

EVALUATION OF THE FARMER SUPPORT  
PROGRAMME: SUB-ASSIGNMENT III  
(VENDA, LEBOWA AND KANGWANE)

FINAL REPORT ON THE AGRICULTURAL ECONOMIC ANALYSIS

by

J.F Kirsten, H.J. Sartorius von Bach and J. van Zyl

University of Pretoria

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## EXECUTIVE SUMMARY

### Introduction

The evaluation study consisted of the following activities: (i) Evaluation of the FSP elements implemented; (ii) Analysis of FSP impact; and (iii) Analysis of FSP policy framework. The evaluation exercise was done in three phases. The objective of the first phase was to give an overview of the position of the households and the agricultural scenario in the respective areas and to evaluate some of the FSP elements implemented. Sample surveys to obtain the information were conducted in the initial phase of the assignment. The second phase consisted of conducting interviews with implementing agents, input suppliers and contractors. The third phase involved a second round of household surveys to evaluate certain elements of the FSP. Due to the very dry conditions, a lack of farming activities in many of the survey areas was experienced, which made the evaluation exercise not possible. This resulted in a change in objective for the third phase to monitoring the performance of the FSP under drought conditions.

In order to determine the impact or effect of the FSP, the ideal would have been to compare the situation with the FSP with the conditions experienced before the implementation of the programme. Thus, to compare the present situation with a baseline scenario would give a clear indication of the impact of the FSP on aspects such as agricultural output, input usage, household income and food security. Such a baseline study was, however, never done in any of the areas.

### Findings

#### (i) VENDA

It can be concluded that the implementation of the FSP, and the various elements of the programme, to a large degree succeeded in alleviating the farming constraints experienced in Venda. Farmers who joined the FSP had improved access to inputs, extension advice was generally available to them and mechanisation services were more available and more reliable. The farmers' appreciation of and high regard for the mechanisation services provided by the FSP co-operatives could be related to the fact that untimely and low level of availability of mechanisation services were probably the biggest constraints for many of the Venda farmers. This was further emphasised by the important contribution of this element of the FSP to increased maize production.

The increased availability and/or improved access to an input package consisting of tillage services in combination with improved seeds and fertilisers are the elements of the Venda FSP that had the greatest impact on the agricultural situation and practice of the households. Additional analyses showed that the contribution of access to credit to improved agricultural situations was not visible. Although access to credit is to some extent linked to the input package described above, the analyses show that the impact of credit in Venda is not that great.

Although extension advice was provided to farmers in general, and also contributed to increased production, the farmers' dissatisfaction with the extension service was clearly

evident from the results of the household survey. This stems to a large extent from a lack of commitment by the extension officers of the Venda Department of Agriculture and also from a lack of coordination between the Venda Department of Agriculture and Agriven. The extension officers are not responsible to the FSP programme manager and they do not report to him at all. This creates all sorts of problems, mainly in terms of total lack of coordination and accountability.

Based on the survey data from the FSPs at Khakhu and Mashamba a number of discriminant analyses were done to determine what contribution the programme made to output and food security. It was found that the elements of the FSP, in particular mechanisation services and inputs, can confidently be associated with surplus producing households. It was also found that there are more surplus producing households amongst those having access to the FSP services. This also implies a greater level of food security amongst these households.

Although the analysis shows that the FSP made some contribution to increased maize output, it is not enough evidence to view the FSP at Khakhu as a success. Rather, the success of the FSP can be attributed to the efficient operation of the co-operative at Khakhu. The co-operative is run by members from the community and is supported and trusted by the community. The co-operative succeeds in providing support services in an efficient manner to the community. It seems, however, that the success of the FSP in the Khakhu ward is to a great extent based on the positive role and influence of the tribal chief. In Mashamba the situation is improving. Agriven is currently training a member of the co-operative to eventually run the co-operative. Previously, corruption and negative opinion of the FSP reduced its effectiveness. The fact that especially the participants and the co-operative in the Khakhu ward increasingly make their own decisions clearly indicates that the FSP can meet the objective of "learning-by-doing". It should, however, be emphasised that the effectiveness of implementation of the programme will increase if more attention is also given to the other elements of the FSP, i.e. extension and marketing.

The analysis and results above, farmers' relatively positive perceptions of the programme, and their high appreciation for timely mechanisation services, provide a relatively positive picture of the FSP in Venda. However, in evaluating and reviewing the project description, it is evident that an over-designed institutional structure for the implementation of the FSPs in Venda was intended. From the institutional analysis it is evident that the local institutional structure as a whole is still lacking coordination and efficiency. Some of the institutional structures established at implementation of the FSP, have disbanded or are in effect defunct. This aspect, being identified as the fourth constraint facing farmers, is clearly not resolved and it seems as if institutional inefficiencies, duplication and coordination are the major problem of the Venda FSP at present.

For a more efficient operation of the FSP in Venda, a review of the institutional framework within which the FSP operates is recommended.

(ii) *LEBOWA*

From the surveys and analyses it appears that the success of the FSP in Phokoane is based on access to one of the FSP elements, namely extension and training. All other elements are in one or another way attached to this service. At present, it seems as if the FSP (especially at

Phokoane) is successful, but it must be stressed that this is to a great extent based on the positive influence and commitment by the LAC officials involved in the FSP.

Besides extension and training, analyses have shown that the availability and access to credit, fertiliser and seeds were major contributors to the improvement of the agricultural situation of the households in especially the Phokoane region. It was also found that in all three survey areas, size of agricultural land had the largest impact on Phokoane households' agricultural situation.

In general, it can be concluded that the implementing agents in Lebowa are determined to contribute to the upliftment of the rural population. Institutional record keeping is improving and the impression is gained that the FSP in Lebowa is successful. However, there is a lack of own decision-making by the participants and co-operatives, which indicate that the FSP, to some extent does not meet the objective of "learning-by-doing".

The FSP in Lebowa has the support of the people since it helped them to overcome their major daily problem - hunger. The FSP alleviated hunger by improving the food security situation in these areas and contributing to a better livelihood for thousands of households in rural Lebowa.

The institutional structure of the FSP in Lebowa is much slimmer than in Venda and there seems to be no major coordination problems as the programme is the sole responsibility of LAC. A lack of training personnel appears to be a major inhibiting factor. The dedication and commitment of the LAC officials and the two extension officers from LDA seconded to LAC, are the major factor contributing to the successful implementation of the FSP in Lebowa. The officials from LAC succeeded in bridging the cultural and communication gap between the implementing agent and the people. Although the approach is somewhat patronizing, it is done in such a manner that nobody is offended.

The effect of the drought in Lebowa was particularly noticeable through the difference in maize yields between the two surveys, and also the lower number of respondents being able to sell any maize in the drought year. The yield reduction as a result of the drought also resulted in households needing to buy more maize than in the 1990/91 season. This was due to the fact that the majority of households were unable to produce enough maize for household needs. This is clearly manifested in higher household expenditure on maize meal.

The success of the programme in the Phokoane area is to a great extent due to the way in which the needs of the community were met, in terms of food production. The rapid expansion of the membership of the co-operative and the adoption of the new cultivation techniques by other farmers in the region not participating in the FSP (the so-called spin-off effects from the Phokoane extension programme) are further evidence of the success of the programme. Initially the farmer groups receiving extension comprised mainly of women in their 50s and 60s. Their success in farming and their success in producing enough staple food for the household led to more and more younger people taking up farming.

Further proof of the success lies in the community's positive perception of the programme and the fact that they attribute their improved food security situation and increased yields to the "school" which taught them the "maize language". The FSP restored hope and self-

confidence in the community and many farmers are proud to tell of their success in farming. The community's perception of the FSP shows that the majority of households attribute their improved living conditions and the production of sufficient food to the FSP. It is clear that the FSP has the support of the people since it helped them to overcome hunger which was their major daily problem.

The successful implementation of the FSP in Phokoane can be attributed to a number of factors: Firstly, the Phokoane area is situated on high potential soil which is characteristic of the Eastern Transvaal Highveld, an important and high potential maize growing area. Secondly, the officials from the implementing agent succeeded in bridging the cultural and communication gap between themselves and the people, and winning the farmers' confidence. Thirdly, and probably the major factor contributing to the successful implementation of the FSP, is the dedication and commitment of the officials and extension officers of the implementing agent. The implementing agent took sole responsibility for the extension programmes and did not rely on, or shared the responsibility with the extensionists from the Lebowa Department of Agriculture.

#### (Hi) KANGWANE

Evaluating the Farmer Support Programme in KaNgwane proved to be difficult since a number of problems were experienced. Firstly, the wide diversity of farming activities and the differences between and within regions made analysis and interpretation of the survey data somewhat difficult. Secondly, difficulties in identifying farmers and farmers' associations under the FSP complicated matters further. Thirdly, institutional cooperation in the evaluation process was sometimes lacking. Furthermore, general record keeping on the extent of the *FSP per se* was lacking, both with the farmers' associations as well as with the implementing agent. A paucity of useful data at the institutional level made it difficult to put the survey results in the correct perspective.

Using the classification of farmers in 4 different groups it was possible to select two of the groups, i.e. FSP farmers and non-FSP farmers to be used in further analysis. In analysing the differences between these two groups it was determined that the FSP farmers have access to some FSP elements (extension, credit, inputs and mechanization services), while these services were generally not available to the other farmers. The FSP farmers produce more maize, obtain higher maize yields per hectare, sell more maize, use more fertiliser and seed and cultivate a larger area of maize than the non-FSP farmers.

It is uncertain whether the FSP contributes to increased agricultural output and improved standard of living. The results from a discriminant analysis, which was based on a limited data base, indicate that access to credit and extension make only a relatively small contribution to increased maize output. It is mainly factors outside the FSP framework, for example owning cattle, which contribute to increased output. However, FSP participants achieved substantially higher maize yields per hectare than non-FSP farmers. However, in subsequent analysis based on data from the second survey, it was found that credit availability significantly contributed to the improvement of the agricultural situation of KaNgwane households.

Agriwane followed a strategy of group lending in the provision of credit for agricultural activities. Although the idea seems to be sound, the manner in which the strategy was

managed proved not to be. In interviews with farmers and farmer groups a lot of dissatisfaction was found amongst farmers around the provision of group loans. A number of groups defaulted on their loans and contributed to the dissatisfaction. The problems related to the group lending scheme could be attributed to groups being too large and too divergent. It is important that groups under such a dispensation should be small and have similar interests and operations. This is not the case in KaNgwane.

The drought impacted severely on the KaNgwane households' surplus maize production which are normally sold. In the 1991 survey, 80 per cent of the respondents were able to sell surplus maize while only 13 per cent of the 1992 respondents were able to sell surplus maize. Despite the drought, 75 per cent of households still managed to earn an income from crop production, mainly from selling vegetables produced under irrigation in community and homestead gardens. Income from livestock sales was higher in the 1992 survey, probably as a result of increased sales by the few large livestock owners in the region due to the dry conditions and deterioration of the condition of animals.

The confusing, and often contradicting, results obtained from the various analyses, make it important to consider the community's perception of the programme. The KaNgwane households generally do not view the FSP as contributing to sufficient food production and improved living conditions. This view could to a large extent be attributed to the fact that the FSP in KaNgwane was largely credit driven. Their perceptions are largely based on the working of the credit delivery system of Agriwane. The framework for the Agriwane support programme was based on the assumption of a spirit of co-operation and collectiveness within each of the farmers' associations in KaNgwane. The lack of unity and co-operation within the farmers' associations was ever present and was further aggravated by Agriwane's credit policy. The policy of collective responsibility for individual debt contributed to the division in the farmers' associations and undermined farmer cooperation. This and the resulting accumulation of debt contributed to the discredited image of Agriwane. To access any of the other services provided under the FSP the farmers had to first acquire credit, and due to the strict credit policy this was often not possible. The KaNgwane households still view inadequate credit provision as the most important problem next to drought.

The impression was gained that Agriwane implemented the FSP in a "top-down" fashion similar to the other projects managed by Agriwane. Judging by the perceptions and views of the farmers it seems that the implementation of the FSP in KaNgwane was not a great success. One contributing factor could be the fact that the FSP was only provided to dryland farmers while the irrigation projects and farmer settlement type projects applied to irrigation farmers. These farmers received services in a different manner and often more of Agriwane's man hours are spent on these projects than on the FSP. Dryland farming in the Eastern Transvaal lowveld, where KaNgwane is located, is very risky and often not suitable for commercial maize production because of the high temperatures and unreliable rainfall.

The effort by Agriwane to improve the accessibility and availability of modern inputs by establishing a number of service centres throughout KaNgwane was courageous and needs to be commended. However, the availability of inputs and credit do not guarantee a successful outcome for the programme. Good coordination with the other elements, in particular extension, is necessary to ensure success. It seems as if the lack of coordination

in the delivery of the various elements, the lack of good and coordinated extension, the strict credit policy and the manner in which the group credit scheme was operated contributed to the limited level of success of the FSP implemented in KaNgwane.

### General conclusions

Through a comparison between the results of the first and second survey it was determined that the results are in general consistent with exception of the average maize yield figures. The difference could to large extent be attributed to the drought. The comparison of the results therefore also highlights the impact of the 1992 drought on respondents.

Differences between sub-regions in each of the survey areas were also highlighted. From these results it became clear that different regions differ with regard to crop combinations (in KaNgwane), yield potential, income sources and household composition. It furthermore shows that aggregation of data ignores regional differences, which could lead to erroneous policy decisions.

Households' perceptions of the FSP were also reported. The perceptions and views of the community are what ultimately will determine the success or failure of the FSP. It was therefore important to determine how the community perceive the FSP. Households in Venda had in general mixed perceptions of the contribution of the programme to improved living standards, while the KaNgwane respondents were generally not at all impressed with the contribution of the FSP. The households in the Phokoane region of Lebowa have a strong view regarding the FSP's positive contribution to increased food production. The Phokoane households in general attributed their improved living conditions, their ability to pay for education and ability to buy new clothes to their success in farming through joining the FSP farmer groups and co-operative.

From the results it became evident that the KaNgwane FSP has failed the "acid test", while the households in the other regions do have mixed perceptions of the contribution of the programme to improved living conditions, etc. The households in the Phokoane region of Lebowa have a strong view regarding the FSP's positive contribution to increased food production.

The respondents were also asked to indicate which aspect of the programme they view as very important in their farming operation. The majority of the households in all three regions viewed mechanisation services as the most important aspect in their farming operation. In an analysis of all the respondents in all three regions the various elements were rated in the following order: Mechanisation, inputs, credit, marketing and training/extension. It is interesting to note that the KaNgwane respondents considered credit as the least important element. This should be put against the emphasis placed by Agriwane on the provision of credit to farmers in KaNgwane, which to some extent corresponds with the views of the respondents regarding the impact of the FSP.

## Recommendations for further research

The major thrust of the 1990-93 evaluation was directed towards assessing the "direct impact of the FSP on factors such as production, cropping mixes, farm incomes, technology adaption, changes in land use and the quality of support services in certain selected target areas". Although efforts were directed to evaluate the broader and indirect impact of FSPs, a clear framework of analyses and research methodology was not developed. These aspects were rather attended to in an ad hoc and somewhat superficial manner. It was, however, observed that the impact of the introduction of a FSP was far reaching. Apart from forward and backward linkages and multipliers, the social structure of families was affected, gender issues became apparent, etc.

The FSP approach was promoted by DBSA as a "demand driven" programme directed towards "those producing agricultural products in rural areas". One important characteristic of a demand driven approach is that changes over time can be expected in the package of services required. Such changes were observed and some changes were introduced in the FSP approach, project description and management procedures followed by DBSA and implementing agents. This flexible approach raises a few areas of interest. Firstly, it is important to keep track of such changes, secondly to analyse the impact thereof to ensure a regular feedback to policy and operations. A third aspect relates to the need to establish baseline information to be able to compare and analyse changes in FSP areas. The lack of such baseline information was noted at the FSP Workshop as a major deficiency. A perceptions audit through participatory processes was also felt to be lacking.

In addition to the FSP evaluation experience the relative lack of a reliable micro level data base on small farmer systems have been highlighted as an important constraint for future policy and planning. From the above discussion it is proposed that the continuation and expansion of analyses of FSP in selected areas and modules is justified and necessary to guide future investment.

The proposal for further research outlined below builds on the results discussed in this report, but extends the field of research to capture and analyse important impacts, trends and new events, triggered by the introduction of FSPs:

- (i) Tracking the FSP and maintaining the evaluation data base;
- (ii) "New style" FSPs in implementation;
- (iii) Baseline surveys and FSPs in preparation; and
- (iv) Social costs and benefits and distributional impact of FSPs.



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## CHAPTER 1

### INTRODUCTION AND OVERVIEW OF THE FARMER SUPPORT PHILOSOPHY

#### 1.1 INTRODUCTION

This report is the culmination of a three year evaluation process of the implementation of farmer support programmes in selected target areas of Venda, Lebowa and KaNgwane. The three year programme involved surveys of farmer households in the Kadishi and Phokoane areas of Lebowa, the Khakhu and Mashamba wards in Venda, and the Nkomazi, Mswati and Mlondozi regions of KaNgwane during 1991. During 1991/1992 the results of surveys were processed and interpreted. The preliminary results were presented to DBSA in May 1992 in the form of a first interim report. The greater part of 1992 was spend on analysing institutional aspects of the FSP, mainly through interviews and discussions with implementing agents. This resulted in a further interim report presented to DBSA in September 1993. During December 1992 and January 1993 a second round of household surveys was done in the same target areas, the results of which are included in this report.

This final report on the agricultural economic or socio-economic aspects of the FSP evaluation programme thus presents the findings of the three phases of the evaluation programme as outlined above. The second chapter discusses the evaluation of each the farmer support programmes in each of the homelands. This is based on the results and interpretations of the household surveys which were assimilated and combined with certain aspects from the institutional analysis. Chapter 3 reports on the second round of household surveys. The results from these surveys provide a good idea of the performance of the FSP under drought conditions. Chapter 4 discusses and describes the characteristics of those households likely to participate in the FSP or the households likely to make use of the farmer support services. Chapter 5 measures the efficiency of production of the FSP farmers. Conclusions and recommendations are presented in Chapter 6.

The following section provides some background on the principles and philosophy of the farmer support programme.

#### 1.2 THE FARMER SUPPORT PHILOSOPHY

The objective of the Farmer Support Programme, as initially stated, is to promote structural change away from subsistence agricultural production to commercial production (DBSA, 1986). This objective was later changed to: "to promote economic development by improving farmers' access to support services over a broad base in a sequential and evolutionary manner". The programme is based on the premise that this change can be achieved by supplying comprehensive agricultural support services to fanners - primarily in selected areas

where the potential for development is good.

Consideration of farmer support was specifically excluded from the DBSA special report on Small Business Development. Certain circumstances, unique to small farmers and to the elements of agricultural support, warrant the formulation of an appropriate framework.

The approach to the farmer support programme (FSP) is based on the following premises:

- i) the ability of "traditional" small farmers to respond rationally to economic incentives is accepted. These groups, however, are seriously restricted by technical, system-related and institutional factors. The supply of appropriate support services could remove or alleviate these constraints, allowing more efficient utilisation of agricultural resources, with a concomitant increase in economic activity and income levels in less developed areas; and
- ii) a "learning-by-doing" approach is necessary to devise guidelines and design criteria for DBSA project teams assisting borrowers in the preparation, appraisal and monitoring of farmer support programmes. The experiences of existing farmer support programmes, such as that supporting small cane growers, were considered in the preparation of the document. The framework is aimed at the implementation of the first phase of FSPs and, therefore, a pilot project approach is required. After the completion of the first phase after year one, the framework will have to be re-evaluated by DBSA, in association with FSP participants. Periodic reviews will also have to be conducted in subsequent years.

There is extensive evidence from other regions in Africa that a broadly based farmer support strategy is a most effective way of promoting agricultural development. The implementation of this strategy in Zimbabwe, with the development of the institutional support and incentives for small farmers to improve production, has led to large increases in their contribution to total agricultural production. Malawi and Kenya can also be quoted as good examples, while efforts to support small scale sugar farmers in KwaZulu have also proved to be successful.

There are indications that this comprehensive farmer support strategy is an appropriate option to supplement the large project and farmer settlement strategies. Farmer support programmes, providing complementary, coordinated and timeous services to the broad mass of farmers have the potential to raise the overall utilization and efficiency of agricultural resources.

Furthermore, in the developing areas, there is support for this strategy from the farmers themselves and often from the political authorities.

The development of farmer support programmes and settlement projects are not mutually exclusive. In certain circumstances the latter will still be appropriate. Greater emphasis, however, should be placed on agricultural development strategies that reach a larger proportion of the rural population and more specifically the emerging farmer.

### **1.2.1 The benefits and costs of the FSP**

There are numerous long and short term benefits that have to be considered in the FSP strategy. These benefits are associated with the following:

- the small farm sector is labour intensive and will serve to combine available labour with other production factors;
- the involvement of large numbers of farmers in decision making roles, with the opportunity for exploiting micro and macro supply and demand situations;
- the opportunity for the stimulation of other economic activity in surrounding areas;
- the utilization of the available skills results in minimal dislocation to the local community, while external management is not permanently required;
- in upgrading skills, the strategy serves as an effective means of encouraging the emergence of fully fledged commercial farmers;
- the stimulation of entrepreneurial activities and skills in the off-farm agricultural sector;
- the relocation of managerial skills from the management of projects to the organisation and provision of services to small farmers, thus economising on this scarce resource;
- existing project infrastructure and management can be used to extend benefits to a larger number of farmers; and
- in the medium to long term, farmers' organisations and individuals could assume managerial responsibility for service provision, thus reducing programme costs.

The major cost of the FSP is the implementation, initial management and administration of the support services.

### **1.2.2 Target Groups**

DBS A (1986) identified three categories of farmers in the less developed areas:

- i) fully commercial farmers who farm independently for their own account on a commercial basis and compete with commercial farmers throughout Southern Africa;
- ii) emerging farmers are defined as those who have the motivating and potential to farm as fully fledged commercial farmers, but lack resources and access to the necessary support services to expand and be classified as commercial farmers. It is important to note that any farmer who produces a marketable surplus can be considered a commercial farmer, but is emergent until he/she is able to utilize his/her agricultural resources without substantial external support; and

- iii) sub-subsistence and subsistence farmers who primarily produce for own use, but may produce intermittent surpluses.

In view of the wide spectrum of needs and the large numbers of small farmers involved, the economic allocation of support services is important. One of the development principles established by DBS A (1986) indicates that comprehensive support should be given to emerging farmers in developing areas. Although FSPs cannot be restricted to emerging farmers only, this group should clearly be considered as the target for support. However, the FSP will automatically exclude Estate Farming Projects, which would include:

- commercial farming ventures conducted on corporate principles by the private sector or development agencies.
- a variant of the above, with a corporate institution operating a tribal farm on commercial principles for the benefit of the tribe, without the active participation of individual farmers.

The Farmer Support Programme can be categorised as inclusive and accommodating; they will provide opportunities available to expand production up to a point where they can be classified as fully commercial. The services of the FSPs will be available to other farmers, but the benefits are specifically aimed at emerging farmers. The essence of the programme is that it should, through allowing economic forces to operate, serve as a spontaneous means of selecting the commercial farmers.

### 1.2.3 Target Areas

It is essential that comprehensive services are provided within an area. Furthermore, to ensure a positive demonstration effect, the support services should be concentrated initially in defined areas. Due to the large numbers of small farmers involved, the economic allocation of support services also requires the identification of target areas. Three possible criteria for the selection of target areas are proposed:

- i) the agricultural potential of the natural resource base;
- ii) the actual and potential demand for support services by individuals and communities;  
and
- iii) the availability of existing technical and infrastructural support.

Areas rating high in all three categories can be classified as Immediate Growth Areas and should be given priority.

Areas with a high agricultural potential but lacking categories (ii) and (iii) can be classified as Future Growth Areas. They rate as a second priority and support activities should be directed towards upgrading such areas to Immediate Growth Areas. Areas of low agricultural potential should not become target areas and support efforts should therefore be restricted.

#### 1.2.4 Constraints facing the Emerging Farmer

Farmers in developing areas experience a number of constraints which increase risk and uncertainty, and act as disincentives for increased production. Although many of the constraints are interrelated and in some cases site specific, certain constraints, common to most areas, were identified by DBS A (1986):

##### *i) External (or system) constraints*

There are a number of constraints which emanate from the broader agricultural environment that are largely beyond the control of the individual farmer. These include, amongst others, natural risks typical to agricultural activity, the limited availability of inputs, credit, mechanisation and marketing services; poor institutional and infrastructural support; inappropriate policies and legislation; restrictive administrative and social structures; and problems associated with land tenure and the acquisition of agricultural resources.

##### *ii) Internal (or allocative) constraints*

Although it is accepted that farmers have the innate potential to allocate resources in an economically efficient manner, there are also a number of constraints effecting the actual ability of farmers to operate economically efficiently and over which the farmer has some control: liquidity problems; shortage of labour; lack of skills, knowledge and education; and a range of cultural factors which in some instances prevent more effective management of resources. The removal of these constraints will assist a farmer to allocate resources in a more economically optimal manner.

#### 1.2.5 Elements of the Support Programme

A comprehensive farmer support programme has to be implemented within the context of the broader agricultural economy. Some of the constraints resulting from inappropriate agricultural policy and legislation and regional economic development problems should be referred to a higher authority for policy formulation and planning. Although appropriate measures are crucial for the creation of an effective agricultural environment, these issues cannot be accommodated during the appraisal or implementation of a particular support programme.

One of the major problems which requires attention are land tenure arrangements. The long term success of the FSP will be dependent on farmers being able to gain secure access to additional land, to be in a position to expand surplus production and increase income. This will require attention by policy makers to ensure that land tenure systems are adapted to accommodate the changing and intensified patterns of agricultural land utilisation.

To assist in addressing the constraints identified in Section 1.2.4 and assuming the above, the following elements have to be provided as part of a comprehensive Farmer Support Programme (DBSA,1986):

- i) the adequate provision of appropriate inputs and the funding thereof (credit) to the farmer;

- ii) the provision of a comprehensive mechanization service, which caters for all aspects of transportation, land preparation, planting and cultivation (harvesting and transport to storage may also be required), as well as the maintenance of machinery, implements and infrastructure;
- iii) the provision of marketing channels and services to cater for all aspects of marketing should this become necessary (i.e. grading, storage, packaging and transport);
- iv) the provision of adequate extension and demonstration services, information and specific project related research to ensure that maximum opportunity can be made of existing and new technology;
- v) the provision of training to facilitate the development of managerial skills needed both on the farm and at an institutional level;
- vi) the acquisition of de facto rights to production which would include land security, contracts and quotas.
- vii) the provision of off-farm agricultural infrastructure necessary to support FSP. The provision of this element differs to that of on-farm fixed improvements and is not paid for directly by the farmer. The following are seen as specific to the FSP: feeder roads and bridges, to facilitate access to farm and service centres; fencing, such as boundary and roadside fencing and around planned agricultural areas; conservation works such as contours and soil erosion works; and finally, the planning necessary for the above such as surveying. It should be noted that the infrastructure necessary for communications and the electrification of rural communities, while important for the FSP, should be seen in the content of more general rural development. The financing of this element and the appropriate terms and conditions will be drawn from existing DBSA infrastructural projects.

Within a target area, farming localities should be identified on the basis of an area in which emerging farmers can have reasonable access to a locality service centre. The service centre should, in response to demand, provide a local market for farm products and collection of products for distribution to wider markets; a retail outlet for inputs and credit; workshop; advice office, etc. Ideally, all rural services should be concentrated at the service centre.

The DBSA (1986) identified the following general guidelines, applicable to the programme as a whole, which should be utilized in the economic appraisal of specific programmes:

- the provision of the support services should be comprehensive and all the elements should be provided in an integrated fashion;
- attention should be paid to the effective and potential demand for support services;
- cognizance must be taken of the existing supply of support services, both within the locality and in the region as a whole and, if necessary, the services should be rationalised on a regional basis;

- the spatial allocation of the support programme needs to be evaluated;
- the sequential nature of agricultural development necessitates the coordinated establishment of support services within an appropriate time-frame;
- as a general principle, the private sector should provide most of the services. Training, research and extension are exceptions, although the private sector can assist in making these programmes more effective. It must be recognised that in certain circumstances, public sector management may be necessary to ensure the adequate supply of services and to regulate the supply of services by the private sector; and
- in appraising individual FSPs a concise cost-benefit analysis, complemented by a qualitative assessment of the potential impact of the programme, will be an important means of ensuring that specific programmes have been adequately planned and a net economic benefit attained. In some cases only a qualitative analysis will be possible. The key norms and standards, the demand for services and the selection criteria for target areas will also be important in the cost-benefit analysis.

#### 1.2.6 Monitoring and Evaluation

To ensure that the objectives of a particular farmer support programme are attained, monitoring and control should be carried out.

During the planning of the programme, an agricultural profile of the area should be established. Detailed base-line studies are not always necessary but an assessment of the following should be made:

- i) the farmer's perception of the constraints they face;
- ii) the nature of land utilisation and distribution;
- iii) the extent of migrancy, commuting and local employment in the area;
- iv) the proportion of agricultural income to migrant income;
- v) the institutional structures and infrastructure; and
- vi) a regional perspective for the proposed programme.

Some of the aspects listed above will be discussed under the sections of this report to follow and as such form part of the initial phase of the evaluation process. During implementation the following aspects need to be monitored and evaluated (DBSA,1986):

- i) the impact of the programme on agricultural productivity, farmer income, income distribution and employment creation;
- ii) the development of local management skills and organisations;

- iii) the progress in expanding private sector involvement, small business activities, etc.;
- iv) the expansion of services to adjacent areas;
- v) the cost effectiveness of the different elements in the support programme; and
- vi) the identification of new constraints.

### 1.3 AN OVERVIEW OF THE EVALUATION PROCESS

In line with the guidelines of the Farmer Support Programme as highlighted above, it has been decided to evaluate the FSPs on a long-term basis. One of the major results of the evaluation is the construction of an information base, which will be built up over time, to identify trends and enable well-founded conclusions to be made. Broadly, the objectives of the evaluation programme are (Singini and Sibisi, 1992):

- to evaluate FSPs as instrument of agricultural development with a view to increasing the effectiveness and efficiency of the support services;
- to evaluate the progress and input of FSPs within the context of an integrated approach to rural development; and
- to provide possible guidelines for the further course of the programme, as well as operational policy guidelines for the development of agriculture within South Africa.

The design of the FSP evaluation emphasises the use of a strong evaluation system which would be technically adequate and useful. The design adopts an interdisciplinary approach involving a mixture of sample surveys and case studies. It was proposed that the sample surveys should be designed and conducted by agricultural economists, while the case studies ought to be designed and conducted by anthropologists and rural sociologists.

The evaluation study consists of the following activities:

- Baseline work
- Evaluation of the FSP elements implemented
- Analysis of FSP impact
- Analysis of FSP policy framework

The baseline work involves the overview, collection and co-ordination of existing data and synthesising any other evaluation findings related to the agricultural scenario. This report intends to cover the first three phases by giving an overview of the position of the households and the agricultural scenario in the respective areas and to evaluate some of the FSP elements implemented. Sample surveys to obtain the information were conducted in the initial phase of the assignment. The second phase consisted of conducting interviews with implementing agents, input suppliers, contractors and shopkeepers as the second phase of the assignment. The third phase involved a second round of household surveys to evaluate certain elements of the FSP. Due to the very dry conditions a lack of farming activities in many of the survey areas was experienced, which rendered the evaluation exercise and comparisons impossible.



This resulted in a change in objective for the third phase to monitoring the performance of the FSP under drought conditions.

#### 1.4 OUTLINE

Chapter 2 reports on the first round of the evaluation process by providing the results from the household surveys and the institutional analysis. This is done for each of the areas surveyed, namely Venda, Lebowa and KaNgwane. The chapter ends with some conclusions.

The third chapter provides the results from the second round of household surveys, and compares them with the first round results. The chapter also ends with specific conclusions.

Chapter 4 involves the prediction of participation in the FSP, while Chapter 5 provides an analysis of the economic efficiency of FSP farmers. Chapter 6 summarises the report and provides conclusions and recommendations.

## CHAPTER 2

### THE FIRST ROUND OF THE EVALUATION PROCESS

#### Results from the household surveys and the institutional analysis

##### 2.1 INTRODUCTION

This chapter presents the findings of sample surveys of farmer households in different areas/wards of Venda, Lebowa and KaNgwane undertaken during 1991. Table 2.1 summarises the surveys done in order to (1) evaluate FSPs as instrument of agricultural development with a view to increasing the effectiveness and efficiency of the support services; (2) to evaluate the progress and input of FSPs within the context of an integrated approach to rural development; and (3) to provide possible guidelines for the further course of the programme, as well as operational policy guidelines for the development of agriculture within South Africa.

The surveys were done by means of questionnaires. The questionnaires consisted of the following sections, all essential to evaluate the DBSA's Farmer Support Programmes in Venda, Lebowa and KaNgwane: (1) general information, (2) factors of production, (3) crop production and consumption, (4) inputs, (5) extension service, (6) training, (7) institutional issues, (8) credit, (9) household income and expenditures and (10) general farming problems.

In addition to the household surveys an investigation into the institutional aspects of the Farmer Support Programme was also undertaken. This was done through interviews with implementing agents, farmers, farmer associations and contractors. The results of this analysis were combined with the results of the household surveys to provide a comprehensive review of the performance of the FSP in each of the target areas. Chapter 3 will follow on this evaluation to verify some of the results and interpretations and to show how the FSPs were performing in a drought year.

The purpose of this chapter of the report is to give an overview of the farmer support programmes in Venda, Lebowa and KaNgwane and to evaluate the performance of the programme and its various elements in addressing the constraints faced by small farmers in the mentioned areas.

The discussion of the FSP in each of the areas will follow the same structure: initially providing a summary of the surveys undertaken and then briefly reviewing the results of the surveys. The various elements of the FSP are evaluated based on these results as well as on interviews with officials from the three implementing agents. Thirdly, the contribution of the FSP to household output, food security, etc. is analysed and finally, various institutional aspects of the programme are briefly considered.

Table 2.1 : Summary of the areas surveyed and sample sizes

Major region	Sub-region	Sample size	Usable questionnaires
Venda	Mashamba	75	50
	Khakhu	73	41
	Total Venda	148	91
Lebowa	Kadishi	42	33
	Phokoane	131	92
	Total Lebowa	173	125
KaNgwane	Mswati	45	35
	Bettysgoed	20	20
	Swallowsnest	20	19
	Hartebeeskop	80	79
	Total		
	Mlondozi	35	18
	Steynsdorp	10	10
	Eerstehoek	45	28
	Total		
	Nkomazi	10	10
Schoemansdal	20	20	
Schulzendal	50	39	
Driekoppies	80	69	
Total			
Total KaNgwane	205	176	
<b>TOTAL</b>		<b>526</b>	<b>392</b>

## 2.2 THE FARMER SUPPORT PROGRAMME IN VENDA

The FSP in Venda consists of a comprehensive support programme in three selected target areas in Venda namely, Mulima, Khakhu and Mashamba. The three target areas were part of the Venda Dryland Crop Production project formerly financed by the South African Department of Foreign Affairs, and in later years, the responsibility of DBSA. The three farmer support programmes (FSPs) in Venda were implemented towards the end of 1988, with the first credit provided to farmers in October 1988 intended for the 1988/89 production season.

The conversion to farmer support in these target areas were in accordance with agreements reached between DBSA management and the borrower (Agriven) in August 1986 in terms of which the Dryland Crop Project would eventually be converted into a comprehensive

farmer support programme.

The constraints experienced by farmers in the target areas were identified as being: low local availability of agricultural inputs; insufficient extension and technical advisory support services; untimely and low level of availability of mechanisation services (winter ploughing / late planting); and a lack of local institutional structures to coordinate and accomplish input acquisition and produce distribution.

The main elements of the farmer support programme in Venda were therefore identified accordingly and are in order of importance: -

- Mechanisation
- Credit
- Inputs
- Extension and training
- Marketing

Mechanisation and specifically ploughing services are viewed as the main thrust of the FSP in Venda.

The FSPs in Venda differ from those elsewhere in that the programmes are implemented through local co-operatives rather than farmer associations. Each FSP area has its own co-operative. Credit, ploughing services, inputs and other services are provided to the farmers through the co-operatives. By late 1989, there were three co-operatives with a total farmer membership of 932, with an average of one hectare per farmer. Extension services were provided by the Venda Department of Agriculture and Forestry, while the local agricultural development corporation (Agriven) provided training on project-related matters (Singini and Sibisi, 1992).

### **2.2.1. Sample survey of rural households in Venda**

The evaluation of the Farmer Support Programme in Venda was conducted in two of the FSP areas, i.e. Khakhu and Mashamba. Household surveys in the two areas were conducted during 1990/91 and again in December 1992. This discussion will only consider the results from the first survey.

#### 2.2.1.1 Area description

##### *2.2.1.1.1 Mashamba*

The Mashamba area is situated in the South-East of Venda along the Klein Letaba River. Mashamba has a broken topography with hilly slopes. The area is further characterised by typical savannah vegetation with sweet to semi-sweet grass species.

The average annual rainfall is approximately 800 millimetres which peaks during the summer months. Mean minimum temperatures in winter are 16 degrees centigrade with the mean maximum temperatures in summer in the region of 31 degrees. Frost has never been

recorded in this area.

Compared to other villages in Venda, Mashamba is densely populated. Employment in this area is high with the majority of women involved in subsistence farming. Most of the men are migrant workers with only a few employed by the Government service. Livestock farming is one of the important activities for male school leavers and unemployed men.

#### *2.2.1.1.2 Khakhu*

The Khakhu area is situated on the Soutpansberg mountain range to the North of Thohoyandou. As a result of mountainous terrain, Khakhu has steep slopes with gradients of more than 12 per cent. The vegetation of the area consists mainly of tropical forests. Grazing conditions are poor due to "suurveld" grass species. The soils in the area tend to be sandy.

Annual rainfall (in good years) is in the order of a 1 000 millimetres. Rainfall peaks in the summer months occurring during intense thunderstorms. Mean temperatures are comparatively lower than the Mashamba area, with an average minimum of 6 degrees centigrade and maximum of 28 degrees. Frost may occur during cold spells in winter.

Khakhu is not as densely populated as Mashamba, but otherwise the demographic characteristics of Khakhu are similar to that of Mashamba. The only other difference is that the literacy levels in the Khakhu ward tend to be somewhat lower than in Mashamba.

#### *2.2.1.2 Data Collection*

Data were collected by students of the University of Venda by means of a questionnaire survey conducted during June and July 1991. The sample included 148 rural households, 75 in Mashamba and 73 in Khakhu, of which 91 completed questionnaires were useable (n = 91). Of the total of 91 respondents, 22 were non-FSP clients, 32 FSP clients in the Khakhu ward and 37 FSP clients in the Mashamba ward.

Two samples were drawn from each ward: The first was a two-stage sample taken from the population of rural households in the ward, assuming that all members of this population were aware of Agriven's support programme. The second was a simple random sample drawn from a list of past and present FSP clients in each ward. The object of the two-stage sample was to elicit demographic and agricultural information representative of the study area and to isolate a subset of households that did not use Agriven credit. The random sample provided comparative information about the participants in the FSP credit schemes.

#### *2.2.1.3 Survey results*

##### *2.2.1.3.1 Household demographics*

It was determined that the overall mean household size in Venda is 6 persons (including migrants). Approximately 56 per cent of household members were under the age of 16 and 5 per cent over the age of 60. Through an analysis of the distribution of the males and

females, it has been determined that the households consist of slightly more females than males.

The difference between the economic activity of the two wards can also be attributed to the fact that there are more males in the economic active age group (16-60 years) in Mashamba, while in Khakhu females are in the majority in this age group. The economic active population in the Mashamba area (more males than females) was calculated as 36 per cent of the population in the area, while in the Khakhu area (more females than males) 43 per cent of the population was classified as economically active. There were more teachers and scholars in the Mashamba ward than in the Khakhu ward and this is probably the reason for the higher literacy level in Mashamba. Scholars and pupils in the Khakhu ward represented only 10 per cent of the total population in Khakhu, while in the Mashamba ward this percentage was significantly higher, at 35 per cent. With respect to levels of formal schooling it was determined that 43 per cent of the total household population did not receive any formal schooling.

#### 2.2.1.3.2 Household income

Household income and expenditure in the study areas are shown in Table 2.3. From this table, it is clear that income from the farming enterprise contributed only 27 per cent to the total earnings of the household. Welfare payments and remittances accounted for nearly 8 per cent of off-farm income. Education, food, clothes, savings and instalments were the main household expenditures in both regions.

Table 2.2 : Average income and expenditure patterns of households in Venda (1991)

Income		Expenditure	
Crops	R 132.04	Education	R 133.41
Livestock	R 206.53	Food	R 164.06
Informal trade	R 100.40	Clothes	R 130.80
Rental from land	R 0.40	Savings	R 145.51
Hiring out equipment	R 6.12	Transport	R 48.54
Occasional work	R 8.16	Durables	R 64.39
Regular cash income	R1210.69	Personal	R 68.55
		Medical	R 60.69
		Instalments	R 108.20

#### 2.2.1.3.3 Household assets

Table 2.3 summarises the distribution of certain assets amongst households. If one considers the value of savings accounts and the ownership of cattle, it seems as if it is largely the poor with low savings and few cattle who join the FSP.

Table 2.3 Distribution of assets amongst Venda households

Item	FSP households	Non-FSP households
Value of savings account (R)		
0	45.5 %	31.8 %
50 - 1000	19.4 %	22.7 %
1000-2000	14.3 %	22.8 %
2000- 3000	5.2 %	18.2 %
> 3000	16.9 %	4.5 %
Access to cropland (ha)		
0	14.3 %	32.0 %
0.25	2.6 %	9.1 %
0.80	1.3 %	-
1	75.0 %	45.5 %
2	5.2 %	9.1 %
> 3	1.3 %	4.5 %
Ownership of cattle		
Cows :		
0	74.0 %	81.8 %
1 -5	11.7 %	9.0 %
5 - 10	9.1 %	9.0 %
> 10	5.2 %	-
Oxen :		
0	89.6 %	86.8 %
1 -5	10.4 %	13.6 %
5 - 10	-	-
> 10	-	-

2.2.1.3.4 Farming activities

Households in the two survey areas are on average situated 436 metres away from the nearest watering point and 3.04 km away from their croplands. The average size of land owned in Mashamba was 1.03 ha dryland cropland and 0.07 ha garden plots. The average size of rented land was 0.02 ha of dryland cropland. In Khakhu the average size of plots was 0.11 ha irrigated land and 0.8 ha dryland cropland. No land was rented. Approximately 60 per cent of the respondents considered land as the main determinant of their personal wealth. About 55 per cent of the farmers are not able to purchase or rent additional land, mainly due to lack of capital or credit facilities. Almost 61 per cent of the respondents indicated that they are able to work more land, but did not have the means to purchase more land.

The incidence of food cropping was high, but there was relatively little evidence of cash crops (see income from crops). The vast majority of households in the two study areas produced maize. The proportion of households producing dry beans and pumpkins was much lower. Cash income from farming accounted for 27 per cent of total income. However, estimates of farm income are unreliable as few households sold produce, and respondents were not willing to give income or expenditure figures.

The mean values of the numbers of livestock were small, illustrating the lack of grazing land (61.5 per cent of the respondents view this as a major constraint). On average, the Mashamba households had 4 head of cattle, 0.6 goats and 9 chickens, while the households in the Khakhu ward had less cattle (2.6), goats (0.4) and chickens (1). These figures clearly reflect the higher grazing capacity in the Mashamba ward. In comparing the FSP and the non-FSP households, it was determined that 74 per cent of the FSP households kept no cows and 89 per cent no oxen. In the case of the non-FSP households 82 per cent had no cows and 87 per cent no oxen.

With respect to the area planted, the Khakhu ward had a bigger area (1.35 ha) which was mainly planted to maize and pumpkins. In the Mashamba region, each household had on average only 0.9 ha of land with maize and dry beans as the main crops.

In general, 53.8 per cent of the households kept cattle, while only 34.1 per cent of these households had enough grazing for their requirements. This is a clear reflection of the condition of the veld, mostly indicated by the respondents as medium or poor. The respondents mostly stated that the veld is deteriorating because of drought and institutional reasons (no conservation possible, to keep less cattle is irrational). Security of tenure was listed by the majority (66%) of respondents as a major concern. The respondents indicated that they would prefer to have a title deed or some proof of ownership for the piece of land they are farming on. Only 12.1 per cent of the farmers were prepared to rent out their land to another farmer.

The need for fencing to keep cattle belonging to other farmers out of crop lands, was indicated as the major problem facing farmers in Venda. In wards where the tribal system of land tenure had not been altered by betterment planning, this problem arises because stock owners may graze their cattle on any land that is not cultivated, i.e. all fallow land is regarded as communal grazing. As a result, planting is often delayed because stock owners use arable land for grazing during winter when the fields lie fallow. In bettered wards grazing, arable land and residential areas are separated according to land quality criteria. Arable fields are allocated to households but grazing land is regarded as common property. When grazing camps are not adequately fenced, there is little a farmer can do to keep cattle off the cropland. The high incidence of households reporting this problem helps to explain why most respondents favoured privatization of grazing land.

The demand for more land for cropping, or the issue of "land hunger" was identified as the second major problem facing farmers in the study areas. This issue could have important implications for future implementations of FSPs and for land reform in South Africa in general. As subsistence farmers become increasingly surplus producers and more commercially orientated, the demand for more land will increase. To avoid the problem of land hunger, other land will have to be allocated to such farmers to accommodate their needs in their quest to become successful commercial farmers. Some reform of the present tenure system will also have to be considered to provide farmers with security of tenure. This issue of shortage of crop land will clearly have to be considered in the evaluation of the FSPs as it could be a major factor hampering progress of these farmers.

## 2.2.2 An evaluation of the implementation of the various FSP elements in Venda

### 2.2.2.1 Mechanisation

Farmers generally make use of mechanisation services provided by the three primary co-operatives. Agriven and the Department of Agriculture also provide mechanisation services. Agriven plays an important role in the mechanisation services provided by the co-operatives by providing training to drivers and assisting in the repairs of tractors, etc.

The Khakhu co-operative owns two Fiat (54kW) tractors, a one ton trailer and a light pick-up truck. Agriven financed the acquisition of the tractors, etc. The co-operative is supposed to repay the Agriven loan for the tractors but has not paid any instalment as of yet. The co-operative has recently applied to Agriven for another tractor as the co-operative experiences a capacity problem during the planting season due to the increased area under cultivation.

Members approach and request the co-operative to provide ploughing/planting services. A list is then drawn up according to the day and time members require the service. Mechanisation services are rendered to members on a credit or cash basis at a cost of R72.19 per hectare. The cost to non-members is R120 per hectare on a cash only basis. During the 1990/91 season the Khakhu co-operative rendered mechanisation services to non-members to the extent of 151.7 hectares ploughed, 5 hectares disced and 2 hectares planted. The income earned by the co-operative for this services amounted to R6 578.



Table 2.4 : Mechanisation and input costs per hectare - Khakhu

Season	Tractor services			Fertiliser		Seed	Total cost per hectare
	Plough	Disc	Plant	2.3.2	L.A.N		
1988/89	37.50	18.75	18.75	94.32	71.37	41.50	282.19
1989/90	37.50	18.75	18.75	110.42	87.47	57.60	330.49
1990/91	65.63	32.81	32.81	93.56	85.80	53.90	364.51
1991/92	65.63	32.81	32.81	93.56	85.80	53.90	364.51

The Khakhu farmers are generally satisfied and pleased with the mechanisation services provided by the co-operative because it provides better and more reliable ploughing than Agriven's or the Venda Government's tractor services. The yields recorded by farmers are higher due to the improved ploughing service, due to the deeper ploughing resulting in better hygroscopicity of the soil.

The Mashamba co-operative owns 6 Fiat (56kW) tractors which are used for ploughing, discing and planting. The members of the Mashamba co-operative also view the tractor service as the most attractive element of the FSP.

Both the co-operatives have own transport in the form of a one ton delivery van. These vehicles are mostly used by managers in the execution of their day to day responsibilities as well as for collecting stock, especially minor items.

Due to the poor state of access roads, very few private contractors are prepared to make deliveries to the co-operatives. The co-operative at Khakhu has to arrange for transport to deliver inputs and other products to the co-operative as Agriven provides no transport. Transport is normally hired to deliver inputs to the co-operative store. Transport costs vary but more or less amount to R250 per 7 ton truck load.

According to the head of the mechanisation division of Agriven, the tractors of the co-operatives initially had to be repaired on a monthly basis, with the co-operatives having to pay for this service. However, due to training of the drivers, the costs of repairs decreased, which furthermore improved the effectiveness of the co-operatives' services, since the co-operatives can use the expenses saved in this way on other items.

From the discussion above it is evident that the co-operatives are to a large extent the only efficient providers of mechanisation services to FSP farmers. The services also appear to be more reliable than those of Agriven or the Venda Department of Agriculture, while the farmers also have high regard for the service provided by the co-operative. It is, however, not clear if any independent tractor contractors, apart from Agriven, do operate in the two areas. According to the project description, one of the responsibilities of the primary cooperatives was the coordination and training of independent mechanisation contractors. This was apparently not adhered to and at present the co-operatives still own the tractors which originally was intended for independent entrepreneurs.

### 2.2.2.2 Inputs

The Agricultural Development Corporation of Venda (Agriven), through the primary co-operatives, is involved in various aspects of crop production in the two study areas. Agriven informs 51.6 per cent of the respondents when to plough, 49.5 per cent when to plant and 31.9 per cent when to weed, while 31.9 per cent of the respondents are informed by Agriven when to harvest. The crop lands of 72.5 per cent of the respondents are ploughed by the co-operatives' tractors, while the co-operatives also do planting of the crops for 69.2 per cent of the respondents and weeding for 2.2 per cent of the respondents. The Venda farmers mainly use chemical fertiliser (71.4%), while 53.8 per cent make use of dung as fertilizer. Only a small number of respondents apply insecticides (13.2%), pesticides (12.1%), and herbicides (5.5%). Mechanical fertiliser application is used by 61.5 per cent of the respondents; 73.6 per cent make use of mechanical planting methods and only 2.2 per cent harvest their crop mechanically.

The number of respondents in the study areas who have access to the various inputs mainly supplied by the primary co-operatives are the following: fertiliser (75.8%), seed (75.8%), chemicals (2.2%), ploughing services (71.4%), farm labour (1.1%), extension services (57.1%), credit (74.7%), and dips & sprays (31.9%).

It is difficult to evaluate these figures and to determine whether the support elements of the programme are functioning as intended, because non-FSP farmers were also included in the sample. The above figures, however, give a general overview of the present situation with regard to the availability and accessibility of inputs.

Table 2.5 gives an overview of the average quantities and prices of farm inputs used by farmers in the two tribal wards. These figures are averages and could, therefore, be misleading since some respondents used as much as 250 kg of chemical fertiliser, which is somewhat out of line of the calculated average.

Table 2.5 : Farm input use/purchases, Venda, 1991

Item		Khakhu	Mashamba	Overall mean
Seed	(Kg)	32.02	17.75	25.35
Chemical fertilisers	(Kg)	21.68	8.75	14.72
Organic fertiliser	(Kg)	11.90	3.48	7.50
Seed	(R)	206.43	60.13	128.40
Chemical fertilisers	(R)	44.83	21.88	32.48
Organic fertiliser	(R)	-	3.47	1.87
Ploughing service	(R)	11.38	20.16	16.11
Labour (weeding)	(R/h)	-	2.04	1.10
Labour (harvesting)	(R/h)	-	2.04	1.10

The management committee of the Khakhu co-operative, in cooperation with the extension officer, decides on what inputs (fertiliser) to use. Advice from the Dryland Crop Production

Committee (DCPC) is also used in their decision making. The DCPC does soil analysis and according to the results obtained, it recommends the quantity and type of fertiliser to be used. At present the co-operative at Khakhu uses 2.3.2 fertiliser and applies 4 bags per hectare. At Mashamba only two bags of fertiliser are applied per hectare.

Primary co-operatives like Khakhu and Mashamba buy their inputs from the Venda Secondary Co-operative. There is, however, some doubt about the future of the Secondary Co-operative as discussed in Section 2.2.4.3 and it can be assumed that the co-operatives will have to look for other sources of supply for seasons to come. The total amount of inputs used by the two co-operatives during the 1991/92 crop season is given by Table 2.6.

Table 2.6 : Inputs used in Khakhu and Mashamba in 1991/92

Input	Khakhu	Mashamba
Area planted	103 ha	257 ha
Seed	5 000 kg	3 924 kg
Fertiliser : 2.3.2	24 700 kg	28 700 kg
L.A.N.	7 500 kg	-

The yields of the previous season (1990/91) in the two areas are provided by Table 2.7 (due to the drought virtually no maize yield was recorded in the 1991/92 production season).

Table 2.7 : Maize yields in Khakhu and Mashamba (1990/91).

	Khakhu	Mashamba
Target yields (1990/91)	3 t/ha	1.5 t/ha
Actual yields	1.6 t/ha	0.72 t/ha

### 2.2.2.3 Credit

Credit under the farmer support programme in Venda is provided to the farmers through the various primary co-operatives. Farmers indicated in the survey that in general FSP related credit was easily available. The credit officer was on average situated about 2 km away from the study areas and it took about one month for approval of their applications.

The reasons given by respondents for joining the FSP credit scheme varied from easy access (57.1% of respondents), insufficient own savings (18.7%), it meets credit needs (38.5%), cheapest source of credit (56.0%) to little or no collateral needed (2.2%). The reason for leaving the FSP credit scheme was mainly due to the respondents not being able to meet the repayment schedule (68.1%). Other reasons given were: poor service provided (30.8%) , insufficient credit offered (48.4%) and credit not available when needed (30.8%).

Members of the co-operatives receive revolving credit for fertilizer, ploughing, discing, seed, etc. Credit is provided according to the area cultivated and is calculated on a per hectare basis. Credit provided to members for the 1991/92 season amounted to R364.51 per hectare

at Khakhu and R309.13 at Mashamba. The interest rate is 9% per annum (or 0.75% per month) and the farmers are given 6 months to repay. The programme manager at Agriven and the managers of the co-operatives are of the opinion that all the farmers know they have to repay their loans, that they are familiar with the terms involved and are aware of the consequences if they do not repay their loans. However, they admitted that only 25 per cent of the farmers understood the principle of interest and the reason why they have to pay interest. Noteworthy was that 41.8 per cent of the respondents thought that they would be brought to court when not repaying their FSP debt, 17.6 per cent believed that Agriven would not serve them again and only 3.3 per cent thought that nothing will happen if they do not repay their debt.

Both co-operatives have the policy that when a member does not repay his/her debt from the previous season, no new credit is issued. The co-operatives have a number of options to ensure the repayment of loans. A monthly statement is issued to all members to inform them of their outstanding debt (no statements were issued at Mashamba). If a member does not repay his/her loan after 6 months, the management committee of the co-operative meet with such a member to urge repayment. When a member after this still fails to pay he is referred to the local council where the chief tries his best to ensure that the member repays his debt. The last resort will of course be court action.

Most of the FSP farmers make use of the credit facility, however, some farmers prefer not to take up the credit and rather pay cash for services and inputs. Farmers are generally advised to pay cash for inputs if they do have available funds.

Crop failure and drought are the main causes of farmers not redeeming their loans. Initially, the number of loans defaulted at Khakhu were low, with only 8 farmers not repaying their loans. In the 1990/91 season the default rate increased to 25 in line with the unfavourable crop conditions. The credit situation of the Mashamba co-operative was not known to the management due to poor record keeping. According to the seconded manager, the situation can only be improved by computerising the financial system of the co-operative. This would then enable the issuing of monthly statements to farmers. Clients continuously moving from village to village and changing of identities further complicate credit management.

Table 2.8 : A comparison of credit provision at the Khakhu and Mashamba FSP co-operatives.

Season	Khakhu					Mashamba				
	Members	Area Planted	Credit per ha	Total Loan	Repayment (%)	Members	Area Planted	Credit per ha	Total Loan	Repayment (%)
1988/89	182	134 ha	282-19	R 37 672 R	93.8	?	?	?	R 83 713	68.0
1989/90	216	122 ha	330-49	40 218 R	61.9	514	416 ha	?	R 92 846	67.6
1990/91	250	104 ha	364-51	37 909 R	33.9	592	293 ha	?	R 80 000 **	63.4
1991/92	300	103 ha	364-51**	53 492	1.9 *	592	257 ha	309-13	R 75 265	19.8*

\* Due to drought  
 \*\* Estimated figure

Note : Limited record keeping at the Mashamba Co-operative is one of the main problems in the FSP at Mashamba and is clearly evident from the lack of information in Table 2.8.

The loans provided to farmers by the two co-operatives are summarised in Table 2.8. With respect to the Khakhu co-operative and ignoring the last season (drought), it is clear that the loans per member are decreasing, i.e. from R207 to R150. The increase in the credit per hectare is due to increased cultivations adjacent to Thononda, the location of the cooperative.

#### 2.2.2.4 Extension

Extension services are provided by the Venda Department of Agriculture and Forestry, while the local agricultural development corporation (Agriven) provides training on project-related matters. The Mashamba and Mulima wards are both served by two extension officers, while only one extension officer attends to the training and information needs of the farmers in the Khakhu ward. Some training is also done through the various levels of the extension service of the Venda Department of Agriculture and Forestry, as well as Agriven. It was found that the Venda extension service is operating at a very low efficiency level due to inadequate training and various other factors hindering an efficient extension service. There is a great paucity of subject matter specialists within the Department of Agriculture and Forestry. During 1989 only four agricultural graduates were employed by the Department. There are no subject matter specialists who can play the key role of making contact with research stations, executing and supervising adaptive research programmes on farmers' fields, training field staff, and obtaining feedback from the field staff on farmers' problems. Evidence shows that the linkages between research, extension and farmers do not function effectively in Venda. The situation has, however, been found to be similar in other national states (Bembridge, 1988).

Personal visits are the most common form of extension provided by the extension service in Venda, although media facilities, such as radio talks and publications, are used as well. Farmers' days are arranged to address special problems within the various fields, with guest speakers invited to talk to the farmers.

It was found that both the senior as well as the junior extension staff of the Department of Agriculture and Forestry did not have a clear knowledge of the objectives, as well as policy guidelines, according to which they should plan their work. This often results in ad hoc extension services being rendered to the farmers with little effectiveness due to the lack of coordination and follow-up efforts. It has also been found that the Planning Division of the Department is not in a position to cater for the back-up services to the extension service, whilst contact with subject matter specialists and researchers is almost non-existent. Consequently, adaptive research and technical and extension training of staff are also non-existent, whilst the division of staff between dryland and irrigation extension service has negative effects on training. Only 7,5 per cent (12 posts) of agricultural officer posts (160 posts) were filled by women (Naledzani, 1992).

Middle management was also found to be not very clear on the application of accepted management principles, an observation that was also made on field level extension workers. No work calendars were kept, hence extension on an ad hoc basis.

The conditions of service have been found to be poor in Venda, and this usually demotivate the extension worker. Elements encouraging poor performance are, amongst others, lack of

accommodation, lack of transport, shorter terms of service in an operational area and non-competitive salary. Only 14 per cent of field staff have been found to have more than four years experience in one operational area. Both junior as well as senior staff members were found to be dissatisfied with the level of training (Bembridge, 1988).

About 85 per cent and 87 per cent of middle and junior field staff respectively were found to be without transport, whilst almost all head office staff had motorised transport. Lack of transport is therefore a big constraint in field level extension work. The record keeping was also very poor, with the reporting system more for record purposes than for managerial control purposes. Only the current state of agriculture is reported on, and not the progress made (Naledzani, 1992).

Although all officers have undergone some training at an agricultural college for periods varying from 2-3 years, only 39 per cent of senior staff achieved a qualification (formal) above standard eight, compared to 76 per cent of junior staff. Evidence also indicated that the majority of extension officers lack practical farming experience (Naledzani, 1992).

At all the FSPs extension was provided by the Department of Agriculture and Forestry as provided for in the project description. According to the Programme Manager of the implementing agent, Agriven, this institutional arrangement is not conducive to increased production, as the extension officers are not necessarily reporting to him despite the provisions of the project description. It is therefore felt that the extension officers should have been permanently seconded to Agriven with the aim of reporting directly to the Programme Manager or his delegate for an improved supervisory/subordinate relationship. In this way the efficiency of the extension service may be improved and its responsiveness to the development activities of the FSPs enhanced.

The present line of reporting in the FSP extension service does not encourage efficient management. The coordination and cooperation between Agriven and the extension officers seem to be a major problem area in the implementation of the FSPs in Venda. It was suggested that it would improve the situation considerably if extension officers could be seconded to Agriven.

The training of the extension officers serving the FSPs should be upgraded as a matter of priority. These extension officers should also introduce a programming approach in their day to day activities in order to improve contact with the farmers and facilitate adoption of improved varieties/techniques.

The sentiments regarding the extension element of the FSP in Venda, discussed above, were also shared by the farmers in a recent survey of rural households in Venda. The general feeling amongst the respondents, was that the extension effort is inefficient. The demand for information is high, considering that 89 per cent of households want to see the extension officer more often. Only 49 per cent of the farmers regarded the quality of the extension service as good. However, the service is viewed as generally available with 80 per cent of the respondents being able to make use of the service when required. Because advice and support are often linked to the mechanization service, farmers' perceptions might indicate that the extension is available. This is not necessarily the case as inadequate extension service was listed by 51 per cent of the respondents as one of the major problems experienced in

farming. Furthermore, low attendance rates at training courses, i.e. crop production, soil conservation, crop storage, farm budgeting and livestock improvement, were also identified.

#### 2.2.2.5 Marketing

The Khakhu and Mashamba co-operatives do not provide marketing facilities as their members prefer to sell their maize out of hand. The main reason for this practice is that the farmers were at the time obtaining higher prices through out of hand sales. Prices as high as R50 per 70kg bag or R714 per ton of maize were reported during the 1990/91 season. One farmer delivered his total crop (20 bags or 1.4 ton) from his 1 hectare plot to NTK and earned an income of R419 which is equivalent to a price of R299 per ton. This compares favourably with the Maize Board's producer price of R302 (after accounting for deferred payments) during the same 1990/91 season.

### 2.2.3 An analysis of the contribution of the FSP in Venda

#### 2.2.3.1 The contribution of the FSP to increased agricultural output

Information on the differences between the farming enterprises of the FSP members and those of the non-FSP members is provided in Table 2.9 below.

When comparing farmers participating in the Venda FSP and the non-FSP farmers it was determined that the FSP farmers produced on average 12.03 bags of maize per hectare compared to the 7.92 bags of the non-FSP farmers. The difference in maize production is significant at the 1% level. The question now arises whether the FSP contributed to an increase in agricultural (maize) output. An analysis was done to determine the factors which could be related to increased (or surplus) production. If these factors could be related to the elements of the FSP then a higher yield can be associated (at least partly) with the FSP. However, this is not necessarily the case, and thus it was felt that a discriminant analysis, similar to studies by Nieuwoudt and Vink (1989), Van Zyl *et al* (1991) and Lyne and Ortmann (1991), was needed to determine the factors associated with increased (maize) production.

Therefore, to estimate the relative importance of the Farmer Support Programme on levels of farm output, an econometric model was designed and tested. The model discriminated between households selling produce and those which do not. It was postulated that sellers of farm produce would use more fertilizer, spend more on contractor services, use more FSP credit, rent more land, purchase more chemicals, etc. than non-sellers. In addition, it was anticipated that the incidence of households knowing the agricultural officer, and those households owning farm machinery, would be higher amongst sellers.

Table 2.9 : Differences in the means of key variables between the FSP and non-FSP farmers in Venda (1991)

		Respondents		Significant differences between means (p value)
		FSP N = 69	Non-FSP N = 14	
Cropland ploughed	(ha)	4.33	3.10	0.0810
Cropland planted	(ha)	4.25	2.70	0.1328
Area under maize	(ha)	0.99	1.00	0.0219*
Area intercropped	(ha)	2.00	2.93	0.6341
Production of maize	(bags)	12.03	7.92	0.0063**
Consumption of maize	(bags)	7.04	7.07	0.4764
Maize sold	(bags)	3.89	0.85	0.0001**
Area under dry beans	(ha)	0.05	0.14	0.1393
Production of dry beans	(bags)	0.26	0.75	0.2326
Consumption of dry beans	(bags)	0.19	0.15	0.0061**
Dry beans sold	(bags)	0.07	0.21	0.3240
Area under pumpkins	(ha)	0.04	0.23	0.0000**
Production of pumpkins	(bags)	1.95	3.57	0.0000**
Consumption of pumpkins	(bags)	1.66	3.57	0.0000**
Pumpkins sold	(bags)	'	"	"

\* = difference between the means is significant at 5% level

\*\* = difference between the means is significant at 1 % level

The results of the discriminant analysis are presented in Table 2.10. The error count for the classifications was 14.33 per cent. The relative importance of each explanatory variable in discriminating between surplus and deficit producers is given by the magnitude of its partial  $R^2$  value and the standardised coefficient.

The discriminant function in Table 2.10 was estimated with the following explanatory variables distinguishing between surplus and deficit producers: the perception that soil erosion affects production; availability of ploughing services; education expenditure and use of chemical fertiliser. The variable "soil erosion affect production", tests producers' awareness of soil erosion and conservation. It was found that surplus producers through their contact with extension officers, were more aware that soil erosion affects production of maize negatively. This clearly indicates the value of and need for an appropriate extension service in showing the farmer the importance of soil conservation practices. The important contribution of extension to increased production is furthermore illustrated by, and linked to, the variable "use of chemical fertilizer". This variable, however, also explains the importance of the availability and financing of inputs as contributing to increased production. The role of the availability of the ploughing service accentuates the importance of access to appropriate services.



Table 2.10 : Estimated discriminant function for surplus and deficit producing households

Explanatory variable	Standardized coefficient		Partial R <sup>2</sup>	Significance P < F	Group means		
	Surplus	Deficit			Surplus	Deficit	Significance P < t
Soil erosion affect production	2.917	4.164	0.1791	0.0917	1.161 *	1.433 *	0.0856
Availability of ploughing services	18.394 -	12.079 -	0.2603	0.0520	1.000 *	1.100 *	0.0002
Education expenditure	0.0110	0.0077	0.3206	0.0222	110.39	102.21	0.0143
Use of chemical fertilizer	0.0159	0.0158	0.0871	0.1000	156.55	90.387	0.3473
Number of cases					25	30	

\* = Dummy variable with 1 = yes and 2 = no.

From the discriminant analysis above, it is clear that factors associated with the FSPs in the Mashamba and Khakhu areas of Venda (i.e. extension, ploughing services, inputs) are associated with discriminating between deficit and surplus producers. The use of fertilisers and ploughing services is furthermore significantly correlated with the provision of credit ( $r = 0.943$  ;  $p = 0.003$ ). This illustrates the positive effect of the Farmer Support Programme. In other words, it may be stated with relative confidence that the elements of the support programme contribute at least partially towards an increase in agricultural output. In addition it seems that extension, despite the reported inefficiencies and lack of coordination, also contributed to increased production.

### 2.2.3.2 The contribution of the FSP to marketable output

From Table 2.9 it is evident that there is a significant difference ( $p = 0.0001$ ) between the quantity of maize sold by the FSP farmers and the quantity marketed by the non-FSP farmers. It has been calculated that the FSP farmers sell on average 3.89 bags (80 kg) of maize while the non-FSP farmers only sell 0.85 bags. This difference could with some degree of certainty also be attributed to the support elements provided by the FSP.

The fact that farmers are selling a certain percentage of their crop should, however, be put in perspective by considering the case of one farmer at Mashamba. This particular farmer harvested 18 bags of maize during the 1990/91 season (more than an average yield), which is 6 bags more than his home consumption and he could, theoretically be classified as a commercial farmer selling surplus production. This is only theoretically, because there will be nothing left of his marketable surplus after he has paid the equivalent of 3.8 bags for his inputs, 2.4 bags for milling costs and 3-4 bags for transport and labour. Thus, the reason for the FSP farmers selling maize is mainly to be able to repay their production loans and to cover other costs which they may have incurred in the production process. It therefore seems as if profits from farming is still marginal for most farmers.

Dankwa (1992), using the same survey data, determined that 51.7 per cent of the households are net consumers, whilst 48.3 percent sold some of the maize produced. In the case of the non-FSP households 88.2 per cent of the households were identified as net consumers, with only 11.8 per cent selling between 26 and 50 per cent of their maize crop.

### 2.2.3.3 The contribution of the FSP to increased use of inputs

Table 2.11 provides a summary of the average quantity of inputs used by FSP members and non-FSP members, as well as the cost of the various inputs used. From this information it is possible to determine how the FSP, through the availability of inputs and the provision of extension advice, contributes to increased usage of inputs, for example hybrid seed and chemical fertiliser. The FSP members in Khakhu and Mashamba used on average 144.24 kg of fertiliser, compared to the 27.38 kg of fertiliser used by the non-FSP farmers. These figures could, however, be misleading because some households used up to 200 kg of chemical fertilizer and some none.

Of more importance, however, is input usage per hectare. It was calculated that the FSP farmers used on average 28.37 kg of seed and 156.5 kg of manufactured fertiliser per hectare. The non-FSP farmers on the other hand used 27.9 kg of seed and 36.6 kg of fertiliser per hectare. The non-FSP farmers used mainly their own seed, which is clear from analysing the amounts farmers spend on purchased seed. The FSP farmers spend on average R165 on hybrid seed while the non-FSP farmers spend only R13 on purchased seed. The high usage of organic fertiliser by the non-FSP farmers is also an interesting and significant difference between the two groups. This does to some extent reflect the lack of availability of chemical fertiliser to the non-FSP farmers as well as a lack of credit (finance) to purchase fertiliser.

Table 2.11 Household input purchases by FSP and non-FSP farmers, 1991

Item	Respondents		Significant differences between means (p-value)
	FSP (N = 69)	Non-FSP (N = 14)	
Seed used (kg)	28.98	15.66	0.4771
Fertilizer used (kg)	144.42	27.38	0.0000**
Organic fertilizer used (kg)	1.52	25.45	0.0000**
Ploughing service rented (kg)	14.46	19.14	0.1504

\* = difference between the means is significant at 5% level

\*\* = difference between the means is significant at 1% level

The FSP farmers in the two wards furthermore indicated that they were generally satisfied (98% of respondents) with the availability of inputs. The non-FSP members on the other hand were to a large extent dissatisfied with the availability of all the inputs. Only 7 per cent of the non-FSP farmers had regular access to fertiliser and seed. The FSP farmers considered the availability of pesticides and labour to be a major problem with only 3 per cent of the farmers indicating that they could obtain chemical pesticides. Apart from this, it is clear that the majority of inputs are generally available in the right packaging and quantity when needed.

To determine the contribution of the FSP in Venda to the increased use of agricultural inputs a model was developed which discriminates between households using large quantities of purchased fertilisers (> 150 kg) and those using small amounts (< 50 kg). Apart from fertiliser, all the explanatory variables tested in the model were considered. This model was considered because it analyses the household's intension to produce a larger output. The model also has more degrees of freedom in the smaller group. This is desirable as the tests and statistical significance are more reliable. The error count for discriminating between the high and low applications was 19.26 per cent.

Table 2.12 : Estimated discriminant function for high and low fertilizer input farming

Explanatory variable	Standardized coefficient		Partial R <sup>2</sup>	Significance P < F	Group means		
	High	Low			High	Low	Significance P < t
Carry out soil conservation practices Want to see the extension officer more often	5.9954	9.3061	0.6917	0.0001	1.937*	1.407*	0.0000
	13.2127	10.2889	0.2116	0.0001	1.000*	1.132*	0.0001
Number of cases					31	53	

\* = dummy variable with 1 = yes and 2 = no

These two explanatory variables, included in the discriminant function, in effect implicate extension being the major factor associated with higher usage of inputs, in this case fertilizer. It can be concluded that elements of the FSP can be associated with increased usage of fertiliser. The same conclusion was made when a similar function was fitted to discriminate between households which used large quantities of purchased seed (> 50 kg) and those using small amounts (< 10 kg). Apart from seed, all the explanatory variables tested in the model were considered. This model was considered because it analyses the household's intension to produce a larger output and supports the function discussed above (correlation between seed and fertiliser). The error count for discriminating between the high and low applications was 12.69%.

Again, as expected, all the explanatory variables selected, namely chemical fertiliser application, mechanical fertiliser application, the use of chemical insecticides and the number of males, had positive signs. The mechanical fertiliser application and the use of chemical insecticides were the most important variables discriminating between the two groups. The statistical significance of the variables were high. The use of chemical fertiliser and mechanical fertiliser application are the two important variables in determining whether the households are using large quantities of seed. In other words farmers applying modern farming methods i.e. chemical fertiliser by mechanical applications are intended to use more seed. Again these results could be linked with the extension service. This is due to the fact that extension and advice is important and indispensable to the adoption of modern farming methods by these farmers.

Table 2.13 : Estimated discriminant function for high and low seed use.

Explanatory variable	Standardized coefficient		Partial R <sup>2</sup>	Significance P < F	Group means		
	Surplus	Deficit			High	Low	Significance P < t
Use chemical fertilizer	0.0027	0.0316	0.2709	0.0000	136.00	5.468	0.0000
Mechanical fertilizer application	21.1994	16.9186	0.1917	0.0063	1.680 *	1.928*	0.0007
Use chemical insecticides	15.0127	14.6115	0.3200	0.0027	1.360 *	1.500*	0.0848
Number of males	2.6692	2.2253	0.2065	0.0770	2.160	3.286	0.0530
Number of cases					25	32	

\* = dummy variable with 1 = yes and 2 = no

From these two discriminant analyses it is clear that effective extension (linked to the variables "applying soil conservation practices", "chemical fertilizer application", "mechanical fertilizer application" and the "use of chemical insecticides") is one of the most important factors in the FSP contributing to higher input use.

To qualify these conclusions it was necessary to determine whether higher input use can in fact be associated with membership of the FSP. Based on cross-tabulation procedures and the calculation of chi-square values, it was found that only increased usage of fertiliser could be related to FSP membership. There seems to be no relationship between FSP membership and increased purchase of hybrid seed.

#### 2.2.3.4 The contribution of the FSP to improved household food security

In Section 2.2.3.1 it was indicated that FSP farmers have proportionally more sellers than net consumers as compared to the non-FSP households in Venda. This implies that the food security situation is less critical in the FSP group than in the non-FSP group. When considering the household expenditure figures in Table 2.14 below, it is evident that the non-FSP households spend relatively more on food and groceries than the FSP group (p = 0.0328). The fact that the FSP households sell more maize and spend less on food/groceries places the group in a better food security position. This may again be explained partly by the fact that the FSP group had more contacts with extension personnel and also had more access to production inputs than the non-FSP group.

Table 2.14 : Income and Expenditure differences between FSP and non-FSP members, 1991

Items	FSP farmers N = 69	Non-FSP farmers N = 14	Significant differences between means (p-value)
Savings account	2005.21	1052.85	0.0000**
Income from crops (R)	144.59	32.14	0.0000**
Livestock sales (R)	186.23	80.00	0.0000**
Funeral policy (R)	421.59	439.64	0.0000**
Monthly insurance premium (R)	18.04	92.57	0.0000**
Education expenditure (R)	108.46	59.36	0.0694
Fcxxl/groceries (R)	122.29	150.28	0.0328*
Clothes (R)	122.04	121.42	0.5913
Transport (R)	34.62	53.07	0.2076
Durables (R)	30.04	28.07	0.1500
Personal expenditures (R)	56.53	31.43	0.0000**
Medical (R)	48.68	40.28	0.3341
Instalments (R)	65.91	71.85	0.9182
Total Expenditures (R)	1028.20	1087.97	

\* = difference between the means is significant at 5% level

\*\* = difference between the means is significant at 1 % level

Using the survey data and Ordinary Least Squares procedures, Dankwa (1992) calculated the elasticities for both FSP and non-FSP households in Venda. The estimated food/groceries expenditure elasticities were inelastic and significant. The expenditure elasticity for food/groceries for the non-FSP group was 0.80 and highly significant ( $p = 0.0089$ ). On the other hand the estimated elasticity for the FSP group was slightly lower (0.78) but also highly significant ( $p = 0.0067$ ). These results imply that the non-FSP group spend more on food/groceries than the FSP group as shown in Table 2.14.

The results put the FSP clients in a comparatively better position as far as food security is concerned. From these findings it may be concluded that the provision of support services to subsistence farmers will help improve the food security situation in rural areas.

#### 2.2.3.5 The contribution of the FSP to increased household income and improved standard of living

The differences between the FSP and non-FSP farmers with regard to household income and household expenditures are indicated in Table 2.14 above. From the table it is evident that the FSP farmers earned significantly higher amounts from the sale of crops and livestock. The FSP farmers had bigger savings accounts than the non-clients (a measure of an increase in the standard of living of the households within the FSP). The non-FSP farmers paid significantly higher amounts for insurance and funeral policies. A further indication of the higher standard of living of the FSP members is the FSP members' higher household expenditures on education, durables, personal and medical expenditures. The non-FSP

farmers had higher expenditures on the more basic items like food, transport and instalments. However, no definite conclusions can be made with regard to the contribution of the FSP to household income and standard of living. It is often argued that usually it is the households with a higher standard of living (the more wealthy), who in any case are participating in the FSP programme. It is therefore not totally correct to conclude that the FSP contributes to improved standard of living as the situation before the implementation of the FSP is not known.

In an analysis done by Sartorius von Bach *et al* (1992) it was also shown how the FSP in Venda has influenced the need hierarchies of participants. Deficit producers are still focusing on basic needs while surplus producers cater for higher order needs. The main expenditures are on basic goods, i.e. food and clothing, followed by higher order needs, i.e. education and durable household items.

#### 2.2.3.6 The FSP and household debt

The weighted average value of new seasonal loans increased from R130 in 1988 to R213 in 1990 (constant 1990 prices). The FSP farmers' outstanding balance over the three year period was only R14 per client. The reason for this is probably because 81 per cent of all clients sampled thought that Agriven would take legal action against defaulters. Although the outstanding balance is quite low, the fact remains that the FSP farmers do on average owe the co-operatives R14 while the non-FSP farmers do not have any outstanding debt over the same period (See Table 2.15).

Table 2.15 : Household access to credit amongst Agriven clients and non-clients, 1991

Items		Khakhu	Mashamba	FSP farmers	Non-FSP farmers
Households sampled		32	37	69	14
Amount borrowed per client 1988	(R)	260.28	17.78	130.24	22.50
Amount borrowed per client 1989	(R)	286.94	104.80	189.27	32.92
Amount borrowed per client 1990	(R)	321.89	120.13	213.70	62.83
Mean outstanding balance 1988-90	(R)	3.98	22.66	14.00	0
Clients who thought that Agriven would act against defaulters	(%)	83.3	78.8	80.9	-
Clients who were not sure what would happen to defaulters	(%)	2.8	3.0	2.9	-

From Table 2.15 above it is also evident that the FSP farmers borrow larger amounts than the non-FSP farmers and thus have a greater risk of defaulting. The past drought resulted in a number of FSP farmers unable to repay their loans. In a recent survey 30 per cent of the respondents indicated that they owe more due to the drought. The FSP credit scheme increases the farming risk of these farmers when considering the variability in climatic

conditions.

## 2.2.4 Institutional aspects

### 2.2.4.1 Introduction

The institutional structuring of the farmer support programme, as outlined in the project description, and the loan agreement between Agriven and the DBS A, provides for a well defined interdependent arrangement of roles of all participants in each target area. The project description assigned various responsibilities to the following participants: -

- Agriven (the borrower)
- Venda Department of Agriculture and Forestry (Venda Government)
- Venda Secondary Co-operative
- Local authorities
- Primary Co-operatives
- Farmers
- Venda Dryland Crop Production Committee

This section provides a brief overview of the institutional structure as implemented and compares the current role of the participants with the outline provided in the project description. Finally some concluding remarks will be made.

Discussions with various officials showed that the joint responsibility of Agriven and the Venda Department of Agriculture and Forestry creates problems and to some extent contributes to the inefficiency in the implementation of the programme. This will be evident from the discussions of the various institutions and committees.

### 2.2.4.2 The FSP Action Committee and Farmer Committees

According to the project description, the FSP Action Committee was supposed to be instrumental in initiating the establishment of, and assistance to, the primary co-operatives, but was found to have effectively disbanded. The Committee was comprised of the Programme Manager and the Manager : Extension and Specialist services (representing Agriven) and unofficially representing the Department of Agriculture. The representative from the Department has since retired and it is understood that he had in fact lost interest even before retirement. No substitute has since been appointed by the Department of Agriculture and this has effectively rendered this committee non-existent.

The position of the programme manager as a member of the FSP Action Committee is undesirable since being a member of the implementing team, he also reports to the FSP Action Committee. The absence of the FSP Action Committee creates a gap in terms of institutional responsibilities and the coordination of the FSP and is therefore bound to affect the FSP's efficiency. The FSP Action Committee is supposed to assist the co-operatives in their organizational structuring, day to day management and training of staff. It seems that the programme manager is now performing most of the duties of the FSP Action Committee. The role of the Venda Dryland Crop Production Committee is, also not clear.

On the other hand, farmer committees were found to be non-existent at all the FSPs. This also creates an institutional gap, and consequently certain responsibilities abdicated. In practice, however, it has been learnt from the seconded manager at Mashamba co-operative that such a committee is not necessary because the manager usually takes all production decisions in conjunction with the extension officer. Whereas the management committee at Khakhu was very much involved in the taking of production decisions, the management committee of the Mashamba co-operative did the solving of disputes between farmers.

#### 2.2.4.3 The Venda Farmers Secondary Co-operative

It has been established from the programme manager that although the Venda Secondary Co-operative did supply inputs and some logistical support regarding mechanization, no training was ever provided to the staff of the primary co-operatives. The establishment of viable marketing channels was also never attended to. In fact, training responsibility as per project description, has been delegated to too many parties. This encourages the non-performance of any given task as no real accountability can be identified.

However, the Venda Farmers Secondary Co-operative has since been closed down due to financial problems. An alternative supplier of inputs and logistical support must now be sought.

Even during the period of its existence the VFSC did not really offer competitive prices, a factor that directly affected the production costs of the farmers. It is therefore advisable not to prescribe any single supplier to the primary co-operatives, but rather encourage the co-operative's management to buy from the cheapest suppliers. The consignment arrangement did not get off the ground since the VFSC supplied inputs on 30 days terms in order to alleviate its financial problems. The implementation of the consignment buying of stock will, however, greatly improve the financial position of the co-operatives.

#### 2.2.4.4 The Venda Government

The formation of the Farmer Committees according to the project description was the responsibility of the Venda Department of Agriculture and Forestry. The non-existence of these committees indicates the failure of the Department to attend to the issue. Coupled with the failure of the Department to nominate a substitute for the FSP Action Committee, the attitude and/or dedication of the Department towards the FSPs becomes questionable.

The provision, in accordance with the project description, that the Department should provide the extension service seems to completely overlook the findings of Bembridge (1988) on the quality of the extension service in Venda.

Extension services to farmers in all of the three FSPs in Venda are provided by the Department of Agriculture and Forestry as specified in the project description. According to the programme manager, this institutional arrangement is not conducive to increased production as those extension officers are not necessarily reporting to him, despite the provisions of the project description. It is therefore felt that these extension officers should have been permanently seconded to Agriven, reporting directly to the programme manager or his delegate for an improved supervisory/subordinate relationship. The efficiency of the



extension service can be improved and its responsiveness to the development activities of the FSPs enhanced.

#### 2.2.4.5 Local Authorities and Primary Co-operatives

The role of the local authorities in solving disputes have been minimal, except at Khakhu where the local headman (chief) is directly involved in the activities of the co-operative.

It was found that all three primary co-operatives in the Venda FSP were not involved in the purchase and marketing of surplus produce of members nor in the development of viable marketing channels. It also seems as if these co-operatives do not have the capacity to perform such a task. It would be of some benefit if this could be delegated to the Marketing Department of Agriven as an interim measure until such time as the co-operatives are capable of performing this task. The importance of the marketing function in the commercialization of subsistence agriculture cannot be over-emphasized.

#### 2.2.4.6 Farmers

Farmers have virtually no input in policy and decision-making of the FSPs, except at Khakhu, where the farmers have some say in decision making mainly through the Management Committee of the co-operative. According to the seconded manager at Mashamba co-operative, this situation is caused by the lack of knowledge on the part of the co-operative (FSP) members. The co-operative management is therefore expected to make all policy and production decisions.

The decisions on the land are not taken by the farmer themselves. They cannot decide on the type and quantities of production inputs to be used. At Khakhu it was learnt that although farmers participate through the Management Committee on production decisions, individual choice is limited as all plots are established with the same per hectare package of inputs (quality and quantity) and the individual is debited with a loan facility in proportion to the size of his plot.

#### 2.2.4.7 Coordination of the institutional structure

From the analysis of the actual institutional structure as implemented and currently operating it appears that most of the institutions and/or committees are defunct, which however, does not necessarily lead to negative results. With respect to the existing structure of institutions, it seems more appropriate to have a slimmer institutional set-up consisting of only **one** implementing agent with **coordinating** functions, so that all FSP elements are provided. Results show that especially the extension services are not effectively included in the Venda FSP package because this function falls under the auspices of the Venda Department of Agriculture.

In general, it can be concluded that the implementing agents in Venda are determined to contribute to the upliftment of the rural population. Institutional record keeping is improving. The increase in own decision-making of especially the participants and the co-operative in the Khakhu ward clearly indicate that the FSP, meets the objective of "learning-by-doing" approach. It should, however, be emphasized that the effectiveness of implementation of the

programme will increase if more attention is paid to the other elements of the FSP, i.e. extension, marketing, etc.

#### 2.2.5 Summary

The constraints experienced by Venda farmers in the target areas were identified as being:

- low local availability of agricultural inputs;
- insufficient extension and technical advisory support services;
- untimely and low level of availability of mechanisation services (winter ploughing / late planting); and
- a lack of local institutional structures to coordinate and effect input acquisition and produce distribution.

As indicated in the introduction, the purpose of this section was to determine how the implementation of the FSP in Venda helped to alleviate the above mentioned constraints and also to determine whether the FSP achieved its goals defined in the project description.

After initially providing an overview of the results of a sample survey of rural households in Venda, an overview of the implementation of the FSP elements was provided. From the discussion it can be concluded that the implementation of the FSP and the various elements of the programme, to a large degree succeeded in alleviating the mentioned constraints. Farmers who joined the FSP had improved access to inputs, extension advice was generally available to them and mechanisation services were more available and more reliable. The farmers' appreciation of and high regard for the mechanisation services provided by the FSP co-operatives could be related to the fact that untimely and low level of availability of mechanisation services was probably the biggest constraint for many of the Venda farmers. This was further emphasised by the important contribution of this element of the FSP to increased maize production, as shown in the discriminant analysis.

Although extension advice was provided to farmers in general, and also contributed to increased production, the farmers' dissatisfaction with the extension service was clearly evident from the results of the household survey. This stems to a large extent from a lack of commitment by the extension officers of the Venda Department of Agriculture and also from a lack of coordination between the Venda Department of Agriculture and Agriven. The extension officers are not responsible to the FSP programme manager and they do not report to him at all. This creates all sorts of problems, mainly in terms of total lack of coordination and accountability.

In evaluating and reviewing the project description it is evident that an over-designed institutional structure for the implementation of the FSPs in Venda was intended. As described in the original Farmer Support Programme description, a FSP requires (1) adequate provision of appropriate inputs and the funding thereof (credit) to the farmer, (2) the provision of a comprehensive mechanisation service, (3) marketing channels and services, (4) extension and demonstration services, (5) training, (6) the acquisition of the *de facto* rights to production and (7) the off-farm infrastructure. In order to provide the above, an institutional structure is required, so that each element can support the other to obtain growth and development in Venda.

From the institutional analysis it is evident that the local institutional structure as a whole is still lacking coordination and efficiency. Some of the institutional structures established at implementation of the FSP, have disbanded or are in effect defunct. This aspect, being identified as the fourth constraint facing farmers, is clearly not resolved and it seems as if institutional inefficiencies, duplication and coordination are the major problem of the Venda FSP at present.

For a more efficient operation of the FSP in Venda, a review of the institutional framework within which the FSP operates is recommended. No institution or organization and/or committees should be involved and responsibilities assigned unless there is a clear definition of accountability by such an institution, organization and/or committee. All efforts must be aimed at closing the responsibility-accountability gap. This will comprise cutting out the "dead wood" in the FSP's institutional framework.

The FSP should, within Agriven, be accorded a higher level of managerial and organizational structure than the current sub-section in which the programme is managed. A fully fledged FSP section should be established within Agriven, manned by a team of well-qualified personnel rather than the present one-man show. All personnel involved in the FSP must, as a matter of practical rationality, fall under the supervision of a well-qualified FSP Programme Manager.

In analysing the impact of the FSP in Venda it was determined that the FSP can with some confidence be associated with:

- increased agricultural output;
- increased sales of surplus produce;
- increased use of inputs, eg. fertiliser and hybrid seeds;
- increased household food security;
- a higher standard of living; and
- increased farming risk due to higher debt levels.

Although the implementation of the FSP in Venda seems to be generally successful, unfavourable climatic conditions, higher indebtedness and institutional inefficiencies could influence the success of the programme to a large extent.

## 2.3 THE FARMER SUPPORT PROGRAMME IN LEBOWA

### 2.3.1 Introduction

The Farmer Support Programme in Lebowa was initially implemented in two selected target areas in Lebowa namely, Phokoane and Kadishi. The programme was later implemented in other target areas such as Mokerong and Nebo. Only the FSPs at Phokoane and Kadishi will be considered in this discussion. Phokoane covers an area of 1 700 ha of dryland maize previously cultivated by the Lebowa Agricultural Cooperation (LAC) for their own account. The FSP in Phokoane entails the settlement of individual farmers on plots of 0,5 to 2 hectares arable land on the farms Rietfontein 876 KS, Vleeschboom 869 KS, Leeukraal 877 KS and Vierfontein 869 KS, which constituted the Phokoane maize project financed by DBSA in 1985. Areas of 30, 30, 20 and 15 hectares respectively on each farm was retained

as nuclei, to be farmed by the Phokoane tribal authority for their own account. The FSP in the Kadishi region was introduced to a relocated community on the farm Elandsfontein in the Bushbuckridge region in early 1990.

The conversion to farmer support in these target areas was in accordance with an agreement reached between DBSA management and the borrower (LAC) in late 1986 in terms of which the Phokoane Dryland Crop Project would eventually be converted into a comprehensive farmer support programme. Previous farming constraints identified in the target areas were:

- low local availability of appropriate agricultural inputs;
- insufficient extension and training support services;
- untimely and low level of availability of mechanisation services; and
- a lack of local institutional structures to coordinate input acquisition and produce distribution.

This situation led to the implementation of a farmer support programme in Lebowa. About 500 individual farmers were settled in the Phokoane area on the existing 1 700 ha of cultivated land. Moveable assets (vehicles and mechanisation equipment) were transferred from the current Phokoane maize project (LAC) to the Phokoane Co-operative. Settled farmers would be provided with production inputs, credit, marketing support, mechanisation services, extension, training and demonstration and research. The structuring of the necessary institutional arrangements in order to facilitate the above and ensure the integration of the privatisation of the project and the Farmer Support Programme were also given considerable attention.

The following principles formed the foundation of implementing the privatisation programme at Phokoane:

- comprehensive support services would be provided to individual farmers to be settled on the basis of demand.
- sufficient flexibility of the provision of support services would be adhered to in order to foster independent decision making by individual farmers within the constraints of the proposed project model.
- goods and services would be provided to farmers at economic rates.

The programme consists of the following elements in all localities:

- the establishment of suitable institutional arrangements for training, demonstration and extension support in each area;
- the provision of credit for agricultural inputs to farmers and finance for mechanisation equipment to co-operatives;
- the creation of suitable marketing structures and arrangements to facilitate efficient produce distribution;
- the provision of the necessary financial support for the construction of co-operative buildings and facilities, and;
- the provision of the necessary institutional support to facilitate proper development of local institutional structures with the eventual aim of independent decision making at individual and local levels.

The comprehensive programme would address the major constraints identified to ensure that farmers utilize existing agricultural potential, skills and facilities in raising productivity. Existing skills would be upgraded through efficient training and extension support. The development objective was set as settlement of individual dryland maize farmers and the provision of comprehensive agricultural support services and incentives to settled farmers to make them more efficient and help towards commercial production.

### 2.3.2 An overview of the implementation and extent of the FSP in Lebowa

The Lebowa Farmer Support Programme was implemented towards the end of 1988, with the first credit provided to Phokoane farmers in October 1988 intended for the 1988/89 production season. The first group of farmers also took part in the first training programme during that year. The Phokoane FSP was the first FSP to be established in Lebowa. The FSP started in November 1988 with 12 groups consisting of approximately 700 farmers. In 1990 the FSP concept was also introduced to the community at Elandsfontein in the Kadishi valley. A meeting was organised and farmers interested were invited to visit Phokoane. A nucleus of 15 interested farmers was established in this way and a programme of training courses started at Elandsfontein.

By the end of 1991 the picture of the Lebowa FSP was as follows: In the Phokoane region there were 28 groups with approximately 2 100 farmers, in the Ndebele region 8 groups with approximately 750 farmers; in Kadishi 2 groups with approximately 120 farmers, while there were 4 groups in Sekhukhune with approximately 360 farmers. This gives a total of 42 groups with approximately 3 330 farmers supported by the FSP in Lebowa.

At the end of 1992, 3 114 farmers were members of the Phokoane FSP, 146 members of the Kadishi FSP, 342 FSP members in the Ndebele region, and together they cultivated a total area of 3 885 hectares.

The implementation of the FSP initially had to overcome obstacles like the mistrust, resistance and suspicion of the actions and activities of the Phokoane co-operative. The implementation of the FSP in Phokoane became the responsibility of the manager of the Phokoane co-operative at that time. The approach of the FSP at Phokoane, and for that matter the whole of Lebowa, obtained a personal characteristic due to the commitment, belief and calling of the particular individual. He designed the FSP in Phokoane and implemented it with imagination and originality. Crucial to the development of the programme was the freedom allowed to the co-operative manager by the Lebowa Agricultural Corporation (LAC). In technical terms, the approach can be described as participatory development which in practice means regular contact with farmers, understanding and involvement. The programme is based on voluntary participation with nobody being forced into the programme. Training is the basis of this integrated support programme and is a prerequisite for participation.

Food security was identified as the basic need of the community in the Phokoane area. The goal of the FSP in Phokoane was therefore accordingly determined to be the increase of maize yields. The urgency of food security superseded any long term ideals of promoting commercial farmers. Thus, the FSP objective of supporting the emerging farmer to become a commercial farmer was overridden by the immediate aim of increasing maize production

to improve food security. It was believed that improved food security through visible food production would overcome suspicion and resistance. The lack of knowledge was identified as the main obstacle inhibiting increased production. The transfer of knowledge by means of extension and training was regarded as the solution of the problem.

The main elements of the Farmer Support Programme in Lebowa are, in order of importance:-

- Extension and training
- Inputs
- Mechanisation
- Credit
- Marketing

Extension and training were for various reasons, as described above, the main thrust of the FSP in Lebowa. Mechanisation and specific ploughing services, as well as agricultural inputs, were generally available and used in the rural areas of Lebowa. Lack of knowledge was however the major problem farmers faced in these areas. Knowledge of agricultural production being the major constraint, therefore, naturally resulted in the emphasis of the programme being placed on extension and training. Ploughing services as well as credit and inputs are provided to the farmers via the primary co-operatives at Phokoane, Kadishi and Ndebele.

### **2.3.3 Sample survey of rural households in Lebowa**

Two areas were identified to evaluate the implementation of the Farmer Support Programme in Lebowa, i.e. Phokoane and Kadishi. Household surveys were conducted during April to June 1991 and again in December 1992. Only the results from the first survey will be used in this section.

#### **2.3.3.1 Area Description**

##### *2.3.3.1.1 Phokoane*

The Phokoane area of Lebowa is situated approximately 50 kilometres East of Groblersdal. The topography is hilly with no rivers. The area is highly populated with the majority of the inhabitants belonging to the North-Sotho speaking Bapedi tribe. The area has deep fertile soils with a high average annual rain fall of between 600 and 700 millimetres. The main crops grown in Phokoane are maize and groundnuts.

##### *2.3.3.1.2 Kadishi*

The Kadishi area is situated in the Bosbokrand region, about 30 to 40 kilometres West of Graskop. The area is very mountainous with many small streams. Kadishi is not as highly populated as Phokoane. Likewise the Bapedi people reside here. The area has good soils with an annual rainfall of 600 to 700 millimetres.

### 2.3.3.2 Data collection

Data used in this study were collected by means of a questionnaire survey conducted during April to June 1991. The sample included 42 households in the Kadishi area and 131 households in the Phokoane area. However, only 33 and 92 questionnaires, respectively, were usable. Due to the difference between the two areas and for institutional reasons, two different questionnaires were used. Comparisons between the two areas will therefore be somewhat difficult. The evaluation of the FSP in Kadishi experienced further difficulties due to political unrest and divisions in the community as well as the fact that the survey was done only one year after implementation.

Two samples were drawn from each area: The first was a two-stage sample taken from the population of rural households in the area, assuming that the total population was aware of the Lebowa Agricultural Corporation's (LAC) credit scheme. The second was a simple random sample drawn from a list of past and present FSP farmers in each area. Of the total of 125 respondents, 29 were non-FSP farmers (12 in Phokoane and 17 in Kadishi) and 96 FSP farmers (80 in Phokoane and 16 in Kadishi).

### 2.3.3.3 Survey results

#### 2.3.3.3.1 *Household demographics*

The overall mean household size in the survey areas is 7.8 persons (including migrants). Due to some limitations in completing the questionnaire, the unemployment rate could not be determined. The economic active population in the Kadishi area (more females than males) comprised of 57.1 per cent of the population in the area, while in the Phokoane area (more males than females) the economic active population was 60.9 per cent. Approximately 35 per cent of household members were under the age of 15 and 4 per cent over the age of 65.

#### 2.3.3.3.2 *Household income*

The household income and expenditure patterns of rural households in Phokoane and Kadishi are shown in Table 2.16. From this table it is clear that income from the farming enterprise contributed 68.4 per cent to the total earnings of the household. Expenditures on education, food, transport and durables were the main household expenditures in the Kadishi area. The mean total income in the Phokoane area was R5 567.23, which is significantly higher than that in Kadishi (R1 525.52). The main expenditure items in the Phokoane area were food, clothing, savings and durables.

Table 2.16 : Income and expenditure patterns in Phokoane and Kadishi, 1991

Income			Expenditure		
Item	Kadishi	Phokoane	Item	Kadishi	Phokoane
Crops	927.27	-	Education	723.24	536.19
Livestock	116.36	-	Food	1291.56	944.88
Informal trade	-	-	Clothes	522.48	615.36
Rental from land	-	-	Savings	152.76	1008.93
Hiring out equipment	-	-	Transport	774.48	216.34
Occasional work	3.63	-	Durables	829.08	906.81
Regular cash income	478.26	-	Other Household Exp.	894.08	306.18
<b>Total income</b>	<b>1525.52</b>	<b>5567.23</b>	<b>Total expenditures</b>	<b>5187.68</b>	<b>4534.69</b>

Note : LAC viewed questions on sources of income as too sensitive during the time of the survey and therefore these questions were omitted from the questionnaire used in the survey of Phokoane households.

### 2.3.3.3.3 Farming activities

The average size of land owned in Phokoane was 1.38 ha dryland cropland and 0.20 ha residential sites. Due to a high coefficient of variance, these averages should be qualified. A total of 84 per cent of the respondents indicated that they have access to a piece of land, with some respondents indicating that they have plots even as large as 6 and 9 hectares. However, 80 percent of the respondents' plots varied between 0.8 and 1.2 hectare. The average size of rented land was 0.35 dryland cropland (with the rent being R14/ha). Only 15 per cent of the respondents rented additional land, some as large as 8 hectares. The average size of land owned in Kadishi was 1.45 ha dryland cropland, 2.00 ha grazing land and a 0.30 ha residential site.

The incidence of food cropping was high with evidence of cash crops (see income from crops). Maize was produced by the majority of households in the two study areas. The proportion of households producing sorghum, dry beans, pumpkins and cotton was much lower. Cash income from farming in Kadishi accounted for 68 per cent of total income, but the figures for Phokoane were unobtainable. However, estimates of farm income are unreliable as respondents were generally not willing to give income or expenditure figures.

The yields for the 1990/91 season in the two areas are indicated in Table 2.17 below. The crop and yields for the 1991/92 production season were considerably lower due to the drought. The estimated yield for the 1992/93 crop season are 3.5 tons per hectare in the Phokoane region and 4.2 tons per hectare in Kadishi.



Table 2.17 : Maize yields in Phokoane and Kadishi.

	Phokoane	Kadishi
Target yields	3.0 t/ha	3.0 t/ha
Actual yields (1990/91)	2.8 t/ha	3.5 t/ha
Actual yields (1991/92)	0.8 t/ha	0 t/ha *

\* No recorded yields due to drought

The mean values of the numbers of livestock kept in the Kadishi area were higher than the Phokoane areas where a lack of grazing land (27.3 per cent according to the respondents) is experienced. On average, the Kadishi households owned 5.6 head of cattle, 5.6 goats and 4 chickens.

With respect to cultivated areas, the Kadishi households planted 1.28 ha (CV of 198%), mainly with maize and cotton. In Phokoane 93 percent of the households cultivated maize, with the majority cultivating approximately 1 hectare of maize (80% of respondents planted between 1 and 1.5 ha of maize). Only 3 percent of the Phokoane households produced sorghum, 24 per cent dry beans and 15 per cent producing pumpkins (mainly intercropped with maize).

In the Kadishi area, 90 per cent of the households keep cattle, while only 43 per cent of the respondents in Phokoane own cattle. The majority (90.9%) of the Kadishi respondents found that there is enough grazing to support the number of cattle, while only 61.2 per cent in the Phokoane region could say the same. The Kadishi respondents (72.7%) were in general satisfied with the current land tenure system while 63.6 per cent were satisfied with the way land is being allocated (all of the respondents were registered plot holders). However, 90.8 per cent of the Kadishi respondents indicated that they would prefer to have a title deed or some proof of ownership of the land they are farming on. Only 18.2 per cent of the Kadishi farmers are prepared to rent out their land to another farmer and only 36.4 per cent are prepared to rent extra land if available (18.2 per cent of the respondents stated that there is enough land available).

When asked whether they would consider other employment opportunities in an urban area, only 18.2 per cent of the Kadishi respondents indicated that they would leave the farming enterprise, while 18.2 per cent would employ somebody to farm full-time for him/her. The majority of households (72.7%) indicated that they prefer to continue farming. These results could, however, be related to a lack of other job opportunities in the region or to the fact that migratory work is a less common practice due to the long distance from the PWV-region.

Similarly to the Venda farmers, the farmers in the two study areas in Lebowa also view the need for fencing as a major farming problem. The major farming problems as indicated by the respondents in the Kadishi and Phokoane areas are drought, poor tractor services and land shortage for cropping, soil erosion and inadequate credit (in Kadishi). It is also clear from the analysis that the availability of good quality drinking water seems to be a major concern for the majority of households in particularly the Phokoane area.

### 2.3.4 An evaluation of the implementation of the various FSP elements in Lebowa

The following services under the Farmer Support Programme were provided to the Phokoane and Kadishi respondents: Credit, inputs, mechanization services, marketing and extension services. The percentage of Kadishi respondents who rated the provision of these services as satisfactory is: credit (0%), inputs (27.3%), mechanisation (9.1%), marketing (9.1%), and extension (45.5%). The main reason given by the Kadishi respondents (90.9%) for not joining the FSP was the insufficient credit offered by the FSP credit scheme. It should however, be mentioned that the credit facilities provided by the Kadishi co-operative is not linked to the FSP programme.

The Phokoane farmers rated the adequacy of these services supplied by the FSP as follows: credit (81.3%), inputs (95.6%), mechanisation (73.6%), marketing (54.9%), and extension (87.9%).

#### 2.3.4.1 Mechanisation

The co-operatives at Phokoane and Kadishi do not directly provide mechanisation services, but play an important role in coordinating and facilitating the mechanisation service from private contractors. The Phokoane co-operative offers the following mechanisation services: -

- the co-operative's own tractors and implements are available to farmers;
- private tractor owners contracted by the co-operative.

The project description provides for the transfer to the Phokoane co-operative of the maize project's mechanisation package at outstanding loan value plus capitalised interest. As provided in the project description, the co-operative could sell tractors and equipment to interested private parties. The Phokoane co-operative sold most of its tractors on a five year loan basis to 15 individuals with the proviso that these new tractor owners should serve the "wishes" of the co-operative and the local farming community as to where, when and how to plough. Due to the continued growth of the programme the co-operative increasingly has to rely on additional private tractor owners to provide the ever expanding mechanisation service. During the 1992/93 season the co-operative arranged for an additional 18 contractors to assist in providing ploughing services to the Phokoane farmers.

The co-operative coordinates the mechanisation services provided by the private contractors. The co-operative once a year arranges a coordinating meeting between the management committee and the private contractors. The co-operative also compiles a list of tractor owners in the Phokoane area who are prepared to provide ploughing services to the farmers. Each farmer group will select a number of contractors to plough their fields and he has to approach the co-operative to arrange a specific day and time for his fields to be ploughed. From this the co-operative draws up a time schedule for each of the contractors, which ensures an efficient and fair utilisation of the limited tractor capacity. The use of private contractors requires a control system to ensure an acceptable standard of cultivation. The system that was devised made farmers themselves responsible for the quality of ploughing and planting of their fields. Upon concluding their credit arrangement with the co-operative every farmer receives a duplicate set of tickets for ploughing and planting. The

farmer will hand his ticket to the contractor only when he/she is satisfied with the contractor's work. The contractor uses the ticket to claim his money from the co-operative. This control system is very effective and for the contractors it gives the added guarantee that they will receive their payment via the co-operative.

The Phokoane co-operative has 2 tractors with implements mainly used for the co-operative's own purpose. The following implements owned by the co-operative are hired out to contractors or farmers at a daily rate of R75:-

- 15 maize planters
- 4 cultivators
- 8 rolling cultivators
- 5 vibrofax soil preparation implements.

In general members of the Phokoane co-operative are satisfied with the mechanisation service provided via the co-operative.

In Kadishi a similar mechanisation situation prevails. Between seven and nine private contractors operate in this area. However, the Kadishi farmers are not satisfied with the ploughing services provided by the contractors. The contractors are apparently not willing to plough to the depth the farmers were taught in the training courses. The problem is compounded by the fact that the contractors do not provide planting services or mechanical application of fertiliser. This is partly due to the rocky soils of Kadishi which damage implements and prevent contractors from applying the correct ploughing depth. This is also a reason why they do not provide planting services. At present most farmers in Kadishi plant and fertilise in the traditional way by hand.

Table 2.18 : Mechanisation and input costs per hectare - Phokoane (R)

Season	Tractor services			Fertiliser		Seed Sensako 2147	Total cost per hectare
	Plough	Disc	Plant	3.2.0	L.A.N		
1989/90	80.00	40.00	50.00	96.00	44.00	30.00	340.00
1990/91	80.00	40.00	50.00	96.00	44.00	30.00	340.00
1991/92	104.50	66.00	66.00	144.00	66.00	40.00	486.50

#### 2.3.4.2 Inputs

In Kadishi 81.8 per cent of the respondents make use of chemical fertiliser, while in Phokoane 97 per cent indicated that they use chemical fertiliser. In Kadishi 36 per cent of the respondents indicated that they use pesticides while only 9 per cent of the respondents use herbicides. It therefore seems that manual weeding is still the major practice in Kadishi. The situation in Phokoane is more or less similar with 50 per cent of the respondents using pesticides and only 7 per cent herbicides.

All the respondents in Kadishi indicated that they had access to fertiliser and seed but only 54 per cent of the respondents had access to pesticides and 36 per cent to dips and sprays. Accessibility to the various inputs supplied through the FSP in Kadishi was as follows:

Fertilizer (63.6%), seed (63.6%), chemicals (36.4%) and dips & sprays (27.3%). The Kadishi farmers were in general dissatisfied with the FSP, with only 27.3 per cent of the respondents approving the availability, quality and quantity of farming inputs.

Virtually all (97%) the Phokoane farmers had access to fertiliser and seed, while 84 per cent of the respondents indicated that they could obtain pesticides and 51 per cent had access to dips and sprays. The majority (95%) of the Phokoane farmers were satisfied with the operation of the support programme.

Table 2.19 provides an overview of the quantities of farm inputs used by Lebowa farmers. The mean values provided in the table are misleading due to the high coefficient of variation. The skewness of the data gathered in the sample survey is further indicated by the fact that some Kadishi respondents used as much as 150 kg of chemical fertilizer and some Phokoane respondents as much as 450 kg.

Table 2.19: Farm input purchases by rural households in Phokoane and Kadishi, 1991 (Mean values per household).

Input		Kadishi (N = 33)		Phokoane (N = 92)	
		Average	CV	Average	CV
Seed	(Kg)	17.60	79 %	20.75	107 %
Chemical fertilizers	(Kg)	65.00	96 %	210.73	126 %
Organic fertilizer	(Kg)	50.00	316%	104.40	162 %

Soil surveys and analyses were carried out in order to determine the specific type of fertiliser required for the FSP areas as well as the correct application rates. The recommendations following from these analyses are conveyed to the farmers through the training courses. It forms a major part of the phase 1 course. Through the years the farmers applied only available fertilisers (often the wrong type) or that which they could afford. The recommended application rates of fertiliser in the Kadishi and Phokoane areas are similar, i.e. :-

- 3 bags (150 kg) of 3:2:0 per hectare, plus
- 2 bags (100 kg) of LAN per hectare

It was also recommended to the farmers to use 10kg of Sensako 2147 (a hybrid cultivar) per hectare as the maize cultivar to be planted.

#### 2.3.4.3 Credit

Revolving credit for fertilizer, ploughing, discing, seed, etc. is advanced to those members who have access to arable land. Credit is provided according to the area of land and is calculated on a per hectare basis. Credit provided to members for the 1991/92 season amounted to R486.50 per hectare at Phokoane and R463.55 per hectare at Kadishi (non-FSP credit provided by the Kadishi co-operative independent from the FSP). The composition of

the credit amount for farmers in the Phokoane area is shown in Table 5.18. The rates in Kadishi consisted of R128.55 for 3:2:0, R70.00 for LAN, R35.00 for seed, R100.00 for ploughing, R60.00 for discing and R70.00 for planting: A total credit of R463.55 per hectare.

Phokoane farmers usually qualify for credit after attending one of the training courses. A deposit of 50 per cent is required for any credit arrangement but when a member has had training this requirement is reduced to 40 per cent. In Kadishi credit is not linked to the training programme. Membership of the Kadishi co-operative qualify farmers for credit, and this is only available for inputs and not for mechanisation. To qualify for credit, farmers will have to clear the previous year's production loan plus interest. FSP credit was introduced in Kadishi during the 1991/92 production season and a total loan of R8 000 was extended to 39 farmers. The interest rate at both co-operatives was 18% per annum (or 1.5% per month) and the farmers were given 9 months to repay their loan.

The training manager at LAC, the managers of the co-operatives, the farmer group leaders and co-operative directors are of the opinion that most of the farmers know that they have to repay their loans, they know the terms involved, understand the concept of interest and are aware of the consequences if they do not repay. Crop failure and drought are the main reasons why some are unable to repay their loans. The default rates for the 1990/91 season were 37 per cent at Kadishi and 34 per cent at Phokoane. The co-operatives can take various actions to ensure that the farmers repay their loans. When a member does not repay his/her loan after 9 months, the management committee of the co-operative will meet with such a member to urge repayment of the debt. If this is without success the member will be referred to the local council where the chief will do his best to ensure that the member repays his/her debt. The last option will of course be court action.

Most of the Phokoane farmers use the credit facility at the co-operative. Some farmers prefer, however, not to take up the credit and pay cash for services and inputs. Farmers are generally advised to pay cash for inputs should they do have funds available.

The sources of credit used by the farmers in the study areas were determined from the household surveys. According to the results the Kadishi households borrowed from family/friends (45.5%), traders (9.1%) and money lenders (9.1%), while farm credit was borrowed from the co-operative (18.2%). The Kadishi respondents were in general not satisfied with the ease of borrowing from the above mentioned institutions. The Kadishi respondents viewed FSP related credit as generally unavailable. The households in Phokoane borrowed credit from the co-operative (51.1%), family/friends (14.3%) and traders (2.2%). In general, they were satisfied with the ease of borrowing. While credit was rated as unavailable to the Kadishi respondents, it was viewed as generally available by the Phokoane households.

#### 2.3.4.4 Extension

Extension and training are provided to the farmers in the Phokoane and Kadishi areas by the LAC training section consisting of two senior training officers and two extension officers seconded from the Lebowa Department of Agriculture (LDA). Since the implementation of the programme these four men have reached almost 4 000 households. Many of the farmers

became members of the respective co-operatives only after completion of the training schedule. The training schedules are coordinated through the co-operatives and the extension officers use the co-operatives as their "base". Training is, however, given in the specific village or area of each farmer group.

The success of the training programme is evident from the increased yields experienced by the majority of farmers who completed the training programme. The success of these farmers resulted in an increased demand for training. The expectation thus far created could become a threat to the FSP in Lebowa as only limited manpower is available to provide the extension and training. This threat forced LAC to embark on a new initiative to train more officers for specific application in the FSP areas. This is also a pro-active measure in view of the intended implementation of the FSP in other areas of Lebowa which will put further strain on an already full training schedule. The number of farmers attending training courses in each of the two areas is indicated in Table 2.20.

Table 2.20 : Number of farmers who have completed training courses at Phokoane and Kadishi

Season	Phokoane		Kadishi	
	Phase 1	Phase 2	Phase 1	Phase 2
1989/90	48			
1990/91	814		146	
1991/92	460	640	0 *	31
1992/93	492	386	**	**

\* Training was suspended due to political unrest in the Kadishi area

\*\* Due to the drought, farmers were involved in non-agricultural activities

Phase 1 consists of basic training, explaining the very basic principles of maize production, while Phase 2 consists of more advanced lectures, touching on elements of soil conservation, plant protection, finance, etc. The drop-out rate from Phase 1 to Phase 2 is 33 per cent in Phokoane and 38 per cent in Kadishi.

By the end of 1992, 1 960 certificates were issued to farmers who had successfully completed the Phase 1 training course. At that same point in time 1 057 farmers had completed the Phase 2 training course in Phokoane and Kadishi. It is estimated that 3 200 Phokoane farmers and 146 Kadishi farmers are at present involved with the FSP in Lebowa.

The direct involvement of extension officers in the decision making process in the farming enterprise is much lower than in Venda. Although the direct involvement is low, most farmers gained their knowledge from the training courses. These proved to be invaluable in the decision-making process.

According to the general feeling of the respondents, it may be concluded that the extension effort in Kadishi is inefficient. With 73 per cent of households wanting to see the extension

officer more often, it can be concluded that the demand for information in Kadishi is high. However, despite the problem of inadequate extension, 72.7 per cent of the respondents in Kadishi viewed extension services as unnecessary. This explains to some extent the low attendance at training courses, i.e. crop production (54.5%), soil conservation (9.1%), crop storage (18.2%), farm budgeting (0%) and livestock improvement (18.2%) (See Table 2.21).

Table 2.21 : Extension and training courses attended by respondents

Population estimate		Kadishi	Phokoane
<b>Extesion and training :</b>			
Households that know Agric. Officer's name	(%)	100.0	89.2
Attended crop production course	(%)	54.5	97.5
Attended soil conservation course	(%)	9.1	97.5
Attended crop storage course	(%)	18.2	96.9
Attend livestock improvement course	(%)	18.2	88.2

Given that 89.2 per cent of households want to see the extension officer more often, it can be concluded that the demand for information is still high. Only 16.2 per cent of the respondents regarded extension services as unnecessary, which is supported by the high attendance in training courses, i.e. crop production (97.5%), soil conservation (97.5%), crop storage (96.1%), farm budgeting (95%) and livestock improvement (88.2%) (see Table 2.21). It was also determined that 87 per cent of the farmers in Phokoane regarded the quality of extension services as good to excellent. Many attributed their perceived success to the extension and training effort.

In comparing the FSP and non-FSP farmers' perception of the extension element of the FSP, it was determined that virtually all the FSP farmers in Kadishi knew the local agricultural officer's name. The number of visits by farmers to the local extension officer was significantly higher for FSP members than non-FSP farmers in Kadishi. The extension officer visited the FSP members on average 41 times per year, while he payed 42 visits per year on average to the non-FSP members. Despite the high number of contacts, most of the respondents indicated that they would like to see the agricultural officers more often.

Virtually all the FSP farmers in Phokoane knew the local agricultural officer's name (FSP 91.7% and Non-FSP 72.7%). The local agricultural officer visited FSP farmers on average 32 times per year, while the mean number of contacts with non-FSP members were 23 per year. Despite the high number of contacts, most of the respondents in the Phokoane region indicated that they would like to see the agricultural officers more often (36.1 % FSP and 18.2% non-FSP).

Table 2.22 : Access to extension and training services amongst FSP and non-FSP farmers, 1991

Items	FSP farmers		Non-FSP farmers	
	Kadishi	Phokoane	Kadishi	Phokoane
Households sampled	16	80	17	12
Total contacts per household	46.5	32.5	42.3	23
Households that knew the AO's name (%)	100	91.7	98	72.7
Households aware of:				
- a crop course (%)	40	95	100	27.3
- a livestock course (%)	20	18.8	50	18.2
- a management course (%)	-	46.3	-	18.2
- a crop storage course (%)	20	80	33.3	18.2
- a soil conservation course (%)	-	82.5	-	18.2
Households that attended:				
- a crop course (%)	20	98.7	83.3	66.7
- a livestock course (%)	0	93.3	33.3	50
- a management course (%)	-	97.4	-	50
- a crop storage course (%)	20	98.5	16.7	50
- a soil conservation course (%)	-	98.5	-	50

About 75 per cent of the Kadishi respondents believe that training will improve their farming skills. The awareness and attendance of the various training courses by the two groups of farmers are shown in Table 2.22. It is interesting to note that more of the non-FSP farmers in Kadishi attended the crop and livestock courses.

Phokoane FSP members indicated that they could get access to information on ploughing, planting, fertilizing, weeding, pest control (all varying between 91.4 and 100%), animal production (28.6%) and dipping of animals (25.7%). However, the non-FSP members responded differently, indicating that access to information was more difficult than experienced by the FSP members.

#### 2.3.4.5 Marketing

The Phokoane and Kadishi co-operatives provide limited marketing facilities to their members as well as storage facilities and means whereby coarse maize can be exchanged for maize meal. FSP members in the Phokoane area have the option of delivering their maize for the above mentioned purposes to either the Phokoane co-operative or the OTK's Sekhukhune mill situated adjacent to the Phokoane co-operative. A large group of the FSP members deliver their maize at the OTK mill as the milling fee is somewhat lower than the fee charged by the co-operative. In addition, members also indicated that the maize meal originating from this mill tastes better. The difference in exchange fees is attributed to the fact that the cooperative does not own its own mill. The co-operative only serves as a depot from where the



maize is transported by road to the nearest mill. The exchange/milling fee charged by the co-operative is as follows: -

Table 2.23 : Exchange/milling fees

Weight of bag	Phokoane Co-operative	OTK mill
80 kg bag (meal)	R8.25	R7.00
50 kg bag (meal)	R7.15	R6.50

Note : 80kg maize meal are produced off 96 kg of coarse maize  
50kg maize meal are produced off 60 kg of coarse maize.

The Phokoane co-operative delivers its maize receipts to a mill which falls under the jurisdiction of the Maize Board. The mill therefore has to comply with the regulations and policy of the Maize Board. This arrangement could in some instances work to the detriment of the FSP farmers. Because of the shortage of white maize due to the drought in 1992, all millers were compelled to mix white and yellow maize meal. As a result FSP members who battled to produce their few bags of white maize received a mixture of yellow and white maize meal in return. Since the people prefer white maize this creates all sorts of frustrations and suspicion amongst the farmers. It is for this very reason the co-operative at one stage thought of investing in its own mill.

An indication of the maize deliveries received by the Phokoane co-operative is provided in Table 2.24. This is also compared with the receipts of the OTK mill in specific years. In 1990/91 season Phokoane farmers delivered 2 145 tons of maize to the Phokoane cooperative and 3 300 tons of maize to the OTK mill. If an estimation is made of maize sold to local traders and of maize used for household purposes, the total production of maize in that year in the total Phokoane area (FSP and non-FSP) could be in the order of 9 000 tons. From the above, it can be concluded that the area under maize cultivation during the 1990/91 season exceeded 3 500 ha. According to the latest estimates total maize production in the Phokoane region during the 1991/92 season was only 2 500 tons, mainly due to the drought.

Table 2.24 : Maize deliveries at Phokoane Co-operative

Year	Phokoane Co-operative			OTK mill
	Total Receipts	Storage	Sales	Total Receipts
1989/90	1 828 t	1 620 t	208 t	
1990/91	2 145 t	1 416 t	729 t	3 300 t
1991/92	820 t	686 t	134 t	1 400 t

Notable from the table above is the increase in the sales of maize relative to storage in normal production years. In 1989/90 farmers sold on average 11.4 per cent of their crop. This increased in the following years to 34 and 20 per cent respectively. This provides some indication that the households are more food secure and therefore has surplus maize to sell. On the other hand it could be argued that farmers were forced to sell more of their crop to settle outstanding debts and therefore it could imply that food security did not improve but

merely stabilised. The drought in the 1991/92 season resulted in reduced deliveries with a larger portion of the total crop stored for later consumption.

The marketing situation at the Kadishi co-operative is similar. Maize deliveries increased from 122 tons in 1989/90 to 220 tons in 1990/91. The share of the maize crop delivered to the co-operative increased from 43 per cent to 60 per cent over the same period. The 1991/92 maize crop was virtually zero. Fortunately, the community is food secure due to previous good yields and households having enough maize in storage to provide for as much as three years, in some cases.

### 2.3.5. An analysis of the contribution of the FSP in Lebowa

#### 2.3.5.1 The contribution of the FSP to increased agricultural output

The contribution of the FSP to increased agricultural output is clear from the discussion in Section 2.3.4.5 on the total production of maize in the FSP areas and from the figures in Table 2.24 above. The disastrous effect of unfavourable weather conditions is also evident from the table and for the purpose of this discussion it is necessary to ignore the results of the 1991/92 crop year for a moment.

From the figures for total maize production in the Phokoane region for the 1989/90 and 1990/91 seasons presented in Table 2.24, it can be concluded that the FSP resulted in an increase in total production (deliveries) and to an increase in sales of maize. However, when comparing the yield figures of non-FSP and FSP farmers (Table 2.25) for the 1990/91 season the effect of the FSP is not as clear as Table 2.24 leads us to believe. From Table 2.25 it follows that the FSP farmers at Phokoane yielded 1.63 tonnes per hectare in the 1990/91 crop season, while the non-FSP farmers recorded a slightly lower yield of 1.02 t/ha ( $p = 0.0366$ ). The reversed situation occurred in the Kadishi region where the non-FSP farmers produced more per hectare on average than the FSP farmers (0.9 t/ha vs. 0.49 t/ha).

Table 2.25 :A Comparison of the farming enterprises of FSP and non-FSP farmers, 1991

	Kadishi			Phokoane		
	FSP	Non-FSP	Significance	FSP	Non-FSP	Significance
Households sampled	16	17		80	12	
Land ploughed (%)	100	83		78.8	81.8	
Land planted (%)	98	81		60.1	70.2	
Production of maize (ton)	1.62	1.833	***	2.71	2.53	***
Maize yield per hectare (t/ha)	0.49	0.90	***	1.63	1.02	**
Consumption of maize (ton)	0.531	0.565		1.25	0.83	**
Maize sold (ton)	0.669	0.918		0.69	0.36	*

\*\*\* = Differences between FSP and non-FSP farmers are significant at the 1% level.

\*\* = Differences between FSP and non-FSP farmers are significant at the 5% level. \*

= Differences between FSP and non-FSP farmers are significant at the 10% level.

The yield difference between the FSP and non-FSP farmers at Phokoane (although significant) is, however, not on its own sufficient to conclude that the FSP contributed to increased production. It was therefore necessary to do a further analysis to determine if the FSP elements do in fact contribute to increased or surplus production. Using the survey data of the Phokoane region a discriminant analysis was undertaken to determine which factors were associated with surplus production. It was argued that households producing more than subsistence needs (12 - 14 bags) and earning an income from maize production, were classified as surplus producers or emerging farmers. Results obtained from the discriminant analysis are presented in Table 2.26. The entries in the first column indicate the relative contribution of each variable to the discriminant function.

Table 2.26 Variables discriminating between deficit and surplus producers in Phokoane

Discriminant variable	Standard discriminant function				Group means		
	Coefficient		Partial R <sup>2</sup>	Significance (P < F)	Deficit farmer	Surplus farmer	Significance (P < t)
	Deficit	Surplus					
Own cattle	8.683	6.533	0.1790	0.0001	1.85 *	1.42 *	0.0073
Area intercrop	1.901	1.387	0.0633	0.0194	2.00	1.29	0.0000
Extension and Training	7.381	5.266	0.0610	0.0227	1.25 *	1.06 *	0.0000
Level of training	0.373	1.322	0.0673	0.0172	1.65 #	1.83 #	0.0005
Mechanical Planting	7.775	5.353	0.0327	0.1040	1.22 *	1.06 *	0.0000

\* = Indicates dummy variable with 1 = yes ; 2 = no.

# = Phase 1 training course = 1 ; Phase 2 training course = 2 ; non-participant = 0

The purpose of the discriminant analysis was not to classify new data. Attention is focused on the contribution of each variable to the group centroid's separation as measured by the F-statistic. A highly significant factor discriminating between surplus and deficit producers was ownership of cattle by surplus producing farmers ( $p = 0.0001$ ). The group means in Table 2.26 also indicate that deficit producers are more likely not to keep cattle ( $p = 0.0073$ ). This variable gives an indication of wealth, implying that the surplus producers are relatively more wealthy and food secure, and do not depend solely on maize production for household food needs. This confirms to some degree the concern of analysts that only the more wealthy and the so-called rural elite participate in the FSP. The ownership of cattle furthermore implies that these households have liquid assets which could readily be sold in case of cash needs.

The analysis also showed that extension and training are associated with surplus production ( $p = 0.0227$ ). There is also a significant difference between surplus and deficit producers with regard to this variable, with surplus producers having a larger tendency to attend training courses. It could therefore be argued that the extension and training element of the

FSP in Phokoane contributes to increased production (at least partially).

The variable "level of training" refers to the different training courses offered through the FSP. The phase 1 training course was coded as 1, the phase 2 course as 2 and non participants was coded as 0. From the group means in Table 2.26 it follows that surplus producers tended to have completed the phase 2 training course. In a further analysis it was found that the average yield of respondents with phase 1 training is 1.54 tons/ha and that of the respondents who have completed or currently taking part in phase 2 training is 3.56 tons per hectare ( $p = 0.0011$ ). This provides further evidence that the FSP partly contributes to increased output. However, this could also be attributed thereto that the first farmers to join the FSP and the first to finish the second phase of training are all farming in the core region of Phokoane, which is known to have a high agriculture potential.

Other important factors were that surplus producing households make use of mechanical planting and intercrop a smaller area. Differences in group means between surplus and deficit producers were significant in both cases. These variables through the link with the mechanization and training elements of the FSP, provide further evidence that the FSP elements contributed to increased agricultural output. A similar analysis for Kadishi was done but provided insignificant results. Too few observations contributed to this result.

The impact of the FSP on agricultural output is further highlighted in a study of the yields of 1 200 Phokoane farmers by Adendorf (1992). The results of this study is summarised in Table 2.27.

Table 2.27 : Increase in maize production at Phokoane as result of FSP training

Item	Before FSP (1990)	After FSP (1991) *
Average size of land	1.3 ha	1.3 ha
Average yield (70kg bags)	6.1 (0.4t/ha)	41.6 (2.9t/ha)
Annual home consumption (70kg bags)	14.5	14.5
Average shortfall/surplus	(9.6)	24.0

\* After completion of the FSP Phase I training course.

Note : The climatic conditions of the two crop seasons did not differ dramatically. Thus the yield increase could be attributed to other factors.

Furthermore, Adendorf (1992) indicated the effect of training on the maize yield of one individual Phokoane farmer, confirming the results discussed above.

Before training :      1986            :      20 bags/ha  
                                  1987            :      32 bags/ha  
                                  1988            :      31 bags/ha

After training :      1989            :      36 bags/ha  
                                  1990            :      51 bags/ha  
                                  1991            :      60 bags/ha

The additional analysis and discussion above make it possible to state that the FSP in Lebowa (Phokoane), mainly through the provision of training and extension, has probably contributed to an increase in agricultural output. It should, however, be stressed that climatic conditions play a crucial role in the extent of the response to training. But in these cases, 1988 to 1991 were all average to dry years and the response could therefore to a large extent be attributed to the FSP training programme.

### 2.3.5.2      The contribution of the FSP to increased input use

Increased input use is most likely due to increased area cultivated. It is also expected that the increased availability of inputs and access to finance (co-operative credit) could also contribute to the increased usage of especially fertiliser and hybrid seed. The increased usage could be linked to the FSP training programme as the fertiliser type and seed type to be used, as well as the application rates, are all included as part of the training courses.

The results from the household survey showed very little difference in the use of chemical fertiliser and seed between FSP and non-FSP farmers. It was only in the use of pesticides and herbicides that the FSP farmers exceeded the non-FSP farmers. The fact that approximately the same proportion of non-FSP farmers as FSP farmers are using fertiliser and hybrid seed, could partly be related to the so-called demonstration effect and to farmers informing other farmers of the "new" cultivation practices.

To support this notion the Phokoane co-operative provided some interesting statistics regarding the co-operatives' total sales of fertiliser and maize seed over the past four seasons. The sales statistics were also provided in terms of hectares, calculated according to the recommended application rates. From Table 2.28 it is evident that enough fertiliser was sold during the 1991/92 crop season to fertilise at least 3 380 hectares at the recommended application rate. This should be compared with the total area cultivated with maize by FSP members, namely 1 900 hectares. The same trend was apparent in the sales of seed. Seed for at least 4 057 hectares were sold during the 1991/92 season. These statistics clearly give the impression that the FSP has some spill-over effects with non-member farmers practising the production techniques as taught to the FSP farmers. It is clear that the successful yields of FSP members resulted in a demonstration effect to other households in the area.

Table 2.28 :    Sales of inputs at Phokoane Co-operative.

Year	Fertiliser		Seed		Area cultivated by FSP members
	50kg bags	Calculated in hectares	10kg bags	Calculated in hectares	
1988/90	430	143 ha	210	210 ha	300 ha
1989/90	3516	1172 ha	669	669 ha	1036 ha
1990/91	5714	1904 ha	2297	2297 ha	1300 ha
1991/92	10140	3380 ha	4057	4057 ha	1900 ha

From the household surveys it was determined that the FSP farmers in Phokoane used 97.5 per cent hybrid seed and 2.5 per cent of the traditional variety, while the non-FSP members used more of the traditional variety (hybrid 54.5% and traditional 45.5%).

An econometric model discriminating between Phokoane households that use large quantities of purchased fertilizers (> 150 kg) and those that use less (< 100 kg) was also estimated to determine if the FSP elements can be associated with increased usage of fertiliser. Apart from this, all the explanatory variables tested in the model were considered. However, due to similarities in fertiliser usage no significant discriminant function could be obtained.

In a further analysis, a model discriminating between Phokoane households using large quantities of purchased seed (> 20 kg) and those using small amounts (< 20 kg) was also estimated. Apart from seed, all the other explanatory variables tested in the model were considered. This model was considered because it analyses the household's intension to produce a larger output and supports the second model (correlation between seed and fertilizer). Again no significant result could be obtained.

The insignificant fittings of the two functions described above can be related to similarities in application rates of seed and fertiliser. This is partly a result of the training programme and also due to the spill-over effect, as discussed above. It can, however, be concluded that the training programme has succeeded in teaching farmers not to apply too much fertiliser and seed but, rather the correct quantity. The efficient use of inputs is a matter to be addressed at a later stage.

#### 2.3.5.3 The contribution of the FSP to improved household food security

From the discussion in Section 2.3.5.1 and the data presented in Table 2.24, and specifically Table 2.27, it can be concluded that the FSP (at Phokoane) has resulted in improved household food security. The increase in maize sales is a major indicator of this, as well as the increase in household staple food production from an average annual shortfall of 9.6 bags of maize below household needs of 14.5 bags annually to an average surplus of 24 bags (See Table 2.27). This is already more than enough evidence that the FSP resulted in households alleviating hunger and food insecurity which was their major concern.

From Table 2.29, listing the main expenditure items of FSP and non-FSP households, it is further evident that FSP households (in Phokoane) spend less (R154.16) on maize meal than the non-FSP farmers (R402.18). The expenditure on maize meal constitutes only 3 per cent of total household expenditure of the FSP households, while in the case of the non-FSP this portion of their expenditure is somewhat larger at 8.6 per cent. The relatively low expenditure on maize meal supports the fact that the FSP households produce comparatively more maize than the non-FSP group. The considerably higher expenditure on maize meal of the major staple by the non-FSP group reflects the relatively more food insecure position of these households (Dankwa et al, 1992).

The lower expenditure on maize meal put the FSP households in a position to spend more on other food (as is clearly indicated in Table 2.29). The FSP households spend about twice as much on other food than the non-FSP households. This indicates that the FSP resulted in a food expenditure shift away from maize meal to other food. It could therefore lead to

improved dietary composition and improved nutritional intake of household members.

#### 2.3.5.4 The contribution of the FSP to increased household income and improved standard of living

An analysis of the difference between income and expenditure patterns of the FSP farmers and the non-FSP farmers is presented in Table 2.29. The table shows that the FSP farmers in Kadishi had bigger savings accounts, but smaller burial/funeral policies than the non-FSP farmers. The non-FSP farmers earned significantly higher amounts from the sale of crops and livestock. The non-FSP farmers had higher expenditures with respect to transport and instalments. The non-FSP farmers had also higher expenditures on the motivators like durables, personal expenditures and medical expenditures. These results seem to be contrasting but it must be kept in mind that Kadishi is a special case where other factors, eg. political and other groupings, play an important role.

Table 2.29 : Income and expenditure differences between FSP and non-FSP members in Lebowa, 1991

Items	Kadishi			Phokoane		
	FSP farmers	Non-FSP	Significance	FSP farmers	Non-FSP	Significance
Savings account	360.00	16.66	**	-	-	
Crops sold last year	30.00	1675.00	**	-	-	
Livestock sales	33.60	213.33		-	-	
Total income	-	-		5678.47	4758.18	
Funeral policy	340.00	1536.00	**	-	-	
Education expenditure	596.00	990.50	**	345.38	1923.82	**
Other food	408.80	1038.50		801.57	463.72	**
Maize meal	-	-		154.16	402.18	
Clothes	944.00	609.83	*	639.96	436.45	
Transport	168.00	1280.67	**	230.71	111.81	**
Durables	382.00	1100.00	**	959.67	522.36	**
Personal expenditures	199.60	251.00		-	-	
Medical	98.00	183.36		-	-	
Instalments	144.00	840.00	**	-	-	
Household expenditures				332.26	116.45	**
Farm expenditures				640.05	691.00	

\* Difference between FSP and non-FSP households is significant at the 5% level

\*\* Difference between FSP and non-FSP households is significant at the 1% level.

The FSP farmers in Phokoane had a bigger total income, higher expenditures on food, clothes, durables, household expenditures and farm expenditures. The expenditure on education by the non-FSP households was, however, higher than that of the FSP members. The results presented in Table 2.29 give the impression that the FSP households do have a higher income and their expenditure patterns indicate a higher standard of living.

## **2.3.6. Institutional aspects**

### **2.3.6.1 Introduction**

The purpose of this section is to discuss the institutional structure of the FSP in Lebowa as currently in operation. The intention of this discussion is to illuminate the deviation from the proposed institutional structure as outlined in the project description and also to show how the institutional structure is promoting the objectives of the FSP in Lebowa.

### **2.3.6.2 Farmer Committees**

It seems as if the FSP is promoted by officers involved with the training programme with the Manager: Training of LAC as the driving force.

### **2.3.6.3 The Co-operatives at Phokoane and Kadishi**

Two of the secondary co-operatives in Lebowa, i.e. Phokoane and Kadishi play an important role in the implementation of the FSP in Lebowa. The Phokoane co-operative is situated at Phokoane in the Nebo area, approximately 50 kilometres east of Groblersdal. The co-operative has at present (April 1993) 2 703 members, all of whom paid their R20 membership fee.

The Kadishi co-operative situated 34 kilometres west of Graskop, is the smaller co-operative of the two with 146 members at present, paying the full membership fee of R100 over a period of five years. A comparison of the operation of the two co-operatives is provided in Table 2.30.

Inputs, credit, ploughing services and advice are provided to the farmers by these two co-operatives. The Phokoane co-operative, supported by FSP and Non-FSP members is currently one of the few co-operatives in southern Africa yielding profits. It is estimated that more than 4 000 households do their business here. If the average household size is taken into account, the estimated number of people served by the co-operative could be in the range of 28 500. This co-operative does not only supply inputs and some logistical support on mechanisation and credit, but also arranges marketing opportunities, coordinate mechanisation services, and acts as development coordinator. The manager of the cooperative, appointed and remunerated by LAC, is responsible for all the managerial decisions tasks. His accountant is also a LAC employee. This, to our mind, is counterproductive to the intended principle of "learning by doing". The question therefore arises what will happen to the co-operative when this expertise is not available any more and members having to manage the co-operative themselves.



Table 2.30:

A comparison of the Phokoane and Kadishi FSP co-operatives

Season	Phokoane					Kadishi				
	Members	Area Planted	Credit per ha	Total Loan	Repayment < %	Members	Area Planted	Credit per ha	Total Loan	Repayment (%)
1988/89	239	200 ha								
1989/90	830	1 036 ha	340-00	R 90 000	77.7					
1990/91	1 637	1 300 ha	340-00	R180 000	76.6	126	800 ha	453-55		
1991/92	2 248	1 900 ha	486-50	R240 000	66.0	146	23 ha	463-55	R 8 000	57.3
1992/93	2 703	**	**	**	**	146	**	**	**	**

\* Due to drought

\*\* Unavailable at time of analysis

The Kadishi co-operative is situated in a remote and isolated area of Lebowa. The FSP was implemented in Kadishi during 1991 and it is only since this date that credit was provided to the members of the Kadishi co-operative. Some of the group leaders in Kadishi admitted that credit was the major constraint in agricultural production in that area. The provision of credit and training services resulted in a drastic increase in turnover, despite the severe drought. Similar to the situation at the Phokoane co-operative, the manager and the accountant are LAC employees.

#### 2.3.6.4 The Lebowa Government

It seems that the Lebowa Department of Agriculture is not interested in and committed to the FSP, as observed by some of the extension officers previously working for the Department. Some of the regional directors showed some interest in the programme but generally the regional directors envy the success of the FSP and view the FSP as a threat to the Department of Agriculture and to their position. It has been said that this could be one of the reasons why the regional directors of the Lebowa Department of Agriculture do not provide any support to the FSP.

At present more than 500 extension officers are employed by the Department of Agriculture. Apart from the two extension officers seconded to LAC for the FSP, none of the other 500 are involved in the FSP extension and training programme as they view the programme as "too much work". From our observation it would appear that the 4 training officers working on the FSP, are effectively reaching more farmers than the Department of Agriculture in Lebowa.

#### 2.3.6.5 Lebowa Agricultural Corporation

The Lebowa Agricultural Corporation (LAC) was instrumental in implementing the FSP in Lebowa. As stipulated in the project description the LAC was responsible for the privatisation of the Phokoane Dryland Maize Project. LAC transferred all moveable assets of the maize project to the co-operatives at outstanding loan value plus capitalized interest.

LAC's approach to the development problem is people oriented and demand-driven and the approach basically is a bottom-up one. The FSP in Lebowa was designed and implemented

by the manager of the Phokoane co-operative and employee of LAC and the programme became a personal mission, pursued with zealous commitment. One crucial aspect to the development of the programme was the freedom he was allowed from LAC. The LAC official responsible for the FSP did not manage or prescribe to him and instead worked v/ith him, listening to and meeting the farmers, etc.

LAC does however, fulfil a supportive role to the co-operatives through the provision of management expertise, etc. The provision and scheduling of extension and training is also a further responsibility of the LAC officials and the two extension officers seconded from the LDA.

#### 2.3.6.6 Farmers

By interviewing with farmers who are members of the FSPs in Phokoane and Kadishi it was evident that in general they were very pleased with their improved situation after joining the FSP. They ascribe this mainly to training, because they view the lack of knowledge as the main factor inhibiting agricultural production. Inputs were always available but they did not know how to apply it.

The programme in Lebowa is based on voluntary participation. No farmer is forced into the programme, forced to join or form a farmer group. Groups are activated spontaneously through the success of the programme. Although the farmer groups are essential to the working of the programme in terms of implementation, divisions and group failure do occur.

The programme does not dictate to farmers on input use. It provides direction to the farmers and increase their farming options. Farmers are still in control and practical farming decisions are taken by the farmers themselves. Farmers only qualify for credit after they have completed the first phase of the training course.

The role of the tribal chief in the successful implementation of the FSPs appears to be small, which to a certain extent indicate lack of support from them. However, as some group leaders mentioned, initially the chiefs were against this "new" FSP approach but changed their attitude towards the programme because their people were satisfied and had enough to eat, even despite the severe drought.

#### 2.3.7. Summary

From the discussion above it appears that the success of the FSP in Phokoane is based on access to one of the FSP elements, namely extension and training. All other elements are in one or another way attached to this service. At present, it seems as if the FSP (especially at Phokoane) is successful, but it must be stressed that this is to a great extent based on the positive influence and commitment by the LAC officials involved in the FSP.

In general, it can be concluded that the implementing agents in Lebowa are determined to contribute to the upliftment of the rural population. Institutional record keeping is improving and the impression is gained that the FSP in Lebowa is successful. However, there is a lack of own decision-making by the participants and co-operatives, which indicate that the FSP, to some extent does not meet the objective of "learning-by-doing".

The FSP in Lebowa has the support of the people since it helped them to overcome their major daily problem - hunger. The FSP banished hunger by improving the food security situation in these areas and contributing to a better livelihood for thousands of households in rural Lebowa.

The institutional structure of the FSP in Lebowa is much slimmer than in Venda and there seems to be no major coordination problems as the programme is the sole responsibility of LAC. A lack of training personnel appears to be a major inhibiting factor. The dedication and commitment of the LAC officials and their two extension officers are the major factor contributing to the successful implementation of the FSP in Lebowa. The officials from LAC succeeded in bridging the cultural and communication gap between the implementing agent and the people. Although the approach is somewhat patronizing it is done in such a manner that nobody is offended.

The successful implementation of the FSP in Phokoane contradicts the difficulties experienced with the implementing of the programme in Kadishi. The success of the FSP in Phokoane can be attributed to the personal interest of the LAC extension officers in the Phokoane area. It could also be argued that their approach was specifically designed for the circumstances in the Phokoane area and was successful due to the fact that they were always present in the area and that they viewed the programme as a personal challenge. The difficulties in Kadishi are to some extent attributed to the political division in the community and because the region is so isolated from the rest of Lebowa.

The FSP in Lebowa has improved food security in rural Lebowa. The question now remains: will the programme as currently implemented also help these households to become emerging or small commercial farmers?

## 2.4 THE FARMER SUPPORT PROGRAMME IN KANGWANE

### 2.4.1 Introduction

The Kangwane FSP was introduced in four phases. The first three phases addressed the provision of sheds, agricultural inputs and small scale water supply systems, respectively. The Livestock Farmer Support Programme is the fourth FSP to be implemented in KaNgwane, but the first specifically addressing support for livestock production. The second phase of the KaNgwane FSP is partly an extension of the first phase to provide more comprehensively for mechanisation services as well as an expansion of all FSP elements into new areas. Furthermore, it will entail the provision of further comprehensive farmer support services to approximately 2 700 additional small-scale farmers on approximately 10 000 ha in eight additional localities in all three main regions of KaNgwane.

The project consists of the supply of comprehensive agricultural support services with the following elements:

### *Service centres*

The provision of eight service centres to farmer groups, to facilitate the furnishing of the following farmer support services in new localities within the three main regions of Kangwane:

- Production inputs and capital requirements;
- credit;
- marketing;
- training; and
- extension, demonstration and research.

### *Mechanisation services*

The second phase of the implementation of the FSP would involve the provision of credit to approximately 30 additional contractors for the repair of their existing tractors, or the purchase of second-hand reconditioned tractors. It would also finance the purchase of equipment for both the 26 existing contractors established during KaNgwane FSP I and the 30 additional contractors to enable them to provide comprehensive services to the farmers and the local community, as required.

### *Irrigation equipment for small-scale farmers*

The financing of approximately 26 individual farmers or farmer groups to purchase irrigation equipment and engines for their existing small irrigation farms on which they have *de facto* land rights.

### *Production loans to farmers*

The provision of production loans to dryland farmers, as well as to new small-scale irrigation farmers, for the partial financing of short-term production inputs.

### *Training and extension*

The comprehensive support services would assist farmers and contractors to utilise existing skills in raising the productivity of land, labour and capital, as well as upgrading the farmers and contractors' skills through extension and training.

## **2.4.2 An overview of the implementation and extent of the FSP in KaNgwane**

FSPs have been implemented in KaNgwane since 1987. By mid-1989 there were twenty seven farmers' associations managing the affairs of farmers, such as applications for loans. At present 87 farmers' associations are assisted through the FSP in KaNgwane. The farmers' associations are co-ordinated by the KaNgwane Agricultural Union. Thirteen new service centres serving as distribution outlets had been constructed by mid-1989. The service centres constructed by implementing agents will eventually be bought by the farmer associations.

Individuals farm in areas where arable land size per farmer ranges from one to ten hectares, while crops grown are mainly dryland maize and cotton. Farmers in KaNgwane expressed

a desire to have their farms irrigated, and DBS A has approved loans for support to emergent irrigation farmers.

Mechanisation packages, consisting of a tractor, plough and trailer, are also made available to individual contractors on a loan basis. The contractors offer services to the FSP farmers. The provision of agricultural extension, research and demonstration is the responsibility of the KaNgwane Department of Agriculture and Forestry. Agriwane also provides extension related to specific issues.

### 2.4.3 Sample survey of rural households in KaNgwane

Three regions of KaNgwane, i.e. Mswati, Mlondozi and Nkomazi were selected for this survey. Household surveys were conducted between December 1991 and March 1992 and again in December 1992/January 1993. For the purpose of this discussion only the results of the first survey are used.

#### 2.4.3.1 Area description

##### 2.4.3.1.1 *Mswati*

The Mswati region of KaNgwane is situated on the Highveld at an altitude of between 1050 and 1700 metres above sea level. The region is mountainous with hills and streams. The Barberton Highland forms the northern border of the region. The vegetation is typical of the Piet Retief "suurveld". Rainfall averages between 800 and 1000 mm per annum.

The Mswati region consist of a number of sub-regions. For the purpose of this study, three of the sub-regions were identified and surveyed, i.e. Bettysgoed, Swallowsnest and Hartebeeskop.

Three farmers' associations operate in the Bettysgoed sub-region. They are the Zamani Association (Agriwane clients), the Mashibambisane Association and the Zamakuzaka Association. The latter comprises mainly females cultivating garden plots with no access to credit supplied by Agriwane.

Farmer households belonging to the Vukani Nakhosikazi Association were surveyed to represent farmer households in the Swallowsnest region. The third subregion, Hartebeeskop, was represented by a survey of farmer households from the Litjelebube Association.

##### 2.4.3.1.2 *Mlondozi*

The topography of the Mlondozi region is similar to the Mswati region with the one exception, namely, the Amsterdam Undulating Hills in the south of the region. Drainage occurs in an easterly direction. The annual mean rainfall is between 800 and 1000 mm.

The valleys in the region were traditionally used by the White commercial farmers as winter grazing for their livestock.

The Mlondozi region consists of the Steynsdorp and Eerstehoek sub-regions. Farmer households of the Juluka, Mashihambisane and Ingogo farmers' associations were surveyed in the Steynsdorp region. Unfortunately, the results from the Juluka farmers turned out to be unreliable as the field worker was unreliable. These were omitted from the analysis. Farmers of the Eerstehoek subregion are renting a farm outside KaNgwane from a White farmer. These farmers have no access to credit provided by Agriwane because Agriwane is prohibited by law from operating outside the KaNgwane borders.

#### 2.4.3.1.3 *Nkomazi*

The Nkomazi region is situated in the Lowveld at between 450 and 600 metres above sea level. The area is characterized by slopes on the Eastern and Western sides of the Lomati River. Drainage is in a north-easterly direction with annual rainfall of above 1000 mm.

Three sub-regions in the Nkomazi region were surveyed, i.e. Schoemansdal, Schulzental and Driekoppies. The farmer households in the Schoemansdal region are members of the Isizamoyethu farmers' association and farm on garden plots. They have no access to Agriwane or FSP credit. The farmers in this ward are competing for the limited water supply with a major coffee project in the same area. Farmers of the Nhlanhla and Thuthukani farmers' associations (mainly females on community gardens) were surveyed in the Schulzental subregion.

Four farmer groups in the Driekoppies region were identified for the survey. Three of these groups have access to irrigation water from a canal out of the Lomati River. The three groups are Ngogolo (sugar cane), Likusasa Lethu (leather ferns) and Cedzindlala (females on garden plots).

#### 2.4.3.1.4 *Nsikazi*

During the period October 1991 to February 1992 political violence and unrest occurred in the Nsikazi region. The field workers were requested by the tribal authorities not to commence with surveying and questioning the farmer households. The Nsikazi region was therefore excluded from the evaluation programme of the FSP in KaNgwane.

#### 2.4.3.2 Data Collection

Data used in this study were collected by a team of 10 field workers by means of a questionnaire survey conducted between December 1991 and March 1992. The sample included 205 rural households in KaNgwane: 80 in Mswati, 45 in Mlondozi and 80 in Nkomazi. The distribution between the different sub-regions is indicated in Table 2.31. Only 176 questionnaires were usable. The selection of respondents according to certain farmers' associations, resulted in a skew distribution of FSP participants. The respondents in one region or sub-region were either from an association being members of the FSP or non-participants. Only a few cases were found where FSP and non-FSP members belonged to one farmers' association or resided within one sub-region with the same natural resource base. It was therefore difficult to make meaningful comparisons between farmers and farmers' associations. The results should be interpreted against this background.

Table 2.31 : Sample distribution of households and useable questionnaires in KaNgwane, 1991 (n = 176)

Region and farmers' association	Sample size	Usable Questionnaires
<b>MSWATI</b>		
<b>1. Bettysgoed:-</b>		
(a) Zamani	15	15
(b) Mashibambisane	10	10
(c) Zamakuzaka	15	10
<b>2. Swallowsnest:-</b>		
(a) Vukani Nakhosikazi	20	20
<b>3. Hartebeeskop:-</b>		
(a) Litjelebube	20	19
TOTAL: MSWATI	80	79
<b>MLONDOZI</b>		
<b>1. Steynsdorp:-</b>		
(a) Juluka	15	0
(b) Mashihambisane	5	5
(c) Ingogo	15	13
<b>2. Eerstehoek:-</b>	10	10
TOTAL: MLONDOZI	45	28
<b>NKOMAZI</b>		
<b>1. Schoemansdal</b>		
(a) Isizamoyethu	10	10
<b>2. Schulzendal</b>		
(a) Nhlanhla	15	15
(b) Thuthukani	5	5
<b>3. Driekoppies</b>		
(a) Ngogolo	20	16
(b) Likusasa Lethu	5	5
(c) Cedzindlala	25	18
TOTAL: NKOMAZI	80	69
<b>TOTAL</b>	<b>205</b>	<b>176</b>

#### 2.4.3.3 Survey results 2.4.3.3.1

##### *Household demographics*

The average size of each household in KaNgwane has been calculated as 8.5 persons. It was further determined that the economically active population in KaNgwane is 69.4 per cent. It is also interesting to note that 80 per cent of the economically active population is females. This is clearly illustrated by the total absence of males in the age group 26 to 35 years in the

households surveyed.

A large number of households interviewed indicated that they have lived on White commercial farms before moving to KaNgwane. However, the majority of the households (52.8%) have been living in KaNgwane for a period of more than 20 years.

#### 2.4.3.3.2 Household income

The average income and expenditure patterns of households in the study area appears in Table 2.32.

Income from the farming enterprise contributed on average nearly 50 per cent to the total income of the household. This provides a clear indication of the importance of farming and agriculture in general in the welfare of the rural community in KaNgwane. The success of the farming enterprise has therefore a direct impact on the standard of living of the household.

Table 2.32: Average income and expenditure patterns of households surveyed in KaNgwane, 1991/92

INCOME			EXPENDITURE		
Item	Average (R)	CV (%)	Item	Average (R)	CV (%)
Crops	4389.53	(249.57)	Maize meal	1126.37	(312.46)
Livestock	723.51	(275.97)	Other goods	1289.15	(112.58)
Informal trading	505.69	(509.68)	Household expenditure	1256.55	(129.38)
Income from land	57.84	(972.35)	Transport	861.32	(165.24)
rented out			Clothing	1129.62	(134.73)
Hiring out equipment	110.62	(361.20)	Savings	999.71	(241.50)
Occasional work	854.51	(248.03)	Durables	419.59	(172.03)
Cash remittance from	2655.88	(153.59)			
family in cities			Farm expenditure	2990.10	(216.73)
Other	1863.40	(339.09)	Education	1164.92	(272.56)
TOTAL	11161.10		TOTAL	11237.33	

The relatively large amounts spend on motivators like education, clothing and general household expenditure, give an indication of the relatively high standard of living if compared to the study areas in Venda and Lebowa.



While farming earned nearly half of the household's income, farm expenses only made up a quarter of total expenditure. Some farmers (20.5 per cent of the respondents) also earn an income by ploughing other farmers' fields, while others (15.9 per cent of the respondents) provide an off-farm service, e.g. transport. These serve as additional income sources to some of the households in the study areas.

#### 2.4.3.3.3 Farming activities

Water plays an important role in the every day life of rural communities in KaNgwane. It was determined that households were, on average, 1.6 kilometre away from the nearest water point. Livestock were kept about 2 km from the nearest water point, while croplands were on average 1.2 km from the water source.

Table 2.33 below gives an indication of the land use patterns in KaNgwane, stating the average size owned in each of the different land categories. The table also shows that dryland cropland is most commonly rented or share-cropped. The average size of land rented is, however, relatively small (less than half a hectare in size). The average rent paid for dryland is R23.88 per year (CV = 35.57). This amounts to roughly R55.00 per hectare per annum.

Table 2.33 : Average land use patterns per household surveyed in KaNgwane, 1991

Land Type	Owned		Rented/share-cropped	
	ha	CV (%)	ha	CV (%)
Irrigated cropland owned	1.01	(316.15)		
Dryland cropland	2.47	(131.37)	0.37	(439.45)
Fallow land	0.15	(190.50)		
Grazing land	3.35	(313.09)	0.31	(904.67)
Garden plot	0.04	(693.27)		
Residential site	0.33	(284.46)	0.02	(1326.65)
Community garden plot	0.11	(379.24)		

It was also determined that 23.9 per cent of all owned land was individually fenced while 76 per cent of the land was collectively fenced as a group of plots or farms.

The different crops and the average area cultivated under each crop in KaNgwane are shown in Table 2.34. From the information provided in Table 2.34 the average yield of all the crops produced can be calculated. Looking at the two major crops, i.e. maize and sugar cane, it has been calculated that the average yield by the maize farmers in KaNgwane is 1.90 t/ha while the sugar farmers obtained an average yield of 111 t/ha. This compares favourably with the average yield of commercial farmers in certain parts of South Africa.

The table also indicates the percentage of households consuming the total harvest of each crop. In this regard it is interesting to note that in 34.1 per cent of the cases the total maize harvest was consumed by the household. However, on average the households surveyed used roughly

half of the annual harvest for home consumption. In the case of sorghum 96 per cent of the households consumed their total harvest.

Table 2.34 : Crops and average area cultivated in KaNgwane by various households cultivating the different crops, 1991/2

Crop	Area planted last season		Production		% of Households consuming heir total harvest
	ha	CV (%)	kg	CV (%)	
Maize	1.95	(107.98)	3897.55	(198.24)	34.1 %
Sorghum	0.37	(145.76)	322.00	( 47.68)	96.0 %
Dry beans	1.93	(193.33)	21.42	(162.05)	61.9 %
Pumpkins	0.99	(187.94)	484.48	(125.05)	67.9 %
Potatoes	0.19	(255.07)	391.63	(225.82)	67.6 %
Cabbage	0.25	(167.08)	443.77	(256.01)	60.2 %
Spinach	0.02	(304.42)	392.92	(403.81)	60.2 %
Onions	0.03	(248.08)	255.36	(218.84)	61.4 %
Beetroot	0.10	(263.51)	495.62	(401.76)	58.5 %
Tomatoes	0.30	(171.63)	351.62	(190.77)	65.3 %
Sugar Cane	5.93	( 38.66)	659833.00	( 27.78)	0.0 %
Leather Ferns	1.00	( 0.0)	3136.44	(118.77)	0.0 %

A total of 85.2 per cent of the households surveyed have access to grazing. Only 22.7 per cent of the respondents rated the condition of the veld as poor, while 50.6 per cent of the respondents were of the opinion that the veld is deteriorating.

It was determined that 52.3 per cent of the households own cattle, while 36.4 per cent own other livestock, e.g. goats and chickens. Most of the farmers learned about farming from their experience on White farms or by visiting other farmers. The knowledge about farming methods obtained in this manner contributed to the fact that 69 per cent of the farmers in the study areas decide on their own when to plough. Furthermore, 82.4 per cent of the farmers made their own decisions regarding planting times, 88.1 per cent when to weed and 82.4 per cent when to harvest.

The respondents in the three study areas of KaNgwane listed the major problems hampering their farming progress as follows (in decreasing order):

- Inadequate credit 82.4 %
- Drought 79.0 %
- Lack of fencing 72.7 %
- Land shortage for cropping 72.7 %
- Low fertility of land 69.9 %
- Access to markets 64.8 %
- Erosion of land 56.3 %
- Poor service from ploughing contractors 53.4 %
- Lack of crop storage facility 50.0 %
- Poor access to daily water 50.0 %
- Shortage of wood/energy 50.0 %

- Poor tractor service from government	49.4 %
- Quality of veld	48.3 %
- Poor quality drinking water	47.2 %
- Inadequate extension	44.9 %
- Poor access to input delivery points	44.3 %
- Land shortage for grazing	40.3 %
- Lack of labour	31.8 %
- Pollution of soil	22.7 %

It is evident from this that inadequate provision of credit is considered to be the major problem facing farmers in KaNgwane. Notable is the lack of fencing again appearing on the list as one of three major problems, like in Venda and Lebowa. When the respondents were asked which single restriction or constraint limited success in farming, 36.4 per cent indicated credit. This again emphasises the important role the provision of credit services could and should play in agricultural development in these areas. The shortage of land for cultivation was also raised as a major problem, an aspect which will have to be addressed in the future implementation of FSPs.

#### 2.4.3.3.4 *A comparison of different categories of farmer households*

Due to the wide diversity of farming activities in KaNgwane and due to regional differences between households, the averages calculated above are to some extent meaningless. The high coefficients of variation in Tables 2.33 and 2.34 give a clear indication of the high variation in the survey data. To add a different perspective to the survey data it was necessary to do a qualitative analysis of the characteristics and farming potential of four identified farming groups. The questionnaires were therefore classified into the following groups according to the type of farming support they receive from Agriwane:

- Those households interviewed and currently farming on Agriwane's "projects". (Group A).
- Households participating in Agriwane's FS & DS (FSP) programme. (Group B).
- Households cultivating mainly community garden plots and do not receive any assistance from Agriwane. (Group C).
- Households farming at Eerstehoek on farms rented from white farmers. Receive no assistance from Agriwane. (Group D).

The respondents from the different farmers' associations were classified in each of the groups as follows:

- Group A : Ngogolo (Sugar cane farmers)  
 Likusasa Lethu (Ferns)  
 Total of 21 respondents
- Group B : Zamani  
 Vukani (Swallowsnest)  
 Litjelebube

Juluka  
Mashibambisane  
Ingogo Nhlanhla

Total of 97 respondents

Group C : Zamakuzaka  
Isizamoyethu  
Cedzindlala  
Driekoppies  
Litjelebube (individual farmers) Mashihambisane  
(women cultivating garden plots) Thuthukani  
(women cultivating garden plots)

Total of 58 respondents

Group D : Eerstehoek

Total of 10 respondents

The results from the analysis of the farmers' associations in the various groups are herewith compared in order to determine the difference between the FSP farmers (Group B) and the others. The results of this analysis are summarised in Table 2.35.

In classifying the farmers in KaNgwane in this manner and comparing the most important variables listed in Table 2.35, it is now possible to identify commercial or emerging farmers from subsistence farmers. It is clear from the information provided in the table that the Eerstehoek farmers (Group D) and the farmers on Agriwane's sugar projects (Group A) are much more commercially oriented than farmers in groups B and C. This emerges from the fact that these households earn by far the major share of their income from farming. The Eerstehoek farmers are renting land from white farmers and are farming independently from any support or credit provision from Agriwane. The commercial nature of their farming ventures is also evident from the fact that they sell 90 per cent of the maize produced, 70 per cent of dry bean production, 80 per cent of groundnut production and the total production of potatoes, cabbage and green mealies.

The farmers on the Agriwane sugar cane projects produce only sugar cane under the indirect control of Agriwane which also provides extensive support. They earn a substantial income from sugar cane production, which is more than sufficient to purchase maize meal and other food for household consumption.

Table 2.35 : A comparison of different groups of farmers in KaNgwane

Item	Group A	Group B	Group C	Group D
Access to land :				
- dryland	-	5 ha	1-5 ha	1-15 ha
- community garden plot	-	0.25 ha	1 ha	-
- irrigated crop land	1-7 ha	-	-	4-20 ha
Area cultivated :				
- maize	-	5 ha	3 ha	4 ha
- dry beans	-	2 ha	6.8 ha	0.8 ha
- vegetables	-	1.03 ha	1 ha	3.75 ha
- groundnuts	-	-	-	1 ha
- sugar cane	1-7 ha	-	-	-
Yield per hectare :				
- maize		1.8 t/ha	0.75 t/ha	2.5 t/ha
- dry beans		1 t/ha	0.23 t/ha	0.4 t/ha
- sugar cane	120 t/ha	-	-	-
Income :	(share)	(share)	(share)	(share)
- crop income	R30 000 (86%)	R 3 500 (42%)	R 1 188 (12%)	R10 761 (66%)
- livestock receipts	-	R 1 000 (12%)	R 720 (7%)	R 1 396 (9%)
- land rented out	-	-	R 20 (1%)	R 895 (5%)
- hiring out of equipment	-	-	R 593 (6%)	R 320 (2%)
- informal trading	R 500 (2%)	R 300 (4%)	R 650 (7%)	R 2 200 (13%)
- occasional work	-	R 1 000 (8%)	R 1 750 (18%)	-
- cash remittances	R 4000 (11%)	R 2 500 (30%)	R4000 (41%)	R 700 (4%)
- other income	-	-	R 781 (8%)	-
Expenditure : *	(share)	(share)	(share)	(share)
Farm expenses	R12 000 (38%)	R 1 500 (12%)	R 853 (8%)	R10 211 (42%)
Maize meal expenditure	R 4 500 (14%)	R 3 800 (30%)	R 878 (9%)	R 934 (4%)
Other food	R 4 000 (13%)	R 1 500 (12%)	R 971 (8%)	R2 330 (10%)
Durables	R 1 200 (4%)	R 1 000 (8%)	R 890 (9%)	R 25 (0%)
Education	R 1 000 (3%)	R 1 000 (8%)	R 1 093 (11%)	R 600 (2%)

\* Only selected items were presented here

In view of the above, it will serve no purpose to discuss and compare the different groups (A, C and D) of farmers with the FSP farmers (Group B), as they operate under completely different circumstances. Due to the nature of the data any comparison is dangerous and would almost certainly be misleading.

#### 2.4.4. An evaluation of the implementation of the various FSP elements in KaNgwane

It was determined that 86.4 per cent of the households are members of farmers' associations. The accessibility of the various support services provided by the Agricultural Development Corporation of KaNgwane (Agriwane) was calculated as follows: 47 per cent of the households surveyed had access to credit, 86 per cent to fertiliser, 80 per cent to seed, 31.2 per cent to mechanization services, 26.7 per cent to marketing services and 44 per cent to training.

The implementation of the various elements is subsequently discussed.

#### 2.4.4.1 Inputs

Agricultural inputs are provided to farmers through 22 agricultural service centres commonly known as "sheds":

Highveld region	-	5 sheds (One owned by Mashibambisane FA)
Nsikazi region	-	6 sheds (One privately owned by a FA in Hazyview district)
Nkomazi west	-	6 sheds
Nkomazi east	-	5 sheds

It should be emphasised that these service centres do not perform functions typical of an agricultural co-operative. The service centres are not linked to the provision of mechanisation services and do not play a role in the marketing of surplus produce as was intended in the project description.

In each of the areas the tribal authority allocated the site where these service centres were eventually erected. Many of these sites have a problem regarding accessibility and availability of water. Although there was sound cooperation between the tribal authorities and Agriwane, the criteria for selecting the localities for the construction of some of the service centres were not met. This is a deviation from the project description and is in most of the cases caused by the self-interest of the tribal chief.

According to Agriwane's five year programme to strengthen the farmer organizations, Agriwane will assist farmers' associations in taking over the service centres. Agriwane is therefore currently in the process of selling off all the sheds. The Mashibambisane farmers' association was the first to take over a shed when they acquired the Bettysgoed shed from Agriwane in 1989 along the lines suggested in the five year programme. Fischer, et al (1992) indicated how this take-over resulted in the "shed" being the major problem for the Mashibambisane farmers' association. They realised that they could not run the shed on their own and debt incurred with Agriwane due to the take-over was a major problem. The main reason behind the problem apparently was that the shed was bought lock, stock and barrel. The farmers' association was however, unable to meet the repayments of the loan which eventually lead to Agriwane not supplying any credit or stock to the Mashibambisane farmers' association. The association was therefore unable to obtain credit in order to finance purchases of new supplies for the shed. With the initial stock sold out, nothing was available to supply farmers with inputs required. Other farmers' associations were as a result complaining about the take over due to the unavailability of certain inputs from the Bettysgoed shed. The question could, however, be asked whether the new managers of the sheds were well trained to ensure a successful take-over.

Agriwane purchases inputs (eg. seed and fertiliser) in bulk at a discounted price from input suppliers and subsequently supply the various "sheds" according to their particular needs. The production inputs are sold to the farmers through the "sheds" at a predetermined price which include a mark-up above the purchase price. The mark-up on the price of the production inputs is done according to the project description. Money raised in this way is used to finance Agriwane's operations, as well as the storage costs of the various inputs. The farmers are able to purchase inputs (on credit or cash basis) in smaller units according to their needs at the service centres. The bulk purchases are thus repacked to suit the needs of the small-scale

farmers. The value and tonnage of the annual fertiliser contract negotiated by Agriwane has increased since the introduction of the FS & DS programme, from 2 800 tonnes (R1,3 million) to 3 950 tonnes (R2,0 million). Although fertiliser consumption increased to a certain extent on Agriwane's projects, most of the increases can with some certainty be assigned to the FSPs.

In interviewing farmers it was determined that they sometimes (12% of farmers) buy their inputs from the nearest town since it is often cheaper than the shed. This trend is furthermore caused by the limited stocks of agricultural inputs at these service centres. However, in the majority of cases inadequate transport and infrastructure force farmers to purchase inputs only from the sheds.

Agriwane employs a service clerk at each of the sheds to manage the centre and to control the stock and sales of inputs. Each clerk keeps a record of sales and stocks. The documentation (records) from each centre is collected at the four regional offices whence it is forwarded to the Agriwane head office. The process is not computerised and it is therefore somewhat difficult to obtain data on input sales, etc. from this documentation. In addition, high employee turnover resulted in the disappearance of data/information on sales, etc at many sheds. It is therefore not possible to determine whether the implementation of the FSP in KaNgwane resulted in the greater availability of inputs or whether there were more sales and increased application inputs. Agriwane is in the process of computerising this process.

Agriwane is one of the major input suppliers in the region, but only 65.9 per cent of the households in the region had access to inputs provided by Agriwane. None of the households in the survey was satisfied with and approved of Agriwane's input service. The majority of the farmers in group B (the FSP farmers) were satisfied with the accessibility and availability of inputs. In group C only approximately 50 per cent of the respondents had access to inputs.

Virtually all (98.9%) the KaNgwane farmers made use of chemical fertiliser, while 50.6 per cent of the households also used organic fertilizer or dung as additional fertiliser. Mechanical fertiliser application was used by 56 per cent of the households and 55 per cent used mechanical planting methods, while only 11 per cent of the respondents used mechanical harvesting. The majority of the respondents (94 %) used hybrid seed, while 20 per cent also used seed of traditional maize varieties. Chemical inputs like insecticides, herbicides and pesticides were used by 40 per cent, 20 per cent and 38 per cent of the respondents, respectively.

#### 2.4.4.2 Credit

The mission of Agriwane is generally viewed as "financing the development of agriculture in KaNgwane". The major goal of Agriwane is the provision of credit to farmers and farmers' associations, while simultaneously ensuring the repayment of these loans. Agriwane therefore emphasises their role as a financial intermediary and pays particular attention to financial management to ensure the lending of funds at minimum risk.

Agriwane provides credit on a group or association basis. This implies that a loan is provided to a farmers' association rather than an individual, and that the association is responsible for the repayment of the total loan. Agriwane requires farmers to form a farmers' association before they can obtain any credit. However, an exception to this rule is sometimes made when

short and medium term loans are provided to a few individual farmers farming on irrigated land or larger dryland acreages. Agriwane is reluctant to supply credit to individual farmers due to their inability to provide collateral (as security) and due to the risk of individuals disappearing. Agriwane therefore relies heavily on the pressure from the individual group members to ensure that loans are repaid.

With regard to maize production, 40 per cent of the respondents indicated that they purchased maize seed and fertiliser on a cash basis. In the case of the production of vegetables, households made less use of credit, with 60 per cent of the respondents paying cash for inputs. These households, however, often do not have access to Agriwane/FSP credit.

At the beginning of the production season each farmers' association applies for a production loan. This process requires the farmers' association to submit a budget specifying input needs for the coming season. After approving the loan, Agriwane provides a letter of credit to the association stating the physical quantities of the various inputs which members of the association could purchase on credit from the service centres. The management of the farmers' association allocates the approved credit facility amongst the members of the association. Each member is provided with his/her own letter of credit specifying the amounts of the various items they could purchase on credit from the service centres. This procedure ensures that the credit facility or loan is only used for productive ventures, and then only for the purchase of agricultural inputs. The on-lending procedure is therefore just a matter of book entries with no physical transfers of funds involved.

Agriwane recently decided not to provide loans to any association should less than 75 per cent of the loan for the previous production year be repaid. A new loan will thus only be provided if the outstanding amount is less than 25 per cent of the original borrowed amount. Agriwane provides some financial training to the farmers' associations to facilitate sound administration of these loans. Loans are provided to farmers' associations at a fixed interest rate of 6 per cent, while individual loans to the members of the farmers' association are on-lended at an interest rate of 8 per cent. The 2 per cent "mark-up" is supposed to be used by the associations to finance the take-over of the various sheds. Agriwane also considers individual loan applications from irrigation farmers and larger dryland farmers. The interest rate charged on these loans amounts to 8 per cent per annum. The difference is related to the cost of obtaining life insurance for the individual applicant. The irrigation farmers produce crops, for example sugar and cotton, which have fixed marketing channels. For them it is easier to ensure repayment of the individual loans.

Although the credit policy of Agriwane is strict, rigid and to some extent unfair to the individual farmer in the group who has repaid his loan punctually, Agriwane views the policy as effective and having a low default rate. Agriwane officials recently indicated that they are currently considering a change in their credit policy. This change in policy would make it possible to accommodate farmers who owe outstanding amounts, on an individual basis. These farmers would have to be identified by the extension officers in each region. The system of group credit, however, creates a problem in this regard. It is particularly difficult to determine the individual members responsible for the outstanding debt of the farmers' association since record keeping at the farmers' associations is not of a high standard.



According to Agriwane, the farmers favourable the current credit policy. This could be true in isolated cases, but there certainly is a strong negative perception of the credit policy amongst the most of the farmers surveyed in KaNgwane. For example, in a recent survey amongst farmers in KaNgwane receiving group credit, it was determined that 22 per cent of these farmers did not favour the policy of group credit. Furthermore, 47.7 per cent of the respondents indicated that they do not feel responsible for the repayment of the loan of the farmers' association. From the discussion of KaNgwane farmers' major farming problems in Section 2.4.2.3.3 it became evident that inadequate provision of credit is considered to be the major problem facing farmers in KaNgwane. When the respondents were asked which single restriction or constraint limits success in farming, 36.4 per cent indicated credit. This again emphasises the important role the provision of credit services could and should play in agricultural development in these areas.

Agriwane was able to provide useful information on loans provided and on the repayments of the loans by the farmers' associations (See Table 2.36). Only the information of selected farmers' associations, all of which receive support under the FSP programme, is listed in Table 2.36. From the table it follows that Agriwane did not strictly apply the "25 per cent rule" and only when a farmers' association was left with an outstanding balance of more than 50 per cent of the loan used, no new production loan was issued. The case of the Zamani farmers' association as shown in Table 2.36 is an example.

Of some concern is the high outstanding balances on the various loans. Using the data in the table, a calculation was made to determine the default rate or the total outstanding balance in each year, calculated as a percentage of the total loan to all the mentioned farmers' associations. The results were as follows:

1987/88	8.8 %
1988/89	39.3 %
1989/90	21.9 %
1990/91	51.9 %
1991/92	49.5 %

The default rates in the last two seasons are exceptionally high but could be related to the high outstanding balance (95%) on the 1990/91 loan to the Zamani farmers' association as well as the effect of the drought in the case of the 1991/92 crop season. The fact that these figures more or less represent the typical situation in KaNgwane, gives an opposing view to that held by Agriwane, namely that the default rates on loans to farmers' associations were low. It therefore questions the principle of group lending and its apparent successful implementation in KaNgwane. Of particular importance is the paucity of proper records and the inability to determine individual farmer's debt. Controls are consequently slack or non-existent, and farmers do not receive regular notification of outstanding debts.

Table 2.36 : Loans and repayments of selected farmers' associations in KaNgwane

Farmers' Association	Crtip Year	No, of farmers	Total Loan granted	Credit/ha granted	Loan amount used	Repayment	Balance carried over
Zamani	1987/88	27	R31 000	R155.00	R27 784 88	R25 152.61	R 2 632.27
	1988/89	28	R37 406	R187.03	R31 460,04	R12 946.60	R18 513.44
	1989/90	-	No loan	-	-	-	-
	1990/91	18	R43 972	R399.75	R42 776.35	R 2 108.55	R40 667.80
	1991/92	-	No loan	-	-	-	-
	1992/93	-	No loan	-	-	-	-
Mashihambisane	1989/90	4	R 3 200	R160.00	R 4 381.47	R 2 394.58	R 1 986.89
	1990/91	7	R 7 360	R160.00	R 6 896.67	R 3 903.41	R 2 993.26
	1991/92	6	R 7 520	R160.00	R 6 711.18	R 6 733.96	R (22.78)
	1992/93	5	R 8 990	R290.00	*	*	*
Mashibambisane	1989/90	12	R 5 920	R 160.00	R 4 610.63	R 3 525.40	R 1 085.23
	1990/91	12	R 5 920	R160.00	R 5 911.74	R 4 070.56	R 1 841.18
	1991/92	6	R5 600	R160.00	R 5 494.62	R 5 111.10	R 383.52
	1992/93	15	R26 100	R290.00	*	*	*
Vukani (Swallowsnest)	1989/90	10	R13 500	R300.00	R11 373.30	R11 373.30	R 0.00 R 3
	1990/91	10	R25 050	R501.00	R21 249.40	R17461.48	787.92 R11
	1991/92	10	R30 000	R666.67	R22 436.83	R10 500.00	936.83
	1992/93	10	R32 716	R727.04		+	*
Thutukani	1987/88	5	R 18 788	R335.50	R 15 879.14	R16 492.92	R (613.78)
	1988/89	7	R 28 990	R446.00	R 17 307.79	R14 146.11	R3 161.68
	1989/90	10	R 41 905	R470.84	R27 896.20	R26 027.50	R 1 868.70
	1990/91	19	R 78 740	R620.00	R48 037.52	R28 071.44	R19 966.08
	1991/92	24	R137 600	R860.00	@	@	
	1992/93	27	R154 475	R835.00	*	*	
Juluka	1987/88	11	R 5 280	R 160.00	R 4 647.52	R 3 037.84	R 1 609.68
	1988/89	11	R25 380	R 540.00	R 23 858.84	R 9 293.43	R14 565.41
	1989/90	13	R16 140	R 538.00	R 15 336.60	R21 963.88	R(6 627.28)
	1990/91	11	R20 472	R 682.00	R 8 441.76	R 8 653.92	R (194.16)
	1991/92	11	R36 400	R2600.00	R18 518.15	R 4 501.88	R14 016.27
	1992/93	11	R26 330	R 877.66	*	*	*
Ingogo	1988/89	23	R10 139.40	R235.80	R 8 573.76	R 7 920.59	R 653.17
	1989/90	#					
	1990/91	#					
	1991/92	#					
Nhlanhla	1988/89	12	R13 888	R496.00	R12 562.81	R12 530.24	R 32.57
	1989/90	12	R18 504	R514.00	R 14 593.96	R 2 400.00	R12 193.96
	1990/91	#					
	1991/92	#					

\* = Current loan still in operation  
# = No loan application received  
@ = Loan not used due to drought  
No loan = No loan granted

#### 2.4.4.3 Mechanisation

Agriwane, as well as a number of tractor contractors, provide mechanisation services to farmers in KaNgwane. In each of the agricultural regions of KaNgwane tractor associations were formed to collectively determine the rates for the various mechanisation services. Agriwane financed contractors to obtain 26 new tractors and 30 second-hand reconditioned

tractors. Loans for this purpose were provided to contractors at an annual interest rate of 10 per cent. The contractors were supposed to repay the loan to Agriwane on an hourly basis, but many of the contractors avoided repayment by all sorts of fraudulent activities, e.g. disconnecting the chronometer of the tractor. As a result many of the contractors came into arrears, with outstanding debt higher than the initial loan. Agriwane eventually had to repossess 13 tractors and a number of implements. Twelve of these were resold to new contractors on hire purchase. The lesson learnt with the loan repayment on an hourly basis resulted in Agriwane changing its credit policy in the case of contractors to financing on a hire-purchase basis. This proved to be more successful as all the contractors were still in operation, only a few being in arrears. Only one contractor was still repaying his loan on an hourly basis; the rest had all changed to hire-purchase contracts.

Agriwane owns 30 tractors, the majority stationed at the irrigation projects under Agriwane's control, serving the needs of the farmers on these projects. Agriwane also owns and rents out implements to contractors at a predetermined daily rate. Agriwane provides mechanisation services to the dryland FS & DS farmers only when the contractors are not available, or when the contractors are not able to meet the demand in peak periods. Agriwane generally prefers not to become involved in this market. The shortage of contractors and Agriwane's reluctance to compete in this market is a major concern to many KaNgwane farmers. Furthermore, the long waiting times and delays due to breakages are also a concern to farmers. Typically rates for mechanisation services charged by some of the contractors during 1992 were as follows:-

Plough	-	R110 per hectare
Disc	-	R70 per hectare
Plant	-	R50 per hectare

Agriwane supplies farmers with cash to enable them to pay for these mechanisation services. Repairs are generally the responsibility of the contractors themselves, but Agriwane could provide financial or technical assistance in certain circumstances. The nearest mechanic is usually contracted for repairs. Agriwane also provided training to contractors through the FS programme. This has resulted in an increase in the performance of the contractors.

#### 2.4.4.4 Marketing

Agriwane only acts as facilitator in the marketing of agricultural products and never handles or stores any produce. Crops like sugar, cotton and maize have fixed marketing channels and the role of Agriwane in this regard is small and limited to the arrangement of contracts, etc. Agriwane does not control the marketing of the farmers' crops. They regard the farmers as "responsible individuals who are responsible for their own marketing". Agriwane apparently only assists the farmers when requested to do so.

The role of facilitator played by Agriwane concerns mainly the provision of four market facilities for fresh produce. Agriwane makes the necessary arrangements to ensure the availability of the site (through negotiations with tribal or local authorities), but is not responsible for the administration and coordination of the activities at these markets. Agriwane only monitors the activities and keeps record of daily sales. The markets are situated at KaNyamazane (30km outside Nelspruit), Kamaqhekeza, Schoemansdal and Kabokweni in the Nsikazi region. Typical produce traded at these markets comprises cabbage, tomatoes, beetroot, spinach, beans, onions, avocados, bananas, eggs, broilers, other sub-tropical fruit

and milk. To pay for the facility and all the administrative arrangements, the tribal or local authority collects a levy of R4 per pick-up and R6 to R8 per truck using the marketing facility. Agriwane is at present negotiating a DBSA loan to finance the building of basic structures at the market locations.

Table 2.37: Average monthly sales volumes on selected markets in KaNgwane

MARKETS	1990	1991	1992
KaNyamazane	64 619 kg	86 062 kg	78 253 kg
Kamaqhekeza	55 974 kg	105 972 kg	144 662 kg
Kabokweni	-	-	78 013 kg
Schoemansdal	62 800 kg	91 044 kg	90 234 kg

The general increase in sales at these markets is clear from the analysis of annual sales at the four locations in Table 2.37. It should, however, be stressed that not all the products are produced in KaNgwane but may be imported from other regions.

#### 2.4.4.5 Extension and training

The number of farmers reached by Agriwane through the training programme is provided in Table 2.38 below. In the 1991/92 season Agriwane presented a total of 194 courses which were attended by 2 644 farmers. The extension officers employed by Agriwane and the KaNgwane Department of Agriculture pay regular visits to the farmers and the various farmers' associations. Farmers are presented with refresher courses and training in various farming and cropping techniques. Agriwane has 2 mobile training units and 1 panel-van equipped with training equipment for use at various locations in the field. Furthermore, 4 training officers are employed to present training courses on a more advanced level and in a lecture and classroom format. Demonstration plots are also used in the extension effort under the FS & DS programme. These demonstrations are especially used to illustrate the yield effects of new bird resistant sorghum cultivars and "streepsiek" resistant maize cultivars. Agriwane furthermore combine efforts with the KaNgwane Department of Agriculture in organising farmer days where information is shared with the farmers. Gatherings of up to 400 farmers at these events are quite common.

Table 2.38 : Training courses presented by Agriwane and attendance by farmers

Year	No. of courses presented	No. of farmers attending	No. of farmers expected	Percentage attendance
1987/88	80	1 573	3 546	44.36 %
1988/89	137	1 834	3 948	46.45 %
1989/90	154	2 162	4 424	48.87 %
1990/91	168	2 432	4 984	48.80 %
1991/92	194	2 644	4 775	55.37 %

could be obtained.

#### 2.4.5.2 The contribution of the FSP to increased agricultural output

By analysing the data it was possible to determine all the variables which differ significantly between FSP and non-FSP farmers. In considering the data presented in Table 2.39, it appears that higher yields in maize and dry bean production were obtained by the FSP farmers than by non-FSP farmers. The FSP farmers obtained an average maize yield of 1.04 tons per hectare which was significantly higher than the 0.96 tons per hectare of the non-FSP farmers ( $p = 0.0000$ ). This could be related to the fact the FSP has access to inputs, finance, mechanisation services and extension (all the FSP elements). However, this is not necessarily the case and thus a discriminant analysis, to determine the factors associated with increased (maize) production was deemed appropriate.

Considering the fact that there are large variations in farming activities within each of the above mentioned areas, it was decided to do a discriminant analysis involving comparable FSP and non-FSP farmers. By using maize yield per hectare, farmers were classified into groups of high (yield > 1.5 t/ha) and low yield (yield < 1.5 t/ha). A discriminant analysis was undertaken to determine the factors associated with increased production. The estimated discriminant function correctly classify 73.64 per cent of the farmers in the high yielding group and 65.43 per cent in the low yielding group. The error count for the classifications was 30.46 per cent.

The results provided in Table 2.40 confirm that the FSP is associated with surplus producers. Access to information on maize cultivation and access to credit both relate to the FSP programme. The important contribution of the variable "own cattle" to the function is also interesting. This could be related to the fact that cattle are often used to finance crop production. This again stresses the importance of access to finance, savings or the ownership of liquid assets (cattle), in surplus maize production in KaNgwane. It is also clear that the FSP elements, such as credit and training, make only a relatively small contribution to increased production - it is mainly factors outside of the FSP framework that contribute to increased agricultural output.

Table 2.40 : Estimated discriminant function for high and low maize yields of farmers.

Explanatory variable	Standardized coefficient		Partial $R^2$	Significance $P < F$	Group means		
	High Yield	Low Yield			High yield	Low yield	Significance
Own cattle	5.088	4.555	0.4615	0.0075	1.275 *	1.5675 *	0.4755
Access to information	3.255	3.712	0.1443	0.0369	1.150 *	1.309 *	0.0800
Access to credit	2.851	2.765	0.1247	0.0247	1.400 *	1.633 *	0.8304

\* = dummy variable with 1 = yes and 2 = no

### 2.4.5.3 Contribution of the FSP to increased household income and improved standard of living.

An analysis of the difference in income and expenditure patterns of the FSP farmers and the non-FSP farmers is presented in Table 2.41. The table shows that the FSP farmers (group B) spend a smaller share of total household income on food and maize meal than the non-FSP farmers. This differences could partly be attributed to the FSP, which serves as an indication that the FSP households produce enough food for home consumption. Surplus funds can thus be used for other expenditures, for durables, etc. Only the difference with regard to expenditures were significant - it is therefore meaningless to discuss the differences in incomes. It is only regarding cash remittances where the non-FSP households received significantly higher amounts than the FSP households. Much of these could be directly related to and accounted for by the composition of the different groups.

Table 2.41 : Income and expenditure differences between FSP and non-FSP members respondents in KaNgwane, 1991

Selected items	Group B		Group C		Significance (P)
	(R)	(% of total)	(R)	(% of total)	
<b>Expenditures:</b>					
Maize meal	1 233.30	10.98	1 165.21	12.94	0.0000
Other food	1 150.00	10.24	1 290.52	14.34	0.0000
Household exp.	1 168.34	10.41	1 172.74	13.03	0.2687
Transport	612.77	5.46	858.42	9.54	0.0006
Clothing	807.03	7.19	1 233.85	13.71	0.0000
Education	753.64	6.71	1 259.64	13.98	0.0146
<b>Income:</b>					
Crops	694.40	6.31	782.21	8.42	0.9126
Livestock	865.51	7.86	710.65	7.65	0.2041
Informal trade	267.71	2.43	638.06	6.87	0.0000
Occasional work	1 280.81	11.64	833.06	8.96	0.1553
Cash remittance	2 498.66	23.71	4 031.77	43.39	0.0002

## 2.4.6 Institutional aspects

### 2.4.6.1 Introduction

The institutional structure in the implementation of the FSP in KaNgwane was decided upon after discussions between the borrower (Agriwane) and DBSA. The programme was structured according to the needs and conditions of Agriwane since they were familiar with the local circumstances. Thus, the programme was designed by Agriwane in close cooperation with DBSA, taking into account the realities of agriculture in KaNgwane.

According to the project description Agriwane will have the responsibility to implement the programme and to provide management support for the KaNgwane FSP. They should recover the costs for all elements for which they are responsible by way of a nett annual budgetary

allocation from the KaNgwane Government and mark-up on production inputs to fanners. Agriwane will also be responsible for the implementation of the following elements and facilities:

- service centres
- mechanisation services
- irrigation equipment for small-scale farmers
- marketing
- training

According to the project description the main function of the KaNgwane Department of Agriculture in the KaNgwane FSP was to provide extension services in the specific programme localities. In addition to these functions, the Department would, through its Engineering Branch, assist in the detailed planning of the small irrigation farms.

The manner in which the programme was implemented in KaNgwane differs to some degree from the other regions. To investigate this aspect as well as to compare the implemented programme with the project description, this section provides an overview of the functioning of the institutional framework of the programme.

#### 2.4.6.2 Agriwane and the KaNgwane Department of Agriculture

The Agricultural Development Corporation of KaNgwane (Agriwane) was responsible for the implementation of the very first FSP (Agriwane also calls the programme the "farmer support and development support programme" - FS and DS) in South Africa. Agriwane was thus the first organization to borrow money from DBSA for this purpose and is currently responsible for the implementation and management of this programme in KaNgwane. The management and the implementation of the FSP is the responsibility of the Assistant General Manager : Agriculture and his two agricultural managers (respectively responsible for the Highveld, Nsikazi and Nkomazi East and West). The Department of Agriculture in KaNgwane also plays a role in the programme by the provision of extension and training services. Agriwane employs 26 extension officers, while the Department has 104 extension officers in its service. The Department generally employs qualified extension officers with at least an agricultural diploma, whereas Agriwane employs specialists with grass roots experience who knows the agricultural practices in the particular regions.

Because Agriwane provided extension services to farmers, some tension was created between the junior officials of the two institutions. An arrangement between Agriwane and the Department makes provision for the KaNgwane Department of Agriculture to be solely responsible for training and for all extension officers to be transferred to the KaNgwane Department of Agriculture. However, at the beginning of December 1992, the 26 extension officers were still employed by Agriwane.

It was found that cooperation between the two institutions was good at senior and management level. The KaNgwane Department of Agriculture has a bi-weekly management meeting. To ensure further coordination in agricultural development efforts in KaNgwane, the Assistant General Manager : Agriculture is also represented on the management committee of the Department of Agriculture. The General Manager of Agriwane and the

Secretary of Agriculture in KaNgwane also meet regularly on an informal basis to ensure close cooperation between Agriwane and the Department. Regular informal project development meetings are also jointly held to discuss project proposals.

#### 2.4.6.3 Liaison Committees

The regional liaison committees between the regional officials and Agriwane and the Department of Agriculture and officials of the local agricultural union meet formally on a monthly basis. The liaison committee meetings are reportedly working well in the Nsikazi region and fairly well in the Highveld region. In the Nkomazi region the liaison committee is not meeting often and liaison is taking place on an irregular basis.

#### 2.4.6.4 Farmers' Associations

There are presently 126 farmers' associations in KaNgwane with a total membership of 2 921 farmers. Of these, 12 associations are situated on formal project schemes but are also serviced under the FSP programme. A total of 87 farmers' associations (69%) are receiving assistance through the FSP programmes.

#### 2.4.7 Summary

The evaluation of the Farmer Support Programme in KaNgwane experienced a number of problems. Firstly, the wide diversity of farming activities and the differences between and within regions made analysis and interpretation of the survey data somewhat difficult. Secondly, difficulties in identifying farmers and farmers' associations under the FSP complicated matters further. Thirdly, institutional cooperation in the evaluation process was sometimes lacking. Furthermore, general record keeping on the extent of the FSP *per se* was lacking, both with the farmers' associations as well as with the implementing agent. A paucity of useful data at the institutional level made it difficult to put the survey results in the correct perspective. These aspects resulted in difficulties in obtaining meaningful results from the analysis. Contradicting results were often obtained and for that reason different approaches as well as different angles were considered. In this section the survey results were initially discussed. Due to the problems described above, the results were discussed in three different ways to obtain a clear picture of farming in KaNgwane and to ensure a meaningful classification of farmers in order to determine the effect of the FSP.

Using the classification of farmers in the 4 different groups it was possible to select two of the groups, i.e. FSP farmers and non-FSP farmers to be used in further analysis. In analysing the differences between these two groups it was determined that the FSP farmers have access to all the FSP elements (extension, credit, inputs and mechanization services), while these services were generally not available to the other farmers. The FSP farmers produce more maize, obtain higher maize yields per hectare, sell more maize, use more fertiliser and seed and cultivate a larger area of maize than the non-FSP farmers.

It is relatively uncertain whether the FSP contributes to increased agricultural output and improved standard of living. The results from the discriminant analysis, which was based on a limited data base, indicate that access to credit and extension make only a relatively small contribution to increased maize output. It is mainly factors outside the FSP framework, for



example owning cattle, which contribute to increased output. However, FSP participants do achieve substantially higher maize yields per hectare than non-FSP farmers.

## **2.5 CONCLUSIONS**

This chapter presented the findings of the first sample survey of farmer households in the Kadishi and Phokoane areas of Lebowa, the Mashamba and Khakhu wards of Venda and the Mswati, Mlondozi and Nkomazi areas of KaNgwane. These findings together with an analysis of institutional aspects of the programme were used to evaluate the various elements of the Farmer Support Programme.

### **2.5.1 Venda**

It was determined that, in general, the FSP clients in Venda are more productive land users, achieve higher farm incomes, have higher household expenditures, make greater use of extension services and farmer institutions than do non-FSP households. The higher standard of living of the FSP members are indicated by their higher education, personal and medical expenditures. These expenditures were significantly higher in the case of the FSP clients.

Through discriminant analyses it was determined that the FSP contributes towards creating surplus producers through the provision of ploughing and extension services. It was further determined that surplus producers are more concerned with soil erosion affecting production, are dependent on the availability of ploughing services, produce more maize, have less females in the households and use more chemical fertilizer than the deficit producers. Furthermore, it was found that the surplus producers have savings accounts which in a way contribute to households being surplus producers.

### **2.5.2 Lebowa**

Farm sizes and the factors of production in the two areas, Phokoane and Kadishi are different. The households in the Kadishi area own bigger areas of land, while in the Phokoane area, the FSP members have bigger garden plots and residential sites and own larger dryland cropland areas than the non-members. The FSP members ploughed all their land, tend to need more land for farming purposes, regarded themselves as more able to work additional land and it seems as if they (in Phokoane) are more productive farmers. In contrast, the non-FSP members in Kadishi were found to be the better farmers.

A striking feature was the high regard respondents had for the training programme in Phokoane. FSP clients in Phokoane feel that the training programme has benefitted their farming enterprises and has contributed to their "success".

A discriminant analysis of surplus versus deficit producers indicated that surplus production was associated with households who use chemical insecticides, intercrop larger areas, plough smaller areas and have more adult females in the household. These factors are also related to purchasing inputs on credit from the co-operative, participating in the FSP programme and receiving higher wage remittances. Because income from agricultural activities contribute

only a relatively small share of total rural earnings, income effects from non-agricultural earnings such as wage remittances are important. The results also illustrate that finance is important in promoting emerging commercial farmers.

With respect to Kadishi, no clear conclusions could be made. However, it was clear that the availability of ploughing services and extension services could support the upliftment of the rural community in Kadishi. The reason for no clear conclusions can be attributed to the short existence of the FSP in its present form. Although surplus producing farmers ploughed less land than deficit farmers, they worked the land more intensively (they intercropped a larger area). The larger number of adult females in surplus producing households probably contributed to this phenomenon. It is also relevant to mention that land size and labour availability are severe limiting factors in the Phokoane area.

### 2.5.3 KaNgwane

In general, income from farming activities contributed, on average, to half of the KaNgwane households' income, while farm expenditure was roughly only a quarter of total expenditure. However, there is a big difference between FSP and non-FSP households with regard to income generated by farming. It may be an indication that the FSP significantly increases the income from farming, thereby eliminating the need for other employment.

FSP farmers in general had significantly more access to mechanization services and training than the non-FSP farmers. With regard to the use of inputs, FSP farmers used more chemical fertilizer, insecticides, pesticides, hybrid seed and mechanical harvesting than the non-FSP farmers. It was also determined that inadequate credit was a bigger problem amongst non-FSP farmers.

The FSP farmers in Mswati had generally more contact with the Agriwane training officer, carried out more soil conservation practices, cultivated bigger areas and were more aware of soil loss than the non-FSP farmers. The average yield for maize production of the FSP farmers was higher than the non-FSP farmers. The difference in yield could be related to the lower use of inputs by the non-FSP farmers. Farm income of the FSP farmers is somewhat higher than that of the non-FSP farmers. The non-FSP households earn significantly more from occasional work.

In Nkomazi it was found that FSP farmers have larger areas of cropland, while the community garden plots of the non-FSP households are larger. Further notable differences are maize production, maize consumption, tomato consumption as well as the higher earnings from agriculture by the FSP farmers. The farmers in this area produce a wider variety of crops, i.e. spinach, tomatoes, sugar cane, leather ferns, etc.

In Mlondozi the non-FSP farmers are significantly different in all aspects as listed, namely they cultivate a larger area of maize, obtain higher yields, higher production, higher crop income, etc.

In determining the effects of the KaNgwane FSP on farm output, it was found that significant differences between food-surplus and deficit producing households occur mainly with respect to farm income, other sources of income, investment in livestock and expenditures on

transport, education, food, etc. With respect to farming, the differences in general, refer to maize planted and purchased seed used.

In general, surplus producers diversify their farming operations to a greater extent than those of deficit producers. Income is also derived from a larger number of sources. Access to credit and extension are the major variables discriminating between surplus and deficit producers. In KaNgwane as a whole, access to finance is further accentuated by the significance of the savings variable in the discriminant function. Access to markets is also an important variable in differentiating between surplus and deficit producers.

Surplus producers have significantly larger savings accounts, greater access to credit, extension and markets, spend more on education and less on durable items than deficit food-producing households.

#### **2.5.4 Conclusions from the household surveys**

Due to the difference between the three regions in terms of agro-climatic aspects, farming practices and institutional constraints, it is difficult to generalise on the above findings. However, the results indicate that increased real earnings in rural areas will change consumption patterns as the demand for staple foods is expected to increase less than the demand for more luxury goods such as clothing. The demand for goods produced by the household is expected to increase less than the demand for purchased goods.

In general, surplus production was associated with households who make use of FSP related services, e.g. credit. These financial measures specifically are dimensions of the income or liquidity impact on food production. As earnings from agriculture are a relatively small share of total rural earnings, income effects from non-agricultural earnings such as wage remittances are important.

Surplus producing households have greater access to financial resources. This confirmed earlier findings (cf. Nieuwoudt and Vink, 1989) and may be attributed to the liquidity constraint on food production where farmers with access to non-farm income are better able to invest in agriculture. The relationship between agriculture and non-agriculture is expected to be competitive as far as the labourer's time is concerned, but it could be complementary as far as other factors are concerned, i.e. where wage remittances can be an input in agriculture. It is also possible that increased earnings in agriculture will make agriculture more attractive for some members who were previously engaged in non-farm employment.

The results thus also illustrate that finance is important in promoting emerging commercial farmers. Improved earnings from agricultural production are expected to have similar positive income effects on food production through their effects on the demand for resources. As earnings from agriculture are a small share of rural earnings, income effects from non-agricultural sources such as wage remittances are important. Training and extension seems to be a crucial issue. In conclusion, it seems that the FSPs contribute positively towards increased output in rural areas.

### **2.5.5 Conclusions from the institutional analysis**

The general conclusions from the institutional analysis in each of the three areas were the following:

#### ***Venda***

In evaluating and reviewing the project description it is evident that an over designed institutional structure for the implementation of the FSP's in Venda was intended. As described in the original Farmer Support Programme description, a FSP requires (1) adequate provision of appropriate inputs and the funding thereof (credit) to the farmer, (2) the provision of a comprehensive mechanisation service, (3) marketing channels and services, (4) extension and demonstration services, (5) training, (6) the acquisition of the *de facto* rights to production and (7) the off-farm infrastructure. In order to provide the above, an institutional structure is required, so that each element can support the other to obtain growth and development in Venda. From the analysis of the actual institutional structure as implemented and currently operating, it appears that most of the institutions and/or committees are defunct, which, however, does not necessarily lead to negative results. With respect to the existing structure of institutions, a more slimmer institutional set-up with only one implementing agent with coordinating functions, so that all FSP elements are provided, seems to be more appropriate. Results show that especially the extension services are not effectively included in the Venda FSP package, because this function falls under the auspices of the Venda Department of Agriculture.

Considering the specific wards, it seems, as if the success of the FSP in the Khakhu ward is based on access to one of the FSP elements, namely mechanisation services. All other elements are in one or another way attached to this service. At present, it seems as if the FSP is successful, but it must be stressed that this is based to a great extent on the influence of the tribal chief on the FSP, influencing all participants as well as the extension officer of the Venda Department of Agriculture.

With respect to Mashamba, the situation is improving. Agriven is currently training a member of the co-operative to eventually run the co-operative. Previously, corruption and negative opinion against the FSP reduced the effectiveness of the FSP in this ward.

In general, it can be concluded that the implementing agents in Venda are determined to contribute to the upliftment of the rural population. Institutional record keeping is improving. The increasing own decision-making of especially the participants and the cooperative in the Khakhu ward clearly indicate that a FSP, based on mechanisation services meet the objective of the "learning-by-doing" approach to make development in Venda possible. It should, however, be emphasized that the effectiveness of implementation of the programme will increase if more attention is also given to the other elements of the FSP, i.e. extension, marketing, etc.

#### ***Lebowa***

From analysing the specific FSP target areas in Lebowa, it appears as if the success of the FSP in Phokoane is based on access to one of the FSP elements, namely training. All other

elements are in one or another way attached to this service. At present, the FSP in Lebowa is perceived as being successful, but it must be stated that this to a great extent is based on the positive influence and commitment by the LAC officials involved in the FSP.

In general, it can be concluded that the implementing agents in Lebowa are determined to contribute to the upliftment of the rural population. Institutional record keeping is improving and the impression is gained that the FSP in Lebowa is successful. However, own decision-making by the participants and cooperatives is lacking, which indicate that the FSP, to some extent does not meet the objective of "learning-by-doing" especially with regard to managerial activities in the primary co-operatives.

The FSP in Lebowa has the support of the people as it helped them to overcome their major daily problem - hunger. The FSP "chased hunger away", it improved the food security situation in these areas and contributed to a better livelihood for thousands of households in rural Lebowa.

The evaluation of the institutional structure in Lebowa for the implementation of the FSP is much slimmer than in Venda and there seems to be no major coordination problems as the programme is the sole responsibility of LAC. The dedication and commitment of the LAC officials and their two extension officers is the major factor contributing to the successful implementation of the FSP in Lebowa. The officials from LAC succeeded in bridging the cultural and communication gap between the implementing agent and the people. Although the approach is somewhat patronizing it is done in such a manner that nobody is offended.

The successful implementation of the FSP in Phokoane contradicts with the difficulties experienced with the programme in Kadishi. The success of the FSP in Phokoane can be attributed to the personal interest of the LAC extension officers (Adendorf and Van Tonder) in the Phokoane area. It could also be argued that their approach was specifically designed for the circumstances in the Phokoane area. Their approach was successful due to the fact that they are always present in the area and because they view the programme as a personal challenge. The difficulties in Kadishi are to some extent attributed to the political division in the community and also to the fact that the region is isolated from the rest of Lebowa.

The FSP in Lebowa has improved food security in rural Lebowa. The question now remains, will the programme as currently implemented also help these households to become emerging or small commercial farmers?

### ***KaNgwane***

Through interviews with officials from Agriwane the impression was gained that they view Agriwane's mission as the provision of credit to farmers and/or farmers' associations in KaNgwane at minimum risk and to ensure the minimum default rate on these loans. The impression was also gained that the FS & DS programme or the FSP in KaNgwane is largely credit driven. This view was also expressed by farmers interpreting the FS & DS as "Agriwane helping them with credit".

Considering the project description, it seems that the KaNgwane FSP was designed to obtain a DBSA loan to finance the construction of service centres, to finance loans to tractor

contractors, to finance production loans to farmers, to finance irrigation equipment for small-scale farmers, to finance the purchase of mobile training units and to finance the construction of market structures. Although these are all elements of the FSP strategy it is not clear how they are co-ordinated, as Agriwane is largely interested in the repayment of the on-lended loans. Agriwane officials also stated that they do not want to become involved in the various farming activities and it is therefore not viewed as a part of their task to know the extent of harvests, etc. The take-over of the various service centres by the farmers' associations, is a further example of Agriwane reducing its involvement, in this case with regard to the provision of inputs to farmers. Apart from the limited facilitative role played by Agriwane in the marketing of surplus produce, Agriwane does not play an active role in improving access to markets and seemingly does not want to become too involved in marketing.

Although the various elements of the comprehensive agricultural support service as stipulated in the project description were implemented, there seems to be a lack of coordination between the various elements. The approach of providing all the elements as a "package" was not adhered to. Thus, there exists no sign of a holistic approach linking all the FSP elements. The impression was also gained that Agriwane, as far as the FSP programme is concerned, is merely run as an on-lending institution working to ensure full repayment of the loans. This resulted in a lack of commitment with regard to the other elements of the FSP approach. Agriwane plays, however, an important role in providing extension and training to farmers.

In the dealings with the Agriwane management, the research team obtained a general impression of a lack of commitment to the FSP approach and bad record-keeping and monitoring of the implementation of the programme. The reason behind this could be attributed to the fact that the Agriwane management is more involved and more concerned with the projects where Agriwane follows to a large degree a typical top-down approach. Most of their efforts are therefore concerned with project farming on irrigated land. The majority of the projects are located on fertile land with access to irrigation water. Typically the projects produce crops like sugar, cotton and bananas where supply response is fast and good results are generally obtained. A further reason could also be the fact that Agriwane introduced the FSP to such a large number of farmers' associations that it is difficult to monitor the programme given the limited personnel in Agriwane.

A total of 87 farmers' associations out of a total of 126 are assisted through the FS & DS programme. It should be emphasised that the FS & DS programme is mainly provided to dryland farmers where agricultural risk is considerably higher (only 12 farmers' associations located on formal projects are assisted through the FS & DS programme). Because many areas in KaNgwane are believed to be unsuitable for dryland maize, cotton and vegetable farming the success rate of the FS & DS programme is therefore somewhat lower. This could explain Agriwane's apparent lack of commitment and enthusiasm for the FSP approach.

## CHAPTER 3

### RESULTS FROM THE SECOND HOUSEHOLD SURVEY

#### 3.1 INTRODUCTION

A second round of surveys of rural households was done in Venda, Lebowa and KaNgwane during the period December 1992 to January 1993. The surveys were again done in selected target areas in each of the three regions. In Venda the Khakhu and Mashamba wards were again included in the sample, while in Lebowa only the Phokoane region was surveyed. A preliminary survey in the Kadishi area showed that no new information of this area could be obtained, mainly as a result of the drought. This resulted in the exclusion of this survey area. In KaNgwane, farmers belonging to farmers' associations in the following five sub-regions were interviewed: Mswati, Mlondozi, Nkomazi West, Nkomazi East and Nsikasi. The sample size and the usable questionnaires in each survey area are indicated in Table 3.1.

Table 3.1 : Summary of the areas surveyed and sample sizes

Major region	Sub-region	Sample size	Usable questionnaires
Venda	Mashamba	40	30
	Khakhu	35	30
	Total Venda	75	60
Lebowa	Phokoane	110	84
	Total Lebowa	110	84
KaNgwane	Mswati: Bettiesgoed	40	20
	Swallowsnest	20	15
	Nkomazi West: Schulzental	15	11
	Bosfontein	15	10
	Nkomazi East: Mangweni	25	20
	Albertsnek	10	8
	Nsikasi: Pienaars Trust	15	12
	Mlondozi: Steynsdorp	20	15
	Total KaNgwane	160	111
<b>TOTAL</b>		<b>355</b>	<b>255</b>

The number of FSP and non-FSP farmers included in the samples were as follows:

	FSP	non-FSP
Venda	48	12
Lebowa	70	14
KaNgwane	95	16

### 3.2 ANALYSIS OF SURVEY RESULTS

#### 3.2.1 Household composition

The composition of the households surveyed is summarised in Table 3.2, indicating the average number of persons in each household.

Table 3.2 : Mean number of household members according to age group in Venda, Lebowa and KaNgwane

Age	Venda		Lebowa		KaNgwane	
	FSP	Non-FSP	FSP	Non-FSP	FSP	Non-FSP
Children (0-4 yrs)	0.89	1.00	1.27	0.92	1.05	1.11
Children (5-9 yrs)	1.07	0.40	1.22	1.21	1.51	1.77
Children (10-18 yrs)	1.71	1.80	1.81	1.35	2.04	2.89
Adult males (19-64 yrs)	2.07	1.40	1.82	0.64	2.58	1.66
Adult females (19-64 yrs)	2.11	2.80	1.77	1.28	2.34	2.00
Adults (> 65 yrs)	0.43	0.80	0.47	0.21	0.47	0.44
<b>TOTAL</b>	8.28	8.20	8.36	5.61	10.00	9.87

A notable trend from Table 3.2 above is the fact that there are generally more men in the FSP households. This implies a higher absence of men from the non-FSP households which could be related to the fact that the incidence of migrant labour amongst these households is somewhat higher. There does not seem to be a big difference with regard to the number of children in households, which suggests that in total households have dissimilar family labour resources. It can also be concluded that there is not a big difference between the household size of FSP and non-FSP households, except in Lebowa where the non-FSP households were smaller mainly due to the higher absence from the homestead of men between 19 and 64 years of age.

Respondents were also asked whether anybody in the household has recently left migratory work to permanently reside with the household in the specific region. In KaNgwane 21.6 per



cent of the respondents recently returned from migratory work due to a variety of reasons with retrenchment or retirement being the major reasons. Only 8.1 per cent of the KaNgwane respondents indicated that they have quit their previous job due to success in the farming activities of the household and saw a better future in farming. In Venda and Lebowa respectively only 5 and 9.5 per cent of the respondents indicated that they have recently permanently returned to the household. Only 1.2 percent of the respondents in these two areas indicated that previous success in the household's agricultural activities contributed to the specific household member leaving his previous job.

### 3.2.2 Household income and expenditure

An analysis of household income and expenditure in the three regions was also done. The results and the mean values for annual expenditures and incomes for all the households surveyed are summarised in Table 3.3. These figures should however be treated with great care and circumspection due to the high variation in the data as depicted by the high coefficients of variation, as well as the relatively small number of households providing information in this regard.

Table 3.3 : Average household income and expenditure in Venda, Lebowa, Kangwane (1992)

Item	Venda		Lebowa		KaNgwane	
	N = 50		N = 34		N = 111	
	Average *	CV (%)	Average *	CV (%)	Average *	CV (%)
Income (R) :						
Crops	1200	-	696	128.7	1392	162.2
Livestock	-	-	1120	90.5	2435	121.9
Informal trade	1400	40.4	1132	116.9	2195	129.5
Land rental	-	-	106	65.8	1147	179.5
Hiring equipment	650	54.4	2252	77.2	878	168.9
Occasional work	2400	130.2	1178	86.2	1625	161.9
Cash remittance	3842	64.4	4049	95.2	2600	136.1
Pension	2738	69.7	3547	45.2	3644	31.9
Other	1031	93.0	540	40.6	5387	130.6
Expenditure (R) :						
Maize meal	895	36.2	527	101.9	1250	138.1
Other food	1639	89.5	1815	64.6	1681	87.3
Household expen	1075	101.1	1334	100.9	965	124.7
Transport	764	97.6	1051	115.1	904	105.1
Clothing	1485	87.3	847	74.2	1746	116.2
Savings	1816	108.7	2161	108.5	1598	148.7
Durables	3385	130.5	1607	60.5	2145	80.5
Farm expenses	494	107.1	661	102.4	2306	118.2
Education	968	180.1	823	127.9	562	224.9

\* Average amount per household participating in the particular activity. This implies that totals cannot be calculated from this table.

The importance of cash remittances and pensions is clearly shown in the table above. It is only in the case of KaNgwane where income from crop production also contributes significantly to total household income, with 76 per cent of KaNgwane households indicating that they have obtained an income from crop production. In Lebowa only 21 per cent of the households earned an income from crop production, while in Venda it was only 1.6 per cent. This trend is partly due to the drought and resultant crop failures in Venda and Lebowa. The drought in Venda was particularly severe and this is also reflected in the fact that only one respondent (1.6%) received an income from crop production. Some farmers in KaNgwane had access to irrigation water which made them less vulnerable to the dry conditions.

The figures in the table above give a good overview of general income and expenditure patterns of rural households. It should, however, be noted that in many of the items listed in the table, only a few respondents provided the required information.

### 3.2.3 Farming activities

The farming activities of the households surveyed are herewith summarised under various headings. In this discussion readers should keep in mind that the survey was done during one of the worst droughts experienced in southern Africa.

#### 3.2.3.1 Access to land

Respondents' access to land are summarised in Table 3.4 indicating the average size of land occupied by households. In Venda 98 per cent of respondents (all except one) indicated that they have access to crop land, while the corresponding figures for Lebowa and KaNgwane were 94 per cent and 96 per cent, respectively. The FSP farmers in Phokoane had significantly larger plots of land. The FSP households also planted a larger area with maize in both the 1990/91 and 1991/92 crop seasons. In Venda and KaNgwane the difference between FSP and non-FSP farmers were not so clear.

In Venda, 58 per cent of the respondents also have backyard garden plots, while 10 per cent also have access to community garden plots. The corresponding percentages in the other two survey regions are 23 per cent and 1 per cent in Lebowa and 12 per cent and 18 per cent in KaNgwane, respectively. The absence of irrigation possibilities in Lebowa is to a large extent responsible for the almost total absence of community gardens in Lebowa.

Table 3.4 : Households' access to land in Venda, Lebowa and KaNgwane, 1992 (mean values)

Item	Venda		Lebowa		KaNgwane	
	FSP	Non-FSP	FSP	Non-FSP	FSP	Non-FSP
Cropland	1.11 ha	1.12 ha	2.32 ha	1.62 ha	5.56 ha	10.25 ha
Fallow land	-	-	-	-	-	-
Backyard garden plot	0.52 ha	0.56 ha	0.37 ha	0.19 ha	0.45	0.42 ha
Community garden plot	-	-	-	-	-	0.69 ha

Only 1.7 per cent of households in Venda rented additional land, while no land was leased to other farmers. In Phokoane (Lebowa), 27.4 per cent of the respondents indicated that they rent additional land. This can be compared with the figure of 15 per cent from the previous survey in 1991/2. Almost 12 per cent of farmers in the Phokoane region are leasing land to other farmers. This suggests that there exists some form of a land rental market in this region. In KaNgwane only 14.4 per cent of respondents rent additional land while only 6.3 per cent lease land to other farmers. This again confirms the existence of an infant land rental market. In all three regions almost 50 per cent of the respondents indicated that they have the opportunity to rent land or participate in some form of share cropping arrangement. The respondents, however, indicated that there are several aspects which prevent them from utilising this opportunity. The main reasons mentioned in this regard are lack of available and vacant land and a lack of finance.

The majority of respondents indicated that they would prefer to have more land (Venda = 58%; Lebowa = 80% ; KaNgwane = 90%). The additional size of land required by the respondents were 1.7 ha, 2.5 ha and 12.9 ha, respectively. The range of land sizes farmers would like to have additional to their existing land, varied from 0.5 ha to 5 ha in Venda, from 0.5 ha to 9 ha in Lebowa and from 1 ha to 100 ha in KaNgwane. The main reasons for requiring additional land were given as: "to produce surpluses" (40% in Lebowa, 63% in KaNgwane, 37% in Venda) and "maintaining the welfare of the household" (23% in Lebowa, 6% in KaNgwane, 12% in Venda). The respondents who indicated that they do not want more land furnished drought, financial problems and enough land (in Lebowa) as reasons for not wanting more land.

Although this question and results may seem odd, it nevertheless reflects the conditions under which the households operate and to some extent reflects the productivity of the land and the income earning potential of agriculture. The results indicate that the KaNgwane respondents clearly notice the potential of agriculture in their region. At least 5 per cent of the respondents indicated they want 50 hectares or more additional land. A further interesting aspect of the results to the open ended question, "how much land do you want?", was also noted. The respondents' answers to this question were much related to the land size they currently occupy and in general twice the size. This to some extent reflects the respondents knowledge of what size of land they are able to handle given available capital, labour and skills and knowledge.

### 3.2.3.2 Crop production

The majority of the respondents in all the survey areas indicated that they do cultivate maize. In Lebowa (Phokoane) 93 per cent of households were involved in maize production, while in Venda 73 per cent and in KaNgwane 77 per cent of the households produced maize. A profile on the various crops grown by households in each region is provided in Table 3.5 below.

The importance of maize production in all three regions is clearly evident from the table below. An analysis of household maize production is provided in Table 3.6. It should be noted that yield figures for both crop seasons, ie. 1990/91 and 1991/92, were data on recorded yields provided by respondents when interviewed during the period December 1992 to January 1993.

Table 3.5 : Crop production in Venda, Lebowa and KaNgwane, 1992 (number of households producing a particular crop).

Crop	Venda		Lebowa		KaNgwane	
	(n = 60)		(n = 84)		(n = 111)	
Maize	44	(73%)	78	(93%)	86	(77.5%)
Tomatoes	1	(1.7%)	0	(0%)	29	(26%)
Sorghum	0	(0%)	0	(0%)	1	(0.9%)
Dry Beans	1	(1.7%)	3	(3.6%)	13	(11.7%)
Pumpkins	1	(1.7%)	5	(6%)	18	(16.2%)
Potatoes	0	(0%)	0	(0%)	21	(19%)
Cabbage	1	(1.7%)	0	(0%)	26	(23.4%)
Spinach	2	(3.3%)	0	(0%)	30	(27%)
Onions	1	(1.7%)	0	(0%)	21	(19%)
Beetroot	1	(1.7%)	0	(0%)	26	(23.4%)
Green mealies	17	(28.3%)	2	(2.4%)	8	(7.2%)
Peanuts	1	(1.7%)	0	(0%)	30	(27%)

The impact of the drought during the 1991/92 crop season on household maize production is clearly noticeable from the yield figures presented in Table 3.6. In Venda and Lebowa yields were reduced by more than 50 per cent, resulting in households barely producing enough for household needs. More or less the same area of maize was planted in response to good early season rains, but the lack of rainfall during the remainder of the season had a detrimental effect on the recorded yields in all three survey areas, but especially in Venda and Lebowa. This also impacted on the sales of maize with 89 per cent of households in Phokoane (Lebowa), 98 per cent of households in Venda and 87 per cent of households in KaNgwane not being able to sell any maize harvested during the 1991/92 crop season.

Table 3.6 : Household maize production

Item	Venda		Lebowa		KaNgwane	
	1990/91	1991/92	1990/91	1991/92	1990/91	1991/92
Area planted (ha)	1.15	1.19	2.09	1.91	4.03	3.79
Yield (bags *)	4.56	2.64	28.09	10.45	31.88	17.47
Yield per ha (bags)	3.96	2.22	13.44	5.47	7.91	4.60
Home consumption (bags)	4.43	2.38	11.41	4.29	14.52	9.88
Stored and milled (bags)	-	-	21.51	9.89	22.56	17.29
<b>Further yield statistics:</b>						
HH's recording yield #	72%	69%	100%	95%	96%	67%
Variance in yield (bags)	1 - 23	¼ - 10	1 - 163	¼ - 60	1¼ - 360	0.6 - 225
Mode (bags) @	3	2	24	5	2½	1¼

Notes : \* Bags refer to 80 kg bags  
# % of households who indicated they plant maize and eventually recorded some yield  
@ Yield per household recorded most

Table 3.6 also provides interesting statistics on the number of households who have planted maize and actually recorded some yield. The fact that so many of the Phokoane respondents in Lebowa recorded some yield despite the drought is indicative of the high agricultural potential of that specific area. One respondent in Lebowa recorded a total yield of 163 bags on 2.8 hectares during the 1990/91 season, ie. an average yield of 58.2 bags per hectare or 4.6 tons per hectare. In the following drought prone crop season this fanner recorded a yield of 49 bags on the same acreage, a yield of 1.4 tons per hectare (a reduction of 70 per cent). The yield obtained by this farmer compares favourably with that of commercial farmers. In the 1990/91 season this particular individual sold 140 bags to a local shop, one of only two respondents using this option to dispose of their surplus produce. In KaNgwane one respondent recorded a total yield of 360 bags on an area of 10 hectares, averaging a yield of 2.8 tons per hectare.

The figures in the first four rows of Table 3.6 need further qualification due to the large variance in households' maize yield as indicated in the second last row of Table 3.6. In Lebowa, for example, the yield per household varied from as low as a quarter of a bag to as high as 60 bags per household. The impact of the drought on recorded maize yields is also clearly shown by the drop in the mode yield per household. In Venda the mode yield was reduced by 33% as a result of the drought. In Lebowa the reduction was 79% and in KaNgwane 50%.

From the figures provided in Table 3.5 it is also evident that the KaNgwane respondents produce a much wider spectrum of commodities, albeit at a very small scale. Crops such as potatoes, onions, spinach, cabbage, tomatoes and beetroot are mainly grown in communal gardens while only a few respondents indicated that they grow these crops in their backyard garden. The majority of respondents growing pumpkins and dry beans indicated that they are grown on dry land, while it is often intercropped with maize. A complete profile of crop and vegetable production in KaNgwane is provided in Table 3.7. The figures presented in the table are averages, but again a high coefficient of variation was found in all the calculations. The results should therefore be treated with care. In some cases respondents were able to give an indication of the area cultivated with a particular crop, but were not able to provide information on production, consumption, etc. This resulted in average figures on yields, consumption and sales not always adding up.

Table 3.7 : An overview of the extent of crop and vegetable production by KaNgwane respondents (1992/93)

Crop	Area	Total Production	Own Consumption	Sold
Tomatoes	0.2 ha	8.0 boxes	1.7 boxes	6.3 boxes
No of respondents	29	4	4	4
CV	229%	143%	125	147%
Dry beans	4.41 ha	3.33 bags	1 bag	2 bags
No of respondents	23	19	18	13
CV	118%	106%	116%	89%
Pumpkins	3.25 ha	53 pumpkins	34 pumpkins	10, 70, 170*
No of respondents	18	13	13	3
CV	107%	27%	79%	-
Potatoes	0.07 ha	8 bags	3 bags	5 bags
No of respondents	21	18	18	13
CV	327%	82%	48%	93%
Cabbage	0.03 ha	5.4 bags	2.2 bags	3.2 bags
No of respondents	26	25	25	21
CV	347%	101%	124%	117%
Spinach	0.001 ha	21.4 bundles	8.2 bundles	15 bundles
No of respondents	30	30	30	26
CV	343%	125%	123%	130%
Onions	0.001 ha	5 bags	1 bag	4 bags
No of respondents	21	21	21	18
CV	132%	91%	49%	97%
Beetroot	0.001 ha	5.5 boxes	2.5 boxes	3.8 boxes
No of respondents	26	25	25	18
CV	446%	76%	120%	88%
Green mealies	1.5 ha	20, 40, 120 bags*	20, 40, 45 bags*	-
No of respondents	8	3	3	-
CV	106%	84%	37%	-
Peanuts	1.57 ha	7.8 bags	2.7 bags	6.8
No of respondents	30	16	16	12
CV	93%	182%	101%	200%

Note : Number of respondents refer to respondents from the 111 respondents particular crop

\* Actual figures to illustrate the variation.

### 3.2.3.3 Livestock production

It is often believed that livestock play an important role in the semi-pastoralist system of the rural households in South Africa. The survey results, however, indicate that the occurrence of households keeping livestock is not that high with not more than 50 percent of households keeping cattle, for example. This is clearly shown in Table 3.8 below.

Table 3.8 : Number of households keeping livestock, 1992.

Livestock	Venda	Lebowa	KaNgwane
Cattle	31 %	42 %	52 %
Goats	20 %	40 %	34 %
Chickens	38 %	58 %	51 %

The average number of cattle owned per household in each region is indicated in Table 3.9. Due to high coefficients of variation, these figures do not reflect a true picture and need some clarification. In Venda ownership of cattle per household varies between 2 and 35 head, with 79 per cent of the households keeping cattle, owning between 3 and 12 head of cattle. In Lebowa ownership ranges between 1 and 40 with 80 per cent of households keeping between 3 and 12 head of cattle. The vast majority of the households own only 2 head of cattle, while one extreme case of a herd of 40 cattle was recorded. From the average figures in Table 3.9 it also follows that cattle ownership in KaNgwane is much higher. This is also reflected in the fact that more than 10 per cent of the households own 30 head of cattle or more. The five largest herds in the sample were 40, 50, 68, 75 and 90, respectively. The majority of the respondents own between 5 and 30 head of cattle.

The limited extent of livestock production in the survey areas is also depicted in Table 3.9 below. The impact of the drought on the high mortality rate of livestock especially in Lebowa and KaNgwane is also evident. Sales of livestock are particularly low, with only 2 respondents in Venda (3.33%) selling an average of 2 head of cattle. In Lebowa only 4 households (4.7 per cent) sold on average between 1 and 2 head of cattle. In KaNgwane the corresponding figure is 14 per cent, with households selling on average 4 head of cattle. The ownership of cattle is higher in KaNgwane and also the occurrence of sales of livestock. In KaNgwane cattle were mainly sold to butchers, while neighbours/friends and auctions were to a lesser degree used as a marketing channel. Households slaughtered on average 2 cattle for various purposes (i.e. own consumption, feasts, etc), while 3 head of cattle were used for lobola.

In Lebowa the survey results indicate that the FSP farmers owned on average more cattle (6 versus 3) than the non-FSP farmers. This probably confirms the suspicion of some commentators that the households participating in the FSP programme are often the more wealthy households, with more cattle and larger savings accounts.

Table 3.9 : Livestock ownership, sales and losses per household in Venda, Lebowa and KaNgwane (1992).

	Venda	Lebowa	KaNgwane
<b>Cattle :</b>			
Number owned *	10	5.6	18.4
Received	-	1	4
Bought	-	1	1.6
Slaughtered	2.2	1	1.8
Given away	-	2.6	4
Stolen / died	3	9	6
Sold	2	1.5	4
<b>Goats / sheep :</b>			
Number owned *	5	6.5	11
Received	-	-	-
Bought	-	-	-
Slaughtered	1.5	1.7	2
Given away	-	-	-
Stolen / died	2	3	4
Sold	-	1	3
<b>Chickens :</b>			
Number owned *	9.5	8	11
Received	-	-	-
Bought	-	8	5
Slaughtered	3	12	7
Given away	-	-	-
Stolen / died	9	9	10
Sold	-	6	7

\* average number of animals owned per household at the time of survey

#### 3.2.3.4 Farming constraints

Due to the severe drought in 1991/92 it was expected that the respondents would highlight the occurrence of drought as the aspect that restricts their farming operations most. This is also shown in Table 3.10. Some farmers also viewed the shortage of mechanisation contractors as a major constraint, especially in peak times. Lack of finance was also seen by a number of respondents in each of the three regions as a factor that restricts their farming operations.



Table 3.10 : Major farming constraints experienced by respondents in Venda, Lebowa and KaNgwane, 1992

FARMING CONSTRAINT	VENDA (% of respondents)	LEBOWA (% of respondents)	KANGWANE (% of respondents)
Drought	65%	28 %	46 %
Lack of finance	5%	14 %	17 %
Lack of Mechanisation	-	15 %	11 %

### 3.2.4 Analysis of certain elements of the FSP

#### 3.2.4.1 Credit

Certain aspects of credit provision to rural households for agricultural purposes were also touched upon in this survey. Respondents were asked about their preference for the payment of their production loan. Most of the respondents prefer their loan payment in the form of a letter of credit. The only difference was in KaNgwane where the majority of respondents (44%) preferred to have their loan paid out in cash. This, however, is something institutional lenders would probably not consider as these loans will often be used on consumption and non-productive items.

It is well known that Agriwane provides credit to KaNgwane farmers through group loans. More than 85 per cent of the respondents interviewed in KaNgwane were members of such groups. However, only 67 per cent of the KaNgwane respondents favoured the practice of group lending, while only 50 per cent of the members of such groups are viewed to be committed to ensure that the group's loan is repaid at the end of the production season. Only 34 per cent of the respondents were of the opinion that they were negatively affected by the group lending scheme. The main reason (58%) cited by these respondents, was that all the group members are punished if one member fails to repay his/her share of the loan.

Credit to Lebowa farmers was provided on an individual basis, with group lending in a few cases (4%). In Venda 45 per cent of the respondents indicated that they are members of such groups, while 62 per cent were in favour of provision of credit through farmer groups.

The accessibility of credit to households surveyed improved in Lebowa since 1989, with 71 per cent of households having access to credit in 1991/92. However, no improvement since 1989 was noted in Venda and KaNgwane with only between 40 and 50 per cent of the households indicating that they have access to institutional credit provided via co-operatives or farmers' associations. The average loan provided to KaNgwane farmers was considerably higher than the loans provided to Lebowa and Venda farmers. This is related to the larger size of the operation of the KaNgwane farmers.

Table 3.11 : Credit accessibility and loan size (1989 - 1992).

Year	Venda N = 60			Lebowa N = 84			KaNgwane N = 111		
	Access * (%)	Loan # (R)	Repay- ment @ (R)	Access* (%)	Loan # (R)	Repay- ment @ (R)	Access* (%)	Loan # (R)	Repay- ment @ (R)
1989	33.3	290.00	290.00	16.7	669.07	450.00	48.6	2252.44	2062.38
1990	21.7	314,60	303.00	38.1	566.62	591.33	57.0	4017 82	1927.60
1991	40.0	370,20	395.00	58.3	534.60	442.38	34.0	2513.59	2379.41
1992	40.0	372.91	61.93	71.4	417.68	198.96	40.0	2993.66	2750.08

\* % of respondents having access to production credit

# Average loan per respondent

@ Average amount repaid by respondents

The information in Table 3.12 below suggests the limited use of informal sources of finance in the financing of agricultural production. The reliance on institutional credit and/or cash to purchase agricultural inputs is clear from the table. This is contrary to the belief that institutional credit typically accounts for a relatively small portion of total credit used in agriculture, with the bulk coming from private moneylenders. On the other hand, the fact that the surveys were done in regions where support programmes were implemented, and because the majority of the respondents are FSP members, it was expected that the results would show a high usage and availability of institutional credit.

Table 3.12 : Sources of finance for the purchase of inputs, (1992).

Source	Venda			Lebowa			KaNgwane		
	Fertiliser n = 56	Seed n = 53	Ploughing services n = 50	Fertiliser n = 77	Seed n = 74	Ploughing Services n = 68	Fertiliser n = 111	Seed n = 111	Ploughing services n = 108
Co-op	82%	81%	80%	83%	84%	78%	-	-	-
Cash	16%	17%	18%	12%	12%	16%	58%	57%	52%
Assoc	-	-	-	-	-	-	42%	40%	36%
Savings	-	-	-	-	-	-	-	1%	1%
Stokvel	-	-	-	-	-	-	-	-	-
Family	2%	2%	2%	1%	1%	2%	-	2%	11%
Cattle	-	-	-	-	-	-	-	-	-
Other	-	-	-	4%	3%	4%	-	-	-

Only 35 per cent of the respondents in all three regions indicated that participation in the support programme resulted in them having more debt than before. The financing of crop production during and after the 1991/92 drought can best be summarised by the following table (Table 3.13). Farmers in Lebowa and Kangwane were the only farmers receiving a drought subsidy from their respective governments.

Table 3.13 : The impact of the drought on financing of crop production by respondents

Percentage of households:	Venda	Lebowa	KaNgwane
who had to repay loans despite crop failure	45%	45%	27%
who were able to repay loans	27%	71%	48%
who were able to get new loans for the next crop year despite defaulting old loan	40%	8%	40%
who owe more as a result of drought	30%	19%	27%
who received a drought subsidy	0%	81%	51%
Average drought subsidy per household (R)	R 0	R 209*	R 2551.09

\* The majority of respondents indicated that they have received a subsidy worth 50 per cent of their total input costs.

### 3.2.4.2 Inputs and mechanisation services

The availability and affordability of agricultural inputs were also analysed. The results are summarised in Table 3.14 below. From these results it can be concluded that the majority of the respondents had access to fertiliser and seed. The respondents viewed the inputs as affordable in general. It was also determined that 58 per cent of the respondents have changed to a different type of fertiliser since the introduction of the FSP. Only 35 per cent of the respondents indicated that they are still using manure to fertilise their crops, although they use much less than before the FSP. The occurrence of farm manure being used as fertiliser is much higher in KaNgwane with 61 per cent of the respondents indicating that they do use farm manure. This could probably be related to the higher cattle ownership among these households. In Lebowa the occurrence was much lower with only 26 per cent of the respondents using manure. Almost all (93%) of the respondents indicated that they make use of hybrid seeds, while only 55 per cent make use of pesticides and herbicides. Fertiliser and seed are mainly purchased at co-operatives and service centres.

Table 3.14 : Input availability (% of households responding positively)

	Venda			Lebowa			KaNgwane		
	Available	Affordable	Credit Available	Available	Affordable	Credit Available	Available	Affordable	Credit Available
Fertiliser	90%	92%	82%	91%	81%	75%	97%	90%	43%
Seed	93%	95%	83%	92%	82%	71%	96%	92%	45%
Chemicals	58%	58%	60%	31%	32%	30%	84%	84%	41%
Ploughing Service*	93%	92%	82%	93%	75%	69%	93%	91%	42%

Information on the usage of inputs by respondents was also obtained. This is summarised in Table 3.15 below.

Table 3.15 : Amount of inputs (for maize production) purchased during 1990/91, 1991/92 and 1992/93 (per hectare).

	Venda			Lebowa			KaNgwane		
	1990/1	1991/2	1992/3	1990/1	1991/2	1992/3	1990/1	1991/2	1992/3
Fertiliser	98 kg	82 kg	80 kg	154 kg	165 kg	179 kg	136 kg	139 kg	141 kg
Seed	10 kg	12 kg	9 kg	9.5 kg	10 kg	10.5 kg	16 kg	19 kg	19 kg
Ploughing									
Services * #	R320 #	R350 #	R352 #	R1 19	R136	R187	R145	R149	R186

\* Amount paid for ploughing services in Rand per hectare.

# Payment for fertiliser and seed are included in the mechanisation service package

The figures in the table above indicate that the farmers are applying fertiliser and seed strictly according to the recommended application rates. This partly explains the low variation between different years. The drop in the average quantity of fertiliser applied by Venda farmers is related to a change in the fertiliser recommendations provided by the extension officers. The recommended application rates were revised after the 1990/91 season from as much as 100 kg to only 80 kg per hectare.

### 3.2.5 Purchases of households' daily food needs

Households' own production of maize and other food crops is a major source of food for rural households and the importance of this is often emphasised. Although own food production is important and does perform an important function, households are dependent on purchases from local shops, shops in the district and from supplies provided by urban families for the majority of their food needs. This is illustrated in Table 3.16. The figures in the table indicate that only a few respondents obtain the majority of their food needs from own production. These figures again emphasise that by far the largest majority of rural households are net consumers. This is despite the fact that the survey was done in areas where support programmes have been implemented for a number of years. The importance of sources outside the household for food supplies could, however, also be related to the disastrous effect of the 1992 drought.

Table 3.16 : Sources from where households obtain the majority of food needs (% of respondents)

Source	Venda	Lebowa	KaNgwane
Co-operative / service centres	14 %	9 %	0 %
Local shop	13 %	51 %	26 %
Shop in district	24 %	20 %	39 %
Outside district / urban family	43 %	19 %	32 %
Own production	6 %	1 %	3 %

### **3.3 DISCUSSION OF THE RESULTS FROM THE INDIVIDUAL SURVEY AREAS**

#### **3.3.1 The sample survey in Venda**

In Venda surveys were done in the Khakhu and Mashamba tribal wards where 35 and 40 households were respectively interviewed. Only 30 questionnaires in each of the survey areas were usable, thus a total of 60 respondents or questionnaires. Due to the random procedure used to select respondents, only 12 respondents out of the 60 happened to be households not participating in the FSP. Due to the lack of statistically significant differences, it was difficult to compare FSP and non-FSP households. In this section only meaningful differences between FSP and non-FSP households in Venda are discussed. Other interesting results from the sample survey in Venda are also highlighted. The results of the surveys in the two survey areas, i.e. Khakhu and Mashamba, are also discussed and compared. To put the results of this survey in perspective, a comparison is made with the results of the first sample survey of rural households done in the same survey areas of Venda during 1991.

##### **3.3.1.1 Comparing FSP and non-FSP households**

As indicated in Table 3.2, FSP and non-FSP households in the two survey areas have similar size households with around 8 persons per household. During 1992 only 3 households recorded any income from agricultural activities. The sources of income for the majority of households were cash remittances and pension payments. Only 5 per cent of the respondents managed to secure food from own production, while more than 40 per cent of the respondents obtained their food from sources outside the survey area and/or from family members in the urban areas. FSP households tend to have higher expenditures on maize meal (R1 148 vs R337), other food (R1 725 vs R625) and other household expenses (R1 148 vs R337). Respondents were not able or willing to provide information on household income, nevertheless the information on expenditure reflects that FSP households manage to acquire more funds than other households, mainly from off-farm sources. This could indicate that FSP participants are more wealthy.

Turning to agricultural activities, it was found that FSP and non-FSP households cultivate similar areas. The average land holding of FSP households is 1.11 ha (ranging from 1 to 4 ha) while the non-FSP households operate on average 1.2 ha (varying between 1 and 2 ha). In both cases all the land was planted with maize. On the question of how much extra land households need, FSP households indicated that they would like to have an additional 1.76 hectares, while the non-FSP households indicated that they would appreciate only an additional hectare.

The households in Venda viewed mechanisation services as the most important element in their farming operation, followed by inputs and credit. Access to markets as well as training and extension were considered to be unimportant. In considering the use of inputs it was found that non-FSP households purchased more maize seed (16 kg vs 11 kg) but less fertiliser (90kg vs 115kg) and also paid less for ploughing services (R189 vs R337) than the FSP households. It was also found that 68 per cent of the respondents changed the type of fertiliser they apply since joining the FSP. Around 75 per cent of the respondents used 2:3:2 fertiliser. The majority of respondents (93%) also make use of hybrid seeds, which were in

the majority of cases (87%) bought from the cooperatives (or service centres) at Khakhu and Mashamba. The recorded maize yields of the respondents were particularly low as a result of the drought. FSP households recorded on average only 2.24 bags and non-FSP households 1.76 bags.

Apart from maize, virtually no other crop was cultivated by the respondents in the particular crop year. Only one respondent indicated that he/she cultivates a very small area (0.001 ha) with a number of vegetables. Livestock production is also relatively unimportant with only 31 per cent of respondents keeping cattle and 20 per cent keeping small stock (goats/sheep). Only 2 respondents reported any income from livestock. The average number of cattle owned per household is 9 head of cattle with the majority of households owning between 3 and 12. Cattle ownership amongst non-FSP households is very low with only 20 per cent of non-FSP households keeping any cattle as opposed to 33 per cent of FSP households.

### 3.3.1.2 Comparing the results from the surveys in Khakhu and Mashamba

Interpreting and utilising aggregate data as was the case above, do not show out differences between the two regions of Venda that were surveyed. This section highlights the differences between the households in Khakhu and Mashamba with respect to a number of key criteria.

In analysing various socio-economic characteristics of households in the two regions the following differences, indicated in Table 3.17, were found. Households in the Mashamba ward are generally larger with an average of 9 persons versus 7 persons per household in Khakhu. The households in the Mashamba ward seems to be more wealthy due to high off farm income (many households had at least one household member formally employed - mainly teachers) and higher pensions, etc. Households in Mashamba received on average R4 204 per year in pensions and R5 657 in remittances as opposed to an average of R2 249 and R3 004 in Khakhu, respectively. The survey results with regard to maize production for the 1990/91 and the 1991/92 crop seasons are summarised in Table 3.18. Information on purchases of inputs for the 1992/93 crop season is also included.

Table 3.17 : A comparison of household characteristics in the Mashamba and Khakhu wards of Venda.

ITEM	MASHAMBA	KHAKHU
Average household size	9	7
Average number of adult females	2.8	1.8
Average number of adult males	1.8	
Income sources (1992)		
Crop income	-	-
Livestock income	-	-
Remittances	R5657	R3004
Pension	R4204	R2249
Cattle ownership : Average	18	10
Range	3 - 80	2 - 35
Maize meal expenditure, 1992 (R)	R 764	R 960
Expenditure on other food (R)	R1288	R1749

Table 3.18 : Household maize production in the Mashamba and Khakhu wards in Venda, 1990 and 1991.

		MASHAMBA	KHAKHU	
<b>Area (ha)</b>	mean	1.214	1.056	
	minimum	1	1	
	maximum	4	2	
<b>Maize Yield (80kg bags)</b>	1990	mean	3.14	5.6
		minimum	2	0
		maximum	6	13
	1991	mean	1.75	2.75
		minimum	1	0
		maximum	4	6
<b>Maize seed purchased (kg)</b>	1990	mean	11.75	12.57
		minimum	10	10
		maximum	14	8
	1991	mean	14.44	13
		minimum	10	10
		maximum	40	18
	1992	mean	11	12
		minimum	10	10
		maximum	12	18
<b>Fertiliser applied (kg)</b>	1990	mean	57	121.43
		minimum	10	50
		maximum	150	250
	1991	mean	51.33	166.66
		minimum	12	50
		maximum	100	250
	1992	mean	55.66	150
		minimum	14	50
		maximum	120	250
<b>Ploughing Services (R)</b>	1990	mean	304	233.6
		minimum	255	50
		maximum	400	364
	1991	mean	353.89	278.4
		minimum	309	50
		maximum	500	491
	1992	mean	320	275.2
		minimum	320	50
		maximum	320	491

The results clearly show that the households in Khakhu have on average achieved higher yields, albeit very low yields, in both crop seasons. This is despite the smaller area of crop land planted to maize in the Khakhu ward. The average amounts of maize seed purchased and applied by households in both regions are more or less the same. The difference in yield could however be attributed to the higher usage of fertiliser by the households in the Khakhu ward combined with better production conditions.

The availability of the various FSP elements in each of the sub-regions was also tested. This is summarised in Table 3.19. Farmers in both regions viewed fertiliser, seed and ploughing services as being generally available. However, the Mashamba respondents viewed extension services as unavailable while 49% of the KhaKhu respondents indicated that they have access to an extension officer. This confirms the findings of the institutional analysis which highlighted the problems concerning provision of extension in Mashamba.

Table 3.19 : Respondents' access to certain FSP elements in the Mashamba and Khakhu wards of Venda (Respondents responding positively)

ITEM	MASHAMBA	KHAKHU
Fertiliser	86%	95%
Seed	91%	95%
Ploughing Services	86%	97%
Extension	9.5%	49%
Credit	57%	46%

### 3.3.1.3 Comparing the results of the first and second surveys of rural households in Venda

In this section results from the two surveys are compared with regard to certain important criteria. The purpose of this exercise is to put the results of the second survey into perspective and to distinguish discrepancies. Given the fact that the first survey was done during a normal agricultural year, and the second survey during one of the worst droughts in southern Africa, it would also be possible to determine the impact of the drought on the households in the survey area. This analysis was also done for all the respondents combined, as it was expected that the impact on the FSP members would be similar, due to the fact that the household sample consists mainly of FSP participants. A complete analysis was, however, not possible because the same questionnaire was not used in both the surveys. It was therefore only possible to compare certain key criteria that were covered in both questionnaires.

A comparison of the average figures for certain key items of the two surveys is presented in Table 3.20 below. From the information presented in Table 3.20 it is evident that the mean figures for area cropland and the area planted with maize are similar in both the surveys. The impact of the drought is clearly reflected in the maize yields as well as the number of respondents selling surplus maize, which was down from 31 respondents or 34 per cent to only 1 respondent or 1.6 per cent in 1992. The impact of the drought on the households' inability to repay their production credit is also clearly shown in the table below.



In analysing yield figures and sales of maize of FSP households it was found that the drought had a similar impact on FSP households. This was also expected due to the fact that the majority of the households in both surveys were FSP participants. These households are therefore just as vulnerable (or may be more) to severe drought conditions.

Table 3.20 : Comparison of key items between the 1991 and 1992 surveys of rural households in Venda (Average figures)

Item	1991 survey (1990/91 crop season) (n = 91)	1992 survey (1991/92) crop season (n = 60)
Household size	6.2	8.3
Cropland	1.10 ha	1.12 ha
Area planted with maize	0.96 ha	1.11 ha
Total production of maize (80kg bags)	10.6 bags	2.6 bags
Quantity maize sold (80kg bags)	3.1 bags (n = 31)	4 bags (n = 1)
Crop income	R117 (n = 28)	R 144 (n = 1)
Average number of cattle	3	10
Average number of goats	1	5
Average number of chickens	5	9
Credit :		
Loan amount	R213.70	R372.91
Amount repaid	R199.70	61.93
Amount outstanding	R 11 (n = 7)	#
Inputs :		
Seed	25.35 kg	13.92 kg
Fertiliser	114.07 kg	98.33 kg
Expenditure on all food (Rand per month)	R140	R211
Farming constraints	lack of fencing (1) Land shortage (2)	Drought (1) Lack of finance (2)

# The average outstanding amount of respondents in this survey could not be calculated, but it was found that 18 respondents (30%) were not able to repay their loan and owe more as a result of the drought.

The farmer support philosophy has a lot to do with ensuring access and availability to a number of elements. It is therefore necessary to consider the improvement in the availability of agricultural inputs, i.e. seed, fertiliser and pesticides/herbicides as well as the availability and access to credit and extension services. This is done through comparing households' perceptions of the availability and access to the various elements as tested in both surveys. This analysis is summarised in Table 3.21.

The figures in Table 3.21 suggest an improvement in the general availability of farming inputs and mechanisation services from 1991 to the end of 1992. Although 84% of the

respondents indicated that they had access to credit facilities, only 40% of the respondents made use or were able to make use of the facilities during the 1991/92 season.

Table 3.21 : The availability of inputs, mechanisation services, credit and extension to households in Venda, 1991 and 1992 (% of households responding positively).

Item	1991 (% of households)	1992 (% of households)
Inputs :		
Fertiliser	76%	90%
Seed	76%	93%
Pesticides/herbicides	2%	58%
Mechanisation services	71%	93%
Credit	75%	84%
Extension services	80%	83%

### 3.3.2 The sample survey in Lebowa

Only the Phokoane region of Lebowa was surveyed where 110 randomly selected households were interviewed. Only 84 of the questionnaires were usable. The sample of non-FSP households was fairly small, which makes it difficult to find significant differences between the FSP and non-FSP groups. It was nevertheless possible to determine significant differences for a number of key criteria. As in the case of Venda, results of the first and second survey of Phokoane households were also compared.

#### 3.3.2.1 Comparing FSP and non-FSP households

In contrast to the findings in Venda it was found that the non-FSP households are smaller (5.61 vs 8.36) due to the higher absence from the homestead of men between the ages of 19 and 64 years. The FSP participants owned more cropland (2.32 ha) than the non-participants (1.625) and during the dry 1991/92 crop season the FSP households planted on average 2 ha of maize as opposed to the 1.45 hectares of maize planted by the non-FSP households. However, the relative share of the landholding planted to maize is somewhat higher in the latter case. The larger size of the land holdings of the FSP households could also implicate a higher maize yield which, according to the results, happened to be the case. The FSP households yielded on average 11.6 bags in comparison to the 5.4 bags of the other households, thus average yields of 5.8 bags per hectare (0.5t/ha) and 3.7 bags per hectare (0.3t/ha), respectively. Although the drought affected all households in a similar fashion, the FSP households managed to secure on average at least enough maize for home consumption. The same does not apply to the non-FSP households.

From the discussion above it is evident that the FSP households in the Phokoane region are larger households, also occupying larger land holdings. To confirm the perceived superior wealth and asset position of the FSP households it was also found that these households own on average more cattle than the non-FSP households. According to the survey results, FSP households own on average 6 cattle per household (ranging between 1 and 40 per household),

while the non-participants own on average 3 cattle (ranging from 2 to 5 cattle per household).

It is often suggested that FSP farmers tend to be more commercially oriented in their farming ventures. The difference in the amounts of agricultural inputs used give a clear indication of this. The difference in input use between FSP and non-FSP households in Phokoane is evident from Table 3.22 below. This difference could, however, also be attributed to the non-participants' lack of access to production credit and limited funds to purchase production inputs. The figures in the table below do not give any indication of production efficiency, but merely provides an analysis of the difference between the total amounts of inputs used. Related to this analysis it was found that the FSP households spend roughly R735 per household per annum on farm expenses as compared to the R335 of the non-FSP households.

Table 3.22a : Average amount of inputs used by FSP and non-FSP households in the Phokoane region of Lebowa.

Crop season	Seed		Fertiliser		Ploughing services	
	FSP	Non-FSP	FSP	non-FSP	FSP	non-FSP
1990/91	20.9 kg	13.6 kg	352.3 kg	165.0 kg	R128.43	R83.75
1991/92	19.3 kg	14.2 kg	332.8 kg	225.0 kg	R143.84	R101.36
1992/93	20.5 kg	15.7 kg	359.8 kg	235.0 kg	R195.89	R139.80

Table 3.22b : Average amount of inputs used per hectare by FSP and non-FSP households in the Phokoane region of Lebowa.

Crop season	Seed/ha		Fertiliser/ha		Ploughing services/ha	
	FSP	Non-FSP	FSP	non-FSP	FSP	non-FSP
1990/91	8.48 kg	4.12 kg	137.3 kg	79.6 kg	R 34.16	R 45.04
1991/92	11.63 kg	7.65 kg	177.2 kg	155.8 kg	R 61.95	R 70.18
1992/93	13.31 kg	7.00 kg	208.0 kg	162.5 kg	R 91.35	R 85.37

### 3.3.2.2 A comparison between various sub-regions in the Phokoane regions

Since average rainfall and agricultural potential differs within the greater Phokoane region, it was deemed appropriate to analyse a number of identified sub-regions. These sub-regions are Nebo, Eensaam, Phokoane and Mathukuthela. It was determined that the households in the different regions had more or less the same number of household members and specifically adult females (between 1.5 and 1.7 females per household). Households received virtually the same amount of pensions per annum (around R3 300 per annum). Households in Mathukuthela (R4 102) and Eensaam (R4 371) received on average more income from remittances than the households in Nebo (R3 677) and Phokoane (R 322). For more details see Table 3.23 below.

Table 3.23 : A comparison of household characteristics in the Phokoane sub-regions.

	Nebo	Eensaam	Phokoane	Mathukuthel a
Average household size	8	9	6	7
Average number of adult females	1.6	1.5	1.7	1.5
Average number of adult males	2	2.3	1	1.2
Income sources (1992)				
Crop income	R 372	R1672	R 592	R 256
Livestock income	-	-	-	R1100
Informal trade	-	-	-	R1341
Remittances	R3677	R4371	R3222	R4102
Pension	R3992	R3063	R3321	R3453
Cattle ownership : Average	4	3	7	7
Range	2 - 16	1 - 1.1	3 - 16	2 - 40
Maize meal expenditure, 1992 (R)	R 402	R 393	R 499	R 464
Expenditure on other food (R)	R1809	R1708	R1783	R1791

A comparative analysis of maize production in the different regions is presented in Table 3.24. From the results presented below it follows that households in the Nebo and Eensaam areas cultivate on average larger plots of land. It is also evident that these two areas also have a higher yield potential. The average yield per hectare in the Eensaam region was the highest with 1.5 tonnes per hectare. The average yield in Nebo was similar (1.3t/ha) but the yields in Phokoane and Mathukutela were much lower at 1.1 t/ha and 1 t/ha, respectively. The drought affected the average yield in all regions in the same way with yields varying from 0.3 tonnes per hectare in Phokoane to 0.5 tonnes in Nebo and Eensaam. The drought resulted in a 62 per cent reduction in the average yield in Nebo, 65 per cent in Eensaam and 74 per cent and 60 per cent in Phokoane and Mathukutela respectively.

With regard to the usage of inputs it was found that households in all the regions used on average around 10 kilograms of maize seed per hectare. This is also in line with the recommended planting density. The application of fertiliser varied between the regions with households in the Nebo and Mathukutela regions applying the most fertiliser per hectare (194 kg and 172 kg respectively). This is considerably higher than the 137 kg/ha in Eensaam and the 116 kg/ha in Phokoane. Despite the high application rate of fertiliser in Mathukutela, the average maize yields remain low. In Nebo yield response to the application of fertiliser was somewhat greater.

Table 3.24 : A comparison of maize production in various sub-regions in the greater Phokoane region of Lebowa

		NEBO	EENSAAM	PHOKOANE	MATHUKUTHELA	
<b>Area (ha)</b>	mean	2.17	2.67	1.56	1.77	
	minimum	1	1	0.7	0.5	
	maximum	6	6	4	8	
<b>Maize Yield (80 kg bags)</b>	1990	mean	36.3 (1.3t/ha)	48.6 (1.5t/ha)	20.7 (1.1t/ha)	22.6(1t/ha)
		minimum	9	15	1	1
		maximum	90	163	50	81
	1991	mean	13.8 (0.5t/ha)	17.1 (0.5t/ha)	5.4 (0.3t/ha)	9.5 (0.4t/ha)
		minimum	1	5	0.1	0.1
		maximum	60	49	15	40
<b>Maize seed purchased (kg)</b>	1990	mean	21.54	26.86	12.5	20
		minimum	10	10	10	10
		maximum	50	60	20	40
	1991	mean	21.76	23	12	19
		minimum	10	10	10	10
		maximum	50	40	20	40
	1992	mean	24	24.54	13.33	19.03
		minimum	10	10	10	10
		maximum	50	40	20	50
<b>Fertiliser applied (kg)</b>	1990	mean	421.43	325	175	304.8
		minimum	150	50	150	20
		maximum	1000	600	300	2000
	1991	mean	377.78	365	181.25	304.68
		minimum	150	200	150	100
		maximum	1000	600	300	2000
	1992	mean	416.67	422.73	237	324.24
		minimum	150	200	150	50
		maximum	1000	1100	400	2000
<b>Ploughing services (R)</b>	1990	mean	175.89	142.5	99.67	92.063
		minimum	80	120	60	20
		maximum	620	160	197	155
	1991	mean	153.67	165.28	121.5	118.826
		minimum	100	60	70	70
		maximum	181	192	197	205
	1992	mean	235.64	201.83	191	157.5
		minimum	121	190	90	90
		maximum	700	230	220	240

As a final comparison between the sub-regions of Phokoane the availability of and access to the various FSP elements were analysed. All four regions are in the proximity of the Phokoane co-operative (within a 15km radius) and it was therefore expected that aspects such as inputs and credit should be available to all respondents in all four sub-regions. As indicated in Table 3.25 this appears not to be the case.

Table 3.25 : Respondents' access to certain FSP elements in the sub-regions of the greater Phokoane region in Lebowa (Respondents responding positively)

ITEM	NEBO	EENSAAM	PHOKOANE	MATHUKUTELA
Fertiliser	100%	83%	69%	95%
Seed	100%	83%	85%	95%
Ploughing Services	100%	75%	85%	95%
Extension	89%	75%	46%	65%
Credit	89%	58%	61%	40%

### 3.3.2.3 Comparing the results of the First and second surveys

Similar to the analysis in Venda, the results of the first and second survey of households in the Phokoane region of Lebowa was also compared with the same purpose in mind. The comparison of key items from the two surveys is summarised in Table 3.26.

The mean figures on household size, land holding and area cultivated are more or less consistent between the two surveys. The effect of the drought is particularly noticeable through the difference in maize yields and also the lower number of respondents being able to sell any maize. The yield reduction as a result of the drought also resulted in households needing to buy more maize than in the 1990/91 season. This is due to the fact that the majority of households were unable to produce enough maize for household needs. This is clearly manifested in the higher household expenditure on maize meal as indicated in Table 3.26. With FSP households being the majority in each of the surveys, it is expected that the impact of the drought on these households would be similar.

Table 3.24 : Comparison of key items between the 1991 and 1992 surveys of rural households in Phokoane (average figures).

Item	1991 survey (1990/91 crop season) (n = 92)	1992 survey (1991/92) crop season (n = 84)
Household size	7.7	7.9
Cropland	2.55 ha	2.23 ha
Area planted with maize	2.14 ha	1.91 ha
Total production of maize (80kg bags)	34 bags (2.7 tons) *	10.5 bags (0.8 tons) **
Quantity maize sold (80kg bags)	8 bags (n = 23)	12 bags (n = 9)
Credit :      Loan amount	R534.60	R417.68
Amount repaid	R442.38	R198.96
Inputs :      Seed	20.89 kg	18.94 kg
Fertiliser	210.73 kg	315.07 kg
Maize meal expenditure (Rand per annum)	R184.14	R527.51
Expenditure on all food (Rand per annum)	R760.74	R1 815.94
Farming constraints	Drought (1) Soil erosion (2)	Drought (1) Lack of finance (2)

\* 93 % of respondents in the 1991 survey, recorded some yield during the 1990/91 crop season

\*\* 95 % of respondents in the 1992 survey, recorded some yield during the 1991/92 crop season as opposed to 100% of the same group recording a maize yield in 1990/1.

In comparison to the results of the 1991 survey at Phokoane, the results of the 1992 survey indicate that the households in the latter survey viewed the various elements of the FSP as less available as was the case with the respondents in the 1991 survey. This is shown in Table 3.27 below. It is only the access to mechanisation services which was higher amongst the households surveyed in 1992. Because the two surveys did not necessarily cover the same households, it is not possible to determine whether there is an improvement in the availability of the various support elements. With regard to the availability of credit it was possible to get some sense of the improvement in access to credit. This was done by asking respondents in the 1992 survey to indicate whether they had access to credit facilities in the previous season, 1990/91. Only 58 per cent of the respondents indicated that they had access to credit facilities in the previous season. This has dramatically improved to 71 per cent of households being able to obtain production credit for the 1991/92 crop season.

Table 3.27 : The availability of inputs, mechanisation services, credit and extension in Lebowa, 1991 and 1992 (percentage of households responding positively).

Item	1991 (% of households)	1992 (% of households)
Inputs : Fertiliser	97%	91%
Seed	98%	92%
Pesticides/herbicides	84%	31%
Mechanisation services	87%	93%
Credit	84%	71% *
Extension services	97%	70%

\* Only 58% of the households interviewed in 1992 had access to credit during the previous crop season, 1990/91 (see Table 3.11).

### 3.3.3 The sample survey in KaNgwane

A total of 160 households from the Mswati, Nkomazi West, Nkomazi East, Nsikasi and Mlondozi regions of KaNgwane were surveyed. Only 111 of the questionnaires were usable. Only 16 of these respondents were non-FSP households which again complicates the comparison between FSP and non-FSP households.

#### 3.3.3.1 Comparing FSP and non-FSP households

The FSP and non-FSP households have more or less the same number of household members, namely 10. The non-FSP households in general occupy larger land holdings than the FSP households (10.25 ha vs 5.56 ha). To determine the demand for more agricultural land, households were asked to indicate how much more land they want. The FSP participants required an additional 11 hectares while the non-FSP households and wanted on average 40 hectares additional land. Some of the non-FSP respondents indicated that they could do with an additional 100 hectares. The non-FSP households also cultivated larger areas with maize, ie. 11.25 hectares as opposed to 3 hectares of the FSP farmers. The non-FSP households' total production of maize will naturally also be higher. The difference is however, quite substantial: 76 bags (ranging from 6 to 225) versus 6.6 bags (ranging from 0.5 to 56 bags). The average yield per hectare during the 1991/92 drought was 6.81 bags (or 0.5t/ha) per hectare in the case of the non-FSP households and 2.16 bags (or 0.17t/ha) per hectare in the case of the FSP members. Yield reduction as a result of the drought was 50% in the case of the non-FSP farmers and 62% in the case of the FSP farmers.

Due to the larger area cultivated with maize, the non-FSP households also reported higher usage of all inputs. The application rate per hectare of maize seed by the non-FSP farmers is, however, more or less half the rate applied by the FSP households (9.6 kg/ha vs 22.8kg/ha). However, all households applied more or less the same amount of fertiliser per hectare, ie. 142 and 126 kilograms per hectare respectively. This could be attributed to the fact that all households apply the recommended application rate for fertiliser and that the non-



FSP households then try to save on input costs through purchasing less maize seed. Although this reasoning might seem to be irrational, it could be related to the fact that the non-FSP households do not have access to production credit and have to purchase all inputs on a cash basis. With maize seed being the most expensive of the production inputs per unit, the farmer tries to save on this item through using seed kept from the previous harvest. It was also found, as mentioned earlier, that the non-FSP households purchase all inputs on a cash basis whereas the FSP farmers use co-operative or farmer association credit to purchase their farming inputs.

The superior position in terms of household food security and general food production of the non-FSP households as reflected in the discussion above, is also confirmed by the fact that the non-FSP households spend less on maize meal per annum than the FSP households (R760 vs. R1276.89). These results question the ability of the FSP in KaNgwane to improve agricultural production in the region. These results also contradict what was found in the other two survey areas and also let us believe that the non-FSP households are the more efficient farmers being able to operate effectively outside the support system provided by Agriwane through the FSP. It can, however, also be argued that the non-FSP farmers occupy in general much more fertile land, usually with access to irrigation water whereas the FSP elements are mainly provided to farmers on less fertile dry cropland.

Turning to livestock production it was found that households own on average the same number of cattle and goats. The FSP farmers earn more from livestock sales than the non-FSP households. According to the survey results, the FSP households earned on average R2622 from livestock sales as opposed to the R850 of the non-FSP households. It is further also interesting to note that the FSP households earn a substantial share of their household income from off-farm sources, mainly occasional work. The FSP households earned on average R1820 from occasional work as opposed to the R193 of the non-FSP households.

People who are serious about farming do not belong to the FSP, only small/bad farmers make use of the FSP. Has to do with the nature of the FSP and also the perceptions about it. It seems as if the FSP members see farming as a last resort and not the major activity of the household.

### 3.3.3.2 Discussion of the results of the surveys in each of the sub-regions

In similar fashion to the analysis of the results of the Venda and Lebowa household surveys, the results of the surveys in the various sub-regions of KaNgwane are herewith analysed. There appears to be quite a difference between the results of the various regions. To highlight the differences an additional table was constructed to show the differences between households in the different regions for certain socio-economic characteristics. This is done in Table 3.28 below. The table also shows out the different cropping patterns in the regions. Maize remains the dominant crop in all regions but a number of other crops, mainly vegetables, are cultivated in all regions in addition to the main staple. The occurrence of vegetable production is much less in Mswati, Nkomazi West and Mlondozi than in Nkomazi East and Nsikasi.

Table 3.28 : A comparison of household characteristics in the KaNgwane sub-regions.

	Mswati	Nkomazi West	Nkomazi East	Nsikasi	Mlondozi
Average household size	8	12	10	11	7
Average number of adult females	1.8	3.4	2.2	3	1.4
Average number of adult males	1.7	3.4	3	2.5	2.4
Income sources (1992)					
Crop income	R 638	R1206	R2512	R1381	R 488
Livestock income	R 626	R2016	R2466	R5400	R1100
Informal trade	R1241	R4353	R1370	R2600	R1097
Occasional work	R 394	R1954	-	R 293	R4427
Remittances	R3300	R1977	R3507	R2469	R 361
Pension	R3055	R4581	R3336	R3520	R3057
Cattle ownership : Average	12	22	18	35	12
Range	2 - 30	4 - 90	8 - 32	8 - 75	4 - 30
Crops cultivated	Maize Tomatoes Dry beans Pumpkins Beetroot	Maize Cabbage Spinach Onions	Maize Dry beans Potatoes Cabbage Spinach	Maize Tomatoes Dry beans Pumpkins	Maize Green Mealies
Maize meal expenditure, 1992 (R)	R 679	R2431	R1091	R1493	R 620
Expenditure on other food (R)	R 880	R2078	R2860	R2184	R 388

Household maize production in each of the sub-regions is compared in Table 3.29 below. Yields between the regions vary considerably. Households in the Mswati region recorded the highest average maize yields in both seasons. An average total crop of less than 4 bags of maize was recorded in Nkomazi West and East and Nsikasi as a result of the drought. The low yields are also reflected in the high average expenditure on maize meal by households in three areas during 1992 (see Table 3.28). Households in the Mswati and Mlondozi regions spend far less on maize meal due to their more food secure position. Households in the Nkomazi East region could not even in the normal 1990/91 crop season secure a good maize yield. The highest yield recorded by respondents in that year was only 11 bags of maize, with a relatively low average of 6 bags of maize.

Table 3.29 : A comparison of maize production in various sub-regions in KaNgwane

	Mswati	Nkomazi West	Nkomazi East	Nsikasi	Mlondo/i
<b>Area (ha)</b>					
mean	5.609	8.75	8.33	1.97	1.867
minimum	0	4	3	0.13	0.5
maximum	20	22	15	8	4
<b>Maize yield (80 kg bags)</b>					
1990/1					
mean	96.18	26.5	6	45.54	14.91
minimum	5	0	1	6	4
maximum	576	100	11	200	30
1991/2					
mean	47.22	3.36	3.5	3.25	8.8
minimum	0	0	3	1	1
maximum	360	21	4	6	38
<b>Maize seed purchased (kg)</b>					
1990/1					
mean	59.64	63.05	114.54	39.23	20.35
minimum	10	20	25	10	10
maximum	250	170	300	100	60
1991/2					
mean	55.38	79.47	123.07	44.23	23.66
minimum	12	10	25	10	10
maximum	250	270	300	100	60
1992					
mean	57.84	68.5	130.55	45.77	25.33
minimum	12	20	25	10	5
maximum	250	200	375	100	100
<b>Fertiliser applied (kg)</b>					
1990					
mean	995.45	495	422.72	476.92	215.38
minimum	50	150	100	100	50
maximum	7500	1800	800	1500	450
1991					
mean	1170.58	521.05	371.43	457.69	186.66
minimum	50	100	150	100	50
maximum	15000	1800	900	1500	450
1992					
mean	967.74	513.89	340	453.84	230
minimum	50	200	100	100	50
maximum	6000	1350	700	1500	750
<b>Ploughing services (R)</b>					
1990					
mean	171.42	96	173.48	80.77	160
minimum	40	80	100	50	0
maximum	600	150	250	200	520
1991					
mean	173.33	107.5	176.4	87.69	155.42
minimum	45	95	110	30	0
maximum	600	195	250	200	520
1992					
mean	251.69	118	198.15	123.07	170.54
minimum	24	100	120	50	0
maximum	1000	200	290	600	668

The access of the respondents in the sub-regions of KaNgwane to the various FSP elements was also analysed. The results are presented in Table 3.30. From the results it appears as if the majority of respondents in KaNgwane have access to all the elements of the FSP. It is particularly the case for the respondents in the Nkomazi West and East and Nsikasi regions.

Table 3.30 : Respondents' access to certain FSP elements in the sub-regions of the greater Phokoane region in Lebowa (Respondents responding positively)

ITEM	MSWATI	NKOMAZI WEST	NKOMAZI EAST	NSIKASI	MLONDOZI
Fertiliser	92%	100%	100%	100%	100%
Seed	89%	100%	100%	100%	100%
Ploughing Services	94%	100%	100%	100%	60%
Extension	33%	100%	100%	85%	47%
Credit	30%	100%	100%	100%	27%

### 3.3.3.3 Comparing the results of the first and second survey.

The results of the sample surveys of 1991 and 1992 in KaNgwane are compared in Table 3.31 below. This brief comparison provides some interesting results. It is interesting to note the consistency in some of the results despite the diverse groups of respondents. Estimates for household size, land holding size and area planted with maize were more or less in the same range, whereas the average figures for expenditures on maize meal and other food were virtually the same. The drought impacted severely on household's surplus maize production which are normally sold. In the 1991 survey, 80 per cent of the respondents were able to sell surplus maize, while only 13 per cent of the 1992 respondents were able to sell surplus maize. Despite the drought, 75 per cent of households still managed to earn an income from crop production, mainly from selling vegetables produced under irrigation in community and homestead gardens. Income from livestock sales was higher in the 1992 survey, probably as a result of increased sales by the few large livestock owners in the region who were exposed to the drought and deterioration in the condition of their animals.

Table 3.31 : Comparison of key items between the 1991 and 1992 surveys of rural households in KaNgwane (average figures).

Item	1991 survey (1990/91 crop season) (n = 176)	1992 survey (1991/92) crop season (n = 111)
Household size	8.5	10
Cropland	3.5 ha	5.9 ha
Area planted with maize	3.1 ha	3.8 ha
Total production of maize (80kg bags)	47 bags (3.8 tons)	17 bags (1.4 tons)
Quantity maize sold (80kg bags)	36 bags (n = 105)	10 bags (n = 15)
Crop income	R4389 (n = 140)	R1392 (n = 84)
Livestock sales	R723 (n = 50)	R2435 (n = 19)
Maize meal expenditure (Rand per annum)	R1 126	R1250
Expenditure on all food (Rand per annum)	R 1389	R1681
Farming constraints	Inadequate credit (1) Drought (2)	Drought (1) Inadequate credit (2)

Earlier analysis of the KaNgwane survey results revealed that respondents cultivate a much wider variety of crops than in Venda and Lebowa. In the following table (Table 3.32) a comparison is made between the 1991 and the 1992 surveys to see whether there is a difference in the variety of crops cultivated between the two groups of respondents.

Table 3.32 : Crops grown by KaNgwane households, 1991 and 1992 (% of respondents).

Crop	1991 Survey (n = 176)	1992 Survey (n = 111)
Maize	100.0%	77.5%
Tomatoes	12.5%	26.0%
Sorghum	1.7%	0.9%
Dry Beans	26.7%	11.7%
Pumpkins	17.0%	16.2%
Potatoes	17.0%	19.0%
Cabbage	22.7%	23.4%
Spinach	18.7%	27.0%
Onions	20.5%	19.0%
Beetroot	11.9%	23.4%
Green mealies	7.4%	7.2%
Peanuts	14.2%	27.0%

The number of respondents in each of the surveys growing a particular crop is fairly consistent between the two surveys. The only differences were noted in the number of respondents growing field crops on dry land, such as maize and dry beans. The drought

conditions could partly explain this difference.

In a further effort to compare results between the two surveys, the availability and accessibility of the various FSP elements are compared. Table 3.33 shows that the 1992 group of respondents indicated higher availability of most of the elements, except for credit, to which less households had access to.

Table 3.33 : The availability of inputs, mechanisation services, credit and extension to households in KaNgwane, 1991 and 1992 (% of households responding positively).

Item	1991 (% of households)	1992 (% of households)
Inputs : Fertiliser	86%	97%
Seed	86%	96%
Chemical sprays	67%	84%
Mechanisation services	70%	93%
Credit	47%	40%
Extension services	66%	69%

### 3.4 HOUSEHOLD PERCEPTIONS OF THE FSP

Critique often expressed against the procedure of evaluating the FSP, is the lack of participation by the beneficiaries of the FSP in the evaluation of the programme. It is often stated that they would be more than able to determine whether the programme is effectively achieving its aims. A call is therefore made for greater participation by rural households in this process.

In addressing this concern, the research team made special effort to consult leaders of various farmer groups and associations to determine their perceptions of the working and implementation of the FSP. The results of these consultations were included in a separate report on the institutional aspects of the FSP (see Appendix 1). To add further perspective on this, a number of questions were included in this second questionnaire to determine the households' perceptions of the FSP. Households' perception of the FSP's contribution to food supply and improvement of the household's general welfare were tested through the inclusion of the following questions:

Since joining the FSP, were you able to :

- produce enough food for the household?
- buy new clothes for your family?
- pay for children's education?

Are you better off than before joining FSP?

The responses of the households to these questions are summarised in Table 3.29. The results in the table speak for themselves and need no further elaboration. It is, however, evident that the KaNgwane FSP has failed the "acid test", while the households in the other regions do have mixed perceptions of the contribution of the programme to improved living conditions, etc. The households in the Phokoane region of Lebowa have a strong view regarding the FSP's positive contribution to increased food production.

The respondents were also asked to indicate which aspect of the programme they view as very important in their farming operation. As indicated in Table 3.34 the majority of the households in all three regions viewed mechanisation services as the most important aspect in their farming operation. In an analysis of all the respondents in all three regions the various elements were rated in the following order: Mechanisation, inputs, credit, marketing and training/extension. It is interesting to note that the KaNgwane respondents considered credit as the least important element. This should be put against the emphasis placed by Agriwane on the provision of credit to farmers in KaNgwane which to some extent corresponds with the views of the respondents regarding the impact of the FSP.

Table 3.34 : Households' perception of FSP ( % of FSP households)

	Venda	Lebowa	KaNgwane
Number of FSP households interviewed	48	70	95
1. Help to provide enough food	61.8 %	81.4 %	32.6 %
2. Able to buy new clothes	47.2 %	60.0 %	21.0 %
3. Able to pay for education	52.7 %	72.8 %	31.5 %
4. Improved living conditions	56.4 %	77.1%	17.8 %
5. Most important FSP element	Mechanisation	Mechanisation	Mechanisation

Respondents were also asked whether the FSP has assisted them in making a profit from farming. The number of households responding positively to this question was as follows:

Venda : 65 %  
 Lebowa : 76 %  
 KaNgwane : 18 %

These figures give a clear indication of the households' perception of the FSP which to some extent reflect the success or failure of the FSPs in the three regions. It also confirms the results presented in Table 3.34.

### 3.5 SUMMARY AND CONCLUSIONS

Following the first round of surveys to evaluate the FSP in Venda, Lebowa and KaNgwane a second round of surveys was done during the period December 1992 to January 1993 in the same target areas. Because the surveys were carried out during a severe drought it was not easy to compare the results of this survey with the first survey to evaluate the support programme as such. The surveys nevertheless served some purpose as it was possible to get some idea of the impact of such a severe drought on rural households operating within or outside comprehensive support structures. The analysis of the second survey also to large extent confirmed many of the results of the first round of surveys despite the drought. Major differences in results were obtained in yield figures and crop income which clearly reflect the impact of the drought. The major findings of the second round of household surveys are as follows:

1. A notable trend is that there are generally more men in the FSP households. This implies a higher absence of men from the non-FSP household which could be related to the fact that the incidence of migrant labour amongst these households is somewhat higher.
2. Only 1.2 percent of the respondents indicated that previous success in the household's agricultural activities contributed to the specific household member leaving his previous job to start farming.
3. The importance of cash remittances and pensions in the household income position is evident from the results. It is only in the case of KaNgwane where income from crop production also contributes significantly to total household income, with 76 per cent of KaNgwane households indicating that they have obtained an income from crop production. In Lebowa only 21 per cent of the households earned an income from crop production, while in Venda it was only 1.6 per cent.
4. Evidence from the surveys suggests that there exists some form of rental market in the Phokoane region of Lebowa and in KaNgwane.
5. The majority of respondents indicated that they would prefer to have more land (Venda = 58%; Lebowa = 80% ; KaNgwane = 90%). The additional size of land required by the respondents were 1.7 ha, 2.5 ha and 12.9 ha, respectively.
6. The majority of the respondents in all the survey areas indicated that they plant maize. In Lebowa (Phokoane) 93 per cent of households were involved in maize production, while in Venda 73 per cent and in KaNgwane 77 per cent of the households produced maize.
7. The drought impacted on the sales of maize in all three areas, with 89 per cent of households in Phokoane, 98 per cent of households in Venda and 87 per cent of households in KaNgwane not being able to sell any maize harvested during the 1991/92 season.
8. The survey results indicate that the occurrence of households keeping livestock is not that high with not more than 50 percent of households keeping cattle. The limited extent



of livestock production in the survey areas was also emphasised by the low level of sales of livestock. Only 3% of the respondents in Venda, 4 per cent in Lebowa and 14 per cent of respondents in KaNgwane sold livestock during 1992.

9. Due to the severe drought in 1991/92 it was expected that the respondents would highlight the occurrence of drought as the aspect that restricts their farming operations most. Some farmers also viewed the shortage of mechanisation contractors as a major constraint, especially in peak times. Lack of finance was also seen by a number of respondents in each of the three regions as a factor that restricts their farming operations.
10. Certain elements of the FSP, ie. credit, input supply and mechanisation services were also analysed. The access to credit only improved in Lebowa with 71% of respondents having access to credit facilities, while only 40% of the respondents in KaNgwane and Lebowa could say the same. The majority (80%+) of the respondents in Venda and Lebowa made use of credit provided by the FSP through the local co-operatives. In KaNgwane respondents purchased inputs mainly on cash, while only 40% of the respondents made use of group credit provided through the fanners' associations.
11. The drought also impacted negatively on households<sup>1</sup> ability to repay production credit. It was only in Lebowa where the majority of households were able to repay their loans, mainly as a result of a drought subsidy of 50% of input costs paid to farmers.
12. All inputs for maize production and ploughing services were generally viewed as available and affordable by the majority of households in all three survey areas. The majority of households in Lebowa and Venda were able to purchase inputs on a credit basis. This not the case in KaNgwane as discussed in 10 above. It was estimated that 93 per cent of respondents make use of hybrid maize seeds. Only 35 per cent of the respondents still use manure as the major fertiliser.
13. Although own food production is important and performs an important function, it was found that households are for the majority of their food needs dependent on purchases from local shops, shops in the district and from supplies provided by urban families. It was found that only a few respondents obtain the majority of their food needs from own production. These figures again emphasise the fact that by far the largest majority of rural households are net consumers of maize and other food.
14. In the discussion of the results from the individual survey areas, a comparison was made between the results of the first and second survey. It was determined that the results are in general consistent with exception of the average maize yield figures. The difference could to a large extent be attributed to the drought.
15. Differences between sub-regions in each of the survey areas were also highlighted. From these results it became clear that different regions differ with regard to crop combinations (in KaNgwane), yield potential, income sources and household composition. It furthermore shows that aggregation of data ignores regional differences, which could lead to erroneous policy decisions.

16. In the final section of the chapter, households' perceptions of the FSP were also reported. Households in Venda and Lebowa in general had mixed perceptions of the contribution of the programme to improved living standards, while the KaNgwane respondents generally were not at all impressed with the contribution of the FSP. The households in the Phokoane region of Lebowa have a strong view regarding the FSP's positive contribution to increased food production.

## CHAPTER 4

### PREDICTING PARTICIPATION FN THE FARMER SUPPORT PROGRAMME

#### 4.1 INTRODUCTION

This chapter investigates the likelihood of households participating in the Farmer Support Programme. It is argued that if subsistence household participate in the FSP, it is most likely that these households will eventually experience an increase in farm income and living standards. The chapter does not consider the impact of the programme on production, income, etc., but rather investigates the probability of households participating in the FSP.

It is important for policy makers and for future implementation of the FSP to determine whether the households targeted do participate in the FSP. It is argued that the propensity of households to participate in the FSP can also be viewed as households' willingness to adopt new technology or in this case a new development programme. It is assumed that under conditions of food insecurity, households adapt to changes. Bates (1989) argues that structural features and values create preferences, which in turn determines individual and group actions. In this respect it is argued that households' decisions depend not only on actions of individual neighbours but on sociological dependent decision-making. For example, if a household has much influence on the community and is a member of the FSP orientated co-operative, households of that neighbourhood are more likely to participate than in the case where this particular households is opposed to the FSP. It is not necessarily only one individual's physical endowments and values which influence preferences of others. Participation does not only depend on physical endowments, e.g. food security, but also preferences, values and sociologic aspects are important aspects influencing participation, which in this chapter are measured as equity and relative values. It is argued that the probability of households to participate in the FSP depend on both economic forces and sociological aspects. The fundamental underlying theoretical problem is the manner in which individual households influence others' preferences and likely behaviour. In this chapter, it is hypothesised that adoption of and participation in the farmer support programme not only depend on the absolute values of specific variables, but that the variation of household characteristics (variables expressed in equity terms or household differences from group means) affects the probability of participation as well.

#### 4.2 METHOD USED

A dichotomous choice model, used in this chapter is related to the initial work of Condorcet (1785). A group or individual has to choose one of two alternatives. It is also assumed that households will make rational decisions in choosing between alternatives. In decision theoretic setting, the purpose of estimating the parameter is to use the data to formulate a decision. This decision depends on the estimated parameter and will be erroneous if it does not equal the true parameter. The cost of the decision will depend on the estimated and the true value of the parameter. To minimise the loss, the estimation of the minimum mean-squared error is chosen (Greene, 1993). The probability of FSP participation can be

estimated by using a linear probability model. In models like these it is assumed that rural households are faced with the choice between two alternatives (FSP participation or not) and that the choice they make depends on their physical endowments and characteristics. Households participate because of an incentive or due to no other opportunity left but to join. The opportunity costs of participation could, however, be too high, perhaps due to higher risk. This could lead to households deciding not to participate.

Typically, a linear probability model looks as follows:  $FSP_i = f(X, Y \text{ and } Z)$

where FSP = household participation in the programme (1 =yes and 0 = no)  
 X, Y and Z = distribution of variables X, Y and Z.

The above binary model has to be rewritten to overcome the general problems of linear probability models, i.e. non-normality of the error term, the heteroscedasticity thereof, the possibility that the estimate lay outside the 0-1 range and the generally lower  $R^2$  values. The above problems are reduced by using a sigmoid curve, which resembles a cumulative distribution function (CDF) of a random variable. The CDF, i.e. logit, is used to model regressions where the response variable is dichotomous, using 0-1 values. The problem of fitting an intrinsically nonlinear model like CDF's with a linear regression programme is overcome by fitting CDF's iteratively. Statistical programming begins with initial estimates of parameter values and modifies them in small steps until the curve fits the data as close as possible. The logit model based on the logistic probability function is specified as follows:

$$P_i = 1 / 1 + e^{-(B_0 + B_1 X_i + B_2 Y_i + B_3 Z_i + u_i)}$$

and for estimation purposes as:

$$L_i = \ln[P_i / (1 - P_i)] = B_0 + B_1 X_i + B_2 Y_i + B_3 Z_i + u_i$$

As the probability (P) goes from 0 to 1, the logit goes from - infinitum to infinitum, i.e. although the probabilities lie between 0 and 1, the logits are not so bound. Although L is linear in X, Y and Z, the probabilities themselves are not an interpretation of the model:  $B_1$  or  $B_2$  or  $B_3$  measures the change in L for a unit change in X, Y or Z, while the intercept may not have any specific meaning. An important appeal of models like these are that they transform the problem of predicting probabilities within a (0, 1) interval with the greatest slope of the cumulative distribution at  $p = 0$  or 1. This implies that changes in independent variables will have their greatest impact on the probability of FSP participation at the middle of the distribution. To estimate the probability of a rural household participating in the FSP, a maximum likelihood function was fitted through the following log-likelihood model:

$$L(B_0, B_1) = \Sigma [p * \ln(\text{estimate}) + (1-p) * \ln(1-\text{estimate})]$$

where estimate  $= 1/[1 + e^{-(B_0 + B_1X + B_2Y + B_3Z)}]$ ;  
 $L(B_0, B_1)$   $=$  probability ratio for FSP participation;  
 $B_0, B_1, B_2,$  and  $B_3$   $=$  parameter coefficients;  
 $X, Y$  and  $Z$   $=$  size of arable land, cattle numbers, members in the household,  
 total household income, farm income, non-farm income, and  
 maize production; and  
 $p$   $=$  probability of FSP participation (1) and not (0).

The approach used in this chapter is to categorise parameters whether they contribute positively or negatively to the probability of participation in the programme. The number of iterations used to fit the S-shaped logit curve depends on the tolerance for convergence (0.00005 used in this analysis) to the "best" loss function value within 100 iterations. The LOSS value presents the sum of least squares. No  $R^2$  values or F values are presented, because the maximum likelihood estimations were re-scaled to the mean square error of one at the end of the iterations. The logit analysis is first done using the transformed data to select variables which significantly affect participation. The selected variables are then used to determine the participation for both sets of data (absolute and equity terms). The means of those observations used to create Gini coefficients of subregions, are used as the absolute value.

In order to predict participation and to utilise both physical and sociologic parameters, both values are expressed in absolute and equity terms. These are then used in the logit analysis. The significance of the estimates determines which of the variables are determinants of participation. To test whether the absolute or equity variables are more important, the participation point elasticities for the variables selected are calculated. This calculation can be done at different participation levels, e.g. 50%, the first or second quartile. The calculation of the point elasticity is only used to determine the importance of parameters (higher elasticity is defined as more important). Since the dependent variable of the equation is  $L$ , and not the probability of participation, the point elasticity of participation has to be derived:

$$\begin{aligned}
 E &= (dP/dX) * X/P \\
 &= (dP/dL) * (dL/dX) * X/P \\
 &= -1/(1 + e^{-L})^2 * -e^{-L} * dL/dX * X/P \\
 &= 1/(1 + e^{-L})^2 e^{-L} * dL/dX * X/P \\
 &= X/(1 + e^{-L}) e^{-L} * dL/dX && [P = 1/(1 + e^{-L})] \\
 &= dL/dX * X * 1/(1 + e^{-L})
 \end{aligned}$$

where:

$E$   $=$  point elasticity  
 $L$   $=$  probability ratio of participation  
 $P$   $=$  probability of participation  
 $X$   $=$  various independent variables

From the above, it is clear that the elasticity not only depends on the direct influence of its coefficient  $X$ , determined in the logit function, but on  $L$ , which is different for each

condition. To determine the relation of elasticities of the absolute and equity variables,  $L$  can take any value, e.g. the constant  $[1/(1 + e^L)]$  can be fixed to 0.5 if  $L = 0$  ( $p=0.5$ ). Policy makers should first determine the desired  $L$  (participation rate), before calculating an elasticity of participation. In this chapter the elasticity was calculated using a fixed value of  $L = 0$  ( $p = 0.5$ ). This implies that there is an even probability for the household to participate or not to participate.

The procedure selected to relate inequality to participation is done by selecting the set of variables which will best determine the probability of participation. The significance and auto-correlation between different variables used in the logit analysis are used for selection of variables. Results show that un-equal distributions of land size, cattle numbers, maize production and non-farm income negatively contribute to participation of the FSP, while high distributions of household size, total and farm income positively contribute to participation. The multicollinearity between land and maize yield and auto-correlation between income and crop land and between herd size and cropland lead to the exclusion of the production and income variables for this analysis. Therefore, household and cropland size are the only selected variables to determine the participation of the FSP. These variables seem to be relevant in addressing the household's decision, namely whether to participate in a agricultural based development programme. Logit analyses are now used to determine the size and significance of parameters for each of the three survey areas.

The F-test serves as a measure to determine whether a combination of equity and group averages are statistically correct, i.e. accept or reject the null hypothesis that the difference between the means of area (homeland) characteristics are significant. The variance ratio (in the F-test) between (a) the estimated variance from the "between" means variation and (b) the estimated variance from "within" the sample variation show that there is evidence that the characteristics (both in absolute and equity terms) between the survey areas differ. From this, it is clear that the logit function cannot be used on rural households within South Africa as a whole, but that different homeland characteristics affect participation differently. This requires an individual analysis for each survey area. Further F-tests show that household participation in Venda and Lebowa do not differ significantly, and that both homelands could be analysed as one region. This is due to similar cultivation practices followed by these households and that maize is the major crop, while households in KaNgwane allocate much more time to vegetable production (See Chapters 2 and 3 for more details).

In order to investigate whether the variables of the latter analysis are not seemingly (coincidentally) associated with the probability to participate, a further analysis on the same survey areas was done. This analysis investigates the association between household characteristics and their differences to (1) regional (homeland) averages and (2) sub-regional differences. The F-test is used to determine which difference is the most suitable. If this analysis presents different results relative to the above, i.e. that only the absolute household characteristics determine the probability of participation, it can be concluded that equity values are seemingly associated with the probability to participate.

The last step is to investigate whether there are differences between the aggregated homeland results and sub-regional results. It is possible that results from the above analyses are significant, but that sub-regional results differ. If the results of sub-regions within a homeland do not differ, the merging of sub-regions will be supported by a F-test. Results

from the last analysis will indicate whether differences between household characteristics will be associated with the probability to participate in the programme. If this is the case, it shows that the difference in household characteristics affect the probability to participate, while homogeneity does not. Heterogenic characteristics can be seen as inequality between specific households and the characteristics of its neighbourhood. Using the differences between the specific household and (1) regional (homeland) or (2) sub-regional averages have the advantage that equity of homelands can be further analysed, i.e. it can be explained which part of it has an impact on participation (for example if the group leader's endowments are seen as large or small). The last analysis is then used to evaluate whether the programme's incidence contributes to equity. Furthermore, it shows how group preferences are formed, i.e. that the probability to participate is the highest when households can be classified into specific household endowment categories. If the probability to participate is the greatest when sub-regional households have large cropland and small household size, it is an indication that the wrong group is participating from a food security point of view. The reason for the latter is that small households need less maize production for a food secure livelihood, but have more cropland available to produce (output is highly correlated with cropland). However, the objectives of the programme is improved food security, increased farm income and improved living standards. Therefore it implies that under these conditions the "wrong" households are participating. It is thus important to know what determines (large or small crop land or household size) participation.

### 4.3 RESULTS

Table 4.1 presents logit function parameters for KaNgwane and for the combined area of Lebowa and Venda. The asymptotic standard errors of the estimate are presented in square brackets, while the calculated point elasticities are presented as the values in parenthesis. From each of the functions, the probability can be calculated. Given a household in KaNgwane with 2.1 ha of cropland and 9 household members, who lives in an area with household and cropland inequality (indicated in Gini coefficients) of 0.20 and 0.38, respectively, the estimated ratio (L) is 0.09, from which the estimated participation probability (p) can be computed as 52.3%.

From Table 4.1 it can be concluded that the probability of FSP participation in KaNgwane is positively associated with cropland and household size, with a more skew distribution of household size and less skew distribution of cropland. Comparing this situation with participation in the Lebowa and Venda FSP, the same signs were found. The calculated point elasticity of the absolute cropland estimate shows that with an one per cent increase in the size of crop land in KaNgwane, the probability of FSP participation will increase by 0.419 per cent ( $L = 0$ ). These point elasticities can be used by various institutions involved with the FSP to predict which households will participate in the FSP. However, policy makers first have to determine their desired L. In ranking the size of point elasticities of absolute and equity estimates, it is clear that absolute value elasticities are less elastic. From the results shown in Table 4.1, it is important to note that both estimates (absolute and equity) are important for predicting FSP participation. The point elasticities show that the stated hypothesis cannot be rejected, i.e. that equity values have a bigger impact on participation than absolute values. This is supported by F-tests showing that the best model consists of both absolute and equity values, followed by a model with only equity values.

Table 4.1: Logit function to determine FSP participation consisting of absolute and values expressed in equity terms

KaNgwane					
Constant	Absolute values		Equity values		Loss function
	Household	Cropland	Household	Cropland	
- 12 596 *** [2.008]	0 436 *** [0 186] (2.012)	0.174 [0.116] (0.419)	66.751 *** [7 898] (7.509)	-13 030 *** [2 6391] (-2.634)	153.002
Lebowa and Venda					
Constant	Absolute values		Equity values		Loss function
	Household	Cropland	Household	Cropland	
- 22.253 *** [2.791]	1.118 *** [0.218] (4 271)	2.791 *** [0.751] (2.002)	67,471 *** [9.303] (7.662)	-12.563 *** [2 484] (-2.251)	80.473

Note: The significance levels are indicated as follows: \*\*\* is 1 %; \*\* is 5%; and \* is 10%.

The model presented in Table 4.1 can be used to predict participation. The advantage of using the variables "household size" and "crop land" and their gini coefficients, is that they can easily be obtained and calculated. Critics could, however, argue that the gini variables are seemingly associated with the participation rate. Because of this, differences in group means are used instead. However, if both the absolute and differences variables are significantly included, the former analysis applies.

The above findings are investigated by using the absolute variables and each households' absolute difference to the homeland or to the sub-regional mean (neighbourhood) in the logit models. The F-test is used to determine which one of the absolute differences gives the best fit. In all three homelands, the F-test shows that the absolute difference to the sub-regional means gives better results than households' absolute difference to the homeland means. The meaning of this correspond to the idea that households use the characteristics of the neighbourhood as reference rather than the average of the whole survey area.

In Table 4.2, the results of the logit functions for each of the homeland areas are shown. It is shown that the probability of participation is positively associated with household and cropland size, combined with households' relative endowments of below average household size and cropland in KaNgwane. This means that the relatively smaller cropland affects participation, i.e. the probability that households with smaller cropland and household size than the average of neighbouring households will participate is greater than for the bigger ones.

Venda and Lebowa yielded different results. In this case only the absolute and relative size of cropland significantly contribute with the adoption of and participation in the FSP. The absolute size of land is negatively associated with participation, while the relative size is positively associated to the participation rate. Thus, the households with small cropland in



absolute terms, but above the neighbourhood average, have a high probability to participate. The extremely small and relatively large cropland "owners" tend not to participate. This corresponds very closely to the findings of Chapter 3.

Table 4.2: Logit function to determine FSP participation consisting of absolute and absolute differences

KaNgwane					
Constant	Absolute values		Absolute difference		Loss function
	Household	Cropland	Household	Cropland	
-57.054 *** [0.000]	7 416 *** [0.000]	0.685 *** [0.000]	-7.189 *** [0.000]	-0 184 *** [0.000]	15.265
Lebowa					
Constant	Absolute values		Absolute difference		Loss function
	Household	Cropland	Household	Cropland	
0.792 [1.701]	0.327 [0.224]	-0.663 *** [0.366]	-0.078 [0.221]	0.741 *** [0.349]	61.839
Venda					
Constant	Absolute value		Absolute difference		Loss function
	Household	Cropland	Household	Cropland	
12.138 [11.131]	0.576 [1.266]	-12.947 ** [7.606]	-0.488 [1.267]	12.927 ** [7.677]	17.728

Note: The significance levels are indicated as follows: \*\*\* is 1%; \*\* is 5%; and \* is 10%.

Variants of the model were used to determine whether the results shown in Table 4.2 are stable, i.e. that the signs and significance are not changing. This is done through adding sub-regional dummies to the equations. Results showed that the parameters presented above are stable values (except for Venda) and that probability of participation in Lebowa is the highest for the Nebo sub-region, followed by Phokoane, Mathukuthela and Eensaam. For KaNgwane the highest probability for participation was found in Nsikasi followed by Nkomazi West, Nkomazi East, Mswati and Mlondozi, while for Venda the ranking are Khakhu, Tshitale and Mashamba. Both the absolute and relative cropland estimates for Venda changes signs, while the household size is still not significant. Because of the changing signs, the interpretation of parameters for Venda have to be handled with care, while prognoses can not be supported.

Because of expected differences between sub-regions, the logit model is run for each sub-region separately. The results are summarised in Table 4.3. Table 4.3 presents the generalised combination of household and cropland size in each sub-region where the probability of participation is the highest. Differences between sub-regions and compared to the homeland aggregate (Table 4.2), explain the insignificance of the above results. From Table 4.3, it becomes clear that sub-regions differ and that significant results from aggregated data may be different to sub-regional results.

Table 4.3: Generalised household and cropland size where the possibility of participation is the highest in each sub-region

KaNgwane					
	Mswati	Nkomasi West	Nkomasi East	Nsikasi	Mlondozi
Cropland size	small	medium	medium	medium	small
Household size	medium	medium	medium	medium	medium
Lebowa					
	Nebo	Eensaam	Phokoane	Mathukhutela	
Cropland size	large	large	small	large	
Household size	medium	large	large	large	
Venda					
	Mashamba		Khakhu	Thsitale	
Cropland size	small		large	large	
Household size	medium		medium	large	

Note: The generalised size small, medium and large is determined by using the signs of parameters cropland and household size.

	Absolute value	Relative value
small	-	-
medium	-	+
medium	+	-
large	+	+

#### 4.4. CONCLUSION

The results of this chapter give a new perspective on the participation of households in the FSP. Factors used to predict the rate of adoption or participation not only depend on physical aspects such as cropland and household size, but also on current equity or relative values in the rural areas. Aspects such as income or expenditure patterns did not significantly determine programme participation. The participation in the FSP by rural households is not only dependent on the objective to improve food security through increased maize production (which could be done by joining the support programme), but also on socio-economic differences.

Sociological aspects are important in the decision-making processes. Rural households rate themselves according to their own situation and compare it with neighbours to determine if adoption of and participation in a development programme meet their objectives. If the choice of participation is because of a need to improve the food security situation, the household will compare itself to its neighbours in the sub-region. The absolute difference between the own situation and those of the sub-region significantly contribute to the decision. Sociologic aspects such as how households influence others, whether a community expects

participation or how households are rated in society, are important issues. These and physical endowments determine the possibility of adoption of and participation in the FSP and explicitly the welfare of the society.

In general, it can be concluded that household and cropland size measured in absolute, equity and relative values are good predictors for programme participation. The analysis shows that the programme in some sub-regions can result in inequality, i.e. the probability that households with larger cropland (associated with higher total maize yields) is bigger than households with smaller cropland.

The results also showed that household participation differs between homelands and its sub-regions. This may be the result of not only the absolute or relative value endowments, but different developmental approaches followed in different homelands (see the institutional analysis in Appendix 1). Policy makers could use this approach to determine the incidence of participation in a programme.

From the analysis of households in the survey areas it was found that in the majority of sub-regions in KaNgwane households with medium size cropland and medium household size are more likely to participate in the FSP. In the Mswati and Mlondozi regions of KaNgwane households with access to small cropland size and medium household size are more likely to participate. In two of the sub-regions of Lebowa, namely Eensaam and Mathukuthela it was noted that households with large cropland and a large number of family members are more likely to participate in the FSP. These households are probably more food insecure due to the large number *of* persons in the household that needs to be fed. The FSP was viewed to assist the household in providing enough food for all the household members. In the Nebo region households with larger crop land and medium household size were found to be more likely to participate in the FSP. In Phokoane it was a small area of crop land and large households that determined households' participation. In the Mashamba ward of Venda medium size households and households with small crop land are more likely to participate in the FSP. In Khakhu medium size households with larger than average crop land were found more likely to participate in the FSP.

It has often been argued that it is only the rural elite participate in the FSP. From the results this conclusion can, however, not be made as the variables used in the analysis do not say much about the distribution of assets among rural households. What it does say, however, is that the issue of participation is not straight forward - it is complex and often involves substitution and complementary/supplementary relationships where people with less land use more inputs (fertiliser, etc. through the FSP) in order to produce the same amount as people with more land. Participation is clearly an issue influenced by both physical endowment of the household and human values

## CHAPTER 5 EFFICIENCY OF FSP

### FARMERS

#### 5.1 INTRODUCTION

Through the analysis in the previous chapter it was possible to determine the characteristics of the households in the survey areas most likely to participate in the farmer support programmes. It is, however, also necessary to determine the efficiency of production of the farmers using the various support services provided through the FSP. This chapter measures the efficiency of existing agricultural production in the three survey areas, KaNgwane, Lebowa and Venda. The results reported on in this chapter emanated from research done by Jenny Piesse, Colin Thirtle and Helmke Sartorius von Bach, using the same survey data which were reported on in Chapters 2 and 3. Although this research forms part of another research programme, it was nevertheless viewed as appropriate to provide some of the initial results in this chapter.

The efficiency of the individual units is measured using a multiple input, single output linear programming model, with scale and technical efficiency separated. Two sets of comparisons are made, firstly between the three individual regions, and secondly between the two years of the second sample survey, where the effect of the severe drought in 1991/92 resulted in some areas suffering considerable loss of productive capacity.

#### 5.2 THE DATA

The data set used included production data which is composed of crop-specific, physical amounts of inputs such as organic and chemical fertiliser, pesticides, herbicides, hybrid and traditional seed, and the degree of mechanisation in ploughing and harvesting. Some inputs such as seed were designated as being either new or retained from the previous year, and the method of payment for these inputs was noted i.e. cash, credit, livestock or barter. Output levels were given in physical quantities. Because of the level of disaggregation, some of the variables were transformed to make the data more tractable and comparable across regions.

In this chapter, we are concerned solely with those farms where maize is the primary crop. Therefore, cases where fruit, vegetables or livestock production accounted for more than 25% of the land available, were excluded from the sample. For the remaining farms, only maize output, and maize-specific inputs were retained. This was done because the maize data was consistent across the three regions in both years, and was the major source of farm income, whereas effort and resources allocated to the other products was fragmented and not easily reconcilable.

While much of the data is valuable, for production and efficiency measurement there were some omissions, the most notable being a labour variable. For example, there is no real indication of labour hours spent on agricultural production in total, and certainly not crop specific labour. In this paper, a labour variable was constructed by using the number of

adult females and old people, on the assumption that the male family members were working elsewhere. However, there was no information about the availability of alternative employment, neither was there any indication of additional labour at harvest. A dummy variable was constructed to take account of those farms which grew a variety of vegetables, to give some measure of the opportunity cost of labour contributing towards maize production.

A second dummy variable which differentiated those farms where size was considered to be a constraint from those where it was not, and a variable denoting membership of the Farmers Support Programme, were included in both years.

Other variables were reported separately for the two years of the survey. Beginning with land, there were several alternative measures of land available. The area planted to maize was considered to be more appropriate than the land owned or land used, since the first could include land rented to other farmers, or used for non-agricultural purposes, and the land used was not necessarily devoted to maize. There was no quality adjustment, although only cropland was used, and fallowland, garden plots and community areas were excluded.

Seed and fertilizer were included for each year. In some cases, seed input was very low, and still some output was reported. This was assumed to be natural seeding from previous years, with no new seed planted. The vast majority of the farms reported using hybrid seed, and therefore this was not included explicitly. The method of payment for these inputs, i.e. on credit or with cash, in many cases paralleled membership of the FSP, but there were a number of exceptions. The method of payment also differed between the two sample periods.

Finally, output was maize production in metric tonnes. Some farmers reported positive output in the non-drought year and none in the drought year, although often inputs on a level with the previous year was reported. These farms were retained in an attempt to measure the effect of the drought, and are an integral part of the analysis.

The original and final sample groups are as follows:

Table 5.1 : Population of Farms in Sample

Area	Sample Interviewed	Total Usable Questionnaires	Maize Producers		Member of FSP
			1990	1991	
Venda	75	60	30		27
Lebowa	110	84	64		56
KaNgwane	160	111	84		75
Total	355	255	178		158

Most of the farmers in the sample are members of the Farmer Support Programme. However, even those who are non-members currently may have been involved previously, and therefore benefited from some level of education and training. They may even have built up a credit history through their earlier affiliation and have access to capital for production-related purchases. Thus there is no reason why a non-member should not be operating on or near the efficiency frontier, as indeed some do.

The next section describes the method used to measure efficiency.

### 5.3 THE MEASUREMENT OF PRODUCTIVE EFFICIENCY

Following the selection procedure outlined above, the farms in the sample are single output (maize) and multiple input production units. However, both inputs and outputs are in physical quantities and there is no price information. Further, although all the survey participants produced the same output, they did not all use the same inputs. This was sometimes simply the result of individual farmers making their own production decisions, but is also because of some farmers' lack of access to sufficient land or to a shortage of other inputs if they do not have financial resources or available credit.

For these reasons, econometric methods of estimation with a defined functional form with inputs common to all productive units and allocation of resources based on prices are inappropriate. The non-parametric, deterministic efficiency frontier, expressed in terms of minimising the input requirements vectors,  $x$ , per unit of output,  $y$ , introduced by Farrell (1957) is the method of choice. Let the technology be modelled by the closed, convex input requirements set;

$$L^t(y^t) = \{X^t: (X^t, y^t) \in S^t\} \quad t=1, \dots, T \quad (1)$$

which denotes all the input vectors,  $x^t$ , that can produce outputs,  $y^t$ , in period  $t$ . The technology is the set,  $S^t$ , where  $S^t = \{(x^t, y^t): x^t \text{ can produce } y^t\}$ .

The Farrell technical efficiency measure is defined so that the isoquant, which is the locus of the efficient points that form the boundary of the input requirements set,  $L^t(y^t)$ , designates the minimal set of inputs,  $x^t$ , resulting in the unit level of output of  $y^t$ . The isoquant, which is defined as the focus of efficient firms, is the supremum of the set  $L^t(y^t)$  and the efficiency of the other farms is measured relative to this isoquant. Thus, the ratio of the vector (representing the lowest mix of inputs which a farm could use and still reach the isoquant, using the factor combination  $x^t$ ) and the specific households' set of farm inputs measures the technical efficiency.

Thus, the efficiency problem is defined as:

$$F_i^t; (y^t, x^t) = \min [\hat{h} : \hat{h}x^t \in L^t(y^t)] \quad (2)$$

where the minimised parameter,  $\hat{h}$ , determines the amount by which the observed input combination can be reduced. The efficiency level is defined as the solution to the programming problem:

$$\begin{aligned}
F_i^t(y_i^t, x_i^t) &= \min \bar{h}, \\
\text{subject to} \quad & z_i^t y_i^t \geq y_i^t \\
& z_i^t x_i^t \geq \bar{h} x_i^t \\
& z_i^t \geq 0
\end{aligned}$$

where  $y$  is the output vector,  $x$  is the input vector and  $z$  is the vector of farm-specific non-negative intensity parameters, which represent the activity level of each farm's use of inputs to produce observed levels of output. The parameter  $\bar{h}$  allows for radial scaling of the original observations and their convex sets, to determine the minimum input usage needed to produce the given level of output. The efficiency measures which result from this analysis define the proportions of inputs and outputs used in the current years choice of technology.

The sample data used in these analyses are from 1990 (non-drought) and 1991 (drought), resulting in a wide range of output levels from very similar input levels. The input and output values are used as a cross-sectional series only, partly due to the lack of sufficiency data to form a time series, although it is noted the drought conditions do not allow a sensible comparison anyway. We are able to compare the production periods by looking at the two separate frontiers, but no attempt is made to define the difference between these as technical progress or regress. Since the majority of farms are included in both samples, with only the addition of a few new entrants in the second year, we are able to identify individual farms to measure the change in efficiency seen in the second year following a higher efficiency in the first. This suggests a drought-related effect rather than purely poor farming practice.

Finally, it is noted that the solution to the original programming problem, as stated in the constrained equation (3), is an aggregate measure including both technical and scale efficiency, although these elements can be considered separately. In particular, since part of the current land reform legislation in South Africa is based on the potential productive efficiency of small settled plots is of crucial importance, measuring the viability of farms of varying size in this sample is addressed in this paper.

A separation of scale and technical efficiency is suggested by Fare, Grosskopf and Lovell (1985) and Valdmanis (1992). This decomposition of the measure of total efficiency into pure technical efficiency,  $T(y,x)$  and scale efficiency  $S(y,x)$  can be shown as follows:

$$F_i^t(y^t, x^t) = T_i^t(y^t, x^t) S_i^t(y^t, x^t) \quad (3)$$

The left hand terms were determined above and now  $T_i^t(y_i^t, x_i^t)$  is calculated as a programming problem in which constant returns to scale (CRTS) is not imposed, so that technical efficiency is measured independently of scale effects. For this, the previous problem is changed by adding the constraint that the sum of  $z$ , across the inputs, must equal unity.

$$\begin{aligned}
F_i^t(y_i^t, x_i^t) &= \min h, \\
\text{subject to} \quad & z_i^t y_i^t \geq y_i^t \\
& z_i^t x_i^t \geq h x_i^t \\
& z_i^t \geq 0 \\
& \sum z_i^t = 1
\end{aligned}$$

The additional constraint on the  $z$  vector has the effect of enveloping the data more closely, allowing variable returns to scale to be exhibited. Household units are inefficient if they are below the RTS frontier. When non-constant returns to scale are allowed, the frontier is concave and the input-output combinations may all be technically efficient. Scale efficiency,  $S_i^t(y^t, x^t)$ , is simply  $F_i^t(y^t, x^t)/T_i^t(y_i^t, x_i^t)$ , since  $F_i^t(y^t, x^t)$  includes both technical and scale efficiency and eliminating the pure technical efficiency leaves scale efficiency. Thus, farms may be scale inefficient, due to being too small, but is technically efficient, or technically efficient, but too large and scale inefficient, or finally technically inefficient and scale inefficient, giving a total level of inefficiency, relative to the constant returns to scale frontier.

Results are reported in the next section.

## 5.4 RESULTS

The only results that are reported on this section are the efficiency measurements for each of the homeland areas. Total efficiency levels are provided for Venda and Lebowa in Tables 5.2 and 5.3. As we know that there is considerable variability in the size of farms in this sample, the decomposition of total efficiency into technical and scale efficiency for each of the regions is also shown in these tables.

Several problems arose in calculating the efficiencies for KaNgwane. Two different computer programmes were used to determine the total and scale efficiencies. However, only the scale efficiency could be analysed, possibly due to the heterogeneity of farming aspects in the area. Actual efficiency values are not provided but rather the distribution of each of the efficiency values of the respondents in each of the regions. The results for technical efficiency show what the impact of the drought was on the technical efficiency of farmers in all of the survey areas. The majority of farmers experienced a considerable decline in productivity, and some appear to have suffered more than others.



Table 5.2 An indication of total, technical and scale efficiency<sup>1</sup> of farmers in the Khakhu and Mashamba wards of Venda, 1990 and 1991.

Efficiency levels	Mashamba		Khakhu	
	1990	1991	1990	1991
<b>Total efficiency :</b>				
Mean :	0.7873	0.2218	0.4388	0.3038
Distribution :				
1 - 0.9	70%	10%	10%	5%
0.9 - 0.6	0%	10%	5%	0%
0.6 - 0.2	30%	10%	65%	65%
0 - 0.2	0%	70%	20%	30%
<b>Technical efficiency :</b>				
Mean :	0.9326	0.2657	0.9123	0.4013
Distribution :				
1 - 0.9	70%	20%	60%	10%
0.9 - 0.6	30%	0%	40%	0%
0.6 - 0.2	0%	20%	0%	70%
0 - 0.2	0%	60%	0%	20%
<b>Scale efficiency :</b>				
Mean :	0.8151	0.3928	0.4428	0.7371
Distribution				
1 - 0.9	70%	20%	20%	60%
0.9 - 0.6	-	-	5%	-
0.6 - 0.2	30%	20%	65%	35%
0 - 0.2	-	60%	10%	5%

From the above table, it is interesting to note reduction in the total and technical efficiency levels in times of drought. It is interesting that the technical efficiency of the Khakhu farmers were less affected by the drought than the Mashamba households.

It should be explicitly noted how the distribution of households within the four efficiency categories changed from a "normal year" to the drought conditions.

<sup>1</sup> Efficiency measures are on a scale of 0 - 1, with 1 being efficient and 0 inefficient

Table 5.3 : Indication of total, technical and scale efficiency of farmers in each sub-region of Phokoane, Lebowa, 1990 and 1991.

Efficiency levels	Nebo		Eensaam		Phokoane		Mathukutela	
	1990	1991	1990	1991	1990	1991	1990	1991
<b>Total efficiency :</b>								
Mean :	0.6299	0.2025	0.7224	0.3144	0.6458	0.1855	0.5583	0.2471
Distribution :								
1 - 0.9	37.5%	0%	37.5%	0%	30%	10%	19%	0%
0.9 - 0.6	12.5%	6%	37.5%	0%	30%	0%	31%	8%
0.6 - 0.2	37.5%	25%	12.5%	62.5%	20%	10%	38%	50%
0 - 0.2	12.5%	69%	12.5%	17.5%	20%	80%	12%	42%
<b>Technical efficiency:</b>								
Mean :	0.9461	0.4699	0.8598	0.4178	0.9557	0.4314	0.8895	0.2471
Distribution :								
1 - 0.9	81%	0%	50%	0%	90%	10%	69%	0%
0.9 - 0.6	9%	37.5%	37.5%	0%	10%	10%	19%	11%
0.6 - 0.2	0%	50%	12.5%	100%	0%	60%	11%	73%
0 - 0.2	0%	12.5%	0%	0%	0%	20%	0%	16%
<b>Scale efficiency :</b>								
Mean :	0.6568	0.4087	0.8138	0.7262	0.6704	0.3850	0.6312	0.5985
Distribution :								
1 - 0.9	31%	12%	63%	37%	30%	20%	35%	11%
0.9 - 0.6	25%	19%	12%	25%	30%	-	19%	31%
0.6 - 0.2	38%	31%	25%	37%	20%	30%	38%	54%
0 - 0.2	6%	38%	-	-	20%	50%	8%	4%

Similar as the former table, Table 5.3 presents the technical efficiency levels for 1990 to 1991. Furthermore it is shown how the technical efficiency of Nebo, Eensaam and Phokoane households were on average reduced by about 50%. The technical efficiency of the Mathukutela households were reduced to 30% of the efficiency obtained in the "normal year".

Because total and technical efficiencies were not calculatable, not much can be deducted from Table 5.4. The only interesting trend is that the scale efficiencies in the Mswati and the Nkomasi West sub-regions were less affected by the drought than the other areas.

Table 5.4 : Indication of scale efficiency per sub-region of KaNgwane, 1990 and 1991 (% of respondents)

Scale efficiency)	Msuati		Nkomasi West		Nkomasi East		Nsikasi		Mlondosi	
	1990	1991	1990	1991	1990	1991	1990	1991	1990	1991
Mean	0.4854	0.4249	0.4084	0.3171	0.4849	0.0373	0.7860	0.4765	0.6108	0.3322
Distribution :										
1 - 0.9	19%	26%	11%	11%	36%	-	61%	23%	27%	27%
0.9 - 0.6	13%	10%	22%	5%	9%	-	8%	15%	18%	-
0.6 - 0.2	48%	38%	33%	16%	-	9%	31%	31%	36%	9%
0 - 0.2	19%	26%	33%	28%	55%	91%	-	31%	18%	64%

Table 5.5 analyses the technical efficiency of those households that are in a category of households in each of the sub-regions in each of the survey areas which are most likely to participate in the FSP.

Table 5.5 : Technical efficiency of households most likely to participate in the FSP

Homeland	Sub-region	% of households likely to participate in the FSP with technical efficiency higher than 75%
Lebowa	Nebo	100%
	Eensaam	66%
	Phokoane	100%
	Mathukutcia	50%
Venda	Mashamba	70%
	Khakhu	100%
KaNgwane #	Mswati	0%
	Nkomasi West	0%
	Nkomasi East	0%
	Nsikasi	33%
	Mlondosi	66%

# Scale efficiency applies in KaNgwane

Relating Table 5.5 back to Chapter 4, it is clear that subregions within homeland areas differ in efficiency. It is interesting to note that all households likely to participate in Nebo and Phokoane have technical efficiency levels of more than 75%, while only 66% and 50% of households situated in Eensaam and Mathukutcia, respectively reach technical efficiency levels of higher than 75%. This to a certain degree demonstrates differences of training and extension services carried out, or that different extension officers operate in the sub-regions. It is also linked to the natural resource base of each of these areas.

With respect to the Venda situation, this analysis again supports previous findings that Khakhu households are more likely to participate in the FSP and are better than those in Mashamba. In this respect findings of the institutional analysis should be kept in mind.

The households in KaNgwane most likely to participate do not reach high scale efficiency levels. This can be explained by the observed lack of access to support services resulting in low efficiency levels (Chapters 2 and 3). It is interesting to note that the more efficient agrarian households in KaNgwane do not participate in the programme.

## **5.5 CONCLUSIONS**

This chapter used the survey data to study technical and scale efficiency in the areas of Venda, Ixbowa and Kangwane where the FSP was implemented. Non-parametric techniques allow estimation of total productive efficiency, and its decomposition into scale and technical elements using distance functions, in the absence of price data. This methodology is extremely useful for many applications where there are often several prices, no prices, or price data that is too poor, or too distorted to be useful.

It was determined that total and technical efficiency levels were generally severely affected by the drought conditions. Technical efficiency of the Khakhu farmers in Venda, and Nebo, Eensaam and Phokoane households in Lebowa were less affected by the drought than the Mashamba households (Venda) and Mathukutela farmers (Lebowa). This implies that drought affects efficiency of production differently in different regions, which can be attributed to differences in agricultural practices.

In Lebowa and Venda, it was determined that most of the households likely to participate in the FSP are technically efficient (above 75%), i.e. Nebo, Phokoane and Khakhu. However, the more efficient agrarian households in KaNgwane do not participate in the programme. This again in line with previous results obtained in Chapters 3 and 4.

The policy implications are fairly clear; the allocation of land to black farmers, whether they manage their farms on a purely private basis, or through the co-operatives to gain access to credit and mechanisation, has to be sufficient to ensure viability and efficiency. In addition, if the land is not going to be used for agricultural production, but simply distributed to fulfil the requirements of the promised land reform legislation, the overall wealth of the country will fall, and everyone will be worse off.