent of WD visits led the 33 per cent for DPP and 29 per cent for LCU.

Of the seven properties that had no departmental visitors six ran livestock with (4) or without (2) improved pastures and one grew crops only. At the other end of the scale the three properties that were visited most frequently (over 100 calls, Table 6.3) by officers of all organisations were closely involved in the new developments in cropping. One of these estimated that over 500 visits were made to his property during the year. In terms of DPP visits if the three properties just mentioned are excluded to avoid the distortions that the high numbers of visits to them can have, then growers of crops (field, fodder or horticultural) received fewer visits on average than those that ran livestock, livestock with improved pastures or livestock with improved pastures and some crops. While this order gives some indications of where current emphases lie certain qualifying influences must be considered. Frequencies reported were only estimates made by landholders as no diary records were kept, or if they were they were not used to answer these questions. Individual interpretations can vary quite markedly and affect the answers. In addition the level of expertise of each respondent in both overall and particular matters, the degree of development and the differences in emphasis on various modes of production can all have a bearing on the numbers of visits.

Most of the survey population (56, 78 per cent) regarded the levels of contact of DPP personnel with their properties as satisfactory (including three of the eight who had not been visited at all during the year). The other responses were that DPP visits were too frequent (1), too infrequent (9) while 6 others expressed indifference about the frequency of such visits. Greater uncertainty was expressed about the frequency of calls made by LCU and WD officers. For LCU 34 (47 per cent) believed that current numbers of visits were about right, three felt that they were too frequent and four believed the opposite that more visits would be appropriate. Fewer were satisfied with the current levels of contact with WD (30, 42 per cent) and 6 felt that more calls could be made. Those who were unable to express a definite answer totalled 31 (43 per cent) for LCU and 36 (50 per cent) for WD which indicates substantial numbers of primary producers in the study area know little about the nature of the work of these two units.

If departmental officers did not call on properties then, in theory at least, the landholder can contact a departmental office although this can often be a less satisfactory option. Seventeen did not visit offices of any of the three organisations and these included three whose properties had not been visited by any government officer. Visits were made by 53 (74 per cent) who called into a DPP office for an average of six visits each, 20 who called into WD offices (for an average of three visits each), and eight who averaged a single visit to a LCU office.

CHAPTER SEVEN

THE EVALUATIONS

The preceding two chapters presented data about service use, essentially, but not exclusively, in 1981-2. Respondents were asked about the nature of the services they received (advice about installation of a bore, animal diseases, marketing information) and about the forms of communication reaching them (magazines, radio, farm/station visits by government officers). This chapter reports how primary producers assess the quality of these two broad areas - the content and the methods of communication. In addition to the areas already covered, training courses for employers, self employed and employees have been added along with respondents' opinions on how government services could be improved. Discussion of the major findings is undertaken in the following chapter.

The Questions Asked

All respondents were asked, 'From your experience is the information/advice provided by the NT government on the following topics satisfactory?'. It should be emphasised from the outset that although the topics were specified in the question, the particular services themselves were not and that the question did not refer to services provided by any other agency. However, the term 'information/advice about land assessment' for example becomes clumsy and in all that follows it is abbreviated to land assessment for convenience, and similarly for the other topics.

Respondents were offered the options 'satisfactory', 'unsatisfactory' or 'don't know'; they were not offered a scale on which to rate or assess their degree of satisfaction or dissatisfaction. This was done to try to encourage respondents to provide a definite assessment of either

satisfactory or unsatisfactory. This method has limitations, especially since no direct follow-up questions were asked. It is possible that some respondents, not definitely or genuinely satisfied, rejected the other option of 'dissatisfied' and the 'don't know' option, and chose the 'satisfied' option as the least inaccurate response. In addition some may have said they were satisfied, not on the basis of direct first hand experience of a given service but because of some general impression, gained at second hand, of the quality of information and advice on a topic. We included the phrase 'from your experience...' in the question to discourage responses based on second hand or general knowledge. The same qualifications apply in principle to the 'unsatisfactory' rating. Finally, the assessment category of 'don't know' may include those who are ignorant of the quality of information/advice available and those who are neutral, that is, those who find the service to be neither satisfactory nor unsatisfactory.

These qualifications must be noted because in the interviews respondents were asked for their judgement of all services regardless of whether a question about a given service was appropriate to their properties. The fifteen topics were:- land assessment, water availability and quality, tenure conditions, animal production, animal health, pasture production, crop production, plant disease and pest control, chemical analysis, soil erosion control, farm and station economics, industry economics, market promotion, price support/guarantees and financial assistance/incentives. From this list it is apparent that not all topics applied to all properties and in the presentation of results assessments have been arranged in various subgroups appropriate to the topic. As an example questions on

crop production did not apply to an enterprise based solely on raising cattle. In the accompanying discussion the emphasis is on replies from properties that grew field crops, fodder crops, horticultural crops or some combination of these, although results from all landholders are presented in tabular form. On the other hand some topics such as market promotion could apply to all types of enterprise and the results for these are presented in broad industry groupings. Even in these cases a particular grower may have had no direct experience of services promoting markets and his answer will be subject to some of the qualifications mentioned above.

Assessment by the Total Population

Assessments of the fifteen topics by all respondents are summarised in Figure 7.1. For every topic each respondent could give one of three assessments, 'satisfactory', 'unsatisfactory' or 'don't know'. The fifteen replies from any one respondent may be aggregated and the numbers of replies of each of the three kinds plotted in a space defined by the sides (boundaries) of a triangle. In Figure 7.1 increased perpendicular distance from a boundary indicates that a particular respondent gave more replies in that category. By plotting the perpendicular distance from the three boundaries we obtain the point that represents the number of 'satisfactory', 'unsatisfactory' and 'don't know' replies from an interviewee.

Each plot represents the number of 'satisfactory', 'unsatisfactory' and 'don't know' replies given by each of the 72 respondents. Where one interviewee gave a certain combination of assessments a single point has been plotted and in instances where more than one respondent had the same combination an adjoining number shows how many people provided that number

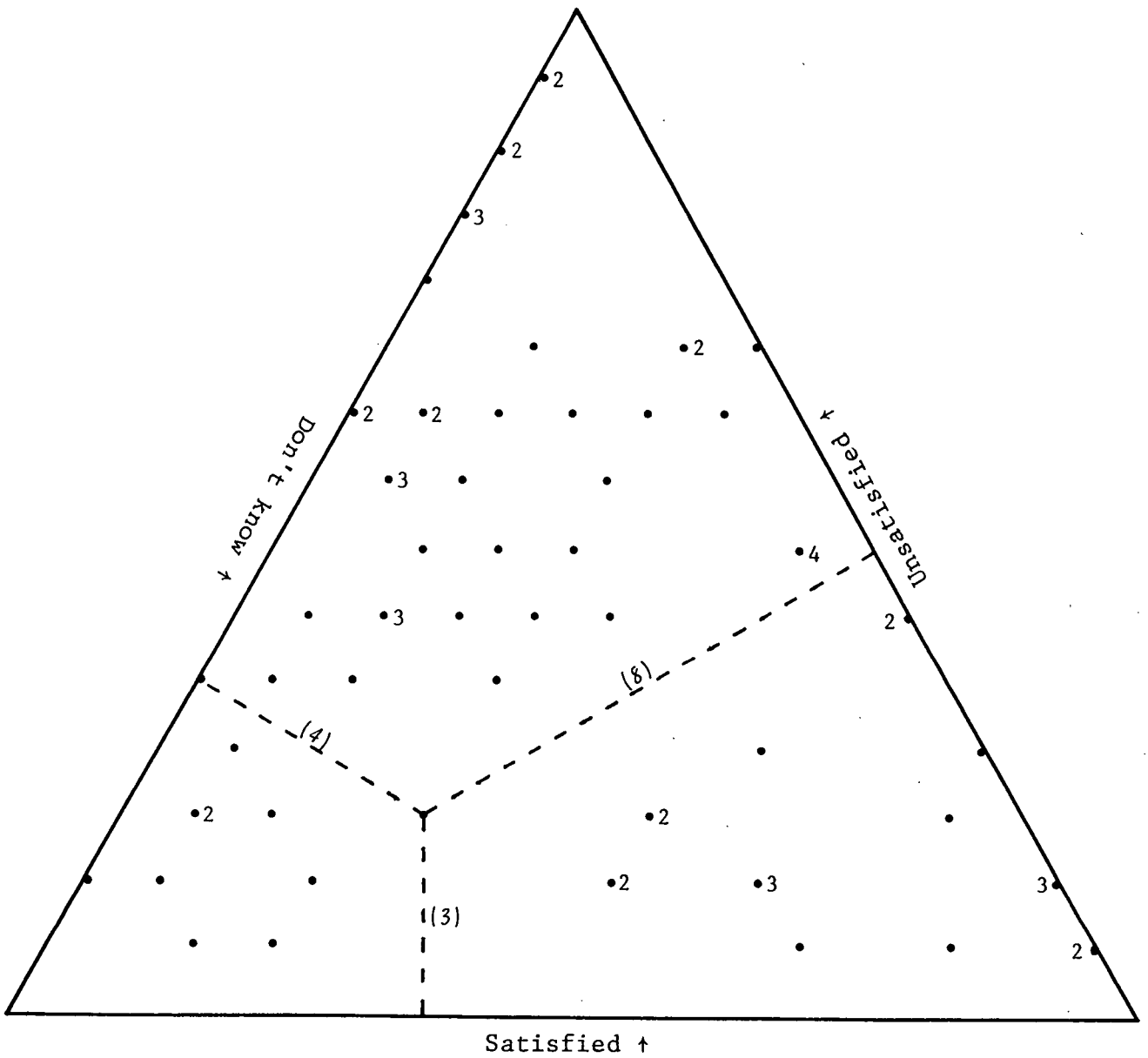


Figure 7.1 Summary of assessments of all 15 services by survey population. Each plot indicates the number of interviewees who responded with the same overall proportions of satisfactory, unsatisfactory and don't know. As an illustration perpendiculars have been plotted for a point that represents 3 satisfactory, 8 unsatisfactory and 4 don't know.

of 'satisfactory', 'unsatisfactory' and 'don't know' answers. For example, at the top of the diagram the point labelled 2 shows that two respondents gave those same numbers of replies; 14 'satisfactory', hence the perpendicular distance from the base of the triangle and 1 'unsatisfactory' as shown by the distance from the boundary so labelled. Of course the assessments were not necessarily for the same topics.

Generally no clearly discernible pattern has emerged to identify groups of primary producers who were satisfied or unsatisfied about services. However, the tendency for points to be towards the left of the figure (that is, at certain perpendicular distances from the satisfactory and unsatisfactory axes) shows that many respondents were prepared or able to give some such assessments rather than to reply 'don't know'. Furthermore the scatter of plots shows that few interviewees gave largely uniform responses for all fifteen topics and that they gave a mixture of replies. This implies that distinctions were drawn amongst the array of services. Conversely the survey data do not imply that those who did give almost uniform assessments through the full range were unable to make distinctions about varying quality of services. It may well have been that their judgements were consistent throughout.

Assessment of separate topics

Assessments of each of the fifteen topics are now considered, bearing in mind the qualifications of the terms satisfactory (satis), unsatisfactory (unsat) and don't know (dk) that were outlined above. After the individual assessments are considered the landholders preferences for improvement are reported.

Land assessment

Land assessment referred to the land resource surveys undertaken by the LCU whereby land units are recognised and identified to describe tracts of land with similar topography, soils, vegetation etc. From this basis various types of land use can be suggested or recommended. The replies have been looked at in two ways; the first recognises those landholders who have had experience with the surveys or who are familiar with them (Table 7.1) and then the second relates ratings of the services to the types of production undertaken on the property (Table 7.2). In Table 7.1 the first two sub groups cover the properties where surveys are known to have been carried

Table 7.1

Assessment of land assessments by experience with service

Group	Numbers			
	dk	satis.	unsat.	total
Survey initiated by incumbent	1	5	7	13
Survey initiated by others	7	9	5	21
Total surveys	8	14	12	34
Surveys understood	9	10	3	22
Others	6	6	4	16
Total	23	30	19	72

Table 7.2

Assessment of land assessment by type of production

Group	Numbers			
	dk	satis.	unsat.	total
Livestock only	6	15	8	29
Livestock and crops	8	10	10	28
Crops only	9	5	1	15
Total	23	30	19	72

out, firstly those requested or initiated by the current owner or manager and secondly those initiated by a previous owner or manager or some other organisation. The numbers are low but 7 of the 13 incumbent owners or managers who had surveys done gave a rating of unsatisfactory. For all surveyed properties 14 replies of satisfactory were received out of a total of 34. Amongst unsurveyed properties 22 respondents were familiar with the service and nearly half of them gave a rating of satisfactory. Hence from the 56 properties that had been surveyed or where the interviewee knew about land resource surveys there were 24 assessments of satisfactory, 15 of unsatisfactory and 17 don't know replies.

When the ratings of land assessment are grouped according to the type of production satisfactory ratings were given for more than half the properties that produced livestock only (15/29) whereas the proportion was lower amongst properties that produced both livestock and crops (10/28) and also amongst farms where cropping was the sole type of production (5/15) (Table 7.2). These total results are largely influenced by the number of don't know replies. If we ignore these then we find more livestock producers and crop specialists were satisfied than were dissatisfied and for those respondents with mixed livestock and cropping operations the split was even (10/10).

Water availability and quality

For assessment of information/advice on water availability and quality three groups have been used - those with bores/wells present, those with dams/weirs and those with a combination of these man-made water supply and storage facilities (Table 7.3). Ratings of satisfactory came from half of

the properties (30/59) and the strongest favourable assessments were obtained from properties with dams/weirs (17/32) and from properties with both underground and surface installations (11/19).

Table 7.3

Assessment of water services by presence
of water facilities

Group	Numbers			total
	dk	satis.	unsat.	
Bores/wells present	4	2	2	8
Dams/weirs present	7	17	8	32
Both present	5	11	3	19
	—	—	—	—
Total water facilities	16	30	13	59
Others	7	3	3	13
	—	—	—	—
Totals	23	33	16	72
	—	—	—	—

Tenure conditions

With regard to tenure conditions the survey population has been split into two groups according to the type of land title, freehold and pastoral lease (Table 7.4). Under the Crown Lands Act pastoral lessees should have annual contact with pastoral inspectors and 17 pastoralists rated the service as satisfactory. On the other hand fewer than half (18/46) of those on freehold land were prepared to give a satisfactory rating which may reflect some dissatisfaction with the (then) recent freeholding of smaller properties. Another explanation may be that it reflects a lack of familiarity with the conditions of lease covenants and subsequent inspections.

Table 7.4

Assessment of tenure conditions by
type of land title

Group	Numbers			
	dk	satis.	unsat.	total
Freehold	18	18	10	46
Pastoral lease	4	17	5	26
Total	22	35	15	72

Animal production

Animal production is the first of a batch of six service topics that relate specifically to various types of production. It includes matters such as animal breeding and nutrition. Amongst those who ran beef cattle only the ratio of satisfactory: unsatisfactory assessments was 2:1, with only 5 out of 35 not prepared or unable to give either of these ratings (Table 7.5). For the 22 who ran both beef cattle and buffalo 13 rated the service as satisfactory and 8 gave an unsatisfactory assessment. Hence 33 of 57 livestock producers assessed the service to be satisfactory, 18 said that it was unsatisfactory. Only 6 gave an answer of don't know.

Table 7.5

Assessment of animal production by
type of production

Group	Numbers			
	dk	satis.	unsat.	total
Beef cattle only	5	20	10	35
Beef cattle + buffalo	1	10	8	22
Total livestock	6	33	18	57
Others	10	3	2	15
Total	16	36	20	72

Animal health

The responses on animal health amongst livestock producers were even more favourable than they were for animal production (Table 7.6). A total of 42 provided assessments of satisfactory and 10 of the 57 said that the service was unsatisfactory. Understandably, as with animal production (see above) most of the survey population who replied don't know were not livestock producers. This rate of approval for animal health was the highest achieved in the fifteen service topics.

Table 7.6

Assessment of animal health by
type of production

Group	Numbers			
	dk	satis.	unsat.	total
Beef cattle only	4	25	6	35
Beef cattle + buffalo	1	17	4	22
	—	—	—	—
Total livestock	5	42	10	57
Others	11	3	1	15
	—	—	—	—
Total	16	45	11	72
	—	—	—	—

Pasture production

Pasture production applies to properties where livestock are run on native pastures, improved pastures or some combination of the two. In addition three respondents reported that they grew improved pastures but carried no livestock. Of the beef cattle and buffalo producers 34 gave assessments of satisfactory (Table 7.7). This is again a high number in comparison with many of the other topics and is approximately the same as that obtained for animal production.

Table 7.7

Assessment of pasture production by
type of production

Group	Numbers			
	dk	satis.	unsat.	total
Beef cattle only	6	21	8	35
Beef cattle + buffalo	1	13	8	22
Total livestock	7	34	16	57
Other improved pastures	1	2	0	3
Total pastures	8	36	16	60
Others	10	0	2	12
Total	18	36	18	72

Crop production

The next three topics relate to the smaller cropping sector. Results are presented as they came from producers of field crops, fodder crops, horticultural crops or some combination of these forms of production. This arrangement leaves small numbers of growers in each group and for that reason any between group comparisons need to be undertaken with caution. The first such topic, crop production, embraced all aspects of agronomy, varieties, etc. More than half of the 43 growers expressed satisfaction with government services in this area whereas 12 gave a rating of unsatisfactory (Table 7.8). Although the numbers of specialist growers of field crops and of horticultural crops are small only half of them or fewer were prepared to rate the services as satisfactory (4/8 and 4/11 respectively).

Table 7.8

Assessment of crop production by type of production

Group	Numbers			
	dk	satis.	unsat.	total
Field crops	0	4	4	8
Fodder crops	2	10	3	15
Horticultural crops	5	4	2	11
Combination	1	5	3	9
	—	—	—	—
Total crops	8	23	12	43
Others	8	13	8	29
	—	—	—	—
Total	16	36	20	72
	—	—	—	—

Plant disease and pest control

Overall a slightly less favourable response was achieved for entomological and plant pathology services than for crop production. Only 19 of the 43 assessed the service as satisfactory and 14 replied that they found the service to be unsatisfactory while 10 gave a don't know reply (Table 7.9). For those who specialised in growing field crops the number of satisfactory ratings seems particularly low; essentially, the total of 19 assessments of satisfactory came from growers of fodder crops, from horticulturists or from those who grew some combination which would need to include either or both of these types of crops.

It is interesting to seek possible explanations for discrepancies between the ratings from field crop specialists and from the rest. First, the services for field crops were less able to meet growers' needs or expectations. This aspect of expectations leads to a second possibility:

Table 7.9

Assessment of plant disease and pest control
by type of production

Group	Numbers			
	dk	satis.	unsat.	total
Field crops	3	2	3	8
Fodder crops	4	6	5	15
Horticultural crops	1	6	4	11
Combination	2	5	2	9
	—	—	—	—
Total crops	10	19	14	43
Others	7	14	8	29
	—	—	—	—
Total	17	33	22	72
	—	—	—	—

different demands may be placed on government services depending upon the crop type. Growers of fodder crops, perhaps, monitor incidence and levels of diseases and pests less closely and therefore require less from the service. On the other hand because of market emphasis on quality of produce horticulturists need to supervise their crops very closely and this they do regularly as part of crop management, thereby also requiring less of the service but for different reasons. Logically, this suggestion may be sound, but it probably is less applicable in practice.

In this brief discussion the focus is on differences in satisfactory assessments amongst types of production. However, it should be noted that within the groups of fodder crops only and horticultural crops only there is little difference between the numbers who assessed the service as satisfactory and the numbers who assessed it as unsatisfactory. That

reverts back to the original observation in this section - that throughout the cropping sector fewer than half of the growers rated the service as satisfactory.

Chemical analysis

Assessments of chemical analysis (of soils, plant tissues etc) were slightly less favourable than for crop production (Table 7.10). Fewer than half (20) rated the service as satisfactory, 13 were unsatisfied and 10 (mainly growers of fodder crops) gave an answer of don't know.

Table 7.10

Assessment of chemical analysis by
type of production

Group	Numbers			
	dk	satis.	unsat.	total
Field crops	3	3	2	8
Fodder crops	6	4	5	15
Horticultural crops	1	6	4	11
Combination	0	7	2	9
Total crops	10	20	13	43
Others	7	16	6	29
Total	17	36	19	72

With progression through the three topics pertinent to cropping it is interesting to note a tendency for growers to provide fewer assessments of satisfactory. In contrast more of the non-cropping people have had the impression that the services are satisfactory.

Soil erosion control

The six remaining service areas applied to all types of production although in practice emphases would change amongst, for example, livestock producers and those who specialised in growing crops. In the treatment of these six service topics three production groups have been recognised - livestock only, mixed production of livestock and crops and crops only.

Table 7.11 shows that only a third of livestock producers (10/29) assessed as satisfactory information/advice on soil erosion control and for the other production groups the proportion was even lower, especially amongst specialist crop producers. Ratings of unsatisfactory were highest amongst respondents engaged in mixed production. A large proportion of specialists, livestock producers and people who grew crops (especially) replied 'don't know'. The overall result is that the survey population was reluctant to assess soil erosion control services as satisfactory.

Table 7.11

Assessment of soil erosion control by
type of production

Group	Numbers			total
	dk	satis.	unsat.	
Livestock only	11	10	8	29
Livestock + crops	8	8	12	28
Crops only	10	1	4	15
Total	29	19	24	72

Farm and station economics and industry economics

Two topics related to economics, one on an individual property level and the other on an industry wide basis, both drew low ratings of satisfactory

(Tables 7.12 and 7.13). This was especially so from properties that produced both livestock and crops (2/28) in each case. Producers of this type largely replied don't know for farm and station economics (18/28, Table 7.12) but were more inclined to give a rating of unsatisfactory for industry economics (15/28, Table 7.13). As a consequence the total number

Table 7.12

Assessment by farm and station economics
by type of production

Group	Numbers			total
	dk	satis.	unsat.	
Livestock only	9	10	10	29
Livestock + crops	18	2	8	28
Crops only	8	5	2	15
Total	35	17	20	72

Table 7.13

Assessment of industry economics by
type of production

Group	Numbers			total
	dk	satis.	unsat.	
Livestock only	7	11	11	29
Livestock + crops	11	2	15	28
Crops only	8	5	2	15
Total	26	18	28	72

of don't know replies for farm and station economics (35) was the highest recorded amongst the fifteen topics. This result should be disappointing to government because at least three of the seven organisations have operations that bear on the economic well-being or industry and individual producer.

Market promotion

Market promotion (Table 7.14) drew high numbers of what may be termed definite responses, either satisfactory (22) or unsatisfactory (33). The ratings of unsatisfactory came particularly from producers of livestock, whether this was the sole type of production or in combination with crops. Producers who grew crops were more inclined to reply don't know or to give an assessment of satisfactory.

Table 7.14

Assessment of market promotion by
type of production

Group	Numbers			
	dk	satis.	unsat.	total
Livestock only	6	7	16	29
Livestock + crops	5	9	14	28
Crops only	6	6	3	15
Total	<u>17</u>	<u>22</u>	<u>33</u>	<u>72</u>

Price support/guarantees

Price support guarantees brought a large number of assessments of unsatisfactory with approximately half of all livestock producers responding in this way (Table 7.15). Fewer than one third of all the survey population (19/72) assessed this service area as satisfactory, a result that held for each of the production groups within the population.

Table 7.15

Assessment of price support/guarantees
by type of production

Group	Numbers			
	dk	satis.	unsat.	total
Livestock only	8	6	15	29
Livestock + crops	8	7	13	28
Crops only	6	6	3	15
Total	22	19	31	72

Financial assistance/incentives

The ratings of financial assistance/incentives produced the highest number of unsatisfactory replies (34, Table 7.16). Furthermore, the don't know replies numbered as low as any amongst the fifteen topics. Within the groups livestock producers, either producers of livestock only or in combination with crops, gave the highest numbers and proportions of assessments of unsatisfactory.

Table 7.16

Assessment of financial assistance/incentives
by type of production

Group	Numbers			
	dk	satis.	unsat.	total
Livestock only	6	11	12	29
Livestock + crops	4	6	18	28
Crops only	6	5	4	15
Total	16	22	34	72

Choices for improvements

Irrespective of whether information about a service is judged to be satisfactory or not, improvements may be made in the provision of information or advice. We asked each respondent which three of the fifteen services were most in need of improvement, and to rank the three services specified. Not all respondents were able to rank three services as in need of improvement; 11 ranked only two, nine named only one as in need of improvement and six declined to specify any service, leaving 46 who ranked three services. In this treatment the replies were again related to various subgroups appropriate to the topic. Land assessment, water availability and quality and tenure conditions were considered in the same groupings as in Tables 7.1, 7.3 and 7.4. All other service areas were related to the three major groups of production - livestock only, livestock and crops and crops only. Thus the answers for each of the fifteen services came from respondents with relevant resources or types of operation. Only four producers made choices (of either first, second or third levels) that were for topics not relevant according to this system and these choices have been discarded in the analysis. The raw figures are presented in Table 7.17. The services are rearranged in Table 7.18 in order according to the number of times they were named as most in need of improvement. Where two or more are ranked equally by this method, then subsidiary rankings were taken into consideration to separate them.

Weighted rankings are also shown. To determine the weights a ranking of 'most in need of improvement' was granted an arbitrary score of three, a ranking of second most in need of improvement scored two and a score of one applied to a third choice. The totals of all scores then determined

Table 7.17

Rankings of improvements necessary to information/advice
provided by NT government agencies

	<u>1</u>	<u>2</u>	<u>3</u>
Land assessment	2	1	1
Water availability and quality	0	1	3
Tenure conditions	1	0	3
Animal production	3	3	1
Animal health	3	2	0
Pasture production	4	2	3
Crop production	4	2	2
Plant disease and pest control	2	7	2
Chemical analysis (soils etc.)	2	2	2
Soil erosion control	4	2	5
Farm and station economics	1	4	0
Industry economics	5	4	1
Market promotion	9	9	8
Price support/guarantees	6	7	9
Financial assistance/incentives	16	10	3

the weighted rankings. Correlation between the two sets of rankings is high (as shown by the Spearman rank order correlation coefficient of 0.9, at the 0.01 level).

Three services head the list in each ranking as most in need of improvement: financial assistance/incentives, market promotion and price support/guarantees. These three account for 48 per cent of the weightings. With one exception the remaining services are in much the same order in the two systems of ranking, with tenure conditions and water availability and quality at the end of each list. That exception is control of plant diseases and pests. Primary producers know about it and regard information

Table 7.18

Rankings of services according to need for improvement

Service area	Ranking	
	1st choice	weighted
Financial assistance/incentives	1	1
Market promotion	2	2
Price support/guarantees	3	3
Industry economics	4	4
Soil erosion control	5	6
Pasture production	6	7
Crop production	7	8
Animal production	8	9
Animal health	9	10
Plant disease and pest control	10	5
Chemical analysis	11	11
Land assessment	12	13
Farm and station economics	13	12
Tenure conditions	14	14
Water availability and quality	15	15

and advice about it as satisfactory (Table 7.9). It is also midway down the list of rankings as most in need of improvement; yet, as the weighted rank shows, it was often nominated as the second or third choice for improvement, which indicates at least some underlying unease about the information and advice available.

Training courses

One way to improve work skills of both employers and employees is through the provision of specific short term training courses and 57 (79 per cent) respondents believed that these would be useful for themselves, their employees or both. Of these more believed that courses should last for

five days than for any other period (Figure 7.2), although three favoured no particular length of course and three expressed opinions of up to six weeks. The wet season months were the most suitable time of the year to hold such courses (Figure 7.3) and Katherine Rural College was the most favoured venue (Figure 7.4). Courses in some 40 topics were identified and the major ones appear in Table 7.19.

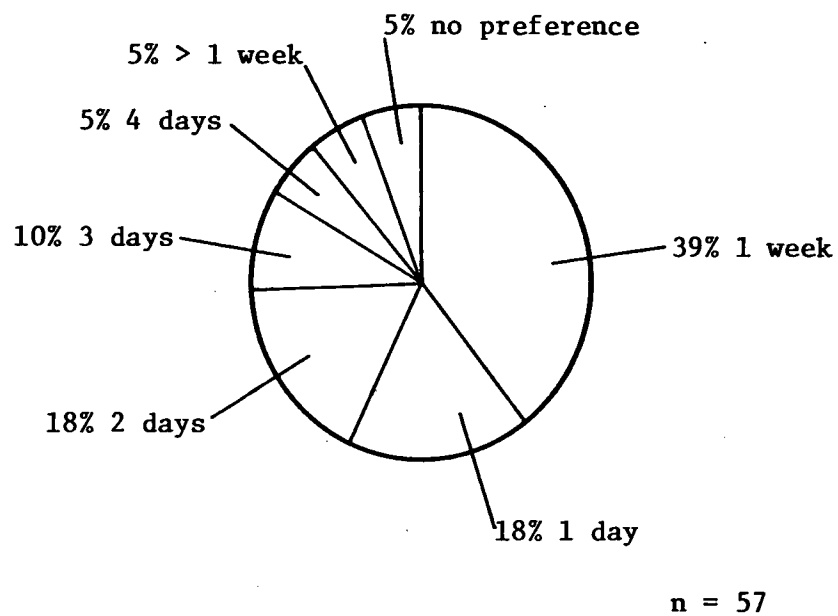


Figure 7.2 Preferred duration of short training courses

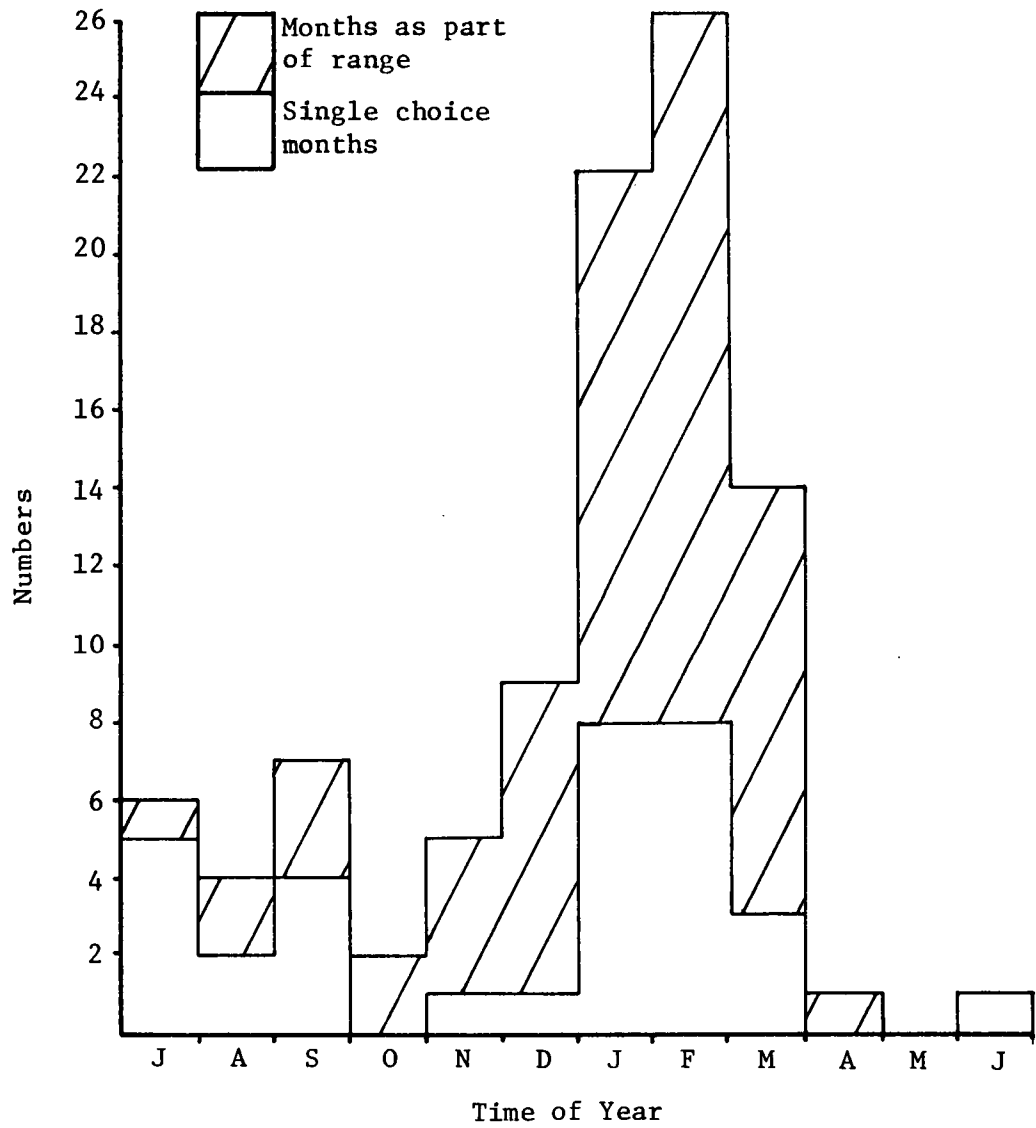


Figure 7.3 Preferred time of year for short training courses

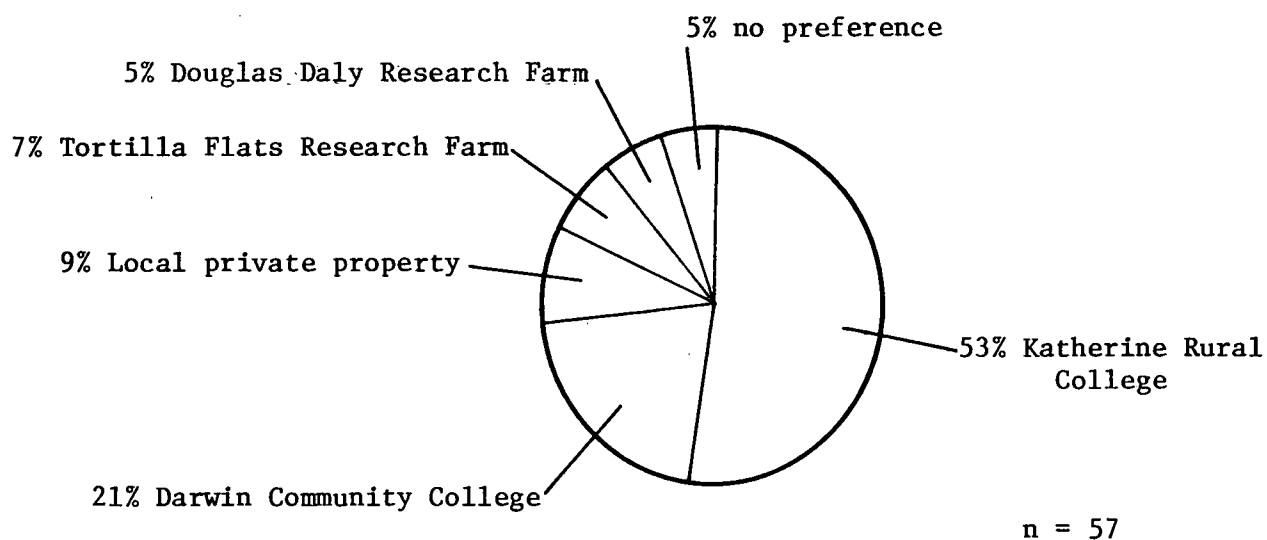


Figure 7.4 Preferred locations of short training courses

Table 7.19

Numbers who would benefit from short, specific training courses

	Self	Employees	Total
Shoeing horses	5 (4)	34 (11)	39
Pregnancy diagnosis	19 (18)	24 (15)	43
Speying	16 (15)	24 (16)	40
Diseases of animals	25 (24)	27 (14)	52
Diseases of plants	24 (24)	23 (12)	47
Insect pests	20 (20)	19 (13)	39
Carpentry	3 (3)	11 (5)	14
Plumbing	5 (3)	9 (4)	14
Welding	5 (5)	23 (14)	28
Diesel machinery maintenance	6 (6)	34 (18)	40
Petrol machinery maintenance	4 (4)	30 (14)	34
Bore maintenance	2 (2)	25 (11)	27
Bookkeeping	10 (10)	19 (11)	29
Taxation for primary producers	18 (18)	17 (10)	35
Artificial insemination	4 (4)	3 (3)	7
Explosives	4 (4)	1 (1)	5

*numbers in brackets() = number of properties

Methods of Communications

The preferred methods of communications were clear cut as shown in Tables 7.20 and 7.21. Approximately two-thirds preferred direct contact with government officers as the way of receiving both general industry information and specific technical information. This demand is increased with the addition of those who specially mentioned a combination of a visit by a government officer who provided information and supplementary printed material directly related to the topic. All production groups share this requirement for personal contact but it is particularly strong amongst specialist livestock producers. Furthermore, for the DPP, Lands, LCU and

Table 7.20

Preferred method of receiving information

A. General industry information

Method	Type of production			total
	livestock only	mixed	crops only	
Direct contact with government officers	23	17	7	47
Journals, newspapers	2	2	2	6
Other	1	0	3	4
Combination	3	9	3	15
	<u>29</u>	<u>28</u>	<u>15</u>	<u>72</u>

B. Specific technical information

Method	Type of production			total
	livestock only	mixed	crops only	
Direct contact with government officers	24	19	7	50
Journals, newspapers	1	2	3	6
Other	2	2	4	8
Combination	2	5	1	8
	<u>29</u>	<u>28</u>	<u>15</u>	<u>72</u>

Water Division the majority of respondents preferred a specialist officer as a contact in preference to a general extension officer - a result that has major implications for the extension services and these are discussed later.

Table 7.21

Preferred contact with government officers

	DPP	Lands	LCU	WD
General extension officer	23	18	19	19
Specialist officers	47	45	44	46
Don't know	2	9	9	7

Further improvements

After all these specific questions were asked one other was asked about improvement of government services. It was open ended - 'How can the NT Government provide more direct help to primary producers more effectively?'. Interviewees were allowed to nominate one service area or topic, although some were prepared to put forward several. The nature of the suggestions and their order appear in Table 7.22. Some 30 per cent (21/72) opted for greater financial assistance/incentives, a result that strengthens the findings of Table 7.18. Also of interest is the second most popular option, increased frequency of contact with government officers which reinforces Table 7.20. Although the assessments of information/advice on matters such as tenure conditions, animal, pasture and crop production were generally favourable (Tables 7.1-7.10) the degree of support for research and for conditions of land allocation shown here hints at some disguised or deep seated dissatisfaction in these areas. On the other hand the lack of satisfaction expressed about soil erosion and

other financial or economic matters (Tables 7.11-7.16) was not supported here by nomination of these sorts of topics as the most effective ways of helping primary producers.

Table 7.22

Best method of direct NT Government help to
primary industry

Method	No.
More financial assistance/incentives	21
Greater frequency of contact with producers	12
More research	11
Conditions of land allocation/tenure	10
Help with marketing	6
Other	7
No opinion	5

CHAPTER EIGHT

DISCUSSION

In this chapter the discussion is conducted at two levels to try to assist those who provide extension services to primary producers. At the first level some of the detail presented in Chapter 7 is considered by attempting to aggregate service areas according to how the information/advice available about them was assessed. Further the preferred methods of government-producer contact are discussed. Secondly, the discussion turns to the wider ramifications for the Territory situation in the face of trends in extension services.

The types of services

It is worthwhile to discuss some of the frequencies of assessments presented in Tables 7.1-7.16. Initially this can be done by looking at the type of services under review. In the above results it was recognized that some of them could best be presented in terms of types of production or some other distinguishing aspect such as type of land tenure or presence of man-made water supply and storage facilities. To choose these groups within the total population is in effect to focus on what may be termed relevant assessments, that is, assessments or ratings made by landholders whose operations are likely to be affected directly by particular services. By selecting replies from those groups, we minimise the possible shortcomings mentioned at the start of chapter 7 but it is at the cost of lowering the numbers that can be considered at any one time. That, in turn, has the result that percentages may be misleading, if the small numbers involved are forgotten. Nevertheless, use of percentages now can help but it is confined to total relevant groups. For example, Tables 7.8-

7.10 deal with various types of crops - field crops (8), fodder crops (15), horticultural crops (11) and combination of crops (9), but this discussion relates to all 43 growers. In this way the use of percentages is more valid.

This approach shows that more than 40 per cent of the various producer groups gave ratings of satisfactory for services directly related to their operations - animal production, animal health and pasture production for livestock producers; crop production, plant disease and pest control and chemical analysis for those who grew crops; water availability and quality for people who had man-made water supply and storage facilities; land assessment for those whose land had been surveyed or who were familiar with land resource surveys; tenure conditions by pastoral lessees and, marginally, by freeholders. Livestock producers gave the highest percentage of assessments of satisfactory (74 per cent) for animal health. Choice of the separation point of 40 per cent has been made because it is so marked - the proportion of ratings of satisfactory amongst the remaining six services was at best 31 per cent for market promotion and financial assistance/incentives. It should not be taken that 40 per cent is some acceptable minimum benchmark. Indeed there is probably no such minimum level of acceptance; the decision-making environment of the primary producer is dynamic and government services should be aware of and be a part of the process of change. Hence the degree approval for any one service must be taken in relation to that of all the others.

Although frequencies are presented according to types of production in Tables 7.11-7.16 all of the six remaining and more lowly rated services were considered across the total survey population because they apply to

all types of enterprise, but with variations in emphasis. Some understanding of the comparative low level of satisfaction with these services comes from consideration of their nature. Among the services that were rated more highly some were used infrequently on individual holdings; for example land resource surveys and the location of a site for a bore or dam do not have to be repeated and although pastoral leases are subject to inspection the conditions in the terms of any lease are not regularly altered. Others of the more highly rated group tend to be on technical matters such as animal health or crop production. Assistance with these may be needed in each season but with the information available the producer can weigh his experience and his current situation against whatever plans he may have and he can decide, for example, what area to plant to crops, which cultivators to grow, how much land preparation to undertake, what fertilizers to use and when to plant. He may choose to implement departmental advice or, alternatively, the option is open to him to modify some or all of the recommendations to suit his circumstances as he sees fit. That is, the services about which information has been said to be more satisfactory are those with the exception of tenure conditions, which are more technical in nature and over which the landholder has a higher level of personal control in making decisions.

Decisions about the remaining services, those rated as less satisfactory, are not made by the producer. Prices are determined by market forces in which the individual has an insignificant influence and he must take what the market offers at the time of sale. Decisions determining what the producer has to pay for fencing materials, chemicals, seeds and the other inputs necessary for production are made by others. In short, producers

are economically vulnerable to market decisions about costs and prices. Likewise the problem of soil erosion can be (but is not always) too big for the individual to bear alone. Courses of action decided on the property admittedly do influence soil erosion but the effects of operations outside the property also bear heavily on the extent and severity of soil erosion. As a result it has been accepted over the years that governments should play a leading part in countering soil erosion and this has become institutionalized to such a degree that soil conservation is now often 'government business'.

This interpretation of the services and their ratings indicates that in 1981-82 the community of primary producers included in the survey felt more comfortable in the service areas in which they could make decisions. These were largely in the technical areas that traditionally have been part of the farmers' bailiwick. On the other hand more government information and action was required in areas where pastoralists and farmers were more exposed to the effects of outside decisions. As the results have shown this will involve increasing the landholders' awareness of some services throughout the rural community and improving the quality of others.

Methods of communication

Table 7.20 showed that at least two-thirds of the survey population favoured direct contact with government officers as the preferred way of receiving information. Table 7.21 showed that again some two-thirds favoured direct contact with officers who specialised in some discipline. Such a clear cut result would appear to offer the obvious way for government to meet landholders' - when a problem arises turn it immediately to the appropriate specialist. However, such a simplistic interpretation

should be treated with some caution. In this case there are two reasons for looking more deeply. The first can be dealt with relatively easily because it pertains to the nature of the question that was asked of the landholders. The second reason is more complex as it involves some fundamental considerations about the nature of extension work and it links in with the final section of this chapter.

The nature of the question asked in the survey may have affected the results to some extent. As it was framed the question asked whether a 'general extension officer' or a 'specialist officer' was preferred. Within the general understanding of agriculturalists the term 'specialist officer' refers to a specialist in a certain discipline (e.g. plant pathology, economics), and hence suggests a higher degree of competence for handling problems in that subject. That is, the wording of the question may have led to an increase in the numbers who preferred contact with a specialist extension worker and a specialist in a particular discipline then a different result may have been obtained, especially amongst producers with no first hand experience of a fully developed extension service. (While information was obtained about previous experience details were not obtained about familiarity with extension services elsewhere).

An alternative or supplementary explanation may lie in agriculture itself. Bardsley (1981, p. 199) also found a greater demand for direct contact in Western Victoria. He believed that this reflected the increasingly technical nature of agricultural production which required trends and problems to be talked about more thoroughly. Broadly the same technological requirements apply in the Territory where the comparative

'newness' of the environment, especially with regard to cropping, heightens the need for discussion about production.

The approach to extension

The result that some primary producers would prefer to deal with officers who specialise in a particular discipline whereas others expressed a preference for dealing with extension officers has major implications for all government organisations that have an extension role with primary producers. It is of special interest to DPP because of its 'traditional' role in extension and while the following discussion is oriented towards that department it does have wider application. What follows here draws heavily upon Bardsley (1981) who provides a fuller explanation of the overall approach.

As a start let us consider what may be termed an orthodox approach to extension. When organisations that disseminate information consider what improvements, if any, could be made to their services it is not unusual - especially when the services are of a technical or scientific kind - to formulate proposals for improvement in technical, scientific, administrative or organisational terms. This approach concentrates on 'what' and 'how' questions of service delivery and tends to overlook the people who must be flexible enough to accommodate themselves to the range of styles of delivery which can be most effective in a variety of circumstances.

The narrowness of this approach neglects some of the valuable resources available in a full participatory extension process. Without in any way attempting to underestimate the knowledge reservoir that is an agricultural

department it is erroneous to regard extension as a one-way flow. In that approach the institution that is the repository of knowledge sets out to effect change by doing something to or for landholders instead of with them. Recipients of advice are left to react or respond to the new information. Thus the extension process fails to involve thoroughly the accumulated experience of producers. As Table 4.3 shows a considerable amount of practical experience is involved even in a pioneering region such as the survey area. This experience is one of the resources of the extension process along with the skills of both specialists in various scientific disciplines and extension workers.

On the local scene an immediate challenge confronting agriculturalists is that technology developed outside the region cannot invariably be introduced without modification. Production systems need to be developed and tailored for local conditions and that requires a practical orientation in research and development. The most effective form will entail interaction amongst research workers, extension personnel and primary producers. Decisions taken within government organisations can alter their resources available (specialists in science and extension workers) but that does not automatically increase the involvement of producers. The key role of the extension worker then is to increase the information flow in all directions and part of that is to increase participation of landholders.

How can this be done? The answer is a complex one as has become apparent with more involvement of social sciences in the understanding of extension. Simply, each producer has his own range of sources of information. The use of any source or sources is a part of the producer's search for information

and knowledge. First the need for a particular piece of information needs to be recognized. Then the choice of where to seek that information indicates the producer's knowledge of the range of sources available and how he assesses them. This survey produced a local example. In Chapter 5 it was reported that 16 interviewees did not know what a land resource survey would tell them about their properties. Before they could decide whether or not to use that service the deficiency in their knowledge about it must be overcome.

Next, as we have seen in Chapter 7 although information/advice available has been variously assessed for different subjects most producers preferred personal contact with government officers. An obvious advantage is that individual circumstances and problems can be discussed whereas written material and radio and video presentations report an aggregation of experience or results, perhaps in the form of averages, and these do not necessarily relate to the specific situation. For the producer to persist with contact with departmental personnel, however, he must believe that they are an effective source. Confidence in them as individuals and perhaps in the whole organisation may be prejudiced by some unsatisfactory experience. In the course of carrying out this survey we received much anecdotal material and two instances serve to illustrate the current point. One producer reported that although he had repeatedly sought help with a specific problem and government officers had visited his property he had received no reply after several seasons. Another respondent had received conflicting advice on how to deal with a problem from officers who had visited separately on the same day! Experiences of this sort can colour producers' preparedness to participate in the fully interactive extension process. Conversely a producer will participate more readily if

experience has shown that 'his' problems can be identified and dealt with and if experimental results can be related to 'his' situation.

One further potential difficulty needs to be considered. Not all producers will require the same interaction because of different managerial capacities and varying stages of property development. Accordingly the extension workers will tailor their visits to suit individual needs. The inherent danger is that some producers may capture the extension service. For example, 52 per cent of the total estimated number of visits to properties by DPP personnel were made to only three properties (Table 6.3). It may be that in the 1981-82 season a case could be made for such close attention but this level of concentration would be difficult to sustain in the longer term without detriment to the whole service.

Finally, the nature of institutions requires a method of evaluation of their services. In the orthodox system of extension where some novel technology was disseminated from departments to the farming sector the effect could be gauged by measure of how many farmers had adopted the innovation or in economic terms such as increased value of production from the adoptive farms. In the interactive extension process some types of evaluation can continue such as the monitoring of quality of produce where a campaign has been oriented in this direction. For the educational extension service evaluation can be through client response measured, as in this survey, by frequencies of contact and attendance at field days. While these may not be orthodox they are appropriate for the fundamental human interaction process of extension.

How then does the survey conducted in 1981-82 fit with the approach advocated to extension? Initially the client's perspective was recognised in the decision to include the seven government agencies on the basis that their operations impinged upon those of the producers. In this report the same orientation has been maintained and appraisals of how individual government organisations performed have been deliberately avoided. As such this monograph gives a basic statement about the services as they were received. From that basis much can still be done. Answers will be required to questions of what motivates producers in the Territory, what are their frames of reference for reaching decisions about their operations and how do these differ from the perspectives held by government advisors about how producers reach decisions. Finally, it must be recognised that the extension process will be a dynamic where the participants (primary producers, extension workers and research workers) are the key resources. Flexibility on the part of the formal organisations will be fundamental to success.

APPENDIX A

Sections of the Crown Lands Act (as at 20 October 1981) with special reference to rural lands.

9. LAND BOARD

(1) There shall be a Land Board of the Northern Territory which shall be an administrative and not a judicial tribunal, constituted in accordance with the succeeding provisions of this section.

(2) The Administrator may, by notice in the Gazette, appoint a Chairman and Deputy Chairman of the Board.

(3) The Administrator by notice in the Gazette, shall nominate 10 persons, to be persons available to serve as selected members of the Board.

(7) Where a question may be or is required under this or any other Ordinance to be heard and determined by the Board or a matter may be or is required to be referred to the Board for its consideration and recommendation, the question or matter may or shall be referred, as the case may require, to the Chairman or the Deputy Chairman.

(8) Upon a question or matter being referred under subsection (7) to the Chairman or the Deputy Chairman he shall select from the available members three persons who shall, with him, constitute the Board for the purpose of considering and recommending upon or determining the matter or question referred.

Division 3 - Leases

23. CLASSES OF CROWN LEASES

Subject to this Act, a Crown lease that is granted under this Act shall be -

- (a) a pastoral lease;
- (b) a lease for a term of years for a purpose other than pastoral purposes; or
- (c) a lease in perpetuity.

23H. VARIATION OF LEASE PROVISIONS

The Minister may, in his discretion, on application in writing by the lessee, vary a provision of a lease.

23J. MINISTER MAY GRANT A MORATORIUM

The power to vary a provision of a lease includes power to vary a provision for the purpose of allowing a moratorium.

Crown Lands

37A. VARIATION OF DEVELOPMENT REQUIREMENTS

(1) A lessee under a pastoral lease may at any time apply in writing to the Minister to have the requirements of the lease relating to stocking, improvements or developmental work to be carried out or effected on the leased land varied to the extent specified in the application.

38. TERMS OF PASTORAL LEASES

(1) A pastoral lease granted under this Ordinance shall be for such a period, not exceeding 50 years, as the Minister determines.

40A. AGRICULTURAL DEVELOPMENT ON PASTORAL LEASES

(1) Subject to this section, a lessee under a pastoral lease may use the whole or any part of the leased land for agricultural development.

(2) A lessee under a pastoral lease who desires to use the whole or any part of the leased land for agricultural development shall, before commencing to do so, notify the Minister in writing in his intention so to do.

(3) The lessee under a pastoral lease who has notified the Minister in accordance with sub-section (2) shall, on or before 30 March in each year, furnish the Minister with a written report giving details of the extent to which he has used the land for agricultural development during the preceding 12 months and the types, quantity and value of agricultural produce disposed of by him during that period.

(4) If the Minister is satisfied that a lessee under a pastoral lease has failed to comply with the requirements of sub-section (2) or (3), the Minister may, by notice in writing to the lessee, forfeit the lease.

40B. USE OF LAND FOR OTHER PURPOSES

(1) Subject to this section and to section 40A, and notwithstanding any provision contained in the relevant lease document, a lessee under a pastoral lease may use the whole or any part of the leased land for such purposes, and on such terms and conditions, as the Minister, in writing, permits.

(2) If the Minister is satisfied that a lessee under a pastoral lease has failed to comply with a term or conditions imposed by the Minister under sub-section (1), the Minister may, by notice in writing to the lessee, forfeit the lease.

48. SURRENDER IN EXCHANGE FOR NEW LEASE

(1) The lessee under a pastoral lease the term of which commenced on or before July 1953 may, at any time after the commencement of the twentieth year of that term and before the expiration of the fortieth year of that term, apply in writing to the Minister to surrender the lease in

exchange for a new pastoral lease of the whole or a specified part of the parcel of land included in the existing lease.

(1A) The lessee under a pastoral lease the term of which commenced or commences after 1 July 1953 may, at any time in the period during which the lease has an unexpired term of not more than 31 years and not less than 10 years, apply in writing to the Minister to surrender the lease in exchange for a new pastoral lease of the whole or a specified part of the parcel of land included in the existing lease.

48F. FAILURE TO COMPLY WITH DEVELOPMENTAL AND IMPROVEMENT CONDITIONS TO BE REFERRED TO BOARD

(1) Where a lessee under a lease granted under section 48D of the Crown Lands Ordinance 1931, as amended to and including the amendments made by the Crown Lands Ordinance 1967, as mortgagee in possession of the land comprised a lease granted under that section or a person upon whom a lease granted under that section has devolved by operation of law, fails to comply with the conditions of a lease as to developmental work or improvements, the Minister shall refer the matter to the Board.

(2) When a matter is referred to the Board under subsection (1), the Board shall investigate the circumstances connected with the failure to comply with the conditions of the lease and shall report to the Minister whether, in his opinion -

- (a) the lessee, the mortgagee or person holding the lease, as the case may be, could reasonably have complied with those conditions; or
- (b) circumstances beyond the control of the lessee, mortgagee in possession or persons holding the lease, as the case may be, prevented him from complying with those conditions,

and shall recommend whether, in its opinion, the lease should be forfeited or the lessee, mortgagee in possession or person holding the lease should be granted a further period within which to comply with the conditions.

59A. AGREEMENT FOR EXCHANGE OF PART OF PASTORAL LEASE

(1) A lessee under a pastoral lease granted under this Ordinance may apply in writing to the Minister for permission to surrender a part of his lease in respect of part of the land included in the lease, being a part of that land that adjoins a part of the land included in another pastoral lease held by another lessee (See back note 8)

- (2) An application under sub-section (1) shall be accompanied by -
 - (a) a plan showing the land included in the part of the lease to be surrendered and the land comprised in the adjoining pastoral lease;
 - (b) a written statement of the other lessee that he desires, and is prepared to accept, for inclusion in his pastoral lease, the land included in the part of the lease to be surrendered; and

(c) reasons in writing why the surrender and inclusion are desired.

107. GRAZING LICENCES

(1) The Minister may, under and subject to the regulations, grant licences to persons to graze stock or any particular kind of stock, on any Crown lands, which are not held under a lease or licence granted under this or any other Ordinance, or on any reserved or dedicated lands, for such period, not exceeding one year, as is prescribed.

REFERENCES

- Australian Broadcasting Commission, 1979. Audience Research 79:34. Radio listening, Darwin.
- Bardsley, J.B., 1981. Farmers' assessments of information and its source. An investigation using interactive computer techniques. Unpublished Ph.D. thesis, School of Agriculture and Forestry, University of Melbourne.
- Bauer, F.H. (ed) 1977. Cropping in North Australia: Anatomy of success and failure. Proceedings of First NARU Seminar. August 1977.
- Christian, C.S., 1952. Regional land surveys. Journal Australian Institute of Agricultural Science 18:140-6.
- Christian, C.S. and Stewart, G.A., 1953. General report on survey of Katherine-Darwin Region, 1946. CSIRO Land Research Series No. 1.
- Cochran, W.G., 1954. Some methods of strengthening the common x² Tests. Biometrics 10:417-51.
- Commonwealth of Australia, 1974. The Principles of Rural Policy in Australia. A Discussion Paper. AGPS, Canberra.
- Drew, C.M., 1974. Models of Agricultural extension. Journal Australian Institute of Agricultural Science 40:218-21.
- Department of Lands, 1982. Annual Report 1981-82.
- Department of Primary Production, 1982. Northern Territory Primary Production Statistics 1981-82. Technical Bulletin No. 64.
- Department of Primary Production, 1983. Annual Report 1981-82.
- Hayami, Y. and Ruttan, V.W., 1971. Agricultural Development: an International Perspective. John Hopkins Press, Baltimore.
- Heatley, A.J., 1979. The Government of the Northern Territory. University of Queensland Press, St. Lucia.
- Hill, B., 1974. Cattle Industry Survey - Victoria River District 1973. Department of Northern Territory, Katherine, NT.
- Hill, B. and Pearson, E., 1977. Victoria River District 1976 Survey Department of Northern Territory, Katherine, NT.
- Jessup, J.E., and Dun, R.B., 1982. Organization and administration. In Williams D.B. (ed.) Agriculture in the Australian Economy Sydney University Press, 2nd ed. pp. 106-24.
- Lemcke, B.G., 1981. Buffalo Industry Survey 1980-81. Technical Bulletin No. 56. NT Department of Primary Production, Darwin.

- Michell, V.J. 1978. The NT Gulf District Cattle Industry Survey 1977. NT Department of Industrial Development, Katherine, NT.
- Michell, V.J. and Stockwell, T.G.H., 1982. The Elsey and Gulf Districts Cattle Industry Survey 1979 Technical Bulletin No. 52, NT Department of Primary Production, Katherine.
- Mollah, W.S., 1980. The Tipperary story: an attempt at large-scale grain sorghum development in the Northern Territory North Australia Research Bulletin no. 7 pp. 59-183.
- Mollah, W.S., 1982a. Humpty Doo: Rice in the Northern Territory. North Australia Research Unit Monograph 29 pp.
- Mollah, W.S., 1982b. Early agricultural settlement at Katherine, Northern Territory. Malaysian Journal of Tropical Geography 5:40-53.
- Northern Territory Development Corporation, 1980. Annual Report and Financial Statements for the year ended 30 June 1980, Darwin.
- Northern Territory Development Corporation 1982. The Fourth Annual Report of the Northern Territory Development Corporation, Darwin.
- Queensland Department of Primary Industries, 1979. Investigation into Production, Handling and Marketing of Horticultural and Agricultural Produce - Northern Territory. Interim Report Horticultural Produce, Agricultural Produce and Appendices.
- Robertson, D., 1980. The Victoria River District Cattle Industry Survey 1979, Technical Bulletin No 35., NT Department of Primary Production, Katherine, NT.
- Robertson, D. and Hill, B. 1978. The Victoria River District Cattle Industry Survey, 1977., NT Department of Industrial Development, Katherine.
- Rogers, E.M., 1976. Communications and development - the passing of the dominant paradigm. In Rogers, E.M. (ed.). Communication and Development: Critical Perspectives. Sage Publications, Beverley Hills. (Sage Contemporary Social Service Issues; 32).
- Rogers, E.M., and Shoemaker, F.L., 1971. Communication of Innovations: a cross cultural approach. The Free Press, New York.
- Siegel, S., 1956. Non Parametric Statistics for the Behavioural Sciences. McGraw-Hill Kogakusha, Tokyo.
- Skerman, P.J., 1978. Cultivation in Western Queensland. North Australia Research Bulletin No. 2.
- Sri Pathmanathan, C., (ed.) 1982. Manpower and Training Needs for Primary Production in the Northern Territory - Report and proceedings of a conference and workshops. NT Industries Training Commission, Darwin.

Wharton, C.R., 1967. The infrastructure of agricultural growth. In Southworth, H.M. and Johnston, B.F. (eds) Agricultural Development and Economic Growth, Cornell University Press, Ithaca.

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