



ARDRI


AN EVALUATION OF
THE KWANDEBELE EXTENSION SERVICE

University of Fort Hare
Together in Excellence

T.J. BEMBRIDGE
and
J.L.H. WILLIAMS

AGRICULTURAL AND RURAL DEVELOPMENT
RESEARCH INSTITUTE

Report No 1/91

FOREWORD

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T.J. Bembridge
Project Leader

The KwaNdebele Government is deeply concerned about the low levels of agricultural production and deterioration of natural resources in the communal land areas, and is anxious to promote individual commercial farmers successfully in the newly consolidated areas. It is especially anxious to implement measures to improve extension services which will lead to increased agricultural production in both sectors, thus improving the quality of life, especially in the communal land areas.

The central theme of this report is that the present under utilisation and deterioration of natural resources in KwaNdebele, partly as a result of high population pressure in the communal areas, is largely due to institutional problems, particularly ineffective extension services and technology transfer systems. The difficult environment in which agricultural extension in KwaNdebele is operating, is discussed in Chapter 4. While agricultural research and extension is a powerful tool when used effectively, it is never a panacea. Whatever extension structure or approach is used, it should also be viewed as only one of several complementary inputs which are pre-requisites for agricultural production.

At the same time, improved institutional support does not have to be fully implemented before building a more effective and efficient extension service as recommended in the final chapter.

The report examines in some depth the present state of agricultural research and extension in KwaNdebele, including aspects of the impact of extension on both communal and commercial farmers. In the final chapter proposals are made for the phased development of a more effective and efficient technology transfer system.

Considerable emphasis is placed on the reorganisation, training and operational procedures of supervisory staff, subject matter specialists and field staff to work within an objective, time-bound programme with interest groups formed in consultation with local authorities. The recommended strategy is aimed at ensuring maximum impact from scarce manpower resources.


The writers are indebted to a number of individuals, too many to mention by name, within the Department of Agriculture and Environment Affairs and the KwaNdebele Agricultural Company and farmer groups, for the insights, advice and information they so willingly provided during the course of this investigation. It is hoped that the report will stimulate initiatives of the kind the KwaNdebele Government is anxious to promote in providing an effective extension service which will contribute significantly to improving agricultural production and rural welfare.

The assistance of ARDRI staff in typing the draft and final manuscript, as well as for cartographic work, is gratefully acknowledged.

February, 1991

TJ Bembridge
Project Leader


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EXECUTIVE SUMMARY

PROBLEM INVESTIGATED

The problem investigated in this study is essentially the influence of various factors on the efficiency and effectiveness of the KwaNdebele agricultural extension service.

ROLE OF EXTENSION

In KwaNdebele, the role of agricultural extension services is to act as a link in the chain of development between the Department of Agriculture and Environment Affairs (DA and EA) and the KwaNdebele Agricultural Company, (KAC), and development, research and servicing organisations on the one hand, and the farmers and rural communities on the other.

The means of agricultural extension are action orientated educational programmes aimed at improving economic conditions, as well as the social and cultural lives of rural communities. This involves joint problem solving between researchers, subject-matter specialists and farmers and households, aimed at bridging the wide technology gap.

Extension aims to help farmers and households gain the necessary managerial knowledge and skills by providing them with training and guidance in management and decision making, as well as in factors of production and household improvement.



METHOD OF RESEARCH

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The research approach was essentially a diagnostic one based on available information, and used postal questionnaires to obtain basic background information from extension staff, as well as structured interview questionnaires. Structured interviews were held with randomly selected groups of commercial and communal area farmers.

The investigation focuses on the environment in which extension services are operating, and on the characteristics of extension workers, as well as the effectiveness of the extension organisation and the system of linkages between farmers, extension and research in providing farmers with adapted technology suited to their needs.

RESEARCH FINDINGS

Policy

An analysis of Government policy guideline documents and Ministerial policy speeches shows that the KwaNdebele Government is fully committed to agricultural development and the provision of the necessary institutional support, including functional agricultural research and extension services to both commercial and communal area farmers. Clear objectives and an operational policy still have to be formulated.

Physical resources

Physical resources for agricultural production in the communal land area of KwaNdebele are being used at only a fraction of the potential because of various institutional, technological, socio-economical and socio-psychological constraints. Furthermore, there is evidence of considerable misuse and deterioration of natural resources, resulting in soil erosion, decreasing soil fertility, veld deterioration and depletion of water resources. Physical resources in the commercial areas are not being used to their optimum because newly settled farmers are going through a learning process and farms are not fully stocked or developed.

Rural population

Only a small percentage of rural households are engaged in some farming activity. Increasing numbers of non-landholders are settling in the rural areas resulting in considerable population pressures. Agricultural production in the communal area is generally characterised by low adoption rates of improved crop and livestock production practices, resulting in low levels of production.

Available data on the resident demographic profile shows a large percentage of young people under 20 years of age and a predominance of women in the productive age groups. The absence of able-bodied men in rural areas contributes to the relatively unproductive rural economy. A preliminary assessment of commercial farmers suggests that at present only one in five has the necessary managerial ability to become an independent farmer.

Many of the constraints of agricultural production in the communal areas are inter-related, emphasising the need for knowledge of the entire agricultural production system in order to formulate an operational agricultural development policy aimed at overcoming present constraints.

Institutional factors

Although credit and marketing facilities have improved in recent years, they still need to be improved to cater for the bulk of small-scale communal area farmers. Research facilities and activities are lacking. The present land tenure system in both the commercial and communal land areas does not provide security and incentives for individual initiative to improve agricultural production. There is also in general, a lack of suitable leadership among village and local level organisations to work with extension officers in promoting agricultural development.

Although the situation has improved in recent years, it was concluded that the Department of Agriculture and Environmental Affairs extension service is operating in a somewhat difficult environment, in the sense that none of the necessary institutional requirements and supporting services in the communal land areas have been adequately fulfilled. In the commercial sector, the Farmers' Support Programme is working reasonably well. However, improved institutional support does not necessarily have to be fully implemented before a more professional capable extension service can be built.

The extension service not selected according to aptitude, and the amount of time spent on training is completely inadequate. Because of the deficiencies in training, extension workers Lack of an operational agricultural policy, poor management of staff, problems connected with salaries, short periods of service in work areas, poor housing, lack of office accommodation, inadequate record-keeping and reporting systems were all found to be constraints to the efficiency and effectiveness of the extension service. All these factors contributed to the generally low prestige and status of field officers in rural communities, as well as to low staff morale. broadcasts are not co-ordinated with specific extension programmes. Extension staff are not trained in the use of groups and consequently very few Field extension staff were relatively young and inexperienced with low formal education. Many staff lack practical farming experience.

Many of the middle management level and field extension workers saw themselves as having low status in the community and did not have a clear idea of their roles in the Department. Few of the senior staff saw themselves in the role of training, supervising and managing junior staff. Field staff felt inadequately guided and supervised by senior staff.

CONCLUSIONS AND RECOMMENDATIONS

A large number of staff do not have sufficient technical subject-matter, economic, communication and extension knowledge, or knowledge of communities and the local environment to be able to perform their tasks effectively. staff incentives, technology development, planning programmes, insititutional support and facilities, training and

Communication between middle management and head office staff was unsatisfactory. Inadequate contact between senior and middle level officers with field level extension workers resulted in inadequate control and supervision. Consequently field work was planned on a piecemeal and ad hoc basis.



There is a need for an agricultural extension system for extension including favourable Few officers had direct contact with research stations. The dearth of professional subject-matter specialists has resulted in an inadequate flow of practical information and methods for field level extension workers to pass on to farmers. Likewise there has been little feedback of farmers' problems to subject-matter specialists and researchers.

It is recommended that there should be a reassessment of commercial farmers. A Co-ordination and co-operation between organisations involved in agricultural development at district and field level were unsatisfactory. selection criteris should be offered smaller units which they are able to manage.

A large number of field staff were unaware of the concept of objective extension programme plans. Consequently there was little evaluation and feedback on the impact of extension. Field visits were carried out on an ad hoc basis concentrating mainly on the more progressive farmers and households. SAC (commercial areas). This will require a corps

of subject matter specialists serving both sectors. Rural development should be handled There was a general lack of suitable reference material available to extension staff at all levels. Only a minority of staff used extension aids.

The crucial roles of a Director of Extension and a Chief Training Officer responsible for An overwhelming problem was the absence of suitably qualified staff to carry out the training function, particularly Subject Matter Specialists. Deficiencies in management and technical and extension training was found in all levels of staff. subject-matter specialists is vital to the future success of extension services in Kwanaaland.

Extension officers are not selected according to aptitude, and the amount of time spent on training is completely inadequate. Because of the deficiencies in training, extension workers were unable to communicate effectively with farmers.

Quantitative communication inputs from the extension service were not as effective as they could be if a more balanced use of communication channels was employed, particularly if greater use was made of group methods and mass media. There is a general lack of back-up written material, and radio broadcasts are not co-ordinated with specific extension programmes. Extension staff are not trained in the use of groups and consequently very few farmers were effectively contacted in this manner. Although demonstrations are fairly widely used there is doubt as to their effectiveness.

Extension workers have maintained contact with only a small proportion of farmers. Junior staff spend insufficient time on direct extension activities, while senior staff spend a negligible amount of time attending training courses and contacting research stations.

CONCLUSIONS AND RECOMMENDATIONS

The final chapter outlines the fundamental requirements for agricultural extension including sustained Government commitment, setting out of objectives, staff incentives, technology development, planning programmes, institutional support and facilities, training and supervision, leadership development and two-way communication from research, extension and the farmer. It is not necessary to fulfil all supposed pre-requisites before re-organising extension.

There is a need for an agricultural operational policy for extension including favourable economic incentives, development of the human potential, generation of new technology, investments in physical and biological capital, security of tenure and improved rural institutions.

It is recommended that there should be a reassessment of commercial farmers. A structured extension and training programme with laid down performance criteria should be drawn up. Those who fail the performance selection criteria should be offered smaller units which they are able to manage.

Recommendations are made for the re-organisation of the extension service on a unified basis with a single line of command, or alternatively a division of responsibility between the DA & EA (communal areas) and the KAC (commercial areas). This will require a corps of subject matter specialists serving both sectors. Rural development should be handled by a separate cadre of staff falling under District Agricultural Officers.

The crucial roles of a Director of Extension and a Chief Training Officer responsible for extension and specialist services, district extension officer, area extension workers and rural development officers are discussed. The extension division should be reinforced by back-up information and planning services. **The provision of professional subject-matter specialists is vital to the future success of extension services in KwaNdebele.**

An adaptive Research Committee should be established with the objective of formulating research priorities and designing extension programmes in each farming sector and agro-ecological region.

While extension workers should not be directly involved in the supply of farming inputs, credit and marketing, they need to be able to inform farmers on these services.

Strong local level tribal authority organisations are essential for effective extension and should be part of a national agricultural development programme.

An effective extension service requires incentives in the form of equitable salaries, employment conditions, opportunities for advancement, housing, office accommodation, a reasonable time in work areas and guidance and supervision.

Management needs to be improved at all levels. Initially management styles need to cater for a large measure of control of field staff until they reach higher proficiency levels.

Operational procedures and a strategy involving a systematic programme of visits to groups of target farmers, interest groups and households, led by local leaders, training of staff for specific programmes, and strengthening of linkages from research through subject-matter specialists to farmers are recommended.

Extension and rural development workers need to obtain adequate documented information on physical resources, infrastructural development, farming systems, production technologies and farming and non-farming activities in order to classify and document information on farmers according to type of farming, farming income and other variables for the purpose of forming interest groups in consultation with local tribal authority committees to whom extension and rural development programmes can be directed.

Extension messages should be devised at district and ward level with the initial emphasis on technology which is relevant, accessible and aimed at overcoming important farming constraints and household needs. Particular attention needs to be given to development of extension messages for women farmers and other womens groups.

There is a need to develop new and innovative methods of communication to back up and reinforce field extension and rural development programmes.

Close monitoring of field extension and rural development activities and performance of extension workers should be built into extension programmes. Evaluation procedures and criteria for measurable indicators such as farming practices, yields, farm productivity, household improvement, participation and functioning of local level organisations need to be incorporated into extension programmes and Departmental reporting procedures.

The DA and EA in consultation with the Public Service Commission needs to plan a dynamic professional manpower training programme to cater for the specialist and professional needs of the re-organised extension service. Post-graduate training and higher diploma studies also need to be catered for to ensure a high degree of staff competence.

There is a need for the training of all extension workers both in agricultural technology and extension methods, as well as training in personnel management in accordance with the level of individual responsibility. Selected officers should have the option of further academic training. KAC Service Centre staff require further training in human relations skills. **Commercial farmer training should be directed at production methods and farm management, especially simple record keeping.**

Special emphasis needs to be put on the training of local level committees and organisations, including decision-making procedures and financial records. Specific programmes are needed for rural youth, as well as for developing a conservation consciousness among school children through teacher training.

Special programmes are required for rural youth, as well as developing a conservation consciousness among school children through in-service teacher training.

It is recommended that the suggested extension and rural development strategy and recommended working procedures be implemented as pilot projects in selected target areas, bearing in mind wider replications. Priorities for implementation are suggested in the final chapter.

The system recommended will not be spectacular at first, but over time with necessary modifications it will result in improved efficiency and effectiveness of agricultural extension services to KwaNdebele farmers and rural households. **It is important to emphasize that the development of effective and efficient extension services requires strong political commitment in terms of financial support, operational policies and action programmes.**



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- (a) evaluate and describe the environment in which extension services;
- (b) evaluate and describe the environment in which extension workers function;
- (c) determine the perceptions of various target groups of the value of the present form and level of extension services, as well as their extension needs;
- (d) evaluate and describe the structure and organisation of the extension service with reference to personnel, training, selection and management;
- (e) evaluate (i) the communication process within the service, (ii) the training procedures and competence of extension personnel concerning methods and techniques in farming, horticulture and home economics, and (iii) present extension methods and techniques to further the stated goals and objectives of the Department;
- (f) evaluate the aptitude, knowledge and ability of individual members of the service at various levels of responsibility;
- (g) provide broad guidelines and recommendations for improving extension effectiveness and efficiency, including the environment, management and structure of extension services aimed at improving the productivity of rural

CHAPTER 1


1.1 INTRODUCTION

At the beginning of 1990, the Agricultural and Rural Development Research Institute (ARDRI) of the University of Fort Hare was commissioned by the Department of Development Aid to conduct an evaluation of the KwaNdebele Extension Service, which in turn was requested by the KwaNdebele Department of Agriculture.

The Department of Agricultural Extension and Rural Development at the University of Fort Hare was commissioned by ARDRI to undertake the evaluation study in co-operation with the KwaNdebele Department of Agriculture and Environmental Affairs (DA and EA) and the KwaNdebele Agricultural Corporation (KAC).

1.2 TERMS OF REFERENCE

In their request to ARDRI commissioning the study, the Department of Development Aid stressed that the agricultural potential and agricultural development policy of the KwaNdebele government be taken into account. The extension and training services of the DA and EA and its agents KAC and Measured Farming were to be evaluated. Special attention was to be paid to the following (Department of Development Aid, 1989).

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- (a) evaluate and describe the present extension services;
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 - (f) evaluate the aptitude, knowledge and ability of individual members of the service at various levels of responsibility;
 - (g) provide broad guidelines and recommendations for improving extension effectiveness and efficiency, including the environment, management and structure of extension services aimed at improving the productivity of rural

for in communities in terms of agriculture and other needs, as well as optimum use of agricultural resources within the KwaNdebele Government's agricultural development policy;

- (h) provide guidelines for the implementation of the recommendations in order of priority, as well as the capabilities and resources of KwaNdebele, and
- (i) calculate costs and manpower implications of the recommendations.

1.3 APPROACH OF THE EVALUATION TEAM

It is widely held that an organisational appraisal can result in improving the efficiency and effectiveness of an extension organisation. Such an appraisal requires an evaluation of the entire extension and research organisation; as well as other institutional factors necessary for progressive agricultural development, if it is to form a useful basis for future planning. The question is not so much one of instituting a complete new research, extension and information system, as one of improving the efficiency of the existing system, within the resources of KDA, KAC and other institutions.

In the light of previous experience, a systems approach offers the best means of studying the complex reality of the technology transfer system in terms of characterising the KwaNdebele system and sub-systems. The present evaluation based upon empirical qualitative and quantitative data includes the sub-systems of (1) agricultural development policy, (2) the environment in which extension services are operating, (3) technology development (research), (4) technology transfer (extension), and (5) technology utilisers (farmers).



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The study focuses on the system of linkages between research, extension and farmers in establishing and perpetuating the flow of appropriate technology between the various sub-systems. The research approach is essentially a diagnostic one aimed at establishing the problems and constraints in the existing system, within the time and budget available to the researchers.

In formulating their recommendations, the writers are conscious of impending structural reforms in South Africa. The emphasis is therefore on putting in place a structure and strategy at "grassroots" level which will serve the future needs of KwaNdebele rural communities and which can be adapted to new dispensations and structures.

The norms for extension, training and technology transfer are discussed in Chapter 2. This is followed in Chapter 3 by a description of the rationale and research procedure adopted by the evaluation team. Chapter 4 describes the environment and institutional set up within which extension services are operating. In Chapter 5 an evaluation is made of the efficiency and effectiveness of extension services. A somewhat subjective evaluation of the impact of extension on farmers is provided in Chapter 6. In the final chapter conclusions, recommendations and broad guidelines

for improving the efficiency and effectiveness of extension services are outlined.

BACKGROUND TO THE STUDY

2.1 INTRODUCTION

Before discussing the findings on extension and training it is pertinent to briefly discuss the concept of extension, the extension task, the functions and role of extension, as well as guiding values of extension and training (Bembridge, 1984; Bembridge, 1991).

2.2 THE CONCEPT OF EXTENSION

There is no single definition of extension which is applicable to all situations. Agricultural extension is a system of non-formal education for adults in rural areas consisting of relevant content derived from agricultural, social and communication research synthesised into a body of concepts, principles and operational procedures (Leagens, 1971). Extension is a process of working with rural people in order to improve their livelihoods. All definitions stress that extension is an ongoing process which occurs over time, and not a single one time activity. As such, it is a field of professional educational practice aimed at:

- (1) teaching people about new ideas, in their own context and life situations, how to identify and solve their own farming needs and problems;
- (2) helping rural people to develop leadership and organisational skills;
- (3) helping farmers acquire technical skills and managerial skills required to cope effectively with those needs and problems, and
- (4) inspiring them to action.



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The ultimate goal of extension is to improve the quality of rural life, as well as increase the quantity of a country's food, fibre and forestry production (Boone, 1989).

Technology transfer is an integral part of, but only part of, the extension process, involving the transfer and spread of farming information from researchers, through subject-matter specialists and extension workers to farmers, as well as getting feedback from farmers and researchers.

Agricultural extension can thus be seen as an educational task consisting of communicating information to farmers, and of helping farmers to adapt their farming to take full advantage of proven and acceptable technology.

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2.3. THE EXTENSION TASK

Extension employs teaching and learning principles that effect changes in the lives of farmers, generally carried out in an atmosphere of farmer involvement, and mutual trust and respect between the agricultural extension workers and their farmers. It is concerned with three basic educational tasks:

- (1) dissemination of useful and practical information related to agriculture and home economics;
- (2) practical application of such knowledge to help farmers and housewives analyse their problems and bring improvement in a systematic way through carefully planned and organised programmes. These programmes must start in the villages, involve participation of farmers and must tackle problems the farmers see and want to do something about; and
- (3) to assist them in using the technical knowledge gained to better solve their problems. To achieve this, the extension officer must be willing to become involved in the local environment and culture.

The extension task involves developing knowledge, skills and favorable attitudes in the farmer and his family, thus enabling them to benefit from research and technology with the ultimate aim of raising their efficiency and achieving higher levels of living. It is not solely concerned with teaching and securing the adoption of a particular improved farm practice, but also with changing the outlook of the farmer and encouraging his initiative in solving problems aimed at improving his farm and home. Its effectiveness is measured by its ability to change a static situation into a dynamic one.



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Extension education is the primary process through which the farmers can learn the reasons for change, the value of change, the results that can be achieved, the process through which change is achieved and the uncertainties inherent in change. It is also the primary source to make farmers and housewives aware of alternatives and to choose from among them the most desirable and different methods that exist for carrying out their farming and other operations.

The emphasis is on learning rather than teaching. It involves working with farmers and their families who have different educational attainment, levels of living, value systems and a wide range of interests. Collaboration and co-operation is insufficient, there must be participation of farmers and local organisations. The demonstration idea is basic to the activities of extension education and is particularly effective with farmers and housewives who do not have access to written materials, radio or other mass media.

2.4 FUNCTIONS OF EXTENSION

Extension education has four major functions in agricultural development.

- (a) The first serves to get farmers into a frame of mind and attitude conducive to acceptance of technological change. As it is generally known, most farmers in less developed countries are still largely tradition bound and afraid to take risks that will involve them in great financial loss, unless they are convinced beyond all doubt that the improved technology that the extension agents are asking them to adopt is economically viable, technically feasible and compatible with their farming system. The primary role of extension is education rather than one of direct personal, regulatory or in any sense a political service to farmers. The ultimate aim is to assist farmers in problem-solving, looking at alternatives and sources of information aimed at making individuals and organisations self-reliant.

This, in effect, provides the rural people and the farmers with an opportunity to play an active role in rural programmes. It enables them to keep in touch with wider sources of information and services outside their villages. A good agricultural extension programme should result from the joint efforts of technically trained staff and farmers and local organisations elected by the community. The four essential basic factors in agricultural production, according to the economists, are land, labour, capital and management. The role of extension education is to bring about a more efficient use of these factors in order to maximise food fibre production and income of farmers from agriculture. The role of extension education can be construed as an activating element through which useful research findings adapted to both felt and analysed needs can be brought to bear on agricultural production, distribution and marketing problems, by educating the farmers in the alternatives available to them from which a useful choice can be made.

- (b) The second function is the dissemination to farmers of the results of research, and the transmission of farmers' problems back to the research organisation. One of the most difficult roles of an extension worker is the diagnosing of farmers' real needs. This involves a close study of local farming systems and production constraints.

In order to perform this function properly, effective lines of communication must exist between the research organisation and subject-matter specialists, the extension service, and the farmers (Fig. 1). To carry the results of research to the farmers, extension workers must understand the nature of the technology and the accompanying practices. They must give the farmers sufficient knowledge and understanding to enable them to adopt the technology which will best suit their farming conditions. They must also aid them in diagnosing the reason or reasons for any failure which may occur, and they must be able to offer suitable solutions to deal with the failure, as well as provide feedback to subject-matter specialists and researchers on problems requiring further research and adaptation.

Trials on proven technology carried out by selected co-operator farmers guarantee that technology being channelled into rural communities is adaptable, relevant and acceptable to farmers.

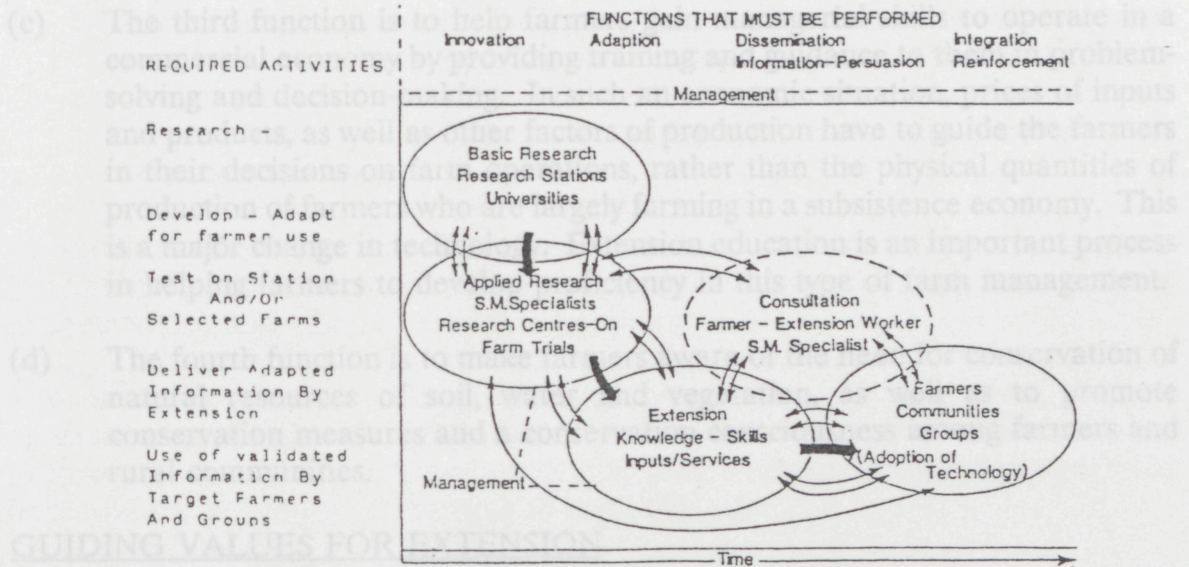


Fig. 1. Farming information supply system (after Lionberger, 1986).



Figure 1 shows a systems model of the theory-to-practice continuum of activities as one dimension, and a specification of the functions necessary to ensure adoption of suitable farming practices and technology as the other. This involves joint problem solving between researchers, subject-matter specialists and farmers aimed at bridging the present technology gap.

The initial requirement is for an appraisal of agro-ecological potential, human potential and the socio-economic situation, to determine constraints and problems aimed at devising suitable technology and farming systems for the needs of different target groups of farmers.

What the system achieves will depend on the commitment and support of government, and effective management of all required functions in the systems, especially effective communication linkages. For agricultural extension to be effective, a stream of risk reducing, profitable and applicable production packages together with knowledge and skills training must be extended to both male and female farmers; without adequate linkages between basic, applied and adaptive research by extension workers and farmers, such effectiveness is not possible.

Improved technology is of little benefit if it cannot be made available to farmers and, conversely, it is difficult to develop useful research programmes unless there is sound feedback on farmers' problems to research.

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- (c) The third function is to help farmers gain managerial skills to operate in a commercial economy by providing training and guidance to them in problem-solving and decision-making. In such an economic situation, prices of inputs and products, as well as other factors of production have to guide the farmers in their decisions on farm operations, rather than the physical quantities of production of farmers who are largely farming in a subsistence economy. This is a major change in technology. Extension education is an important process in helping farmers to develop proficiency in this type of farm management.
- (d) The fourth function is to make farmers aware of the need for conservation of natural resources of soil, water and vegetation, as well as to promote conservation measures and a conservation consciousness among farmers and rural communities.

2.5 GUIDING VALUES FOR EXTENSION

A study of various extension systems in both commercial and traditional farming areas shows four basic values to guide Extension Education as a professional field of practice (Boone, 1989).



- In effective extension work, the farmer and his family are viewed as the central focus. This involves providing the farmer with the knowledge and skills to enable him to manage his farming enterprise effectively and efficiently. This means that the farmer is an active voluntary partner in extension work and that measurable change in farmers is the ultimate measure of extension success.
- One of the themes occurring in extension systems is the value of rural or agricultural life. Both the Training and Visit and Farming Systems Research/Extension models grew from cultures that highly valued rural life, and concern that small-scale farmers were not benefiting from research. This means that extension must be based on the practice of accepting and valuing the beliefs, lifestyle and behavior of farmers as the point of departure in the extension programme. It also means that extension workers need to be treated as professionals in their own right.
- Extension workers need to have faith in the possibility of agricultural improvement and the value of agricultural technology. This leads to planned change through applied scientific knowledge. Successful extension programmes are based on a blend of research technology, education and farming practice, in equal measure. Failure is often due to neglect of one or more of these issues.

Extension workers look upon reality as a network of systems. A systems perspective is the reason for defining extension work as the link between research, education and the farmer. Extension flourishes when there are simple, open, direct, two-way lines of communication between field extension workers, subject-matter specialists and supervisory staff; as well as between extension workers and supporting organisations, including research, and finally between extension workers and farmers. There is also a need for functional linkages with input suppliers, marketing and credit organisations that complement extension.

An agricultural structure that allows for a "bottom up" communication flow, in which head office decisions are based on information from field workers and farmers, leads to more viable and effective extension programmes.

The extension worker's role as an adult educator is, in large part, that of understanding the farmer's culture and of building bridges that allow new knowledge to cross into that culture. Change occurs only when the farmer recognises a personal need and the possibility of changing to meet that need.

Extension education stresses learning by doing in the farmers fields or with his livestock, because these are the sites where people can test new knowledge and skills and decide whether or not to adopt it. In extension, learning is a process of adapting new knowledge and practices. Extension builds on the farmer's existing knowledge base.

2.6 ANALYSING TRAINING NEEDS



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Training needs should be determined within the framework of the KwaNdebele government's agricultural development policy. Before considering the present situation regarding training levels of extension staff in KwaNdebele (see Chapter 5), it is necessary as a background to consider the whole concept of training of extension workers. Figure 2 represents a conceptual model of analysing training needs. It is important in assessing training needs to analyse the needs of the organisation as a whole (Bass and Vaughan, 1966 p76; Morano, 1973).

The first stage of the task of analysing training needs is to write job descriptions, which include standards of performance and task analysis, of the various categories of staff (Moore, 1979: p9; Kennan, 1981: p20). To do this it is necessary to know the objectives of the extension service itself (Mager, 1975: p19; Mumford, 1971: p61), since training must be aimed at achieving the objectives of the Department (Boydell, 1977: p4).

As well as the goals of planned change, understanding the 'multi-dimensional process' of rural development is also an important ingredient in training (Epstein and Penny, 1972: p247). It is also important to understand the crucial role of rural women in food production.

Learning in an extension situation is a joint exercise between extension worker and farmer (Clarke, 1981: p85), in which the extension workers learn about the needs of the farmer, so that they may work together to improve the situation, by analysing and interpreting the farmers' needs and problems (Gallaher and Santopole, 1967).

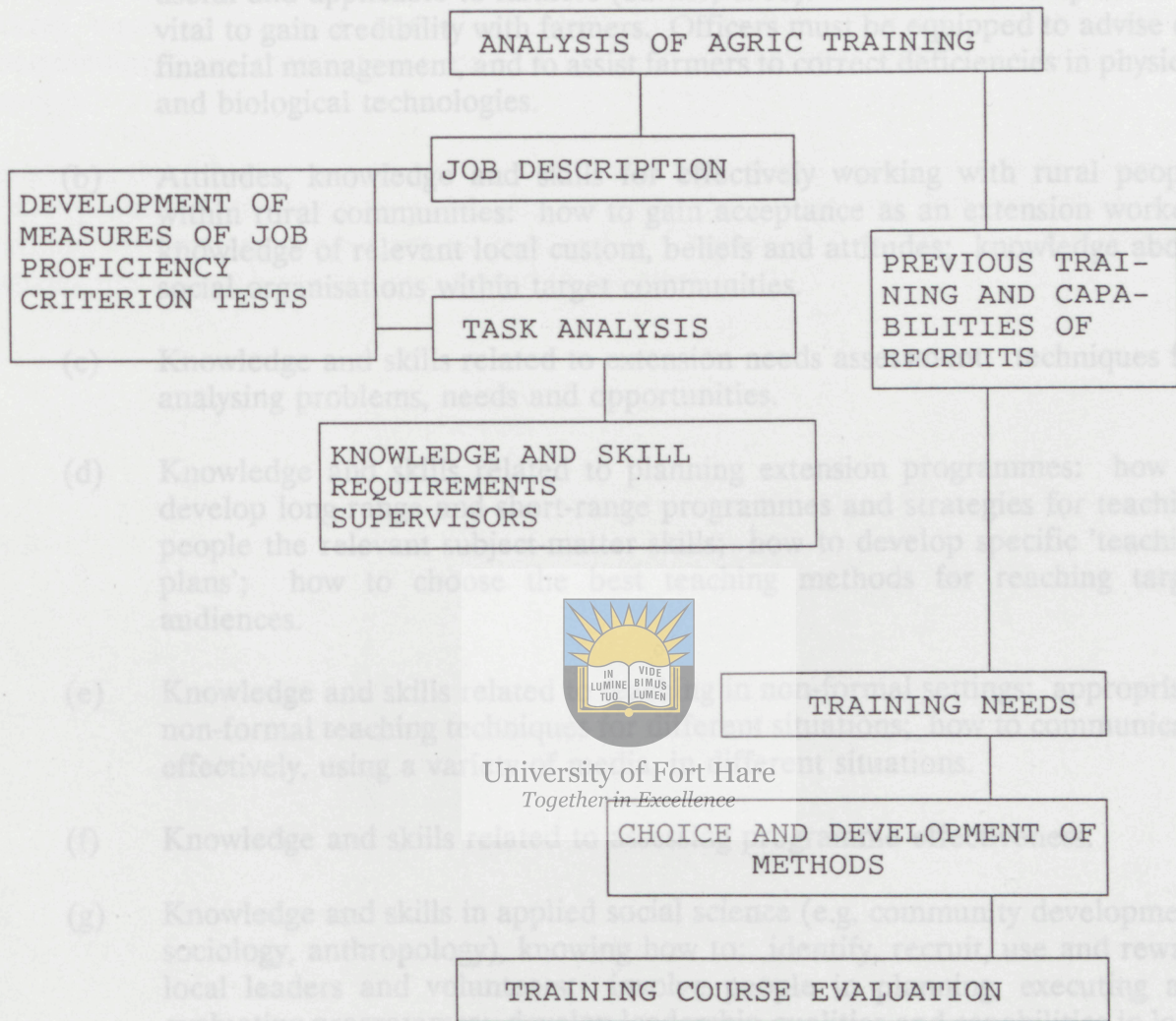


Figure 2. Model for analysing training needs.

An extension worker must work within the client's 'range of convenience', if he is to be perceived as 'relevant' (Clarke, 1981: p85). Extension workers need to have the 'ability to handle farming skills confidently in front of farmers' (Chambers, 1981: p9). To be successful in this, the extension worker needs inter-personal and group communication skills (FAO, 1972: p105).

Kelsey and Hearne (1955) outline ten different characteristics required of extension workers. Of these, seven are closely related to abilities in teaching and leadership: ability to plan and co-operate with others, tact and interest in people, enthusiasm,

reliability, and effective speaking and writing. In summary, some of the training needs for extension workers in KwaNdebele, in accordance with the required characteristics, are:

- (a) There is no substitute for technical training in practical technology which is useful and applicable to farmers (Saville, 1968). Professional competence is vital to gain credibility with farmers. Officers must be equipped to advise on financial management, and to assist farmers to correct deficiencies in physical and biological technologies.
- (b) Attitudes, knowledge and skills for effectively working with rural people within rural communities: how to gain acceptance as an extension worker; knowledge of relevant local custom, beliefs and attitudes; knowledge about social organisations within target communities.
- (c) Knowledge and skills related to extension needs assessment: techniques for analysing problems, needs and opportunities.
- (d) Knowledge and skills related to planning extension programmes: how to develop long-range and short-range programmes and strategies for teaching people the relevant subject-matter skills; how to develop specific 'teaching plans'; how to choose the best teaching methods for reaching target audiences.
- (e) Knowledge and skills related to teaching in non-formal settings: appropriate non-formal teaching techniques for different situations; how to communicate effectively, using a variety of media in different situations.
- (f) Knowledge and skills related to assessing programme effectiveness.
- (g) Knowledge and skills in applied social science (e.g. community development, sociology, anthropology), knowing how to: identify, recruit, use and reward local leaders and volunteers; involve people in planning, executing and evaluating programmes; develop leadership qualities and capabilities in local people; work with groups; organise and maintain appropriate and effective groups and organisations; work co-operatively with other agencies and organisations; foster and facilitate local decision-making and action.
- (h) The relatively low emphasis given to rural women in KwaNdebele suggests the need to increase their participation in activities designed to improve agriculture, health, nutrition, etc.
- (i) Training in personnel management, staff organisation, management and control is vital for all officers in control posts.
- (j) The subject-matter specialist should be trained to bridge the gap between research and farm practices, and provide a two-way flow of information



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between research and extension (Sachs, 1981: p138).

In summary, developing an effective and efficient extension service requires a clear knowledge by all levels of staff of the concept, task, functions, and guiding values of extension. In assessing training needs, it is necessary that the extension service works within clear objectives and that training is directed at achieving programme objectives. Extension workers need to be well trained in technology, human relations, communication, understanding local communities, and in applying management principles to the work situation.

The aim of this Chapter was to provide the reader with norms against which to assess the efficiency and effectiveness in which the concepts task, functions, role and training of extension workers are carried out as discussed in Chapters 4, 5 and 6. The next chapter discusses the research procedure adopted in the study.

The objectives of the investigation in terms of the tender document (DE6/15/2/2//1566) may be summarised as being:

- (a) to discuss and describe the KwaNdebele agricultural development policies;
- (b) to evaluate and describe the environment in which the KwaNdebele extension service is functioning;
- (c) to evaluate and describe the content and organisation of the research and extension service provided by the Department of Agriculture and Environmental Affairs (DA and EA), the KwaNdebele Agricultural Company (KAC) and Measured farming to personnel, training, selection and management;
- (d) to evaluate the efficiency of the communication process within the service, as a means of providing extension workers with practical knowledge about farming methods and techniques as well as extension methods in furthering the stated aims and objectives of the Department;
- (e) to evaluate the methods used in communicating information to farmers;
- (f) to assess the aptitude, knowledge and ability of individual extension workers;
- (g) to evaluate the impact needs and perceptions of both commercial and communal sector farmers with regard to extension and other services provided by the DA and EA, KAC and Measured farming;
- (h) to give broad guidelines and recommendations for increasing the effectiveness and efficiency of the extension service, with the object of raising the productivity of rural people and their agricultural enterprises within an overall agricultural development policy for KwaNdebele.



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RESEARCH PROCEDURE3.1 INTRODUCTION

This chapter outlines the objectives and rationale of the study, the orientation and planning of the survey, sources of information, sampling, interviewing procedure, and also analysis of the data.

3.2 OBJECTIVES OF THE INVESTIGATION

The problem investigated in this study is essentially the influence of various factors which underlie the low functional efficiency of the KwaNdebele extension service.

The objectives of the investigation in terms of the tender document (DE6/15/2/2//1566) may be summarised as being:

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- (h) to give broad guidelines and recommendations for increasing the effectiveness and efficiency of the extension service, with the object of raising the productivity of rural people and their agricultural enterprises within an overall agricultural development policy for KwaNdebele.

3.3 RATIONALE

An extension service is normally structured and organised for specific goals and objectives. In the case of KwaNdebele, the extension service is considered as an instrument of government in implementing agricultural and rural development policies. The policy and objectives of the Department of Agriculture and Environmental Affairs must therefore be taken as the basis of the analysis.

In 1986 a memorandum entitled "Beleidsriglyne vir landbou ontwikkeling in KwaNdebele" set out the role of agricultural development in achieving rational goals to achieve national objectives, identifies guidelines as well as agricultural policy objectives (KwaNdebele Government, 1986). Agricultural development is not seen as a goal in itself but rather as a means to achieving national objectives.

3.3.1 The role of agricultural development in achieving national goals

- (i) Improving the general welfare and living standards by means of creating employment opportunities and increased per capita income;
- (ii) Conservation and optimal utilisation of natural resources, with the emphasis on food and fibre production;
- (iii) Balanced development with particular reference to the development of rural areas;
- (iv) Development of optimal co-operation between public and private sectors in developing the national economy;
- (v) Aim at a balance between internal self-support and self-sufficiency.



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3.3.2 Identifying agricultural policy objectives

The following objectives were identified:-

- (i) Achieving optimal agricultural production within the framework of conservation of natural resources, economic and human development considerations;
- (ii) Improving the quality of life of landholders and non landholders in the rural areas;
- (iii) Optimal development of the rural population in agricultural and related industries;
- (iv) Optimal participation of communities in agricultural and rural development programmes;

- (v) Settlement of individual farmers on economic units with the aim of developing self-sufficient commercial farmers.
- (vi) Development of agricultural organisations which will further the power of individual farmers to further and protect their own interests.
- (vii) To develop and expand contacts with agricultural organisations outside KwaNdebele aimed at co-ordinating and furthering agricultural knowledge.

The above objectives are to be achieved through programmes and projects based on development of the human potential, agricultural technology, economic considerations and the physical potential (KwaNdebele government, 1986).

3.3.3 Action plan

The policy guideline sets out a number of proposed actions to implement the above stated policy, including the following:-

- Detailed land-use surveys of commercial farming areas.
- Planning of economic units based on land-use surveys.
- Training of farmers at the Funda Mlimi training center, including an investigation into the effectiveness and relevance of farmer training.
- Training of additional extension workers at agricultural colleges and technikons.
- Training of farmers and in-service training of subject-matter specialists and extension workers.
- Formulation of a farmer settlement policy, including the role of the state, land tenure arrangement, compensation for farm improvements and occupation clauses.
- For each commercial farmer a management plan based on recommended farming systems is to be drawn up to assist the farmer in decision making.
- Draw up a settlement programme for commercial farmers which will ensure integrated agricultural and rural development.
- While priority is to be given to the commercial farming sector, normal services will continue to be provided to the traditional communal land sector.
- Because of the high population pressure in the communal land sector attention needs to be given to community development with the emphasis on rural women.

3.3.4.2 - Provide additional professional and technical staff to strengthen the KDA.

The above actions were to be undertaken by both the DA and EA and the KAC. Since these recommendations were made certain actions have taken place and are evaluated elsewhere in this report (Refer Chapters 4, 5 and 6).

3.3.4 Departmental policy

3.3.4.3 Subsequent to the policy guidelines for agricultural development the Department of Agriculture has drawn up policy documents for agricultural extension and training, crop production, animal production and veterinary services. Aspects of these documents which are pertinent to this study are summarised below:

3.3.4.1 Agricultural extension and training

3.3.4.4 The **mission** of the extension services is to develop the human potential as part of the total agricultural development of KwaNdebele, by means of effective extension and training, as well as by providing support services (KwaNdebele Department of Agriculture, 1989).

Target groups for extension are farmers in communal areas, commercial farmers, housewives in rural areas, small-scale vegetable production, the youth and leaders of target groups.

The **objectives** of extension are a) to assist that sector of the public which has access to natural resources to optimally use these resources for food production to cater for a growing population, and b) to develop both commercial and small-scale farmers to become independent economic producers.

The **extension strategy** for the communal land areas is to encourage interest groups, clubs and producer associations to become involved in extension and training programmes aimed at farmers becoming more economically independent. Development and implementation of relevant production and marketing programmes, and the training of leaders of various organisations are also part of the stated strategy.

The **strategy for commercial farmers** is to provide extension services and training at a high level by reinforcing extension with subject-matter specialists from the DA and EA, the KAC, Funda Mlimi training center, as well as from outside KwaNdebele.

3.3.4.5 The policy also provides for evaluation procedures to evaluate the extension programmes in terms of achievement of objectives, as well as providing feedback on farmer problems.

3.3.4.2

Livestock production

The livestock policy document sets out criteria for selection, training and settlement requirements for commercial farmers. Carrying capacity, herd management, breeding, selection, grazing management, production systems, cattle buying schemes, dairying, poultry, pigs and smallstock production guidelines are set out in the document (Swanepoel and Schelters, 1986).

3.3.4.3

Animal health policy

The animal health policy document sets out policy concerning disease prevention and treatment in terms of notifiable and other diseases. The department provides a free diagnostic, dipping, post-mortem, fertility testing and advisory service (Smit, undated).

3.3.4.4

Crop production and ploughing services

The policy is to encourage crop production on an economic basis, by carrying out soil classification surveys and soil sampling to ensure that only high potential land is cultivated and sound cropping programmes developed. The most suitable crops for the area are maize, sunflowers, dry beans, groundnuts, sorghum and cotton (KwaNdebele Department of Agriculture, 1986).

The DA and EA provides ploughing services and inputs on a credit basis. There are at present 7 irrigation schemes in the communal areas. Household and communal vegetable gardens are encouraged.



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3.3.5 The KwaNdebele Agricultural Company

The stated mission and objectives of the KwaNdebele Agricultural Company are as follows:-

3.3.5.1

Mission

KwaNdebele Agricultural Company (Pty) Ltd exists to promote economic agricultural development, in its broadest sense, as the basis for raising the standard of living and quality of life of the people of KwaNdebele by increasing the productivity of available resources viz - people, land and soil, and water while conserving their capacity and potential to produce over the longer term.

3.3.5.2

Objectives

Within the Government of KwaNdebele's framework of objectives and principles for agricultural development, the KwaNdebele Agricultural Company has adopted the following objectives:

- KwaNdebele Agricultural Company's focus will be the establishment of a stable, viable agricultural economy as the basis for evolving towards commercial agricultural production.

3.3.6 Ministerial p
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 extension service may be evaluated. Some of the broad policies, aims and objectives
 which are po

- In order to protect the interests of the communities they seek to service, the KwaNdebele Agricultural Company will contribute to the formulation and implementation of agricultural development and plans, liaising closely with the appropriate authorities in the process.

(a) In the
 1986) which was
 allocated to KwaNdebele to settle 250 farmers on economic units which will

- The KwaNdebele Agricultural Company's own plans and those that they formulate for and with the participation of the communities and individuals they serve, must reflect the overall development emphasis of the Government departments with which they interface.

- ensure
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 inputs, credit and marketing facilities. On units where there
 is no infrastructure, fencing, water and other essential infrastructures need to

- The creation of the greatest number of employment opportunities possible and feasible will be a central theme in the KAC's development actions, requiring, thus, that labour intensive technologies be favored.

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- The KwaNdebele Agricultural Company's agricultural development action should not take into account only the potential and capacity of the resources in an area, the optimal utilisation of these, and the availability of appropriate macro and on-farm infrastructure, but also the specific demands and needs of the community, and individuals in the areas concerned.



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- The KwaNdebele Agricultural Company will establish the necessary agricultural support structures and systems to provide production inputs, credit, mechanisation services, marketing, infrastructure, extension and training to the widest number of individuals potentially capable of participating in agricultural activities.

(b) In his
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 complemented on their work in assisting to develop 25 communal gardens.

- Entrepreneurship will be encouraged and promoted by the KwaNdebele Agricultural Company, not only in respect of individual farmers, but also through the privatisation of both existing, and future agricultural support activities; this will be done by identifying and facilitating the establishment of co-operatives or similar institutions, individual businessmen, and small agricultural related businesses to fulfil these requirements.

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- The KwaNdebele Agricultural Company will establish relevant marketing and distribution systems that link individual, and collective farming operations with appropriate markets, the intention being to privatise these activities when appropriate.

(c) In his

- Where possible agro-processing should take place within KwaNdebele to optimise the socio-economic benefits derived from agriculture, and,

Minister to this end, the establishment of agro-industries with the appropriate authorities viz KNDC, and Government departments by involving the private sector optimally.

3.3.6 Ministerial policy speeches

Annual policy speeches by the Minister of Agriculture from 1988 to 1990 provide an additional frame of reference in terms of which the efficiency and effectiveness of the extension service may be evaluated. Some of the broad policies, aims and objectives which are pertinent to this investigation are summarised as follows:

- (a) In the presentation of his 1988 budget speech (KwaNdebele Government, 1988) the Minister of Agriculture makes reference to the 151 271ha which was allocated to KwaNdebele to settle 250 farmers on economic units which will ensure an income of R6 000 to R7 000 per annum. These include 48 cattle farmers, 11 crop farmers and 186 mixed farming units. Lessees need to be provided with the necessary extension advice, training and other services, such as mechanisation, inputs, credit and marketing facilities. On units where there is no infrastructure, fencing, water and other essential infrastructures need to be provided.

Mention is also made of medium term credit provided to farmers to purchase breeding stock and the development of 18 community gardens. The Minister also makes reference to the low attendance at farmers days and the problem of housing and transport for extension staff. A plea is also made for the development of farmer organisations leading to a Farmers Union.

A particular problem cited was widespread theft of pumps and engines. Mention is also made of poor communication between farmers and the DA and EA and KAC, which was due in some measure to a shortage of extension staff. Farmers were also unhappy about complete dependence on the KAC for mechanisation and other services.

- (b) In his budget speech for 1989 (KwaNdebele Government, 1989) the Minister of Agriculture mentions that the previous years budget for agriculture was only 7,2 percent of the national budget. Extension services comprised 12 senior and 30 field staff of whom only one was a graduate. The Minister made mention that the complaint that extension workers "were not seen on the farms" had received attention. Female extension workers were complimented on their work in assisting to develop 25 communal gardens. Mention is made of 28 improved bulls purchased by farmers.

The Minister mentioned that 21 752 tons of maize valued at R5,03 million had been produced, which represented 72% of KwaNdebele's requirements. 1 584 tons of groundnuts were also produced.

- (c) In his most recent budget speech (KwaNdebele Government, 1990) the

Minister confirms that the 1989/90 season was a poor one, with crop yields estimated at 30 to 60% of the previous year. The proposed budget for 1990/91 was 6,37 percent of the total national budget. The Minister made a plea to livestock owners to organise themselves to prevent uncontrolled veld burning. He also appealed to farmers to take better care of pumps, engines and other farm infrastructure.

Reference was made to work opportunities created by KwaNdebele contractors being engaged for infrastructural development on commercial farms. The Minister referred to the problems of theft to both infrastructure and livestock which was reaching alarming proportions. A compulsory branding scheme was to be introduced to minimise stock theft. As regards the commercial farmers, a suggested norm for determining farm size was a nett farm income of R12 000 to R14 000, which is twice the amount mentioned in the 1988 policy speech(See (a) above). Mention is made of farmers settled on farms in the Verena district, which were subsequently found unsuitable for crop farming, necessitating the temporary resettlement of these farmers on other more suitable farms. Steps have been taken to train extension workers in soil and land capability classification to prevent a re-occurrence of bad planning.

Reference is made to a proposed agricultural extension and training policy involving a clear cut mission statement and objectives, identifying target groups and strategies and evaluation procedures (Refer 3.3.4.1), as well as to the present evaluation study. Mention is also made of the shortage of extension staff and problems being experienced with communal vegetable gardens.

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The Minister reported on the activities of the Funda Mlimi Training Center, which included farmer training, KAC tractor driver courses, training courses for extension workers and courses for women's clubs in poultry and vegetable growing.

Reference is made to the role of the KAC in supplying credit and support services to 250 commercial farmers and 450 subsistence farmers.

3.3.7 Discussion

From the above it can be concluded that the DA and EA and the KAC have reasonably clear-cut broad policy guidelines and objectives, and both organisations are committed to agricultural development and the provision of the necessary institutional support, including functional agricultural research, extension and training. Judging from recent Ministerial policy statements it is clear that certain problems are being experienced in implementing the action plan (Refer 3.3.3). Relevant aspects are referred to in the findings in Chapters 4, 5 and 6.

3.4 ORIENTATION AND PLANNING

The orientation and planning of this study took place during an initial visit to KwaNdebele during March, 1990. The object of this preparation stage was to get a clear idea of the agricultural situation in the country and the institutional framework for agricultural development, as well as to gather relevant background information for the evaluation study. At the same time informal structured discussions were held with groups of senior and middle management staff to obtain a preliminary idea of the workings and problems which beset the extension service.

3.5 INFORMATION SOURCES

In terms of the tender document (DEC/15/2/2/1566) data was obtained from the following sources:

- available annual reports, policy documents and other relevant written material;
- anonymous postal questionnaires to all DA and EA and KAC staff to obtain background biographical data and information on activities;
- interviews with random samples of various categories of DA and EA and KAC staff;
- structured interviews and discussions with representative groups of commercial and subsistence farmers;
- structured discussions with management staff of DA and EA, the KAC, the Agricultural Marketing Board and Funda Mlimi Training Center.

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3.6 QUESTIONNAIRE OBJECTIVE AND DESIGN

Postal questionnaires completed on an anonymous basis were designed for both senior and junior staff to obtain information on personal characteristics, facilities, working areas, use of communication channels, allocation of working time, use of visual aids, contact with information sources and perceptions of agricultural development and work situation problems.

A structured interview schedule was drawn up as a basis for discussion with randomly selected individual staff at the three levels of seniority. This schedule was designed to probe functional efficiency and perceptions of problems within the Department.

3.7 SAMPLING PROCEDURE

The sampling frame for individual interviews consisted of 6 senior Head office staff and 54 senior, middle and junior staff from a list provided by the Department of Agriculture and Environmental Affairs and the KAC. Table 3.1 shows the percentage of each of the three categories of groups of staff interviewed.

Table 3.1 - Percentage of various categories of staff interviewed, 1990.

Category	Total	No. interviewed	%
<u>KDA</u>			
Senior	4	4	100,0
Middle	6	3	50,0
Junior	38	12	31,2
<u>KAC</u>			
Junior	10	5	50,0
TOTAL	60	26	43,3

Postal questionnaires were completed and returned by all junior and senior staff.

3.8 INTERVIEWING PROCEDURE

3.8.1 Extension staff

Interviews with extension staff were conducted in a single session and lasted from one to one and a half hours. Interview time varied according to the category of officer, as well as according to the interest and alertness of the respondent.



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3.8.2 Farmers

Interviews were held with 4 representative groups of communal farmers, 4 groups of commercial area farmers, as well as with representatives of farmers associations and agricultural co-operatives. While individual interviews may possibly have given more in-depth information and allowed for quantifying of qualitative information, time and cost did not permit such an exercise to be carried out.

In the writer's opinion the structured group interviews provided adequate qualitative information for the study on trends, problems, constraints, as well as in obtaining constructive ideas on how to solve problems. Interview sessions and discussions on average lasted from one to two hours.

3.9 QUALITATIVE RELIABILITY

While a number of anomalies were found in the anonymously completed questionnaires, these were not of sufficient magnitude as to detract from the validity of conclusions drawn from the data.

All precautions were taken during individual and group interviews and discussions to explain the anonymous nature, purpose and background to the survey in order to avoid creating suspicion. Questions were phrased in such a way as to avoid prejudice and bias among respondents. Discussion sessions were conducted in a relaxed and friendly atmosphere. It is therefore considered that the data and conclusions presented give a realistic picture of the efficiency and problems of extension services in KwaNdebele.

3.10 CLASSIFICATION OF THE POPULATION

The principle objective of the evaluation study was to describe the characteristics of extension workers and farmers and to assess the functional efficiency of the extension service. An important objective was not only to obtain an insight into the overall situation, but also to assess senior and junior staff and the impact of extension on farmers. Where applicable, data was classified according to senior and junior agricultural officers.

3.11 NORMS FOR SUCCESS

Previous similar studies carried out by the writers of extension services in Ciskei (Bembridge and Penberthy, 1980), Transkei (Bembridge, 1984), KwaZulu (Bembridge, Steyn and Williams, 1983) and Venda (Bembridge, 1988) provided useful comparative norms.

Since an important objective of this study was to make recommendations for improving the efficiency and effectiveness of extension services in KwaNdebele, an important norm for success will be whether the extension service measures up to the role and functions enumerated in Chapter 1. A well established organisation and management principles and criteria.



3.12 DATA ANALYSIS

Questionnaires were checked and coded for computer analysis. Sophisticated statistical analysis was not considered necessary for this type of investigation.

The next chapter describes the environment of extension, including the various institutions involved in agricultural development in KwaNdebele.

THE ENVIRONMENT OF EXTENSION4.1 INTRODUCTION

Accepting that the major issues in agricultural development in KwaNdebele center around agricultural resources, institutions, infrastructural development, traditional social structures, socio-economic factors and the potential of human resources, it will be pertinent in this study to identify certain complex problems which are related to agricultural production and which therefore also directly or indirectly affect agricultural extension.

Because it was not within the terms of reference of this study, this chapter briefly and somewhat subjectively reviews the physical resources and environment, institutional and political factors, as well as some characteristics of the rural population.

4.2 PHYSICAL ENVIRONMENT

It is not within the terms of reference to document the physical environment and potential of KwaNdebele. The researchers had some difficulty in obtaining detailed information. Suffice to state that the southern and north eastern section of the communal land area has contiguous and pockets of high, medium and low arable potential. Irrigation potential is limited with 7 schemes with 591 ha under irrigation. Most of the northern and western areas are basically suited to semi-extensive livestock production supported by drought resistant fodder crops (Fig. 3)

The commercial farming areas which comprise approximately 141 800ha or 52% of KwaNdebele, can be divided into three distinctive agro-ecological zones: 1) the highveld bushveld transitional zone with a mean annual rainfall of 687mm; 2) the semi-arid more bushveld region with a mean annual rainfall of 618mm; and 3) the bushveld transitional area with a mean annual rainfall of 652mm.

4.2.1 Communal land areas

There are no reliable statistics available on agricultural production in the communal land areas. Available evidence and observations show that the agricultural resources in the communal areas of KwaNdebele are being utilised at only a fraction of the potential because of high population pressure, and various institutional, technological, socio-economic and socio-psychological constraints.

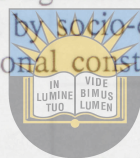
Fig 3. Land use potential of KwaNdebele

With the exception of irrigation development projects, detailed resource surveys to determine micro-level farming potential at village (ward) level are generally not available. Detailed land capability surveys are fundamental to optimum land use and successful agricultural extension programmes.

The constraints of agricultural production in the communal land areas in terms of present land use which have been identified are summarised in Figure 4. A similar situation is found in other homelands. Many of the constraints are in turn inter-related by cause and effect relationships and constitute a system, by which change in one element requires changes in other elements in order to achieve a stable farming system.

In the communal areas agricultural production does not fulfil subsistence requirements. Because of the ever increasing rural population, mainly with household members commuting to work in the Pretoria and Johannesburg areas, there simply is not the potential to fulfil the subsistence requirements of about 700 000 people living on about 163 000ha, probably the highest rural population density in Southern Africa. Cash income from agriculture is low, with the major part of household income derived from wages, pensions and other non-farming sources.

However, the present situation is not only caused by deterioration of natural resources *per se*. Fuller use of the agricultural potential without deterioration of natural resources is also prevented by socio-economic, technological, political and institutional constraints. An additional constraint is lack of knowledge of farming and resource conservation (Fig 4).



The deterioration of soil fertility is mainly the result of poor soil cover and deterioration of the soil organic matter. Application of kraal manure in adequate quantity is inhibited by problems of transport. Land preparation and planting are often not carried out at the optimum time because of lack of draught power. Labour capacities are often inadequate for timely weed control. Farming systems and technology which are compatible with farmers' needs and preferences in relation to food and cash crops have not been sufficiently tested and developed.

Outputs from livestock enterprises in the communal land areas are extremely low, not only in terms of traditional uses of draught power and manure, but also in terms of meat and milk. The major causes of low livestock production are low levels of nutrition as a result of overstocking, lack of application of veld management and principles and lack of fodder conservation. Deterioration of natural grazing occurs because the application of grazing management principles, including realistic stocking rates are not compatible with present attitudes of farmers towards livestock production.

The major constraints which prevent conservation and improvement of arable land seem to be a general lack of knowledge, lack of inputs, and reluctance to risk expenditure on innovations considered of doubtful economic benefit. On the positive

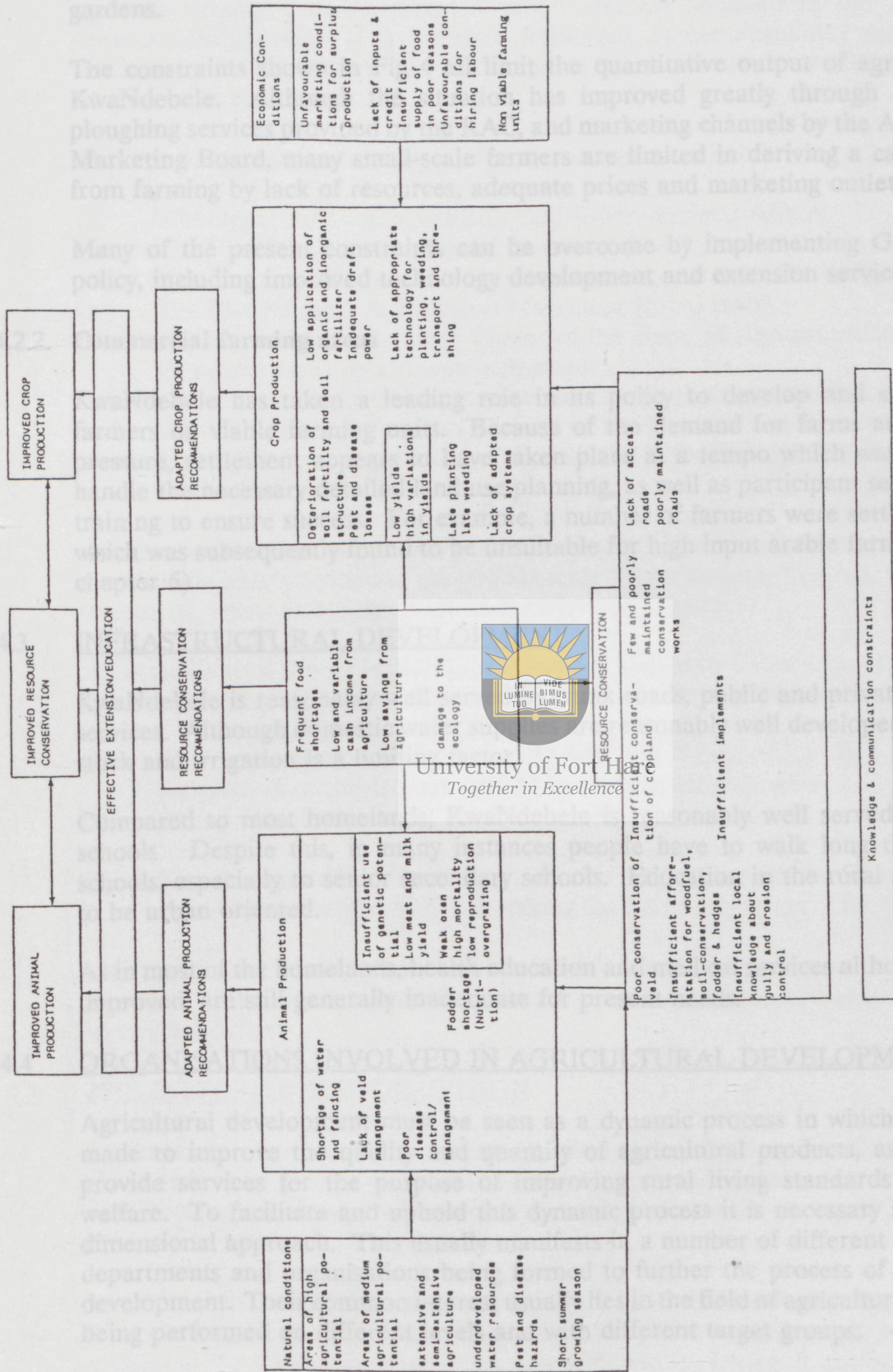


Fig 4. Conceptual framework of land-use constraints in communal areas of KwaNdebele.

side, good progress has been made with the development of communal vegetable gardens.

The constraints shown in Fig 4 all limit the quantitative output of agriculture in KwaNdebele. Although the situation has improved greatly through credit and ploughing services provided by the KAC, and marketing channels by the Agricultural Marketing Board, many small-scale farmers are limited in deriving a cash income from farming by lack of resources, adequate prices and marketing outlets.

Many of the present constraints can be overcome by implementing Government policy, including improved technology development and extension services (Fig. 4).

4.2.2. Commercial farming areas

KwaNdebele has taken a leading role in its policy to develop and settle Black farmers on viable farming units. Because of the demand for farms and political pressure, settlement appears to have taken place at a tempo which was unable to handle the necessary detailed land use planning, as well as participant selection and training to ensure success. For example, a number of farmers were settled on land which was subsequently found to be unsuitable for high input arable farming (Refer chapter 6).

4.3 INFRASTRUCTURAL DEVELOPMENT



KwaNdebele is reasonably well served with trunk roads, public and private transport services. Although domestic water supplies are reasonably well developed, water for stock and irrigation is a limiting factor.

Compared to most homelands, KwaNdebele is reasonably well served with rural schools. Despite this, in many instances people have to walk long distances to schools, especially to senior secondary schools. Education in the rural areas tends to be urban oriented.

As in most of the homelands, health education and medical services although greatly improved, are still generally inadequate for present needs.

4.4 ORGANISATIONS INVOLVED IN AGRICULTURAL DEVELOPMENT

Agricultural development must be seen as a dynamic process in which efforts are made to improve the quality and quantity of agricultural products, as well as to provide services for the purpose of improving rural living standards and social welfare. To facilitate and uphold this dynamic process it is necessary for a multi-dimensional approach. This usually manifests in a number of different institutions, departments and organisations being formed to further the process of agricultural development. Their common interest usually lies in the field of agricultural extension being performed on different levels and with different target groups.

This is also the case in KwaNdebele. A variety of different organisations and agencies varying from government to private, are involved in the agricultural development process. It is therefore important, before evaluating the extension service, to briefly review the different agencies involved in the agricultural development process.

The following organisations are currently serving agriculture:

- (i) The Department of Agriculture and Environmental Affairs.
- (ii) The KwaNdebele Agricultural Company (KAC).
- (iii) The KwaNdebele National Development Corporation (KNDC).
- (iv) The KwaNdebele Agricultural Marketing Board (MB).
- (v) The Funda Mlimi Training Center of the Dept. of Agriculture (managed on an agency basis by a private contractor).
- (vi) Other State Departments in accordance with their specific functions.
- (vii) The Planning and Advisory Council of the KwaNdebele Government.
- (viii) Embryo farmers organisations also existing at the Energy Centres established by the KAC.

It is noteworthy that the institutional support services available to serve agriculture are virtually wholly limited to the public sector. Organisations involved, target areas, structures, inputs and outputs are summarised in Table 4.1.

An evaluation of the agricultural organisations shown in Table 4.1 was undertaken by van de Wall (1990). Two fundamental problems emerge from this investigation:-

- (i) The para-statal KwaNdebele Agricultural Corporation falls under the jurisdiction of the Department of Economic Affairs; whereas in most other homelands it falls under the Department of Agriculture.
- (ii) The Funda Mlimi Training Center is an agency of the Department of Agriculture charged with undertaking the training function of the Department.

Such fragmentation of organisations inevitably leads to poor co-operation and liaison, as well as problems of staff motivation and morale due to disparities in salaries and service conditions.

4.5 THE INSTITUTIONAL DIMENSION

As in any relatively new developing country, agriculture in KwaNdebele is characterised by governmental, para-statal and private agencies and organisations. The Government has the major influence on agricultural development (see Chapter 3).

Agriculture in KwaNdebele does not enjoy a major comparative advantage, because it is relatively limited in extent. This results in agriculture enjoying a relatively low priority in the allocation of resources (see Chapter 3). Unless it can be proved that

Table 4.1. Agricultural and development agencies and their respective functions in KwaNdebele

AGENT	TARGET AREA	STRUCTURE		INPUT	OUTPUT	
		Component of agric. development	Organisational network	Financial resources	Legal authority	Organisational goals
KwaNdebele Dept. of Agric. & Environmental Affairs	Agricultural development	<ol style="list-style-type: none"> 1. Policy involve ment. 2. Training and administering legislation. 3. Overall planning and strategy development. 4. Administering Govt. funds in agric. dev. 5. Non-profit research and dissemination of knowledge. 6. Coordinating and controlling development activities. 	National	Govt.	Govt.	<ol style="list-style-type: none"> 1. Improving rural welfare 2. Management and conservation of natural resources.
KwaNdebele Agric. Marketing Board	Marketing at operational level.	<ol style="list-style-type: none"> 1. Acting as broker 2. Becoming involved in project planning to control production and identify needs. 3. Obtain finance in capital market to purchase crops. 4. Initially operating marketing channels. 	National	Para-statal	Govt.	<ol style="list-style-type: none"> 1. To give producers of KwaNdebele a say in the marketing of their produce
KwaNdebele National Development Corporation (KNDC)	Industries in agric. development.	<ol style="list-style-type: none"> 1. Holding Corporation KAC. 2. Establish/recruiter of agro-industries based on production within KwaNdebele. 	Nation wide	Para-statal	Govt.	To establish manufacturing industry and encourage small and emergent enterprises.
Funda Mlimi Agricultural Training Centre.	Agric. development.	<ol style="list-style-type: none"> 1. Agricultural training and education. 	Nation wide	Private	Govt.	<ol style="list-style-type: none"> 1. To train farmers. 2. To train learner farmers. 3. To train farm workers. 4. In-service training of staff.
KwaNdebele Agric. Company.	Agric. development	Commercial farming services to communal land areas.	Nation wide	Para-statal	Govt.	Developing commercial farming in new area services to communal land areas.
Planning and Advisory Council	Still not active, impossible to determine its role and influence.					
Farmers Organisations	In formation stage, not very influential as yet.					



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4.5.3 the comparative disadvantages that exist can be overcome through the successful application of high technology agriculture, this situation seems likely to persist.

4.5.1 Agricultural policy

Agricultural policy was discussed in Chapter 3. KwaNdebele agriculture is officially acknowledged as being the cornerstone of orderly and balanced economic, social and political development. The protection and optimal use of the country's non-renewable resources are recognised as prerequisites for the proper development of the agricultural industry in KwaNdebele. Attention is given to the development of the human, agro-technical, agro-economic and physical components.

It is evident that a systems approach to agricultural development is not being followed, but rather a system by which attention is given to certain identified problems and needs.

The development policy for the "new area" is quite clear in its approach to establish economic farming units for commercial production by full-time farmers.

Concerning the "old area", it seems as though development is to be mainly executed through the community development approach. It is however evident that neither a specific strategy for achieving the goals nor adequate parameters have as yet been determined for any area.



4.5.2 Farm inputs and credit

Because of the different approaches to the development of the old and the new area, there are different needs for the availability of inputs and credit. In the "new area" the farming requisites, production credit, extension and training is made available through the service centers. Each center has a Production Officer responsible for ensuring that inputs are available to farmers. These service centers are also actively being steered towards privatization.

Mechanization services are supplied by the KAC at market rates. Efforts are also made to actively promote the involvement of the private sector and the SA Landbank with regard to credit facilities. The KAC, which is the recognised development arm of the Dept of Agriculture is also required to support both the "Old" and "New areas" with

- production inputs
- credit
- recruitment of farm labour
- marketing
- establishment of off-and on-farm infrastructure.

Co-operatives which were set up to provide credit in the commercial areas are reported to be not functioning very well.

4.5.3 Marketing

Due to the situation of KwaNdebele available markets are relatively nearby. Definite efforts to promote effective and viable marketing structures and systems have recently been developed by both the KAC and the KwaNdebele Marketing Board(KMB). The KMB is responsible for co-ordination and regulatory control of marketable produce, particularly for those crops controlled by RSA Marketing Boards. The establishment of a viable and stable agro-economy is receiving high priority. Current efforts are being made to investigate marketing conditions and the desirability of a local marketing organisation. Such structures and systems are critically important in ensuring and promoting the establishment of a viable commercial farming sector. Marketing channels do exist for the different enterprises through the KAC as an integral part of their support services. Maize, wheat and sunflower are delivered to the Oos Transvaal Kooperasie.

Although market channels are not always utilised to their potential, communal farmers do not have easy access to markets. Cattle, sheep and goats are usually marketed through traditional or private treaty channels. The same applies to vegetables. In the latter case negotiations are underway for the establishment of a fresh produce market at Kwaggafontein where there is a large consumer population.

4.5.4 Training

Development is a process, and to maintain the momentum of the process it is necessary that educational inputs be on a regular basis and in a practical manner. In KwaNdebele a definite distinction in this process is made between agricultural personnel and the farmers. Funda Mlimi training center in close consultation with the DA and EA and the KAC is responsible for all formal managerial, technical and financial training of farmers, in-service training of extension officers and for the co-ordination and planning of all aspects of training.

Agricultural personnel are trained at both formal and informal (in service) levels. Farmers are trained mostly at the informal level. Various courses are presented at Funda Mlimi for training of commercial farmers (see Chapter 6). Training is also conducted at local service centers and by extension officers visiting farmers.

4.5.5 Agricultural research

Effective and appropriate research is costly. No formal research structures and systems exist in KwaNdebele. Informal research is conducted on a limited scale. It is however, generally accepted that any extension service must rely on a steady stream of suitable technology from research stations and locally adapted trials. The only research facility in KwaNdebele is at the Funda Mlimi Training Center, where certain demonstration trials are carried out. To fulfil research needs the KwaNdebele Dept of Agriculture and Environmental Affairs must of necessity rely mainly on research results from research centers in South Africa and elsewhere. Overwhelming evidence, however, shows that, because the relative production factors

and commodity values differ so greatly in small-scale peasant agriculture, optimal technology in the commercial farming sector is not necessarily optimal to the less developed agriculture of KwaNdebele.

Furthermore, adoption of technology advocated by the extension service is likely to accelerate only if innovations are perceived by farmers as appropriate to their agro-climatic environment. It is also imperative that any new technology or practices must be suited to individual needs, economically viable, compatible and technically feasible. All technological development in small-scale agriculture should be directed at overcoming the most limiting resources. At present there is virtually no manpower to undertake this function in KwaNdebele.

4.5.6 Agricultural extension

Development policies have goals which government tries to achieve with different instruments. In KwaNdebele this vital service is provided by the Department of Agriculture and Environmental Affairs, which is reviewed and evaluated in Chapter 5. Agricultural extension is one of the cheapest investments in implementing and achieving government policy provided it is well organised, managed and functional.

4.5.7 Agricultural development support

As a result of the more systematic approach to agricultural development in the "new area", a Farmer Support Programme (FSP) financed by the Development Bank of Southern Africa has been launched. The development objective of the programme is to promote structural change, away from subsistence agricultural production to commercial production, by providing access to support services and incentives to emerging farmers, thus facilitating increased efficiency of agricultural resource utilisation, food security and entrepreneurial ability over a broad front (Development Bank of Southern Africa, 1989).

Projects on the Consolidation Land will entail the upgrading of farming units and other necessary support elements in accordance with the organisational structure outlined in Figure 5. It should be noted that the line function of extension differs from that of staff of the KAC, resulting in ineffective extension because of lack of co-ordination and control of extension activities (Refer Chapter 5 and 6).

The Implementing Committee(IC) consists of representatives of the DA and EA, KAC, KNDC, Farmers Agricultural Union and the National Agricultural Planning Committee. The IC is responsible for the sound functioning of the FSP within an Integrated Rural Development Approach. Service Centres(SC) are designed to provide support in terms of infrastructure, mechanisation, production credit, extension and training, marketing and institution building. Each SC is managed by a Management Committee with representatives of the KAC and farmers. This organisation is aimed at promoting collective action by farmers.

arrangements do not provide the necessary incentives and security for long term improvements of agricultural production.

While the stated intention in the... eventually establish individual entrepreneur farmer... writing there was no leasehold or occupation contract in... This is an obvious disincentive to improved farming.

4.5.9 Local institutions and leadership

In the communal areas there are three agricultural co-operatives with 2 298 members. There is no evidence on the effectiveness of these co-operatives, but subjective opinion is that they are... very well. There are also 26 women's clubs with a total mem... Recently there has been an attempt to organise farmer associations around... Troya Energy Center and in one other area (Department of Agriculture and Environment Affairs 1990).

Because of po... reported not to be functioning.

In the commercial farming areas attempts have been made to involve farmers in forming farmers' associations... The intention is that the associations should be the... of farmers. In practice Farmers Associations are not... Although, they are apparently consulted on extension... little in the way of implementation of programmes.

With the exception of some... communal gardens and other home economics activities it can be concluded that farmers in both the communal and commercial sectors in KwaNdebele cannot exercise sufficient political pressure to have resources directed to promoting their farming interests. In the comm...

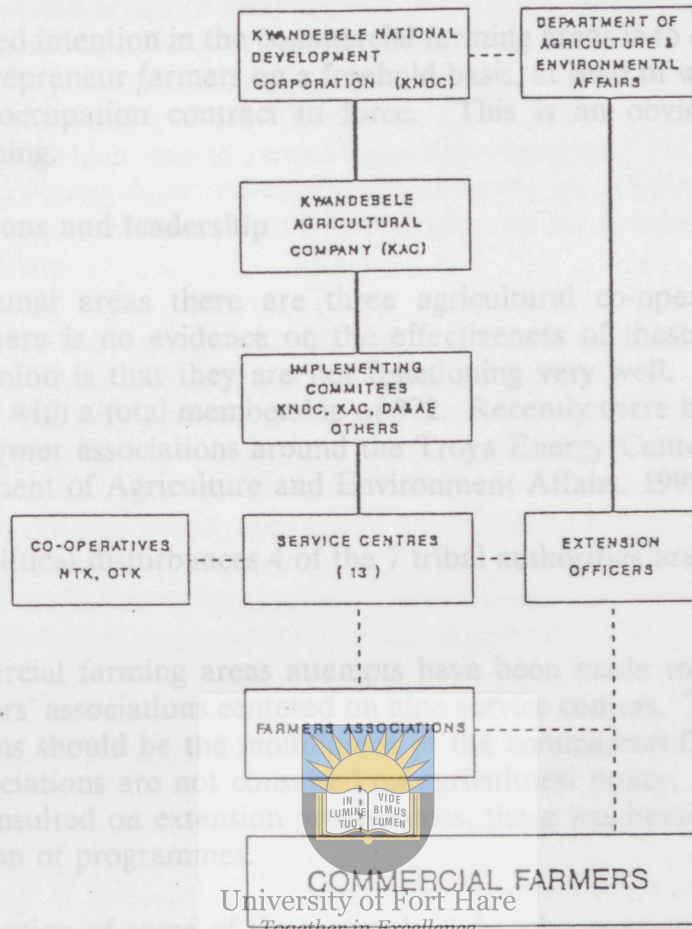


Fig 5. Organisational structure of KAC services to commercial farmers.

4.5.10 Discussion of the institutional dimension

4.5.8 Land tenure

The brief synopsis of important institutional factors has shown that in KwaNdebele there is no detailed statistical information on communal area landholdings in KwaNdebele. Available data show that the size of dryland arable holdings are in any event non viable in terms of providing a living from agriculture alone. With the exception of Van Dykspruit where 3 farmers are farming 34 ha under irrigation on a communal basis, irrigation holdings in communal areas are also non-viable economic units.

Land tenure in the communal areas is both an emotional issue and very much a political matter. Communal land in KwaNdebele remains in sacred trust for the vast majority of people. It is bound up with moral, social, legal and other concepts which detract from its economic value. A general conclusion is that present land tenure

arrangements do not provide the necessary incentives and security for long term improvements of agricultural production.

While the stated intention in the commercial farming areas is to eventually establish individual entrepreneur farmers on a freehold basis, at time of writing there was no leasehold or occupation contract in force. This is an obvious disincentive to improved farming.

4.5.9 Local institutions and leadership

In the communal areas there are three agricultural co-operatives with 2 298 members. There is no evidence on the effectiveness of these co-operatives, but subjective opinion is that they are not functioning very well. There are also 26 women's clubs with a total membership of 372. Recently there has been an attempt to organise farmer associations around the Troya Energy Center and in one other area (Department of Agriculture and Environment Affairs, 1990).

Because of political disturbances 4 of the 7 tribal authorities are reported not to be functioning.

In the commercial farming areas attempts have been made to involve farmers in forming farmers' associations centered on nine service centers. The intention is that the associations should be the mouthpiece of the commercial farmers. In practice Farmers Associations are not consulted on agricultural policy. Although, they are apparently consulted on extension programmes, there has been little in the way of implementation of programmes.

With the exception of some of the women's clubs who operate communal gardens and other home economics activities, it can be concluded that farmers in both the communal and commercial sectors in KwaNdebele cannot exercise sufficient political pressure to have resources directed to promoting their farming interests. In the communal areas traditional leaders tend to dominate rural socio-political life.

4.5.10 Discussion of the institutional dimension

The brief synopsis of important institutional factors has shown that in KwaNdebele the division of responsibility between Government (DA and EA) and the para-statal development organisation (KAC) is a constraint to management and optimum use of scarce manpower resources. Credit and marketing facilities have improved, particularly for the commercial farmers, but still need to develop to cater for the small-scale farmers. Research facilities are limited to the Funda Mlimi Training Center. The present land tenure system does not provide adequate security and incentives to individual initiative. Finally, there is in general a lack of suitable leadership and grass roots organisations with, and through whom, area agricultural extension programmes can be planned.

4.6 THE RURAL POPULATION

It was not within the terms of reference of this study to undertake a detailed study of the rural population of KwaNdebele. KwaNdebele is atypical of other homelands in that a large proportion of rural people (circa 90%) live in rural towns or villages, commuting daily or weekly to the PWV area. There are no reliable statistics on the rural population, which due to current unemployment and violence in the urban areas is growing almost daily. A rough estimate would be 115 000 households or 700 000 people, of whom not more than 7 000 households are involved in some or other agricultural activity.

Available data on the demographic profile of the rural population of KwaNdebele shows a predominance of young people under 20 years of age. Because of labour migration, women predominate among adults involved in agricultural activities, especially in the productive age group between 22 and 55 years. Thus in many instances farming activities are left in the hands of older men, women and children. Wage earnings in the urban sector act as an economic cushion which is also detrimental in providing incentives for improved farming efficiency. Average per capita incomes are below minimum subsistence levels, confirming that the majority of the rural population live in varying states of poverty. The adult illiteracy rate is approximately 48 percent.

4.7 AGRICULTURAL PRODUCTION



4.7.1 Communal areas

Any assessment of present agricultural productivity in the communal areas of KwaNdebele has to contend with the unreliability of estimates and statistics. Nevertheless, a number of general trends do emerge from available information and certain conclusions can justifiably be drawn from existing data.

Data from the DA and EA indicates a low level of fertilizer usage on lands ploughed and planted for farmers ($\pm 100\text{kg/ha}$), which presumably tended to be the more progressive farmers. The distribution of improved seed is also relatively low in relation to the area under cultivation (Department of Agriculture and Environmental Affairs, 1990).

As regards cattle production, the majority of the 2 400 cattle owners own 10 or less head of cattle. In considering the traditional economic uses of cattle for draught power, manure and milk together with the socio-cultural role of cattle, the majority of cattle owners do not have sufficient animals to sell, except to meet emergency financial needs. Goats and sheep are kept mainly for household subsistence and various socio-cultural needs.

4.7.2 Commercial farming areas

The estimated cost(1989) to provide FSP to the whole project is R127 million.

According to the Development Bank of Southern Africa expected social and economic benefits will exceed the costs (Development Bank of Southern Africa, 1989). It is too early to assess whether the latter goal is likely to be achieved.

In an economic sense the most important norm for success for commercial farming success must be considered to be the parameter of net income per unit of land or livestock unit. Eight different farming models with different combinations of crops, livestock, deciduous fruit and vegetables have been proposed. It is estimated that an average farming unit on the project has the potential to generate an annual nett farm income of R20 000 to R30 000 per ha (Development Bank of Southern Africa, 1989). Unfortunately none of these farming systems have been field tested.

Unfortunately no detailed nett farm income figures were available. However, a subjective assessment by Departmental staff in 1990 revealed that more than half the farmers were showing a loss (Refer Chapter 6).

To date the crop yields of commercial farmers have varied considerably according to season. In 1987/88 average maize yields of 2,09 tons were reported. With high mechanisation and input costs, more than half the farmers must have shown a loss on maize production during the season. The 1988/89 season was reported to be an improvement on the previous season with a total production of 31 440 tons of maize which was sufficient to satisfy internal consumption. Average yields were reported at 3,63 tons. However, 1989/90 was a poor season with crop yields 30 to 60% below that of the previous two seasons (Department of Agriculture and Environment Affairs, 1990). It can be concluded that over the first three seasons of the scheme, many farmers find themselves in a precarious financial position.

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As regards cattle production, commercial farmers are still in the process of building up their herds. Those on livestock units had an average of only 32 head of cattle, while those on mixed farms had 22 head. No information is available on reproduction, offtake and herd mortality. More than half of the commercial farmers (57%) did not own any cattle, including half of those allocated cattle farms (see Chapter 6).

4.8 DISCUSSION

Although certain information is available on land-use, land capability surveys for both the communal and commercial farming areas still need to be undertaken as a basis for future planning. There is evidence of a deteriorating environment, particularly in the communal land areas.

Because of high population density and population growth, the communal land areas do not have the potential to fulfil even subsistence requirements of the present population. Agricultural production is at a low level due to lack of knowledge and inputs, as well as a natural tendency to avoid risk. Households are consumers rather than producers of agricultural products.

Although infrastructural development in KwaNdebele is relatively good, there is still a need for development of primary water supplies and other infrastructure such as roads, schools and clinics.

FUNCTIONAL EFFICIENCY OF EXTENSION AND RESEARCH SERVICES

An evaluation of agricultural organisations has shown that having the KAC and the DA and EA under different departments has resulted in poor co-operation and liaison, which has affected overall manpower productivity. Agricultural training has been delegated to a private sector organisation, rather than falling under KDA itself, which is a decided disadvantage in terms of implementing objective training policies.

While KwaNdebele has formulated sound agricultural policies, there is a general lack of formal strategies to achieve stated policy goals. There is also a lack of technology development capacity.

While the Farmer Support Programme has functioned reasonably well in the commercial sector, the communal areas are less well provided for in terms of institutional support.

Present land tenure systems in the communal land areas act as a disincentive to encouraging individuals to get involved in farming for profit. In the commercial farming sector, the failure to formalise land tenure arrangements is a major constraint to sustained agricultural production.

Although attempts have been made to launch co-operatives and form farmers associations, in general the lack of leadership and local organisations is a constraint to agricultural development.

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A general conclusion is that the Department of Agriculture and Environmental Affairs extension service is operating in a somewhat difficult environment, in the sense that none of the necessary institutional requirements and supporting services have been adequately fulfilled. This applies particularly to research facilities, specialist back-up, land tenure and local leadership.

Despite the enormous increase in knowledge in scientific terms, in the developing areas, the question of developing appropriate technology and how knowledge is to be translated into practices is still to be answered.

This chapter, based upon empirical data on the KwaNdebele extension services, focuses on the organisation of extension services, characteristics of extension workers, the effectiveness of the extension organisation and the systems of linkages between farmers, research and extension in perpetuating the flow of knowledge between the various sub-systems.

5.2 ORGANISATION AND OBJECTIVES

The Departmental policy and objectives were discussed in Chapter 3 (Refer 3.3.2).

FUNCTIONAL EFFICIENCY OF EXTENSION AND RESEARCH SERVICES5.1 INTRODUCTION

The generally unfavourable environment in which extension services of the Department of Agriculture were operating in was referred to in Chapter 4. This has resulted in somewhat limited impact on farmers as will be discussed in Chapter 6.

Although progress has been made in communal areas, in the development of infrastructure, and in developing communal gardens, and irrigation schemes, as well as providing inputs and ploughing services, credit and marketing facilities are generally inadequate, capital formation is low, and the land tenure system militates against individual initiative. A proportion of households are caught up in the vicious circle of poverty. There is also clear evidence of a deteriorating agricultural environment in some areas.

In the communal farming areas, for various reasons it appears that to date there has not been a great deal of impact in improving the efficiency of farmers. Less than one in five farmers were estimated to be farming reasonably efficiently. A similar situation pertains in the newly settled commercial farming sector (Refer Chapter 6).

It is against this background that the problems and prospects for agricultural research and extension are now to be reviewed and evaluated here.

In KwaNdebele, the agricultural extension services are the most important link in the chain of development between the Department of Agriculture and Environmental Affairs and development and servicing organisations on the one hand, and the farmers and rural communities on the other. In providing such links, extension services have the potential to play a key role in increasing agricultural production.

Despite the enormous increase in knowledge in scientific terms, in the developing areas, the question of developing appropriate technology and how knowledge is to be translated into practices is still to be answered.

This chapter, based upon empirical data on the KwaNdebele extension services, focuses on the organisation of extension services, characteristics of extension workers, the effectiveness of the extension organisation and the system of linkages between farmers, research and extension in perpetuating the flow of knowledge between the various sub-systems.

5.2 ORGANISATION AND OBJECTIVES

The Departmental policy and objectives were discussed in Chapter 3 (Refer 3.3.2).

The post of Director of Extension is of vital importance in order to co-ordinate staff. Evidence showed that individual officers did not have objectives in implementing extension programmes within the framework of stated departmental objectives and action plans. general morale of staff as well as on the functioning of the extension section as a whole. At present this post has not been filled.

Table 5.1 Distribution of Extension and Veterinary staff by grade, according to establishment posts filled 1990

GRADE	Posts filled	No	%
MINISTER OF AGRICULTURE			
DEPT. OF AGRICULTURE & ENVIRONM. AFFAIRS			
PURPOSE: TO IMPROVE THE AGRIC. POTENTIAL & PRODUCTION			
Control Agricultural Officer	1	100,0	
Chief Agricultural Officer	2	100,0	
Principal Agric. Officer	4	100,0	
Principal Agric. Officer	1	100,0	
Senior Agric. Officer	2	33,3	
Senior Agric. Officer	2	50,0	
Agricultural Officer	187	100,0	
Agricultural Officer	128	100,0	
Women Assistants (Technical)	12	36,4	
CONTROL AGRICULTURAL OFFICER			
CHIEF AGRICULTURAL OFFICERS (3)			
Agricultural officer	-	0,0	
Senior Agricultural Officer	5(5)	35,7	
PRINCIPAL AGRICULTURAL OFFICERS (5)			
SENIOR AGRICULTURAL OFFICERS (10)			
Veterinary surgeon	1(1)	25,0	
Animal Health Officer	6	75,0	
Senior Animal Health Officer	2	100,0	
VILLAGE LEVEL SERVICE CENTRES			
AGRIC. OFFICERS (26)			
WOMEN EXTENSION ASST. (33)			
RANGERS (80)			
COMMUNAL LAND AREAS +/- 3000 LANDHOLDERS/STOCKOWNERS			
COMMERCIAL FARMERS (277)			

Fig 6. Organisational structure of extension services in KwaNdebele.

Figure 6 shows the organisation of the extension of the Department of Agriculture. KwaNdebele is a relatively small area with the headquarters of the extension section located at the head office of the Department of Agriculture and Environmental Affairs. There is no decentralisation to regional or sub-regional level.

The post of Director of Extension is of vital importance in order to co-ordinate staff activities and provide leadership and motivation for field staff. If this post is not filled by a competent person, or frequent staff changes are made, it has a detrimental effect on the general morale of staff as well as on the functioning of the extension section as a whole. At present this post has not been filled.

Table 5.1 Distribution of extension, technical and veterinary staff by grade, according to establishment and posts filled, 1990

GRADE	Establishment		Posts filled	
	No	%	No	%
EXTENSION				
Control Agricultural Officer	1		1	100,0
Chief Agricultural Officer	3		3	100,0
Principal Agric. Officer (M)	4		4	100,0
Principal Agric. Officer (M)	1		1	100,0
Senior Agric. Officer (M)	6		2	33,3
Senior Agric. Officer (F)	4		2	50,0
Agricultural Officer (M)	18		19*	100,0
Agricultural Officer (F)	8		11*	100,0
Women Assistants (non-diploma)	33		12	36,4
SUBJECT-MATTER SPECIALISTS	14		5(3)	35,7
TECHNICAL				
Agricultural officers	25		-	0,0
Senior Agricultural Officers			5(5)	35,7
VETERINARY DIVISION				
Veterinary surgeon	4		1(1)	25,0
Animal Health officers	8		6	75,0
Senior Animal Officers	2		2	100,0
Principal Animal Health Officer	1		-	0,0
Funda Mlimi Training Centre	-		-	0,0
Subject-matter Specialists	-		2**	
Technical staff	-		2**	
TOTAL	146		74	50,7

* Additional staff held against senior posts

** Contracted to Dept. of Agriculture

() Seconded staff

For the purpose of this study, all staff designated senior agricultural officer and above in Table 5.1 are classed as senior staff, while the rest are designated as junior staff. Although half the established posts were vacant, the writers are of the opinion that there are adequate agricultural extension staff (Refer 5.9.5), but a shortage of Rural Development Officers (Refer 7.4.9). In particular, there is a shortage of subject matter specialists (Refer 7.4.3).

5.3 SENIOR HEAD OFFICE STAFF

Interviews were held with six of the senior Black staff(CAO's and DAO's) based at head office. The writers were impressed by the calibre of senior staff and dedication and interest in their work. Some of the problems diagnosed were as follows:

- Staff generally achieved some job satisfaction, but were sometimes frustrated by work pressure, political interference and lack of incentives.
- Staff were not consulted in the formulation of departmental policy, and they were generally unaware of KAC policy.
- Only half the senior staff had job descriptions.
- There were no head office or area records of communal area farmers.
- There were no specific area extension programmes with clear objectives, work schedules and evaluation procedures.
- Farmer leadership training was restricted to women's groups. It was stated that some farmer leaders wanted to be paid for any services to the community.
- The only contact with research was the Roodeplaat Research Station, some four years ago. Officers felt that much of the research was not directly applicable to their work situation.



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- Because of the lack of subject matter specialists (SMS), they had received no technical guidance, except in the case of horticulture for female field staff.
- None of the officers had attended training in agricultural technology courses over the past 12 months.

- Staff were unanimous that there was insufficient training in technology. The writer assessed staff to have some theoretical knowledge, but were generally lacking in the practical application of knowledge.
- Staff had attended a course in programme planning and extension methods, but felt that extension methodology training was still inadequate, particularly in communication skills. They did not have adequate knowledge of group dynamics.
- Until recently none of the senior staff had received any training in personnel management. Two attended a recent course. Staff were generally deficient in training in farm economics.
- Staff felt that there were no incentives provided for good work performance

for all categories of staff.

- Interference by politicians (MP's) was cited as a major obstacle to effective performance. Some MPs tended to dictate what extension workers should be doing in their areas. Some farmers tended to go direct to the Minister with requests and complaints.
- Although senior staff were fulfilling a training function, because of shortage of SMS's and back-up information they were not well equipped to carry out effective on-the-job training.
- Work tended to be planned on an ad hoc basis with no written programmes for field staff.
- There was no performance evaluation of staff based on performance, tasks and roles.
- Senior staff claimed to provide feedback to the Directorate on farmers' problems, but felt these were generally not attended to. There was a feeling that the Secretary and Deputy Secretary did not have adequate contact with the field situation.
- Staff had limited back-up written information. Most written material was in the form of The Farmers Weekly Landbouweekblad, old agricultural college notes, and some material from the Department of Development Aid.

It is clear from the above evaluation that although senior head office staff were keen on their work and had good potential, they were not adequately fulfilling their role in the technology transfer process, nor were they adequately trained to manage and motivate subordinate staff for optimum performance.

5.4 MANAGEMENT WITHIN THE DEPARTMENT

While head office staff had a reasonable idea of planning, organising and controlling subordinate staff, this was not the case with other staff. Interviews revealed that the junior staff had very vague ideas concerning the application of accepted management principles in their work situation.

The junior staff did not have a clear vision of departmental policy. When the few who answered in the affirmative were probed for more detail, they gave vague replies which resembled agricultural college notes. It was clear that they were not aware of specific departmental policy.

The weekly work programme, according to which the junior staff claimed to work, appeared to function satisfactorily if properly supervised. This was obviously not always the case. The staff had to draw up a work plan every Friday for the next week which had to be in accordance with a programme plan for the whole area or

5.6 PERSONAL CHARACTERISTICS OF FIELD STAFF

5.6.1 for a section of the staff. The system seemed to be advantageous for various reasons, one being that it made staff control easier.

A further impression gained was that the female officers in the community development section were better organised, controlled and motivated than was the case with the other staff. They seemed to work together in a co-operative and friendly manner. The reason could be that they are a small unit within the larger extension organisation.

The Animal Health officers seemed to be fairly well informed concerning their subject matter and had regular contact with specialists, namely veterinary officers.

5.5 COMMUNICATION WITHIN THE DEPARTMENT

5.5.1 Communication with head office

Most of the field staff interviewed were of the opinion that communication with head office was unsatisfactory; they sometimes felt neglected by head office senior staff, which gave them a feeling of remoteness and they claimed that they obtained little guidance from head office staff.

Whatever the validity of this evidence, it is having an adverse affect on staff morale and indicates poor communication within the department, as well as a general lack of management training.

5.5.2 Contact between head office and ward officers

At field level it was found that contact between senior and ward officers was infrequent and little guidance was given, suggesting that supervision and control of the field officers was generally poor.

The field level officer tended to be left on his own and was seldom visited by senior staff and practically never by the top officials. This resulted in very little, if any, on-the-job training and guidance. Although a number of officers said they had a 'work plan', interviews revealed that work plans were not always implemented.

As KwaNdebele is a relatively small area with no subdivisions in the extension service, it was easier for the field staff to maintain contact with head office.

A general conclusion was that field work was planned on a piece-meal and ad hoc basis.

5.6 PERSONAL CHARACTERISTICS OF FIELD STAFF

5.6.1 Age of the extension staff

It has often been established in studies that the farmers in the rural areas tend to be older, more traditional and more illiterate than the populations in the urban areas. Young and inexperienced extension officers may find it difficult to communicate effectively with such older people, especially in traditional tribal areas.

Table 5.2 Distribution of extension staff according to age group, 1990 (N = 44).

Category	AGE GROUP CATEGORY											
	21-25		26-30		31-35		36-40		41-45		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Senior Staff	-	-	-	-	6	60,0	3	30,0	1	10,0	10	100
Junior Staff	5	14,8	20	58,8	7	20,5	2	5,9	-	-	34	100
Total	5	11,4	20	45,4	13	29,5	5	11,4	1	2,3	44	100

The mean age of the senior staff was 35,2 while it was 28,4 for the junior staff.

Senior staff were fairly young for their positions, varying between 31 and 45 years of age. The junior staff also tended to be young, with nearly 80% being between 26 and 35 years of age.

In most rural communities male farmers tend to be in the older age groups. It is therefore likely that most of the farmers are older than the extension staff and that they may not be receptive to advice from young staff members unless they are highly trained and motivated.

5.6.2 Length of service in the Department and in the work area

The extension worker should work long enough in the same area to get to know the people and the situation of each farmer, as well as to gain their confidence and create interest and involvement in extension programmes. If this aim is to be achieved, a period of at least five years in the same area is desirable.

According to staff service records, more than 90% of the staff had less than 10 years experience. Of the junior staff, more than 90% had less than 5 years service (Table 5.3).

On the assumption that at least two years is required for extension officers to familiarise themselves with their work areas, and probably three years before an officer can become really effective in his region, it can be concluded that most of the junior staff are not yet well established in their areas and are therefore not being utilised to their full potential.

Table 5.3 Distribution of extension staff according to years of service, 1990 (N = 44).

Category	YEARS ACCORDING TO GRADE									
	0-5		6-10		11-15		16-20		Total	
	No	%	No	%	No	%	No	%	No	%
Senior Staff	-	-	7	70,0	1	10,0	2	20,0	10	100
Junior Staff	31	91,2	3	8,8	-	-	-	-	34	100
Total	31	70,5	10	22,7	1	2,3	2	4,5	44	100

Table 5.4 Distribution according to category of length of service in work area 1990 (N = 44)



Category	CATEGORY OF YEARS SERVICE IN AREA									
	0-2		3-4		5-6		7-8		Total	
	No	%	No	%	No	%	No	%	No	%
Senior Staff	3	30	1	10,0	2	20,0	4	40,0	10	100
Junior Staff	29	85,2	5	14,8	-	-	-	-	34	100
Total	32	72,8	6	13,7	2	4,5	4	9,0	44	100

Although a few senior staff members had been in their working areas for more than five years, all the junior staff had less than five years service in their present work situation. This could be due to frequent transfers, but it is mainly due to the short period of service in the Department as already indicated (Table 5.4).

5.7.2 The effectiveness of staff with less than two years service in their working area is questionable, because it takes at least two years for officers to familiarise himself with his work area before they can be effective. With nearly three quarters of the junior staff in this category, this is obviously a serious inhibiting factor to the effectiveness of the service.

5.7.3 The short duration in work areas is due to the fact that the Department is still in the development stage. Staff turnover was extremely low.

5.6.3 Education

Extension staff are in leadership positions and by virtue of the nature of their work they should be well educated in order to command the respect of the community. Eight of the ten senior officials had only a standard eight qualification, one had standard nine and only one had matric.

The Junior staff had better qualifications in that 30 percent had a two and a half year Agricultural Diploma while more than half (53%) had a matric certificate. Only 18 percent had a qualification lower than matric.

Senior staff who are required to give guidance to junior staff and are responsible for the management tasks of the department should in fact be better qualified than the junior staff. This situation where the junior staff have a higher secondary education level than senior staff could create a situation of mistrust and dissatisfaction with senior staff, as it is likely that any incompetence in decision making and managerial control would be perceived by the junior staff as being attributed to their lower education levels.

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5.6.4 Discussion

The personal characteristics of the extension staff revealed that the short period in their present working areas and the education levels of the senior staff are serious constraints towards the functioning of the department.

5.7 SOCIOLOGICAL CHARACTERISTICS

5.7.1 Religious denomination

Staff belonged to a wide spectrum of religious denominations, seventeen denominations were represented amongst the 44 officers, with the Apostolic church featuring the most prominently, with 7 members belonging to it. The significance of religious denomination was not investigated, but it may have an influence on the attitudes of officers to their work. It has been established that religious affiliation of farmers has an influence on farming progressiveness (Bembridge, 1984).

5.7.2 Land and Stock Ownership

None of the senior officers owned any land or cattle. Only 12% of the junior officers owned cattle and two (6%) cultivated some land. This may be an indication that the staff lacked practical agricultural experience.

5.7.3 Status and Role

The extension officer's own self-esteem, which is assumed to depend upon past success or failure, is an important motivational factor.

From the personal interviews it appeared as if the discrepancy in salaries was the main reason for the staff to perceive themselves as having low status. The housing situation as well as the adequate transport were regarded as factors which increased their status considerably.

The attitude, motivation, problem perception and levels of knowledge of individual officers have a strong bearing on how efficiently and effectively an organisation functions.

5.8.1 Achievement motivation

Many senior staff felt they were working and getting 'bogged down' in their work through lack of direction. Some politicians and local leaders did not understand the concept of extension and expected officers to do things for them rather than give advice. There was no incentive for good performance.

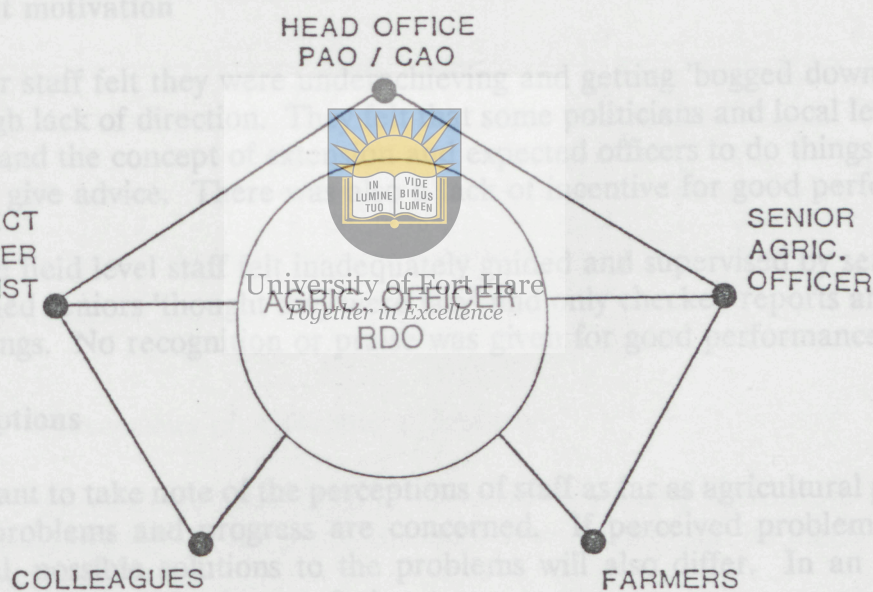
5.8.2 Staff perceptions

It is important to take into account the perceptions of staff as agricultural problems, extension problems and progress are concerned. Perceived problems are not coincidental. Solutions to the problems will vary. In an extension organisation this could lead to confusion.

5.8.2.1 Perceptions of the adoption of modern farming practices

The extent to which modern farming methods have been adopted is one indication of the impact of extension programmes.

Figure 7. Role situation of an extension worker. Those who have not adopted basic modern crop farming practices such as the use of fertilizer, kraal manure and certified maize seed (Table 5.5).



For the service to function effectively, there must be clearly defined organisation and task boundaries between various categories of extension workers, specialists and farmers. As shown in Figure 7, extension officers are not concerned only with farmers, but also with head office staff, supervisors, colleagues and subject-matter specialists.

If the task boundaries and role expectations are not clearly defined, role conflicts are bound to occur. Many of the field staff interviewed did not have a clear idea of their roles in the department. Some of them had vague, broad ideas, and tended to see their function as being administrative rather than as the function of field extension educators. Some saw their role as, 'telling people' and 'doing things for the community'.

5.8 SOCIO-PSYCHOLOGICAL CHARACTERISTICS

The attitude, motivation, problem perception and levels of knowledge of individual officers have a strong bearing on how efficiently and effectively an organisation functions.

5.8.1 **Achievement motivation**

Many senior staff felt they were underachieving and getting 'bogged down' in their work through lack of direction. They felt that some politicians and local leaders did not understand the concept of extension and expected officers to do things for them rather than give advice. There was a lack of incentive for good performance.

Many of the field level staff felt inadequately guided and supervised by senior staff. Some claimed seniors 'thought they were lazy' and only checked reports and looked for the wrongs. No recognition or praise was given for good performance.

5.8.2 **Staff perceptions**

It is important to take note of the perceptions of staff as far as agricultural problems, extension problems and progress are concerned. If perceived problems are not coincidental, possible solutions to the problems will also differ. In an extension organisation this could lead to confusion.

5.8.2.1 **Perceptions of the adoption of modern farming practices**

The extent to which modern farming methods have been adopted is one indication of the impact of extension programmes.

There are still substantial numbers of farmers who have not adopted basic modern crop farming practices such as the use of fertilizer, kraal manure and certified maize seed (Table 5.5).

The reasons for non adoption were not investigated, but it is a rational decision for farmers not to adopt farming practices unless they have the necessary knowledge and skills to do so.

Table 5.5. Distribution of junior extension staff according to perceived adoption rate of important farming practices in their areas, KwaNdebele, 1990 (N = 34).

No. of farmers	Use of Fertilizer		Use of Kraal manure		Use of improved maize seed	
None	9	26,6	19	56,0	12	35,3
1 - 20	8	23,5	7	20,6	9	26,5
21 - 40	4	11,8	-	-	4	11,8
41 - 60	6	17,6	2	5,9	4	11,8
61 - 80	1	2,9	1	2,9	-	-
81 - 100	1	2,9	1	2,9	1	2,9
101 - 120	1	2,9	1	2,9	1	2,9
121 - 140	2	5,9	1	2,9	1	2,9
>140	2	5,9	2	5,9	2	5,9
TOTAL	34	100	34	100	34	100



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5.8.2.2 Perceptions of Agricultural problems

The importance of knowledge of the problems facing agriculture cannot be overemphasized. If the problems are known, a start can be made in solving the problems.

Generally speaking the staff seemed to be aware of most of the agricultural developmental problems in KwaNdebele (Table 5.6). It was interesting to note that the land tenure system was not perceived to be a problem.

5.8.2.3 Perceptions of extension problems

The extension staff should be aware of the problems confronting the progress of extension.

Table 5.6 Distribution of junior extension staff according to perceptions of the main agricultural development problems in KwaNdebele, 1990 (N = 34).

PROBLEM	Number	%
Too little land	2	5,9
Lack of water	14	41,2
Lack of facilities/implements	12	35,3
Poor housing	2	5,9
Poor management	11	32,4
Poor fencing & roads	6	17,6
Too little training	11	32,4
Poor health & social conditions	2	5,9
Lack of security	4	11,8

Table 5.7 Distribution of junior extension staff according to perceptions of the most important problems in extension in KwaNdebele, 1990 (N = 34).

PROBLEM	Number	%
Shortage of land	2	5,9
Fencing/water	7	20,6
Lack of finance/housing	9	26,5
No transport	2	5,9
Political/cultural/security	3	8,8
Poor management	15	44,1
Lack of training courses	10	29,4
Lack of equipment/facilities	7	20,6
Poor communication	6	17,6

The problems perceived by the staff as problems (Table 5.7) show that a large number of staff were aware of the problems in the extension service. This was also true in the case of the senior staff.

5.8.2.4 Discussion Perceptions of solutions to the extension service

Table 5.8 Distribution of junior staff with regard to their perception of solutions to extension problems in KwaNdebele, 1990 (N = 34).

SUGGESTION	Number	%
Provide fencing	1	2,9
Provide water	1	2,9
Allocation of land	1	2,9
Provide finance	3	8,8
Provide training & courses	17	50,0
Improve communication	6	17,6
Improve salaries	6	17,6
Improve housing and infrastructure	2	5,9
Improve management and administration	12	35,3



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It is significant that half the junior officers realised that they needed more training while 35% perceived that management should be improved. Table 5.8 gives an indication that the junior staff were aware of the problems and the possible remedies of the extension service.

5.8.3 Extension workers' knowledge

It was not possible to make a detailed assessment of extension workers' knowledge of applied technology. However, evidence from both senior and junior officers suggests that a large proportion of staff do not have sufficient technical subject-matter and extension knowledge to be able to perform their tasks effectively. There was evidence of conflicting advice being given to field officers by their seniors.

In general officers did not have a working knowledge of current costs of production of various enterprises. Because of the importance of the profit motive in effective extension, the deficiency in knowledge of farm management economics is a most serious inhibiting factor.

Knowledge of extension principles and methodology was generally lacking. Only a few officers had a good idea of the knowledge and skills required for effective extension. In order to be able to communicate effectively, extension workers need to be thoroughly acquainted with the characteristics of the communities they serve.

5.8.4 Discussion

Extension workers generally lacked achievement motivation. Although they had a good idea of the needs of and constraints to agricultural extension, they generally had an inadequate knowledge of applied technology, farm management and economics, extension methods and rural communities to be able to perform their tasks effectively.

5.9 SERVICE AND WORKING CONDITIONS

The importance of motivation in extension workers is immense. Because of the nature of the job, close supervision of the amount of effort put into the work is impossible, and motivation becomes a critical factor. Because of his isolation and individual responsibility, the extension worker must be self-motivated. A motivation policy which works will ensure that he is as effective as possible. Current thinking on motivation is that it is an important tool to increase the effectiveness of extension services.

Some previous investigators have concluded that problems of management and organisation rather than individual competence are the major factors responsible for the poor performance of many extension workers. According to research findings, personal and socio-cultural factors have an influence on job satisfaction and consequently on job performance. Those factors which produce job satisfaction are distinct from those causing job dissatisfaction (Figure 8).

The factors called 'hygiene' imply that good hygiene is a prerequisite for the health of the organisation and are extrinsic to the job. These motivationally negative factors (dissatisfiers) include deficiencies in staff management, policy, administrative efficiency, methods of supervision, working conditions and salaries. The factors which produce positive motivation and which are called motivators (satisfiers) are intrinsic to the job and determine how an individual will apply himself to the job. Motivators include achievement, recognition, responsibility and the nature of the work itself (Figure 8).

The task of management of an extension service is to devise organisational policies which will result in active pursuance of the goals of the extension organisation by satisfied field staff. In order to obtain the maximum output from a field extension worker, it is essential to eliminate personal problems as well as problems which act as constraints in his working situation. In the first instance, his living conditions have to be satisfactory. This entails a home, office accommodation, clothing, medical care,

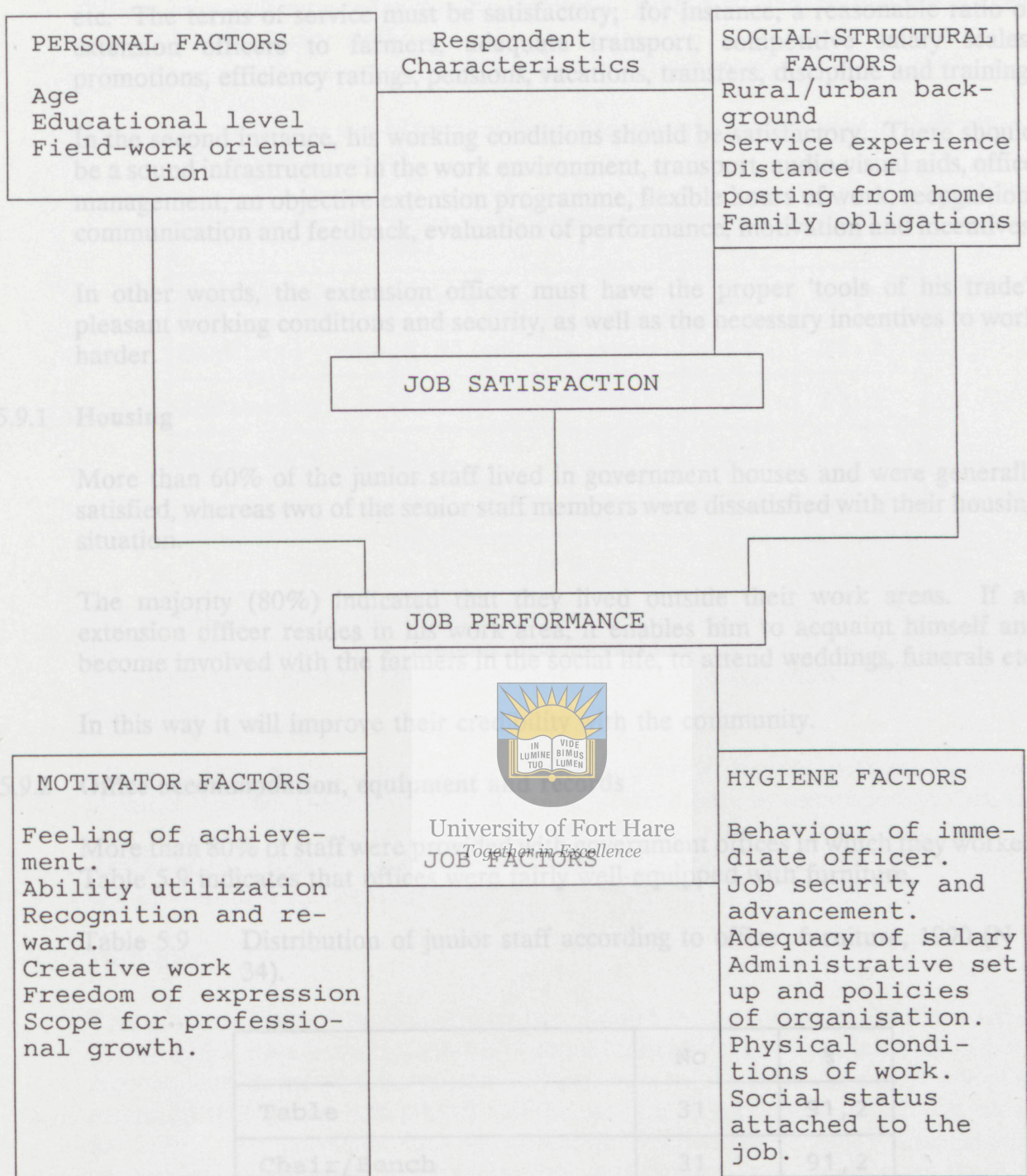


Figure 8. Determinants of job satisfaction in an extension service.

etc. The terms of service must be satisfactory; for instance, a reasonable ratio of extension officers to farmers, adequate transport, competitive salary scales, promotions, efficiency ratings, pensions, vacations, transfers, discipline and training.

In the second instance, his working conditions should be satisfactory. There should be a sound infrastructure in the work environment, transport, audio-visual aids, office management, an objective extension programme, flexible hours of work, recognition, communication and feedback, evaluation of performance, motivation and incentives.

In other words, the extension officer must have the proper 'tools of his trade', pleasant working conditions and security, as well as the necessary incentives to work harder.

5.9.1 Housing

More than 60% of the junior staff lived in government houses and were generally satisfied, whereas two of the senior staff members were dissatisfied with their housing situation.

The majority (80%) indicated that they lived outside their work areas. If an extension officer resides in his work area, it enables him to acquaint himself and become involved with the farmers in the social life, to attend weddings, funerals etc.

In this way it will improve their credibility with the community.



5.9.2 Office accommodation, equipment and records

More than 80% of staff were provided with government offices in which they worked. Table 5.9 indicates that offices were fairly well-equipped with furniture.

Table 5.9 Distribution of junior staff according to office furniture, 1990 (N = 34).

	No	%
Table	31	91,2
Chair/Bench	31	91,2
Filing cabinet	22	64,7
Shelves	4	11,8
Stove	3	8,8
Refrigerator	2	5,9

5.9.5 Offices were well supplied with basic furniture. Table 5.10 gives an indication of the records kept by junior staff.

The staff found themselves in a work situation which is reflected in Table 5.11. There were some staff who, for various reasons, probably lack of records, did not
 Table 5.10 Distribution of junior officers according to records kept in their offices, 1990 (N = 34).

RECORDS	No	%
Individual farmer records	25	73,5
Physical potential of the area	13	38,2
Individual farmer crop yields	18	52,9
Livestock numbers	20	58,8
Possess a written work plan	29	85,3

The fairly high percentage (85,3%) of officers with programmes could be due to the planning system which is followed by the Department whereby every officer should draw up a work plan for the week which should be in accordance with his overall work plan.



Although 74% indicated that they kept individual farmer records, personal interviews revealed that the records which were kept referred only to some specific data like crop yields for the season or a list of farmers who required loans, and were not comprehensive data on the farmers for the entire area. In most cases record keeping can be considerably improved.

5.9.3 Transport

Transport for junior extension officers has always been a problem in Southern Africa. Motor cycles have been introduced in some homelands, but were not very popular. Allocation of transport to extension staff was most satisfactory. All except one of the extension staff (senior and junior) had the use of a motor vehicle, which was usually an LDV. No problems such as kilometre restrictions or other dissatisfaction concerning transport were raised by staff during interviews. This gives them the required mobility and status.

5.9.4 Salaries

General dissatisfaction was expressed by staff in that salaries in the department were not equitable with those of similar posts in other departments, such as education and administration which require similar qualifications. The discrepancy between extension and other posts was perceived to be from 30 to 60%.

5.9.5 Farmer/Extension worker ratio

The staff found themselves in a work situation which is reflected in Table 5.11. There were some staff who, for various reasons, probably lack of records, did not know how many farmers there were in their wards.

According to the above table (Table 5.11) the staff are not overburdened with unmanageable numbers of farmers as is the case in other less developed areas of Southern Africa. The average extension officer farmer ratio for the junior officers in the three categories are dryland 1:101, livestock owners 1:115 and irrigation holders 1:36. This is a more favourable situation than in most commercial or communal farming areas.

5.9.6 Size of work area

The size of an extension officer's ward plays an important role in his functional efficiency. If an area is too large, an extension officer will find it difficult to keep in contact with farmers.



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Table 5.11 Distribution of staff according to landholders, stockowners and irrigation holders in work area, 1990 (N = 44).

		LANDHOLDERS									
Category	None		1-50		51-100		101-150		151+		
	Senior Staff	8	80,0	1	10,0	1	10,0	-	-	-	-
Junior Staff	9	26,5	16	47,1	3	8,8	2	5,9	4	11,8	
Total	17	38,6	17	38,6	4	9,1	2	4,6	4	9,1	
		STOCKOWNERS									
	None		1-50		51-100		101-150		151+		
	Senior staff	5	50,0	1	10,0	1	10,0	-	-	3	30,0
Junior staff	13	38,2	13	38,2	4	11,8	-	-	4	11,8	
Total	18	40,9	14	31,8	5	11,4	-	-	7	15,9	
		IRRIGATION LANDHOLDERS									
	None		1-50		51-100		101-150		151+		
	Senior staff	8	80,0	-	-	-	-	-	-	-	-
Junior staff	24	70,6	7	20,6	1	2,9	2	5,9	-	-	
Total	32	72,7	7	15,9	3	6,8	2	4,6	-	-	

The size of the land areas for which the extension staff are responsible is relatively small compared to other less developed areas of Southern Africa, and this factor is therefore not a constraint towards the functioning of the extension service.

5.10 EXTENSION ACTIVITIES

The extension activities of the staff are discussed in this section.

5.10.1 Extension programming

A planned extension programme at district and ward level is essential for successful extension. Behavioural change is a product of education, and effective teaching and accelerated learning can be brought about only by a scientifically constructed extension and communication plan.

Table 5.12 Distribution of staff according to total cultivated land area in their wards, 1990 (N = 44).

DRYLAND AREA CULTIVATED IN HA												
	None		1-1000		1001-2000		2001-3000		3000+		Total	
Senior Staff	7	70,0							3	30,0	10	100
Junior Staff	15	44,2	8	23,5	5	14,7	3	8,8	3	8,8	34	100
	22	50,0	8	18,2	5	11,4	3	6,8	6	13,6	44	100
IRRIGATED LAND IN HA												
	None		1-50		51-100		101-150		151+		Total	
Senior Staff	8	80,0	2	20,0	-	-	-	-	-	-	10	100
Junior Staff	25	73,5	4	11,8	1	2,9	2	5,9	2	5,9	34	100
	33	75,0	6	13,7	1	2,3	2	4,5	2	4,5	44	100

Due to lack of maps and records, some staff were not sure of the size of their wards, while others were not confined to a specific area.

Staff working in the dryland areas were well distributed over areas that varied from 40 to 5 515 ha in extent with an average size work area of 1 442 ha per ward. Irrigation land work areas were much smaller, and varied from 21 to 150 ha, with an average area of 54 ha per officer.

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Interviews revealed that a large percentage of field staff were unaware of the concept of work programmes. It was found that extension officers who claimed they had drawn up a work programme confused work programmes with their weekly work plans which was not linked to an objective area extension programme plan. They admitted that they often had to deviate from work plans due to unexpected duties and meetings.

A general conclusion from interviews with various categories of extension staff was that in general little more than lip-service has been paid to applying principles of extension in communication and work planning. Objective evaluation was almost completely lacking, and the general absence of extension programmes reflects an ad hoc and piece-meal approach to extension, resulting in little impact.

5.10.2 Interpersonal contact

Interpersonal contact is a relatively expensive communication method, but is also essential and the most productive form of communication with small-scale farmers. To be effective, however, extension workers must consider individual farmer's needs, resources and capabilities.

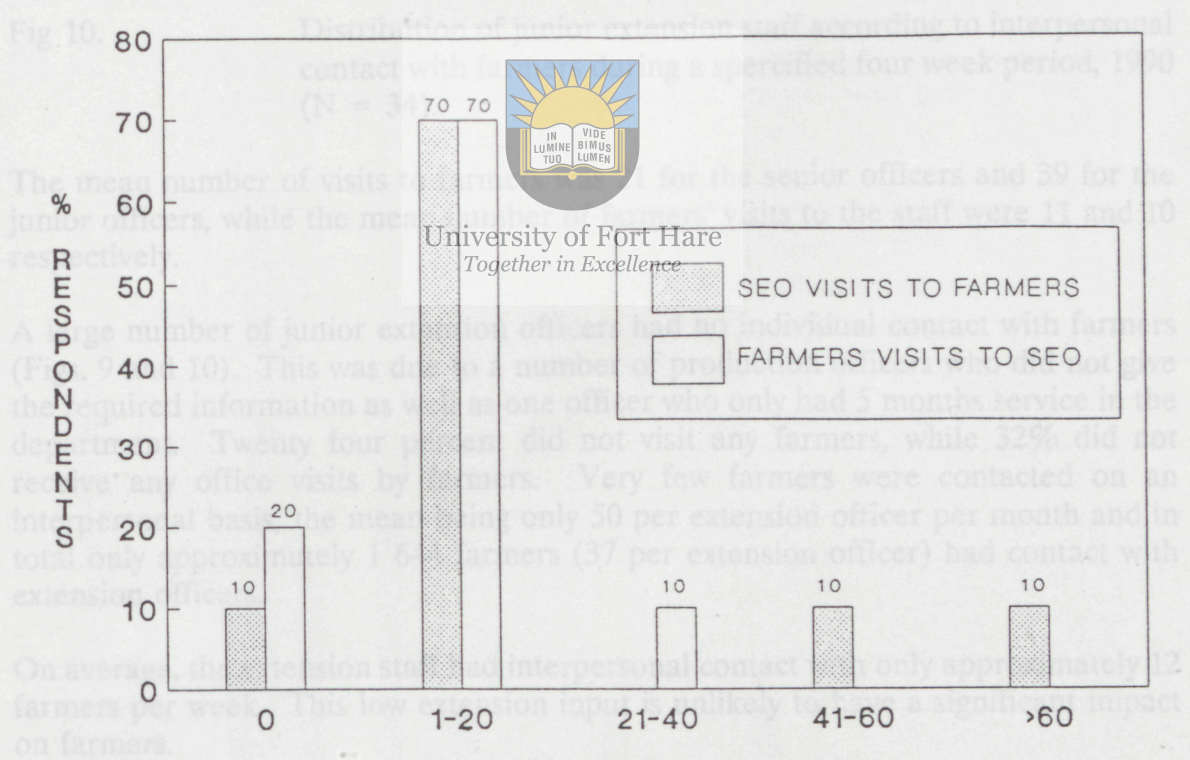


Fig 9. Distribution of senior extension staff according to interpersonal contact with farmers during a specified four week period, 1990 (N = 10).

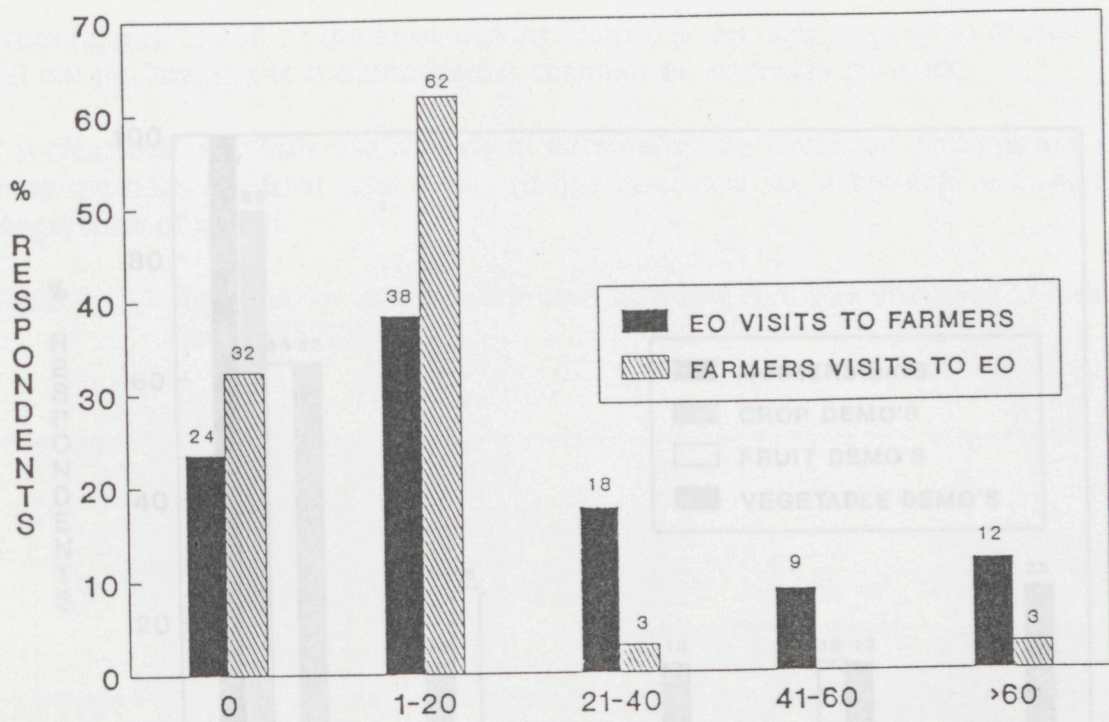


Fig 10. Distribution of junior extension staff according to interpersonal contact with farmers during a specified four week period, 1990 (N = 34).

The mean number of visits to farmers was 21 for the senior officers and 39 for the junior officers, while the mean number of farmers' visits to the staff were 11 and 10 respectively.



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A large number of junior extension officers had no individual contact with farmers (Figs. 9 and 10). This was due to a number of production officers who did not give the required information as well as one officer who only had 5 months service in the department. Twenty four percent did not visit any farmers, while 32% did not receive any office visits by farmers. Very few farmers were contacted on an interpersonal basis, the mean being only 50 per extension officer per month and in total only approximately 1 644 farmers (37 per extension officer) had contact with extension officers.

On average, the extension staff had interpersonal contact with only approximately 12 farmers per week. This low extension input is unlikely to have a significant impact on farmers.

5.10.3 Group contact

Staff were requested to indicate their use of various communication channels and techniques as indicated in Figures 11 and 12.

From figures 11 and 12 the most striking feature is the high proportion of staff who did not use any of the communication channels or extension methods.

It is clear that the use of these methods is made of different group extension methods and that these methods are used only on an ad-hoc basis and not according to a planned programme of extension.

Table 5.13 Distribution of Extension staff according to topics discussed at farmers days (N = 44)

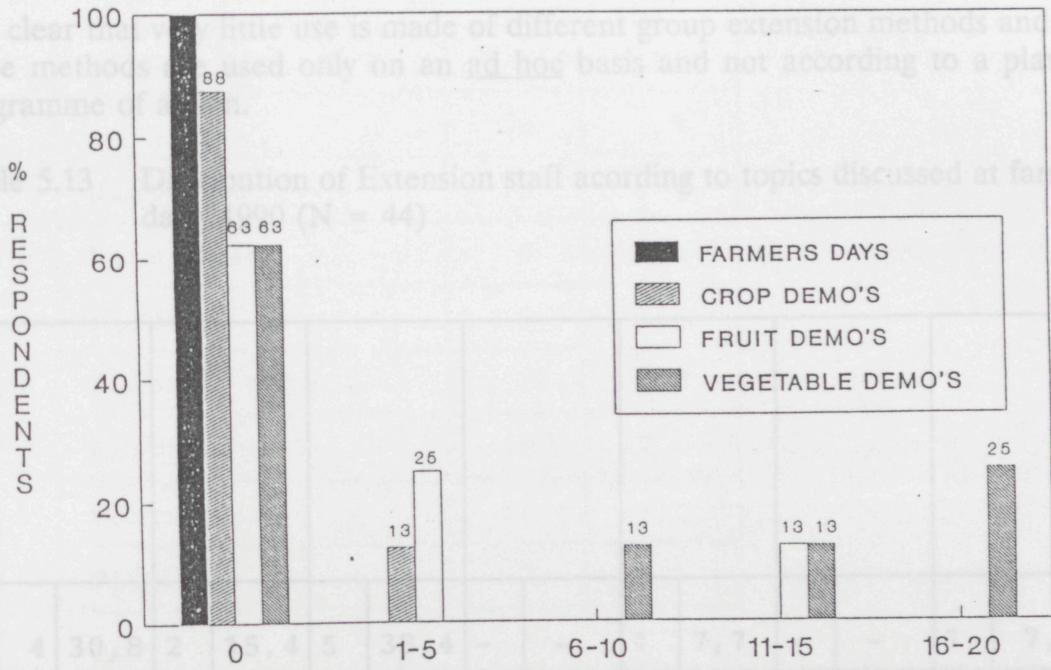


Fig 11. Distribution of senior extension staff according to the use of different extension methods used during a specific one year period, 1990 (N = 10).



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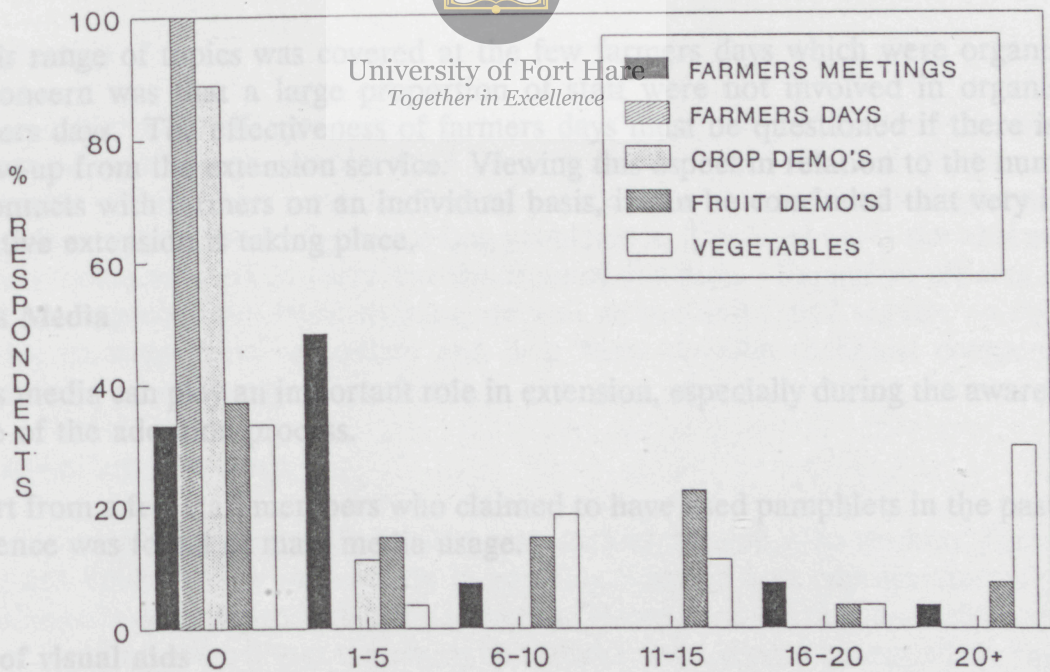


Fig 12. Distribution of junior extension officers according to the number of times particular extension methods were used over a specific one year period, 1990 (N = 34).

Table From figures 11 and 12 the most striking feature is the high proportion of staff who did not use any of the communication channels or extension methods.

It is clear that very little use is made of different group extension methods and that these methods are used only on an ad hoc basis and not according to a planned programme of action.

Table 5.13 Distribution of Extension staff according to topics discussed at farmers days, 1990 (N = 44)

Senior Staff	4	30,8	2	15,4	5	38,4	-	-	1	7,7	-	-	1	7,7	
Junior Staff	20	47,7	-	-	3	7,1	14	33,3	1	2,4	4	9,5	-	-	
	24	43,6	2	3,6	8	14,6	14	25,5	2	3,6	4	7,3	1	1,8	

A fair range of topics was covered at the few farmers days which were organised. Of concern was that a large proportion of staff were not involved in organising farmers days. The effectiveness of farmers days must be questioned if there is no follow-up from the extension service. Viewing this aspect in relation to the number of contacts with farmers on an individual basis, it can be concluded that very little effective extension is taking place.

5.10.4 Mass Media

Mass media can play an important role in extension, especially during the awareness stage of the adoption process.

Apart from a few staff members who claimed to have used pamphlets in the past, no evidence was found of mass media usage.

5.10.5 Use of visual aids

The use of visual aids in extension work cannot be over-emphasized and plays a very important role in effectively communicating with farmers.

Table 5.14 Distribution of junior extension staff according to use of visual aids KwaNdebele, 1990 (N = 34).

Visual Aid	Junior staff	
	No	%
Blackboard	13	38,2
Flip chart	9	26,5
Slides	9	26,5
Flannel boards	3	8,8
Pamphlets	16	47,1
Posters	14	41,2
Films	7	20,6

The black board is a basic and fairly cheap visual aid which can be used with much success in areas where there is no electricity. Table 5.14 shows a general lack of visual aids, especially portable blackboards, flipcharts and printed back-up material.



5.11 STAFF TRAINING

5.11.1 Introduction

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All education and training to equip a staff to perform their tasks more effectively is a form of investment. While it is easy to calculate the cost of training, it is impossible to estimate the cost in economic, technical and social terms of not training staff adequately. One of the overriding problems in KwaNdebele is the absence of suitably qualified staff to carry out the training function. Extension officers must receive comprehensive basic training, as well as in-service and regular on-the-job training to keep them up-to-date and help them develop technical competence, leadership and communication skills.

5.11.2 Extension training needs

Training must be related to the fundamental task of the extension worker. Technical skills are fundamental, particularly in applying adapted and appropriate technical knowledge in accordance with farmers' needs. However, expertise in a technical field alone is inadequate without the ability to transfer new skills to others, which implies training in communication, as well as in management principles and skills. It is also important that extension workers have a basic understanding of human social behaviour and of change occurring in a cross cultural perspective. They need an understanding of the totality of social relationships in the local environment.

5.11.3 Pre-service training

It is generally accepted that an effective extension service requires three levels of training, namely, certificate diploma and degree. KwaNdebele has no facilities for formal training. Diploma level training is undertaken at Tompi Seleka College in Lebowa or at Taung Agricultural College in Bophuthatswana. Graduates are trained at the University of Fort Hare and the University of the North. At present there is no facility for the training of technical officers at the higher diploma level. There are few people from KwaNdebele available with the necessary education and training to fill many of the professional, specialist and managerial posts in the establishment of the department.

5.11.4 In-service training

No attempt has been made to select extension officers according to their aptitude. There is thus a need to develop selection criteria for prospective extension staff prior to their entry to an agricultural college.

Table 5.15 Distribution of extension staff according the number of training courses attended over one year, 1990 (N = 44).

Officer Category	0		1-5		6-10		>10		Total	
Sen. officers	2	20,0	8	80,0	-	-	-	-	10,0	100
Jun. officers	9	26,9	2	5,9	4	7	2	5,9	34,0	100
Total	11	25,0	26	59,1	5	11,4	2	4,5	44,0	100

One in four staff members did not attend any training courses during the year, while about 60% attended between 1 and 5 courses. Further investigation showed that the senior staff only spent an average of 1,8 days, while junior staff spent an average of 8,7 days per year on training.

Topics covered at training sessions attended by senior staff, included poultry, vegetables, soils, fruit and management. The courses mentioned by junior officers included defence, driving, extension, office conduct, soils, communication, equipment maintenance, nutrition and administration. Of these courses the extension course was attended by 50 percent of the junior officers, the soils course by 26 percent, while the other courses were only attended by a negligible number of officers.

Training programmes were organised in a somewhat *ad hoc* and unco-ordinated manner and were not directly related to specific work programmes.

The lack of objective planned programmes for induction training after officers commenced their duties appeared to be a constraint to staff development and motivation.

5.12 RESEARCH AND SUBJECT MATTER SPECIALISTS (SMS) CONTACT

An agricultural extension system which transmits knowledge from research to extension and then to the farmer, must solve six basic functional problems in order to ensure both the initiation and perpetuation of the flow of knowledge (Fig. 13).

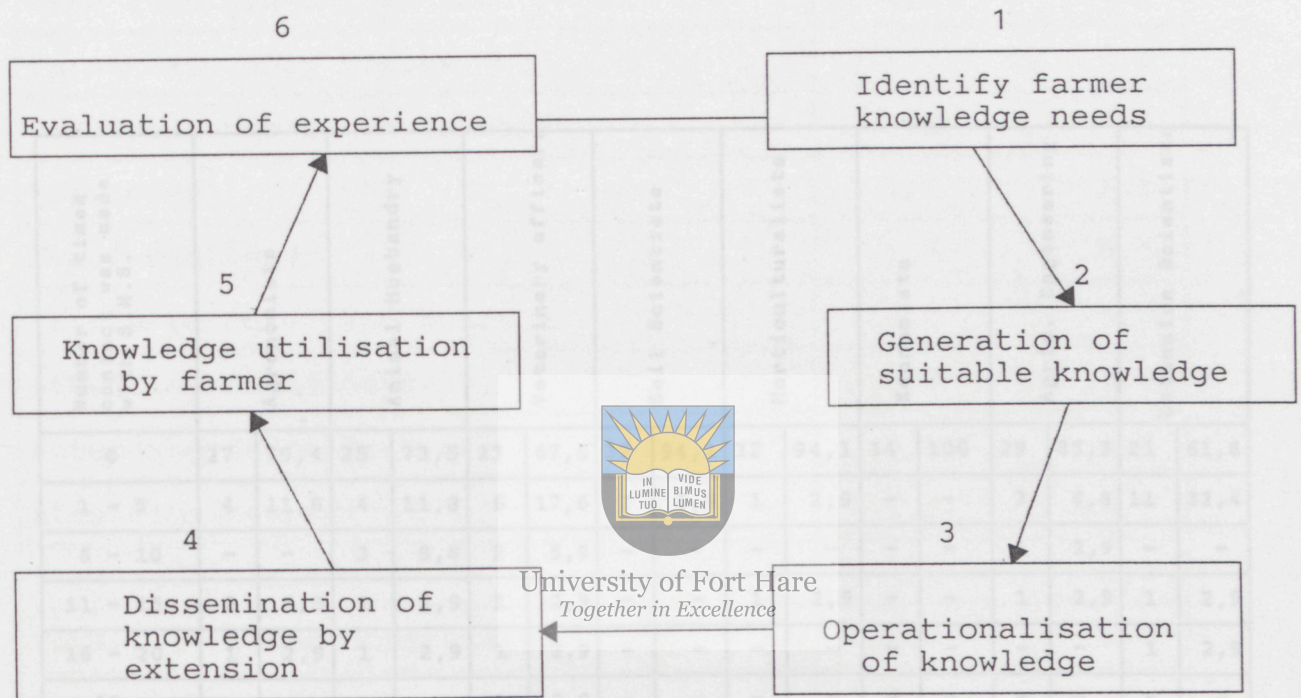


Fig. 13 Model of the functioning of an agricultural knowledge system.

The basic determinants of a sound research policy are the knowledge and needs of commercial and small-scale subsistence farmers in KwaNdebele, which directly or indirectly, influence decisions in the research and extension process. There are no research stations in KwaNdebele.

During the past two years only five of the 34 junior officers had visited a research station. The research stations visited were Irene, Onderstepoort, Boskop and Turfloop University. Of the ten senior officers, four visited a research station once, while only one senior officer visited two research stations. The research stations mentioned were Roodeplaat, Kanhyam, Onderstepoort and Boskop. Of these Kanhyam is a commercial company while Boskop is a training centre for farm labourers.

5.13 Contact of extension staff with research stations was for all practical purposes insignificant in terms of the technology transfer system.

Table 5.17 Average usage of time by senior officers over a specified four week period
 Subject matter specialists play a potentially important role in in-service training of extension staff, carrying out adaptive research and providing specialist back-up advice.

Table 5.16 Distribution of junior extension staff according to contact with subject-matter specialists during a specified six months period, KwaNdebele, 1990 (N = 44).

Number of times contact was made with S.M.S.	ACTIVITY															
	Agronomists		Animal Husbandry		Veterinary officers		Soil Scientists		Horticulturalists		Economists		Agric. Engineering		Extension Scientists	
0	27	79,4	25	73,5	23	67,6	32	94,1	32	94,1	34	100	29	85,3	21	61,8
1 - 5	4	11,8	4	11,8	6	17,6	1	2,9	1	2,9	-	-	3	8,8	11	32,4
6 - 10	-	-	3	8,8	2	5,9	-	-	-	-	-	-	1	2,9	-	-
11 - 15	2	5,9	1	2,9	1	2,9	-	-	1	2,9	-	-	1	2,9	1	2,9
16 - 20	1	2,9	1	2,9	1	2,9	-	-	-	-	-	-	-	-	1	2,9
>20	-	-	-	-	1	2,9	-	-	-	-	-	-	-	-	-	-

Junior extension staff had very little contact with subject-matter specialists (SMS), in fact so little that it can be regarded as being ineffective in terms of staff development.

and control staff and carry out administrative work, a senior officer should possibly spend a little more than 12% of his time on office work. Approximately a third of their time was spent with junior staff, while just less than a third (31,5%) of time was spent on extension related work. Only four percent of their time was spent on training courses which is completely inadequate at their present stage of development.

The average usage of time by the senior officials can be regarded as falling within their task and job description, except that inadequate time was spent on training. Management principles need to be introduced in accordance with the recommended strategy and operational procedures (Refer 7.9)

5.13 STAFF USE OF TIME

Table 5.17 Average usage of time by senior officers over a specified four week period, 1990 (N = 10).

ACTIVITY	No. of days	%
Office days	2,4	12,0
With staff in the field	1,9	9,5
With staff in the office	2,1	10,5
Farmer advisory visits	1,2	6,0
Servicing visits to farmers	1,9	9,5
Farm days	1,1	5,5
Staff meetings	1,7	8,5
Visits to chief and headman	1,0	5,0
Attending field days	3,2	16,0
Attending demonstrations	0,8	4,0
Attending courses	0,8	4,0
Time with seniors	1,0	5,0
Time with other departments	0,4	2,0
Time with private organisations	0,3	1,5
Days on leave	0,2	1,0
TOTAL	20,0	100



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In order to plan and control staff and carry out administrative work, a senior officer should possibly spend a little more than 12% of his time on office work. Approximately a third of their time was spent with junior staff, while just less than a third (31,5%) of time was spent on extension related work. Only four percent of their time was spent on training courses which is completely inadequate at their present stage of development.

The average usage of time by the senior officials can be regarded as falling within their task and job description, except that inadequate time was spent on training. Management principles need to be introduced in accordance with the recommended strategy and operational procedures (Refer 7.9).

Table 5.18. Average usage of time by junior officers over a specified four week (20 day) period, 1990 (N = 34).

ACTIVITY	No. of days	%
Days in office	2,6	13
Individual farmer advisory visits	2,6	13
Servicing visits (non advisory)	1,4	7
Attending farmer meetings	1,2	6
Attending staff meetings	1,0	5
Visiting chief and headman	0,8	4
Attending field days	6,4	32
Attending demonstrations	1,2	6
Attending courses	0,6	3
Time spent with seniors	2,0	10
Days on leave	0,2	1
TOTAL	20,0	100



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According to the junior officers approximately 40 percent (39%) of their time is spent with administrative work, 57 percent doing extension related work while only three percent of their time is spent on training.

The time spent on administration should be greatly reduced, while it is obvious that training has been neglected in the past and should also receive much more attention.

5.14 DISCUSSION

It is pertinent at this stage to reflect and summarise the findings of this chapter. Rural extension cannot be considered in isolation from many other factors which affect the development of rural areas. It is clear from the evidence in Chapter 3 that the KwaNdebele extension service has been operating in a difficult environment, in that none of the institutional requirements and support services necessary for successful agricultural development have been completely fulfilled. The necessary infrastructure and services such as roads, health, social services, inputs, credit,

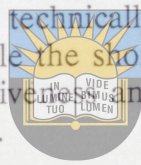
markets and water supplies are outside the scope of the extension services, nevertheless affect the successful operation of the latter.

Although a number of aspects which have been mentioned above require attention There has been progress over the past 2 to 3 years in providing inputs such as fertilizers, pesticides, credit facilities, improved seeds and cultivation implements, especially to the communal farming sector.

Few people would question that extension education has a vital role to play in the agricultural development of KwaNdebele. This study shows that so far the results of such education have been disappointing.

It can be concluded that the extension service has operated in a haphazard manner, with neither priorities specified nor plans drawn up and implemented, with the result that its objectives have not been achieved. The investigation has shown considerable deficiencies in technical support and administrative control at all levels. It was found that the majority of staff did not have a clear idea of any operational policy for agricultural development.

The shortage of professional and technically trained personnel in the extension service is a cause for concern, while the short period of service for almost all the junior staff militates against effectiveness and efficiency. They were furthermore relatively young and inexperienced.



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It was found that the general morale and status of extension workers was not at a level to cause a high level of demotivation. Although staff complained of low salaries, lack of training etc., it was found that certain factors such as, for example, adequate provision of transport increased the status of the staff.

In-service training in technology and extension methods was very poor and needs to be improved. It was heartening to find that a fair number of staff were aware of the problems facing agriculture in general and the extension service in particular, and also had a good perception of the solutions to these problems.

It was found that there was a favourable farmer/extension officer ratio, but interpersonal communication needs to be improved, particularly working with groups.

Little use was being made of the mass media and the use of visual aids left much to be desired. The general lack of communication and liaison between research establishments, subject-matter specialists and the extension service has resulted in a

dearth of practical information and methods for extension officers at local level.

Although a number of aspects which have been mentioned above require attention and should be improved, there were also a fair number of positive and encouraging aspects concerning the future potential of the extension service. The next Chapter gives an overview of the perceived extension impact on farmers.

6.1

Any objective evaluation of the impact of extension on both communal land and commercial farmers in KwaNdebele is handicapped by the lack of statistical information on farming practices, crop yields, farming knowledge and other parameters. In this study conclusions are drawn mainly from limited available data, observations of the researchers and the survey of farmers' attitudes and perceptions of their own situation.

6.2 COMMUNAL LAND AREAS

As far as can be ascertained there are some 2 500 households in the communal land areas who are running cattle and goats, and to a lesser extent, sheep (Refer 4.7.1). Some 160 farmers cultivate 800ha ranging from 2 to 10ha. There is evidence that some farmers are ploughing land simply to retain their land rights. In addition, there are 591 ha under irrigation on 7 small projects. There is one dryland cotton growing scheme with 5 participants (Refer 4.7.1).

6.2.1 Farmers' perceptions of farming problems

Interviews with groups of communal farmers revealed a host of perceived problems which are common to communal farmers. These include the following:-



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- * shortage of grazing land;
- * shortage of primary water supplies;
- * insufficient arable land;
- * lack of soil surveys;
- * because of labour migration most farming is of necessity undertaken by women;
- * high input costs, including mechanisation;
- * lack of credit facilities;
- * lack of formal marketing channels for vegetables.

6.2.2 Information sources

Most farmers came from white owned farms and therefore had some knowledge of farming. While the DA and EA was cited as almost the sole source of advice on cattle and crops, it was claimed that female farmers had little contact with extension workers. Farmers perceived there was a shortage of extension workers, and that some lacked training and education. Some respondents perceived that officers were

IMPACT OF EXTENSION ON FARMERS**6.1 INTRODUCTION**

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Interviews with groups of communal land farmers revealed a host of perceived problems which are common throughout the homelands. These include the following:-

- * shortage of grazing land;
- * shortage of primary water supplies;
- * insufficient arable land;
- * lack of soil surveys;
- * because of labour migration most farming is of necessity undertaken by women;
- * high input costs, including mechanisation;
- * lack of credit facilities;
- * lack of formal marketing channels for vegetables.

6.2.2 Information sources

Most farmers came from white owned farms and therefore had some knowledge of farming. While the DA and EA was cited as almost the sole source of advice on cattle and crops, it was claimed that female farmers had little contact with extension workers. Farmers perceived there was a shortage of extension workers, and that some lacked training and education. Some respondents perceived that officers were

transferred too often; there was also a singular lack of farming method and result demonstrations.

There was dissatisfaction on advice on cattle and grazing management, as well as on financial matters.

6.2.3. Support services

Two service centers have been set up to serve the communal land areas with farming inputs. Farmers in these areas were fairly unanimous that access to credit was difficult for most farmers. Inputs were obtained from KAC and the Northern Transvaal Co-operative (NTK). However, farmers perceived inputs as being too costly and there were problems with transport of inputs from the source to farmers fields.

The marketing of crops was mainly through the NTK and farmers were generally satisfied with this channel. Cattle were generally sold locally to butchers and dealers and there was general dissatisfaction with the prices being realised.

6.2.4 Local organisations

The most successful local organisations are the 59 women's clubs with about 20 members each. The main activities are to produce vegetables for home consumption, as well as homecrafts for sale. Agricultural co-operatives and farmers associations have to date generally not fulfilled their functions adequately.

6.2.5 Schemes in communal land areas

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It is pertinent to this study to discuss briefly the impact of certain agricultural development projects in the communal land areas.

6.2.5.1 Klipspruit Irrigation Scheme

The Klipspruit irrigation scheme managed by the KAC which was started over 3 years ago comprises 22 farms each with approximately 5ha. Decisions on cropping programmes and all planting operations were carried out by the KAC. Farmers were responsible for irrigation, weeding and harvesting.

Interviews with a sample of participants revealed general dissatisfaction with the project management. Farmers perceived the following problems:-

- * Input cost charges were not varied according to the size of land.
- * Ploughing and planting was not carried out on time.
- * Insect control on dry beans was carried out too late.
- * Most farmers had to forego income from crops to repay input costs and

6.2.7 Discussion some still had debts owing.

- * Input costs were perceived as being too high.

Available evidence suggests that with the exception of women's gardening clubs, farmers were unanimous that they would like to farm full time and would prefer to carry out all farming decisions and operations themselves. They were not in agreement with the present cropping programme of pea production and expressed the wish to grow cabbages and other vegetables.

6.3 COMM Perceptions of potential income from the scheme varied from R2 000 to R5 000 per annum. Participants felt they lacked skills and advice on irrigation. The investigations revealed that participants generally lacked economic knowledge. A particular problem was that the majority did not understand the KAC financial statements and were unaware of interest rates charged on loans.

Unlike comm As regards advisory services, participants had favorable perceptions of extension workers, but felt there was a lack of demonstrations on farming techniques and farming systems.

6.2.5.2 Umnota Farmers Association

This scheme which has been going for 9 years comprises 150ha of cotton with 5 participants who all share jointly in profits. Participants live a long way from the project, some up to 30km distant. All farming operations, except weeding and harvesting, are carried out for farmers by the KAC staff. As with the Klipspruit scheme, participants expressed the wish to carry out farming operations themselves, provided they could obtain credit and mechanisation services. Participants were dissatisfied with income from the scheme. They perceived they could obtain a potential income of R25 000 against the present income of R6 500. The investigation revealed that they were deficient in economic knowledge and did not understand the financial statements from the KAC. They expressed the need for training in financial management. They were all prepared to farm on a full time basis and would prefer to live nearer the project.

6.2.6 Perceptions of needs

Generally speaking communal land farmers were not sure whether current farming systems and practices were the most suitable for the area. As one farmer put it "we just plant". There was general consensus that more advice was needed. General interest was expressed in the promotion of home vegetable gardens and small-scale broiler production.

Suggested needs to improve farming included training and extension, more grazing camps, credit, job creation and additional land.

6.2.7 Discussion

Available evidence suggests that with the exception of women's gardening clubs, extension has not made a great impact in the communal land areas in terms of human and local institutional development. Although there have been improvements, institutional support for agricultural development is still inadequate.

6.3 COMMERCIAL FARMING AREAS

Unlike other homelands KwaNdebele has 52% of the land (141 800ha) set aside for commercial farming. The area is divided into 314 economic farming units, of which 277 have already been allocated to farmers. Planning and development of these farms was undertaken since 1986 by the KAC. The area is planned on the basis of 20 to 30 farmers per Service Center (SC) which is designed to provide mechanisation services, farm inputs and advice. The first phase of the project was aimed at supporting 140 cash crop farmers on 38 600 ha in the Southern higher potential areas. This was followed more recently with the second phase involving the settling of farmers on mixed farms and cattle enterprises. This investigation was handicapped by lack of demographic and statistical information on farms and farmer participants.

6.3.1 Characteristics of farming systems

Table 6.1 shows that approximately 30 percent of the farms suitable for crop production are assessed as having poor soils.

Table 6.1 Mean farm size, arable and grazing land according to farm category N = 210), 1990.

FARM CATEGORY	FARM SIZE ha			ARABLE LAND ha			GRAZING LAND ha		
	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.
Crops - good soil	34	261	104	34	159	38	28	106	91
Crops - poor soil	39	266	88	39	150	35	36	125	90
Crops and livestock	60	413	253	58	153	63	59	268	226
Livestock	77	738	306	34	116	51	75	705	337
TOTAL	210	480	312	165	146	52	198	385	356

Source : Department of Agriculture and Environment Affairs

Farmers on livestock and mixed farms still have comparatively few cattle and most have insufficient animals to make a living out of livestock (Table 6.2).

Table 6.2 Distribution of commercial farmers according to mean number of cattle by farm category (N = 210).

FARM CATEGORY	CATTLE HERD SIZE		
	No.	Mean	S.D.
Crops - good soil	34	8,29	17,50
Crops - poor soil	39	12,72	23,26
Crops and livestock	60	22,32	35,36
Livestock	77	32,12	53,44

Source: Department of Agriculture and Environment Affairs.

Fifty four percent of farmers did not own any cattle (Table 6.3). However, this is misleading in the sense that many farms have cattle owned by squatters. It is estimated that over 50 percent of livestock farming units are carrying more than the assessed carrying capacity.

Table 6.3 Distribution of commercial farmers according to herd size and farm category, 1990 (N = 210).



FARM CATEGORY	HERD SIZE CATEGORY						
	None	1-10	11-20	21-30	31-50	51-100	>100
Crops - good soil	22	4	3	2	1	2	0
Crops - poor soil	22	3	6	3	2	2	1
Crops + livestock	31	4	6	2	6	9	2
Livestock	39	3	3	7	9	9	7
TOTAL	114	14	18	14	18	22	10

Source: Department of Agriculture and Environment Affairs.

Only one in five of the purely livestock enterprises have sufficient animals (>60) to make a living out of cattle (Table 6.3).

6.3.2 Some farmer characteristics

Only half of the farmers permanently occupied their farms; while 24 percent employed a manager, less than half of the farmers (47%) derived their major source of income from farming. Those employing managers tended to derive their major income from farming. Thirty percent had business interests, 28 percent of whom had more than one business (Table 6.4). One in five had some other occupation other than farming, covering a wide range of occupations including politicians, taxi owners, teachers, construction businesses and public service employees.

Table 6.4 Distribution of commercial farmers according to permanent farm occupancy, employment of managers, business interests, farming as a major source of income and other occupations, 1990.

FARM CATEGORY	Permanent Occupancy		Employ Manager		Business Interest		Farm as major income source		Other Occupation	
	No	%	No	%	No	%	No	%	No	%
Crops - good soil	22	88	4	16	2	9	19	83	3	9
Crops - poor soil	11	32	9	26	8	24	10	31	9	23
Crops + livestock	22	52	8	18	14	33	23	55	6	10
Livestock	24	43	16	29	24	44	20	36	7	13
TOTAL	79	50	37	24	48	31	72	47	25	12

Source: Department of Agriculture and Environment Affairs.

6.3.3 Assessed farming standards

Only about one in five farmers (22%) were assessed by Department of Agricultural and Environmental Affairs as having a good standard of farming (Table 6.5).

FARM CATEGORY	No	%
Crops - good soil	5	20,0
Crops - poor soil	20	71,0
Crops + livestock	23	56,0
Livestock	19	58,0
TOTAL	67	33,0

Table 6.5 Departmental assessment of farming standards according to farm category, 1990 (N = 152).

FARM CATEGORY	FARMING STANDARD							
	Poor		Fair		Good		Total	
	No	%	No	%	No	%	No	%
Crops - good soil	1	41,0	13	52,0	11	44,0	25	100,0
Crops - poor soil	16	48,5	13	39,4	4	12,1	33	100,0
Crops + livestock	18	45,0	14	35,0	8	20,0	40	100,0
Livestock	19	35,2	23	42,6	12	22,2	54	100,0
TOTAL	54	35,5	63	41,4	35	22,2	152	100,0

6.3.4 Perceived farming loss

The writers did not have access to detailed financial statements of individual farmers. However, a subjective assessment by officials of the Department of Agriculture and Environmental Affairs (DA and EA) indicate that more than half (53%) of farmers whose activities were known by staff of DA and EA were showing a loss on their farming (Table 6.6).

Table 6.6 Distribution of respondents according to Departmental estimates of those showing a farming loss by farm category, 1990 (N = 125).

FARM CATEGORY	FARM LOSS	
	No	%
Crops - good soil	5	20,0
Crops - poor soil	20	71,0
Crops + livestock	23	56,0
Livestock	19	58,0
TOTAL	67	53,0

It is significant that the highest percentage of those estimated to be showing a farming loss were crop farmers on poor soils. The reason for livestock farmers showing a loss was due mainly to insufficient animals (see Table 6.3).

6.3.5 Farmer training

There appears to be a strong correlation between the level of farmer training and farming success. The original plan was that all applicants would undergo 6 months training at Funda Mlimi Training Center on agricultural production and farm management. Only the first 15 farmers underwent this training, most of whom are reported to be doing fairly well.

Due to pressure to settle farmers, the training period was reduced to 5 weeks for the next 45 applicants. These are reported not to be doing as well as those who had 6 months training.

Subsequently the pre-settlement training requirement was waived resulting in the majority (79%) having received no formal course training. Although farmer selection criteria were laid down there is evidence that in some cases criteria were not strictly applied. Training by staff of Funda Mlimi and Departmental extension staff is now carried out at the 8 Energy Centers throughout the farming calendar. To date the emphasis has been more on crops than cattle. Funda Mlimi also makes a training input to extension workers. There was confusion among farmers as to whether to go to project management or extension workers for advice, which tended to make extension workers lose credibility.

Despite a favourable ratio of one extension officer to 28 farmers, the investigation revealed that extension work is not carried out effectively, reaching only 30-40% of farms. Interviews revealed farmers generally lacked technical farming knowledge and skills. This is largely due to poor communication and lack of clearly defined roles of the KFC and DA and EA staff. Extension officers perceived that their efforts were being undermined by KAC staff at the Energy Centers.

An additional technology transfer problem is that farming systems being recommended and applied have not been adequately tried and tested. Farmers felt crop demonstrations were useful, but felt they could not learn effectively unless they carried out farming operations themselves.

6.3.6 Problem perceptions

Discussions with farmers revealed general dissatisfaction with the services provided by the KAC. Some of the most important perceived problems included:

- * Farmers did not approve of the fixed cropping programme and the planting of crops when farmers were not present;

* Services were perceived as not being of the required standard. For example, some complained that white and yellow maize seed was mixed, while others felt their were insufficient implements.

* It was stated lime had not been applied to maize lands in some areas where it was required.

6.3.9 * Delay in payments. Because cheques were made out to the KAC, individuals were suspicious of payments received from OTK. Others felt they were being charged more for labour than was actually incurred.

* Cattle farmers claimed it was difficult to obtain loans to purchase cattle.

There was evidence that some farmers had high expectations from management, including provision of fencing and water supplies. The validity of the "teething problems" mentioned above were not investigated. However, such problems are bound to arise in the launching of large scale farming projects.

6.3.10 Management Committees

6.3.7 Farmer participation

Farmers were generally not consulted by the KAC on policy and farming systems. While a small proportion of farmers do their own ploughing (circa 25%), planting, fertilizing, spraying and harvesting are generally carried out for farmers by the KAC. A number of farmers do harvest by themselves while others pick up after the harvesters have been through the lands.



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In general, farmers said they preferred to carry out all cropping operations themselves, provided they had the necessary implements.

With regard to cattle, the DA and EA carries out routine inoculations for farmers, while farmers do their own dipping.

Decision making on cropping programmes and inputs is solely undertaken by the KAC. Farmers were unaware of any cropping plans for their farms, and had no knowledge of farm development plans. On the livestock side, farmers were free to decide on inputs and the sale of cattle, except in cases where they had loans owing to the KAC.

Farmers said they preferred to make all farming decisions themselves provided they could obtain the necessary guidance and advice from extension workers.

6.3.8 Economic perceptions

None of the farmers interviewed were satisfied with their farming income. Discussions with farmers revealed that they had little idea of production costs, potential income and production levels from crops. They had a fairly good idea of

the value of cattle. Most farmers were aware of interest rates charged on loans. None of the farmers kept their own financial records. A proportion of farmers claimed that they did not understand the financial statements from the KAC.

Most farmers felt they could make a living out of farming and perceived that a profit of R20 000 to R25 000 was possible under good management.

6.3.9 Marketing

Not all farmers were aware of the price received for maize from the Oos Transvaalse Kooperasie (OTK). Some farmers preferred to be paid directly by the co-operative rather than through the KAC. There were some farmers who felt they could obtain better prices from the NTK.

Most cattle were sold through stock sale pens and farmers appeared to be satisfied with prices paid.

6.3.10 Management Committees

The function of Energy Center Management Committees was reported to be variable, with some functioning fairly well.

6.3.11 Perceptions of training

Less than half (48%) of farmers were satisfied with the training provided by Funda Mlimi, project management and extension workers. Farmers were unanimous in expressing the need for training in record keeping.



6.3.12 Perceived farming needs

Most farmers felt that the KAC should either sell implements or provide financial assistance for them to buy implements to enable them to undertake their own farming operations.

Some farmers felt they should be free to go outside and negotiate with other farmers for mechanisation and other services.

Cattle farmers expressed the need for loans to purchase cattle.

6.3.13 Discussion

A general conclusion on available evidence and observations was, that at present, not more than one in five farmers have the necessary knowledge, skills and managerial ability to stand on their own as independent commercial farmers, despite their almost unanimous desire to manage and run their own farms.

The commercial farming project has had the spin-off of providing employment for

SC staff, including some 200 tractor drivers, labourers and fencing contractors. At this stage it does not appear to have had the planned impact in terms of disposable farming income accruing to farmer participants.

CONCLUSIONS AND RECOMMENDATIONS

7.1

The general lack of farmer participation exacerbates the impact of extension and training. While improved extension and training could have some impact in increasing the number of independent commercial farmers, poor farmer selection and lack of inherent managerial ability is likely to preclude many from obtaining status as independent commercial farmers.

are given in the Executive Summary. Recommendations are made in accordance with the terms of reference (p 1) and the study objectives (p 13).

The object of this final chapter is to indicate certain practical recommendations arising from the conclusions drawn, as a basis for short-term and long-term strategies for improving the effectiveness and efficiency of the technology transfer system in KwaNdebele. Research and extension are part of one system. One cannot be effective without the other.

In putting forward these recommendations the writers are conscious of pending institutional and political reforms in South Africa, which in all likelihood will result in a unified Department of Agriculture serving all sectors of agriculture. Such reforms will have the advantage in making research and specialist services more readily available to KwaNdebele extension staff and farmers. It is also recognised that certain recommendations may have been partially implemented.



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7.2

REQUIREMENTS FOR SUCCESSFUL EXTENSION

The concept of extension, the role of extension and the role of extension, as well as guiding values of extension were outlined in Chapter 2. The successful implementation of any extension system requires that a number of fundamentals be in place. The DA and EA should clearly identify its objectives, assess farmers' needs, train extension workers according to the managerial needs of fulfilling Departmental objectives, devise extension programmes and provide for monitoring and evaluation. Requirements for extension staff include viable work incentives, timely financing, provision of support and facilities, adequate and appropriate training, effective transport, and continued supervision.

It is essential for an extension and research system to have competent village level extension workers who will visit farmers frequently and regularly with relevant technical information and skills and bring farmers' problems to research. It is also essential to have continuous and regular training, fixed visits by staff solely occupied with extension work, built-in regular supervision and guidance, continuous upgrading of staff, close co-ordination with input agencies, minimal office and paper work and monitoring and evaluation of extension activities. If these functions are not performed the potential effectiveness of the system is drastically curtailed.

The introduction of a functional professional extension service requires sustained Government support and commitment. Leadership of the extension service must be

CONCLUSIONS AND RECOMMENDATIONS7.1 INTRODUCTION

A discussion of important conclusions and findings was given at the end of various sections and chapters. These will therefore not be repeated here. Important findings are given in the Executive Summary. Recommendations are made in accordance with the terms of reference (p 1) and the study objectives (p 13).

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The introduction of a functional professional extension service requires sustained Government support and commitment. Leadership of the extension service must be

strong, active, innovative and field orientated. Extension cannot be effectively implemented in a half-hearted manner. Work of the extension service must predominantly take place with farmers in their fields and with their livestock, and be manageable by the staff concerned. All staff must receive training that is frequent, regular and relevant to their needs. Links with research must be strong and research must be oriented to the priorities of farmers. Each area extension officer (AO) must have a clearly delineated work area, fixed work schedules, and regular contact with subject-matter specialists.

There is no doubt that at least moderate increases in livestock production, as well as yields of grains, legumes, fruit, and particularly vegetables, are feasible. The potential for increased production in the commercial farming areas is much greater. However, to realise this and to translate generalized technology into location-specific recommendations a continued effort in adaptive research and researcher/extension/farmer interaction is called for. **It will also be necessary to pay much greater attention to the quality of planning and to co-ordinate implementation of development activities.**

The development of an effective extension organisation is a slowly evolving process rather than a universal and rigid structure. **It is not necessary to wait for all supposed prerequisites for extension to be fulfilled before re-organising and restructuring extension.**

The challenge of extension is (1) to **identify** technology which is most appropriate to a given situation; (2) to work out ways of **effectively communicating** to farm families the knowledge and skills necessary to use that technology, and (3) to organise, in co-operation with various agencies, the necessary local leadership, inputs, resources, and support required for farmers to use that technology.



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Recommendations are made which are within the potential capacity of present and future staff to undertake the extension function. **It should be remembered that extension is one component of an integrated institutional support system.**

7.3 AGRICULTURAL POLICY

An extension service can only function with a consistent policy and clear objectives, as well as leadership and support from Head Office senior staff. Extension workers need clear guidelines as to what is expected from them. Qualified professional senior staff need to be given specific responsibilities for training, management and development of extension staff and be prepared to devote at least 40 percent of their time in the field assisting and guiding staff.

KwaNdebele has still to draw up an operational policy for agricultural and rural development with clear objectives and priorities.

It is recommended that an operational agricultural and rural development policy be drawn up by a team of experts from the DA and EA, KAC and any outside experts

deemed necessary. Policy formulation will require considerable research and data gathering. Policy considerations should include the prime movers of agricultural development:

1. **Favourable economic incentives** which protect the economic interests of farmers and rural people. These economic interests include agricultural prices, access to markets, efficient farm input delivery systems, rural energy and industrial policies that support agriculture.
2. **Development of human capability and managerial skills** created through formal education, extension, training and job experience, especially trained researchers and extension workers.
3. **New technology** that is generated by research and tested by extension workers and diffused to farmers, with the emphasis on farming systems.
4. **Investment in physical capital** such as roads, domestic water supplies, irrigation schemes and **biological capital**, including crop and livestock improvement.
5. **Security of tenure** plays a strategic role in converting family labour into capital formation because, with security, farmers can be assured that farm improvements can be passed on to the next generation.
6. **Improvement in the performance of rural institutions** such as marketing, credit, research and extension.



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Agriculture is the prime economic resource of KwaNdebele. It is clear that the KwaNdebele government is allocating insufficient expenditure to agricultural and rural development.

It is recommended that expenditure on agriculture and rural development be progressively increased within the ability of manpower resources to implement agricultural and rural development programmes.

Agricultural extension is a dynamic process. Strategies for successful agricultural development should focus on rural communities, local level institutions and technology. The strategy must be flexible, varying with circumstances and level of development. It must integrate decentralised development through actual local level participation.

Recommended that as an interim strategy KwaNdebele's agricultural development in the old areas should continue to be aimed at farmer support for subsistence and commercial farmers over a broad base, as well as community development support for non landholders. The aim should be to sustain rather than commercialize subsistence farming.

In view of the finding that a large number of commercial farmers do not have the necessary managerial ability and motivation to become fully fledged independent commercial farmers it is recommended that:

- (a) a structured extension and training programme be drawn up, and farmers warned that those who fail to participate and demonstrate that they or their managers have the necessary farming skills, will be given alternative options;
- (b) that farmers who fulfil certain laid down performance criteria be given definite contractual tenure, involving a probationary period;
- (c) those who fail the performance selection criteria be offered subsistence units which they are able to manage, and
- (d) that the new strategy be clearly explained to farmers.

There should be a reassessment of the potential of commercial farmers, according to experience, knowledge and trainability as a basis for planning a training and extension strategy and institutional support for this sector.

7.4 REORGANISATION OF EXTENSION SERVICES

It is clear that the present structure and organisation of extension services, especially in the communal farming areas, is not functioning effectively. Posting of DA and EA staff at Government Service Centres is not functioning effectively for reasons already given in this report.



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7.4.1 **Organisational structure**

Ideally, there should be a unified extension service with a single line of command and the necessary subject-matter specialist back-up, falling either under the DA and EA or the KAC (see Annexure A).

If the above recommendation is not acceptable, then there is a need for a joint strategy between the KAC and the DA and EA with a clear cut definition of roles.

In either structure there is a need to separate field extension services for commercial and communal land farmers.

In the event of the second option being accepted, it is recommended that KAC assume full responsibility for extension services in the commercial farming areas, as well as for agricultural projects under their control. The DA and EA to retain responsibility for extension services in the communal land areas.

Because of scarce manpower resources it is not feasible in terms of the second alternative above, for each service to have its own corps of subject-matter specialists. A weakness in the present extension system is a lack of subject-matter specialists to

fulfil the role of training staff, carrying out adaptive research and providing specialist back-up advice to extension workers and farmers.

A recommended structure and organisation can only be drawn up once a decision is made by the KwaNdebele government as to which of the above alternatives will be implemented. A suggested structure for a unified extension service is given in Annexure A. There need to be clearly defined responsibilities and job descriptions at each level of line management, as well as co-ordination and control procedures. It is important not to lose sight of the overall purpose of the organisation, which is to beneficially influence farming and household practices, productivity and profitability.

7.4.2 Directorate

The key to success of an extension service is strong dynamic leadership. It is recommended that the extension division be headed by a professionally trained person with at least an Honours degree in agricultural extension, who would be responsible for overall leadership in implementing government policy, co-ordinating work planning, evaluation procedures and staff training. If necessary, a suitable person should be recruited from outside South Africa.

7.4.3 Specialist Division

The Funda Mlimi training centre has good training facilities and would seem to be the logical centre to base a team of subject-matter specialists.



Recommended that a Chief Training Officer (CTO) directly responsible to the Director of Extension, be appointed to co-ordinate all training and assume responsibility for functional linkages with research, subject-matter specialists, extension and farmers. It is accepted that initially it may be necessary to second staff to certain senior specialist posts.

The most economical way of upgrading extension services is to appoint a team of subject-matter specialists. It should be recognised that in due course this function may be provided by the central RSA government within the region.

Recommended that a team of professional subject-matter specialists be appointed under the Chief Training Officer and based at Funda Mlimi Training Centre. Specialist areas required are: agronomy, veterinary, animal and pasture, horticulture, agricultural engineering (soil conservation), land-use planning, home economics, extension methodology and agricultural economics. If access to a soils specialist is not available, it may be necessary to appoint a soil scientist.

7.4.4 The role of subject-matter specialists

Subject-matter specialist (SMS's) should work with appropriate researchers, and research stations in the RSA and undertake regular study to become competent in

7.4.7 their field of specialisation; they should organise and implement adaptive research and training programmes in co-operation with senior field staff. They should undertake field visits to lay-out and monitor on-farm trials, assist in solving problems and become involved in production policy issues and adaptive research design issues related to their field of specialisation. It is their task to convey suitable innovations to district and area extension staff who in turn will pass on information to small-scale landholders and commercial farmers.

7.4.8 SMS's should be responsible for a detailed analysis of the production potential of their own specialisation, carry out statistical surveys and market analysis, as well as document specialist and research activities at all levels. They should participate in training programmes and maintain regular contact with field staff.

7.4.5 Agricultural information

An effective extension organisation requires adequate media back-up. This was found to be generally lacking in KwaNdebele.

7.4.9 It is recommended, that an Agricultural Information section falling under the Chief Training Officer be created and charged with the responsibility of co-ordinating radio programmes, developing back-up written information and audio-visual material for field extension staff.

7.4.6 Extension areas



It is essential that all field staff have clearly defined work areas.

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7.4.10 It is recommended that working areas in the communal lands be organised according to Chiefs and Headmen's areas, with each area under the control of a District Agricultural Officer (DAO). The DAO should be responsible for planning, control, supervision and guidance of all field staff under his control, as well as for co-ordinating and implementing training and extension programmes with local level tribal authority organisations and field staff. These posts should be filled with officers having a good technical knowledge, as well as leadership and managerial ability. A ratio of one DAO to 6 AOs and Rural Development Officers (RDO's) is recommended.

Because of the importance of farming systems, it is recommended that work areas in the commercial farming areas be delineated according to agro-ecological areas, and where possible, based at the Service Centres. A ratio of one extension worker to 50 farmers is recommended for these areas. One DAO should be responsible for 3 to 4 area officers.

Recommended that all area extension programmes be based on farmer and householder needs.

7.4.7 Area officers

Linkages between Head office and field staff have not functioned effectively. The Area Extension Officers (AEOs) should where possible, live in their work areas and identify with local communities. The task of the AO or RDO is to assist groups of families or households in decision making through regular planned visits. These visits should provide them with the necessary knowledge and teach them the skills to apply recommended crop, horticulture, livestock and household practices. The AO/RDO should also provide feedback to DAOs and subject-matter specialists on progress, problems and constraints.

7.4.8 Planning division

The present planning division falling under the CTO should be enlarged to provide specialist planning advice at individual farmer and Ward (village) level, including land-use plans and irrigation and soil conservation layouts and plans. Each AO/RDO should be provided with maps showing the physical potential, infrastructural development and present land-use of his/her work area.

7.4.9 Rural Development Staff

It was not within the terms of reference of this study to investigate rural development in KwaNdebele. Because of the complexity and differences in needs of rural communities, it is recommended that a separate cadre of staff, particularly females, be recruited to serve as Rural Development Officers (RDOs) at village level. Such staff would fall under the jurisdiction of DAOs and work in close co-operation with agricultural extension staff in drawing up area development and extension programmes with village tribal authority level committees and organisations. The present female agricultural officers and women assistants should be placed in this area of responsibility.

7.4.10 Adaptive Research Committee

It is recommended that an adaptive research committee (ARC) be established in KwaNdebele composed of designated DA and EA senior staff, subject-matter specialists, KAC staff and co-opted specialists, as well as local farmer representatives, with the objective of formulating on-farm research priorities and designing extension programmes in each district. The ARC will, in time, become the forum for research-extension interaction where local priorities are decided and programmes formulated.

It is recommended that the ARC compile an area 'Status Report' for both the communal and commercial farming areas, providing detailed knowledge of current farming situations and farmer's priorities and constraints to production, in order to determine adaptive research priorities. The 'Status Report' should be prepared by a multidisciplinary professional group in consultation with extension workers and farmers and include identification of farming systems, a review of cropping and

livestock systems, yields and productivity gaps, and identification of priority constraints at farmer level. It is recommended that the ARC organise workshops in each sector to review research and decide on seasonal recommendations.

7.4.11 Research

KwaNdebele cannot afford a research organisation of its own. It is through closer research/specialist/extension/farmer interaction that researchers in the RSA can, by means of feedback from farmer reactions on the relevance and impact of recommendations, and through their own diagnosis of existing production constraints, begin to focus their basic and adaptive research on the specific requirements of given agro-ecological areas and of farmers in different socio-economic conditions. Research should focus on cropping and livestock farming systems rather than on single crops. Basic research, required for KwaNdebele should be carried out by the Agricultural Research Council (ARC) on a contract basis.

Research problems should be identified through feedback from DAOs, AOs and RDO's, particularly during training sessions. Research officers of the ARC should be contacted by subject-matter specialists to provide technical expertise and design on-farm trials, which are implemented by the DAOs in co-operation with the SMSs. These trials are aimed at verifying proposed improved practices.

Research recommendations need to be tailored for different target groups. Recommendations for practices that improve returns on labour should be stressed. Available information suggests that information should be given to technology relating to weed control, fertilizer rate, timing of operations, storage, vegetable and fruit production. Consideration for the improvement of livestock should take both individual and community issues into account.

It is recommended that there should be joint visits to farmers' fields and livestock holdings by researchers, SMSs and extension staff in 'diagnostic teams', visiting on-farm trials to observe the performance of recommended technology and investigate constraints.

The extension methodology specialist should focus activities on expanding formal extension training, teaching improved training methods to supervisory staff and the development of more effective extension and communication approaches. Initially it may be necessary to obtain outside assistance for this function.

7.5 INSTITUTIONAL SUPPORT FOR EXTENSION

The role of the DA and EA is firstly to enhance farmers' ability to take timely decisions through sound extension advice, and secondly to provide separate means of input support. This can be done by strengthening linkages between extension, co-operatives and private sector supply organisations. Once extension becomes well established and functional it can and should provide a pivoted information link between farmers and other services such as inputs, credit and marketing. Good

extension results in increased demands for inputs and this in turn puts pressure on input agencies.

DAOs and AOs cannot be effective extension workers if they are directly involved in the provision of farmers' inputs, credit and marketing.

It is recommended that officers involvement in inputs supply, credit and marketing should be restricted to:-

Inputs. In general DAOs and AOs should only be required to inform farmers of input availability and delivery and not to become involved in deliveries. Service centres, co-operatives and the private sector should be responsible for supply of farming inputs.

Credit. Extension workers should assist with farmer identification and provide farmers with information about loan procedures. KAC staff should carry out the remaining loan procedures.

Marketing. The extension officer should advise farmers on alternative marketing outlets and prices and not be involved in organising marketing. KAC and the KwaNdebele Agricultural Marketing Board and co-operatives should retain responsibility for all agricultural marketing functions. Extension field staff should pay special attention to providing sound advice.

It was found that some commercial farmers were dissatisfied with mechanisation services, particularly the high costs thereof.

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(1) Recommended that farmers be given loans on a selective basis for the purchase of their own implements.

(2) Recommended that further opportunities be given to developing farmer contractors.

(3) Service centres should cater for inputs and marketing with limited ploughing services, preferably through contractors.

(4) Commercial farmers expressed dissatisfaction that mechanisation services were carried out without them being present.

Recommended that Service centres should not undertake any farming operations without the verbal and written consent of farmers.

(5) Recommended that management training programmes be aimed at farmers themselves eventually taking over the running of Service centres.

In the communal land areas where no contractors are available, ploughing services should be provided on pre-determined demand at commercial rates

(6) Farmers expressed dissatisfaction with the lack of security of tenure.

Recommended that future land tenure terms in the commercial farming areas (Refer 7.3) and on agricultural projects be clearly defined and communicated to farmers.

7.6 FARMERS' ORGANISATIONS

Strong local level organisations are essential to the agricultural development process. Such organisations need to be mobilised and trained to play an increasing role in local agricultural development. Local organisations should be responsible for determining community or group interests and should assist in data collection for planning purposes.

It is recommended that product-oriented Farmers Associations and Women's groups continue to be encouraged within the present local tribal authority organisation structures (communal areas) and Service Centre committees (commercial area), to improve vertical communication at district and national level. The role of Farmers Associations and other groups would include planning extension programmes with local extension staff, and determining input needs and resource requirements.

7.7 STAFF MOTIVATION



An effective extension service requires incentives for all staff, including employment conditions, equitable salaries, positive guidance, training and opportunities for advancement. Deficiencies were found in the provision of various motivational needs and incentives (Refer Chapter 5).

It is recommended that AOs and RDO's be stationed for at least 5 years in their work areas. If necessary, steps should be taken to ensure that staff at district and area level are not financially disadvantaged by remaining for longer periods in work areas.

It is recommended that the DA and EA together with the Public Service Commission investigate salaries of technical and professional staff in the Department, to ensure that they are at least equitable with Departments employing staff with similar qualifications.

It is recommended that all field staff be provided with adequate housing, office accommodation, visual aids and printed material, furniture and record systems.

In the writer's opinion, results, recognition and responsibility will lead to motivation. Extension workers will become more motivated when they are able to assist farm families to increase their production, to improve their income, and to improve their family life.

7.8 MANAGEMENT AND SUPERVISION

Management of an extension service is concerned with the effective organisation and co-ordination of staff and resources required to implement extension programmes to meet certain objectives, usually involving an increased flow of relevant knowledge and skills aimed at changes in behaviour of individuals and groups of farmers and households. Management was found to be less than effective at all levels, emphasising the need for greater sophistication of management practices.

There should be a single line of command. Supervisory staff need to be knowledgeable and sensitive to the problems confronting area extension officers on a daily basis. They must identify employee motivation and the professional growth and training needs of staff, guide them in implementing extension programmes, constantly evaluate and analyse area extension programmes, and be committed to co-ordinating and co-operating with subject-matter specialists and servicing agencies involved directly or indirectly in programmes.

Because present staff are not well trained and supervised there is initially a need for control over field level staff, until such time as they reach levels of proficiency and effectiveness so that they are able to plan their work without supervision. At the same time there is a need for a more co-operative, considerate and positive attitude towards junior staff. Supervisory staff, including Head Office Staff, should make regular field visits to guide and train, as well as evaluate staff performance.

They should monitor the frequency of visits and message delivery, through periodic random visits to target groups of farmers.



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7.9 OPERATIONAL PROCEDURES

The extension task of disseminating information and the practical application of such knowledge has not been highly effective for reasons given in previous chapters.

This study has shown that visits to farmers are irregular and *ad hoc*; extension messages are sometimes not timely or appropriate; area extension workers are not adequately supervised or guided and do not receive regularly updated recommendations. Extension programmes are generally not based on constraints and problems.

The 'Target Area' approach which involves concentrating services and other resources in a particular area, involving the co-ordination of other sectors such as input suppliers, specialists and marketing agents, is basically sound.

The conventional technical change approach where innovations are introduced to a small number of 'progressive farmers', demonstration 'farmers' and 'opinion leaders' in the hope that information will diffuse to other less progressive farmers has, for various reasons not proved successful in developing areas in Southern Africa. There is clearly a need to find alternatives to the approach of concentrating on progressive

farmers and housewives.

7.9.1 Extension strategy

It was found that with the exception of women's groups no target groups had been clearly defined and no programmes evaluated.

Whatever extension system is adopted in KwaNdebele it is important that the management system be based on a systematic programme of visits to groups of target farmers or interest groups led by tribal authorities, local leaders, co-operator farmers and housewives. Regular training of staff for the specific extension programme, as well as ensuring linkages from researchers and subject-matter specialists to extension workers and eventually to farmers is also an important facet of the strategy. In order to bring about control and accountability there is a need for all field extension staff to have written extension programmes.

A strategy more in keeping with local needs is to focus on functional groups who are interested individually or collectively in improving one or more aspects of their farming or livelihood, preferably the whole farming system, or household economy. For such a system to be successful, group participants firstly need to understand their own farming or household situation and the potential for change. Such groups need to be organised in co-operation with tribal authorities and farmer organisations and require a leader, contact or co-operator farmer or housewife to liaise with the local extension or rural development office and assume responsibility for collective decision-making, and the sharing of facilities, and, in some cases, resources. This requires training of leaders and co-operators, as well as local committees and groups.

For such groups to be successful, they must see the possibilities of tangible short-term benefits from participation, even in the first season, which means there needs to be adequate resource support from the start of the programme.

Objectives should include area target yields and production levels, operational tasks, the time factor, as well as measurable behavioural changes such as adoption of practices by co-operator and follower farmers and housewives, as well as development of local organisations. An example of factors in planning and implementing a Ward (village) extension programme is shown in Annexure B.

7.9.2 Farmer categories

A target category differs from a target group in that members of the latter are conscious of belonging to a specific group, while the former share certain characteristics as defined by the observer.

Because of scarce resources, extension must limit itself to one or more categories or groups of which the member individuals or households share common interests and are keen to improve their farming and household methods and production.

Introduction of technology to a target group requires information about the conditions and needs of intended utilisers as well as their participation in designing, pre-testing, suggesting improvements, and providing local knowledge.

It is recommended that area physical maps be prepared of the agricultural potential, physical infrastructure and human dimensions of villages and farms to be covered by individual AO's, RDO's and supervisory staff(See 7.4.8)

It is recommended that extension workers and RDO's obtain adequate appropriate information on farming and other families in their areas, design programmes with local tribal authority leaders and organisations, ensuring that socio-cultural and economic aspects, as well as inter-dependence of crops and livestock are taken into consideration.

It is recommended that the planning division draw up land-use plans for each commercial farm and devise farming systems in accordance with the needs and inclination of each farmer.

7.9.3 Classification of farmers

In order to identify target groups an analysis of the farming systems and production technologies is necessary. Firstly, it is necessary to differentiate between landholders, stockowners and non landholders. Rural communities in the communal areas can be divided into land-right holders with larger or smaller farms, share croppers, women farmers, livestock owners according to type and number of animals, and non-landholders. Some of these groups may overlap. Target farmer groups can be identified by calculating rough gross farm incomes from main crops and animal production.



In the commercial farming areas target groups can be identified according to managerial skills, interest, enthusiasm and farming systems. Clearly progressive fulltime farmers require different training and advice from those who are less knowledgeable and have limited knowledge and skills (Refer 7.3).

Family income from farming can be estimated on the basis of classification of the main crops, livestock numbers and composition, production area and the corresponding technology used.

Production methods tend to change with size of enterprise. To differentiate technology, consideration needs to be given to adoption of new technology, degree of mechanisation, labour input, cultivated areas, production resources and social costs.

In formulating extension programmes for different categories in the communal areas, it would be an advantage to differentiate between crop production, livestock production, vegetable growing and mixed farms in each work area.

It is recommended that details of each farming household and target non-farm household should be documented on a card index system for easy reference and classification. Senior staff and SMSs can assist with data analysis.

Not all agricultural and rural development objectives have the same value for each member of a rural community. To fit agricultural and rural development objectives to the needs of individual households it is recommended that in consultation with local tribal authorities and farmer organisations, rural communities and farmer groups be categorised according to farmers with the potential to produce a cash income from crops, and for livestock food crop-orientated farmers, and low resource farmers of marginal or below subsistence levels. A similar categorisation according to sphere of interest can be undertaken for non-landholders and womens' groups.

The next logical step, again in consultation with tribal authorities and local organisations, is to organise farmer and household categories into fairly homogenous groups according to farming and other interests, so that they can voice their needs and participate in the planning of development programmes, delivery of inputs, and the organising and evaluating of extension programmes. With the help of local tribal authorities and committees, AOs and RDOs and senior staff should organise production and interest groups according to major production and other human development interest.

7.9.4 Planning of visits

Extension officers should plan their programmes and visting schedules in consultation with appropriate local tribal authorities, farmer committees, women's groups and supervisory staff, to ensure that visits are on a regular basis, with the aim of guiding groups of farmers or housewives through the entire season with a specific crop, livestock or rural enterprise.

Co-operator farmers, householders and interest groups should be located throughout the work area and depending on the type of farming, visited weekly, fortnightly, or monthly on fixed days following a set route(Refer Annexure C for example). It follows that DAO's and AO's require intensive training in group dynamics.

AO's should endeavour to visit approximately 6 interest groups per day. Each co-operator farmer or group leader would arrange for up to 10 interested fellow farmers or housewives to be present at each visit. Group leaders or co-operators should be carefully selected by the local tribal authority or farmers' committee according to type of enterprise, size of holding and acceptability. They should be average for the group, have sufficient income, be willing to co-operate with extension officers and RDO's. He/she should ideally be a full-time farmer or housewife willing to accept visitors. The group leader should arrange a venue for meetings and/or demonstrations.

An important question is how long a farmer or housewife will remain a co-operator farmer or in an extension group. The criteria should be that once a farmer or

housewife has learnt sufficient skills and knowledge to manage his farming system or household competently without guidance, he/she should be encouraged to continue on his/her own on the understanding that he or she is always free to seek advice during the regular visits of the AO or RDO.

The emphasis on field visits must be on teaching simple basic concepts, principles and skills needed in making decisions and managing the farm or household enterprise. Training should be step by step, taking groups of farmers and housewives through the entire farming cycle or household improvement practices.

7.9.5 Extension messages (technology)

The study has shown that land, labour, capital and management is not being used as effectively as it might be.

Extension messages should be devised as appropriate to agro-ecological, district and ward (village) level and based on local needs. General policy guidance should be given by Head Office and DAO's should only recommend technology approved by the ARC which is relevant and accessible to various groups of farmers(Refer 7.4.10).

Extension programmes should be aimed at overcoming important constraints first. For example, in field crops, such as maize, a programme may initially focus on inexpensive innovations which show good short-term results, such as land preparation, plant population, intercropping and weed control. Over time it will be extended to more advanced technology such as improved seed, and eventually to other crops and various types of livestock production. In other words, **technology needs to be phased in in accordance with the farmers(groups) ability and resources.** The problem of multiple messages in different subject areas can be solved through developing seasonal modules and messages, e.g. maize in the early rainy season, followed by livestock, household economics, etc.

In the communal rural areas of KwaNdebele, women are generally producers of food crops. **It is recommended that particular attention be given to the development of extension messages for women farmers.**

7.9.6 Communication methods

The technology transfer model described in Chapter 2 has not functioned effectively in KwaNdebele. Although other communication media such as radio, written information, slides and film shows must be used to back up extension, under conditions in KwaNdebele the transfer of new technology is **most effectively done through personal visits of technically proficient extension workers to groups of farmers in their fields and with their livestock, or with groups of housewives in their home environment.**

Extension staff need to focus on the use of new and innovative methods of extension. Visual aids, method and result demonstrations, models, role play, drama, slides, films, tapes, videos, bulletins and leaflets all have potential under certain circumstances for effective and efficient communication. All communication media should be used to back up and reinforce a specific field agricultural extension programme, but nothing can replace the programme itself.

It is recommended that the media section and the extension methods specialist devise and advise DAO's and AO's on suitable communication strategies for their work areas.

7.9.7 Monitoring and evaluation

Monitoring should not be seen as a 'fault finding' mechanism, but rather as a positive means to suggest areas which require improvement and attention. It must create an atmosphere of trust, honesty and ability for self-criticism; this takes time.

Immediate results can come from close monitoring of field extension activities. Agriculture remains a complex activity with many interacting factors, making it virtually impossible to determine with precision what part of an observed increase in production is due to which variable.

Supervisory staff should be responsible for supervising, guiding and monitoring field extension staff on a regular basis. They should ensure that programmes are being implemented to the satisfaction of local farmer committees, and that staff have the necessary technical competence and are able to communicate effectively with target farmer and women's groups.

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It is recommended that DAO's and AO's continue to prepare fortnightly or monthly activity plans and that they be monitored and supervised according to these plans. Special attention should be paid to monitoring the performance of field level workers, with emphasis on operational tasks and the achievement of extension objectives.

While it is difficult to evaluate the impact of extension services in terms of financial returns to the potential adopter, it is possible to measure partial indicators such as the adoption of farming and household practices, yield increases, and production levels, at least with target groups and followers.

It is recommended that the Chief Training Officer, the SMS's and the extension methods specialist draw up simple annual evaluation criteria for extension programmes in each district or working area.

It is recommended that every three to five years either internal evaluation by professionally trained officers, or independent evaluations of extension impact and effectiveness be carried out according to a pre-determined set of measurable indicators such as farming practices, yields, farm productivity, participation and

functioning of local level organisations.

7.9.8 Reporting systems

It is recommended that reporting procedures be relatively simple and designed to measure activities as well as extension impact. Reports may include all or some of the following work aspects:

- interest groups, number and composition
- participation in groups, leadership development
- activities of groups
- use of inputs, adoption of practices, yields, production levels
- use of credit
- activities of extension workers
- advisory activities, demonstrations, visits to individuals and groups
- desired training
- special problems

7.10 TRAINING

7.10.1 Formal training

An extension service can only function with well trained staff. To be successful manpower development inevitably requires financial sponsorship.

Recommended that the DA and EA and the KAC in consultation with the Public Service Commission jointly draw up a manpower development programme for tertiary level education to fulfil the staff needs of both organisations.

It is recommended that selected graduates be given the opportunity to undertake post-graduate training in accordance with the research and specialist needs of the extension service.

Selected senior non-graduate staff should be sponsored to undergo higher diploma studies in agricultural extension and rural development.

7.10.2 In-service training

The training of extension workers and RDO's involves training in both agricultural technology and extension methods and techniques for effective communication, as well as training in personnel management, in accordance with the level of individual responsibility. It was found that some of the extension officers in the commercial sector tended to lack faith in the potential for agricultural improvement. Most of the training needs defined in Chapter 2 were unfulfilled.

District level supervisory staff together with SMS's should plan regular on-the-job training programmes for field staff in liaison with the Head Office extension

specialist. Training programmes should focus on extension messages and practical skills for the particular time in the farming system or household calendar.

There is little doubt that once all levels of staff are adequately trained they will become motivated, and gain in competence and self confidence with a high sense of responsibility.

Recommended that first priority be given to training senior supervisory staff to carry out regular on-the-job training for field staff. Where necessary they can be periodically reinforced by SMS's.

It is recommended that all senior head office and district staff be trained by skilled professionals in modern concepts of management adapted to local culture. It is recommended that KAC Service Centre Managers be given further training in human relation skills.

It is recommended that selected officers who have proved themselves be given the option of furthering their academic training without having to resign and forego benefits.

It is recommended that a KwaNdebele Extension Association be formed to foster professional interest in agricultural extension.

7.10.3 Training of local committees



It was found that farmers are not playing an active role in extension programmes. The importance of training local leaders can not be overstressed. **Leadership training at both extension worker and farmer level should be focussed on implementing specific area extension programmes.** In the training of local level tribal authority committees, special emphasis needs to be put on establishing decision-making procedures, reaching of decisions, delegation of responsibility, reporting requirements and keeping of financial records. Initially, it may be necessary to commission outside expertise to provide leadership training. Ultimately it should be the responsibility of District staff.

7.10.4 Farmer training

In the main farmer training should be part and parcel of extension programmes in both the communal and commercial sectors.

Farmers should be encouraged to define their own training needs. **Commercial farmer training should be directed at production and farm management.**

There is a need for commercial farmers and project participants to fully understand the financial statements provided by the KAC.

Recommended that farmers be trained in functional numeracy and simple

7.12 bookkeeping as part of farmer development programmes.

Recommended that leadership training be instituted for farmers' associations and women's groups where this is an expressed need of the groups concerned.

7.12.1 Such training should be part of an overall extension strategy directed at giving farmers and women's groups increased responsibility for planning, implementing and evaluating programmes in their own areas.

7.10.5 Rural youth

7.12.3 There is a need to instil a conservation consciousness among the people of KwaNdebele. The best way to achieve this is through the youth.

Recommended that the Chief Training Officer, extension specialist and information division develop simple teacher training modules and instructional materials on conservation and promote conservation training in schools.

7.11 PILOT EXTENSION PROJECTS

7.12.6 It is recommended that before launching national extension programmes, on the basis recommended, pilot extension projects be introduced into each sector with selected field staff under competent trained supervisory staff. Programmes should focus on regular scheduled visits to target groups of farmers as recommended under 7.8.1 to 7.8.4.

7.12.5 It is recommended that initially extension effort be concentrated on 'target areas' with a high probability of success, bearing in mind wider replications.

7.12.9 It is recommended that transport and budgetary requirements be prepared for each target area at district level and submitted to Head Office for consideration and approval. Budgets should include adequate transport, teaching aids, demonstration materials and record systems.

7.12.11 It is recommended that financial assistance be sought from the Development Bank of Southern Africa to implement pilot extension programmes.

7.12.12 Pilot extension projects can only succeed if there is strong political commitment, cooperative tribal authorities, sound planning, provision of institutional support and inputs, application of management principles, including adequate training, supervision and control of field staff.

It is recommended that once the pilot extension projects have been evaluated after a year or two, similar programmes be phased in over 2 to 5 years, in accordance with experience gained in pilot projects.

7.12 SUGGESTED PRIORITIES

The first priority is to make optimum use of existing manpower and financial resources. Secondly, to strengthen and reinforce extension services. To this end the following priorities are recommended:-

- 7.12.1 A decision needs to be taken on the future structure of extension services (Refer 7.4.1).
- 7.12.2 Appoint a competent person to lead the extension service, together with a Chief Training Officer (Refer 7.4.2 and 7.4.3).
- 7.12.3 Implement training of all senior staff in management procedures and techniques, as well as technology and extension techniques related to their work areas (Refer to 7.10.2). Initially it may be necessary to obtain outside assistance for such training.
- 7.12.4 Assess and implement staff motivational needs (Refer 7.7).
- 7.12.5 Reassess commercial farmers in terms of future potential (Refer 7.3).
- 7.12.6 Implement operational procedures in terms of 7.9.1 to 7.9.8 inclusive, in a number of pilot areas (Refer 7.11).
- 7.12.7 Organise regular on-the-job training of AO's and RDO's by senior staff and SMS's concurrently with 7.12.6 above.
- 7.12.8 Recruitment of a corps of subject-matter specialists (Refer 7.4.3).
- 7.12.9 Reinforce the planning and information divisions (Refer 7.4.5 and 7.4.8)
- 7.12.10 Formulate a policy and an operational strategy for extension (Refer 7.3)
- 7.12.11 Institute an Adaptive Research Committee (Refer 7.4.10).
- 7.12.12 Implement leadership training programmes for field staff and local organisations in conjunction with specified extension strategies and programmes in target areas (Refer 7.10.3).

Some of the steps may be implemented simultaneously. In the writers view all the above recommendations will apply, irrespective of any future structural or political changes.

7.13 BUDGETARY IMPLICATIONS

Because of the large number of vacant subject-matter specialist posts (Refer Table 5.1), no additional funds will be required for staff to fill recommended SMS posts as recommended (Refer 7.4.3).

The Department will however have to budget for materials and equipment to reinforce the proposed agricultural information and planning divisions (Refer 7.4.5 and 7.4.8).

7.14 CONCLUSION

The system recommended will not be spectacular at first, but over time it will result in greatly increased extension contacts and activities, improved information flows, improved management, and, most important, improved knowledge, skills and confidence of AO's and RDO's, all resulting in improved farming practices, higher levels of production and improved socio-economic conditions. An important consideration is to allow for modification over time to accommodate changing circumstances.


It should be emphasized that the future effectiveness and efficiency of extension services in KwaNdebele depend on strong political commitment in terms of policy, financial support and action programmes.



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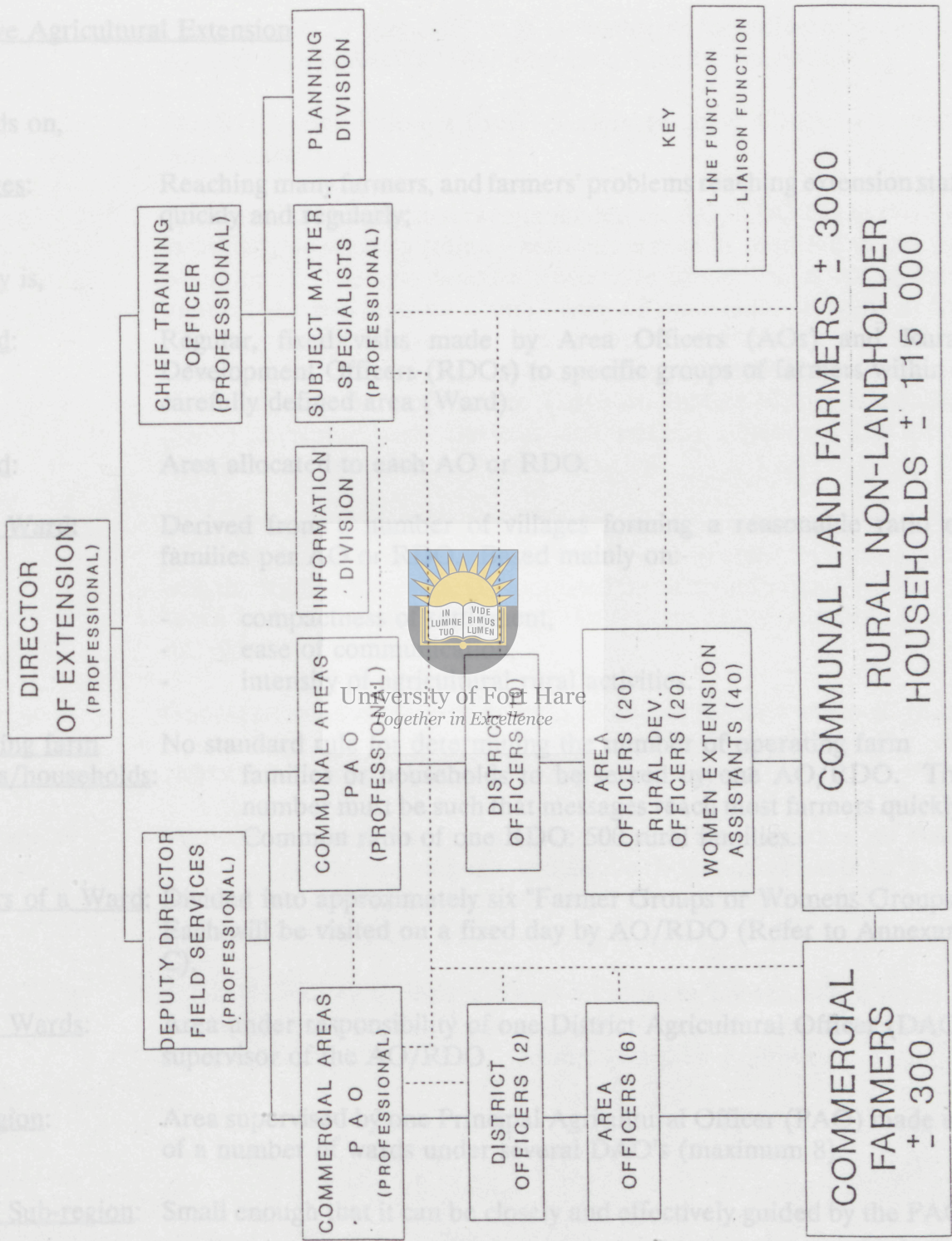
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ANNEXURE A PROPOSED STRUCTURE OF KWANDEBELE EXTENSION SERVICES



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PROPOSED STRUCTURE OF KWANDEBELE EXTENSION SERVICES



FIELD ORGANISATION FOR EFFECTIVE EXTENSION

Effective Agricultural Extension

Depends on,

Messages:

Reaching many farmers, and farmers' problems reaching extension staff quickly and regularly;

The key is,

Planned:

Regular, fixed visits made by Area Officers (AOs) and Rural Development Officers (RDOs) to specific groups of farmers within a carefully defined area (Ward).

A Ward:

Area allocated to each AO or RDO.

Size of Ward:

Derived from a number of villages forming a reasonable ratio of families per AO or RDO. Based mainly on:-

- compactness of settlement,
- ease of communication,
- intensity of agricultural rural activities.



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Operating farm

families/households:

No standard rule for determining the number of operating farm families or households to be served by one AO/RDO. The number must be such that messages reach most farmers quickly. Common ratio of one RDO: 500 rural families.

Farmers of a Ward:

Divided into approximately six "Farmer Groups or Womens Groups". Each will be visited on a fixed day by AO/RDO (Refer to Annexure C).

DAO's Wards:

Area under responsibility of one District Agricultural Officer (DAO) supervisor of the AO/RDO.

Sub-region:

Area supervised by one Principal Agricultural Officer (PAO) made up of a number of wards under several DAO's (maximum 8).

Size of Sub-region:

Small enough that it can be closely and effectively guided by the PAO.

Nature of Areas:

Wards, farmers' groups, womens' groups and districts must be compact and contiguous.

Basic Requirement,

Extension Messages: Reach many farmers, and farmers' problems reach extension staff, quickly and regularly.

Technology Packages: AO and RDO given different technologies for different groups of farmers' housewives by DAO and subject-matter specialists.

Programme: AO/RDO must follow a fixed schedule to achieve regular contact. (See Annexure C).

Messages: Teach farmers production recommendations AO/RDO has learned in fortnightly or monthly training sessions, and skills required to put the recommendations into practice. Motivate farmers to adopt at least some of the practices on a small area of their land. Review in the field adoption of previous recommendations and discuss field problems he notices or raised by farmers (note those he cannot solve should be discussed with the appropriate DAO or Subject-Matter Specialists (SMS) at report back meetings and training sessions. The same principles apply with rural housewives.

Effective Visits: Because of the importance of effective visits, it is essential to define precisely the area of jurisdiction "Ward", and to assist, in consultation with the tribal authorities, all interested farmers and women within the Ward to form interest groups that can systematically be served by the AO/RDO.

Extension: Good extension is not possible if a Ward, farmers' or womens' group is too large, or if, for some other reason, it is difficult for the AO/RDO to cover a Ward or group effectively.

Frequency of contact: Frequent contact between a AO/RDO and all farmers in his/her Ward is not possible, but contact should be frequent enough to teach farmers/householders step by step throughout the farming or household cycle.

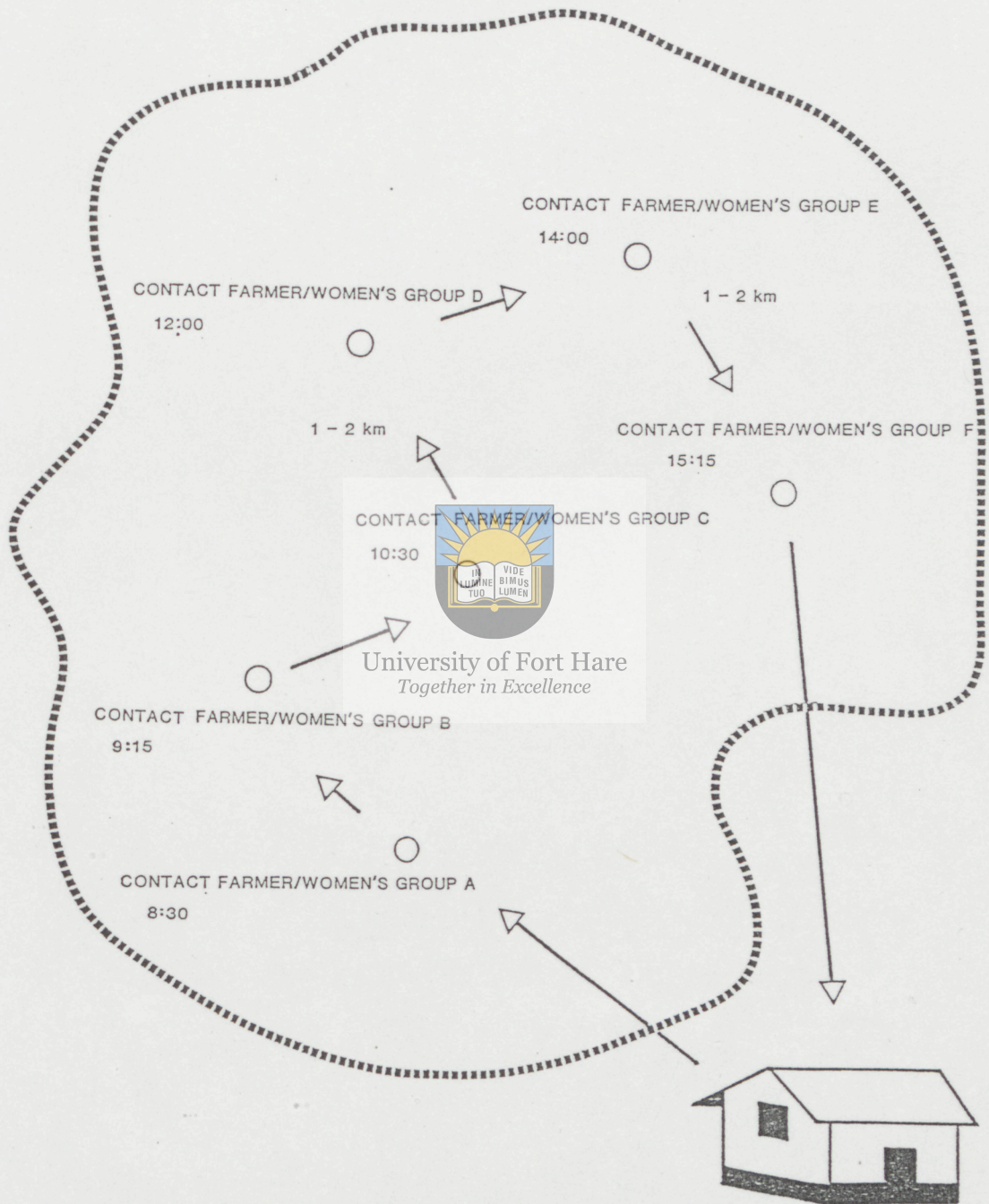
Responsibility: While AO/RDO is responsible to all farmers/householders, on each fortnightly visit he/she focuses on a selected number of farmer or householder groups and co-operators and their followers.

1 - 2 km average distance between farmer/women and farmer/womens' groups

10-15 km maximum distance between Extension workers house and sublocation

Sublocation 1 (1 of 6)

6 Contact farmers/women and farmer/womens' groups per sublocation



1 - 2 km average distance between contact farmers/women and farmer/womens' groups

10-15 km maximum distance between Extension workers house and sublocation