

# 6. The farmer support programme in Lebowa

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## 1. INTRODUCTION

There is a comprehensive farmer support programme in Phokoane and Kadishi in Lebowa. The Phokoane area covers 1 700 ha of dryland maize previously cultivated by the Lebowa Agricultural Corporation (LAC) for their own account. The FSP in Phokoane entailed the settlement of individual farmers on 0,5 to 2 ha plots of 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 ha respectively on each farm were retained as nuclear units to be farmed by the Phokoane tribal authority for its own account. The FSP in the Kadishi region was started with a relocated community on the farm Elandsfontein in early 1990.

The conversion of the Phokoane dryland crop project to farmer support in these target areas was agreed between DBSA management and the borrower (LAC) in late 1986. Farming had been hindered in these areas by:

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

The Phokoane maize project was privatised on the principles of:

- comprehensive support services to be provided to individual farmers settled according to demand
- flexible provision of support services to foster independent decision-making by individual farmers within the limits of the proposed project model
- economic rates for goods and services provided to farmers.

The programme would consist of:

- suitable institutional arrangements for training, demonstration and extension support
- provision of credit to farmers for agricultural inputs and to cooperatives for mechanisation equipment
- suitable marketing structures and arrangements for efficient produce distribution
- financial support for the construction of cooperative buildings and facilities

- support for development of local institutional structures with the eventual aim of independent decision-making at individual and local levels.

The comprehensive programme would attend to the main constraints on utilisation by farmers of agricultural potential, skills and facilities. Existing skills would be upgraded through efficient training and extension support. The development objective set was settlement of individual dry-land maize farmers and provision of comprehensive agricultural support services and incentives to settled farmers to promote efficiency and emergence of commercial production.

## **2. THE FSP IN LEBOWA**

The Lebowa FSP was implemented towards the end of 1988, with the first credit being provided to Phokoane farmers in October 1988 for the 1988/9 production season. The first group of farmers took part in the training programme in that year. The Phokoane FSP started with 12 groups totalling approximately 700 farmers. Movable assets (vehicles and mechanisation equipment) were transferred from the Phokoane maize project (LAC) to the Phokoane cooperative. In 1990 the FSP concept was also introduced to the community at Elandsfontein in the Kadishi valley. A meeting was organised and interested farmers were invited to visit Phokoane. A nucleus of 15 farmers and a programme of training courses were established.

By the end of 1991 in the Phokoane area there were 28 groups with approximately 2 100 farmers, in the Ndebele area 8 groups with approximately 750 farmers, in Kadishi 2 groups with approximately 120 farmers and in Sekhukhune 4 groups 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 there were 3 114 farmers in the Phokoane FSP, 146 in the Kadishi FSP and 342 in the Ndebele FSP together cultivating a total area of 3 885 ha.

The FSP had initially to overcome obstacles like mistrust of the Phokoane cooperative. The FSP in Phokoane became the responsibility of the manager of the Phokoane cooperative at the time, who designed and implemented it with imagination and commitment (see institutional arrangements in 6.4 below). The approach used is participatory development, which in practice means regular contact with farmers, understanding and involvement. Farmers participate voluntarily. Training is the basis of this integrated support programme and a prerequisite to participation.

Food security was identified as the basic need of the Phokoane community, and increased maize yields accordingly became the goal. The urgency of food security displaced any long-term ideals of promoting

commercial farmers, the original FSP objective. It was believed that improved food security through visible food production would overcome suspicion and resistance. Lack of knowledge was identified as the main obstacle to increased production.

Extension and training are thus the most important elements of the FSP in Lebowa, followed by inputs, mechanisation, credit and marketing. Mechanisation and ploughing services, and agricultural inputs had been generally available and used in the rural areas of Lebowa. Ploughing services, credit and inputs are provided to the farmers through the primary cooperatives at Phokoane, Kadishi and Ndebel.

### **3. SAMPLE SURVEY OF RURAL HOUSEHOLDS IN LEBOWA**

Implementation of the FSP was evaluated in Phokoane and Kadishi. Household surveys were conducted during April to June 1991 and again in December 1992. Only the results of the first survey will be reported in this paper.

#### **3.1 Area description**

The Phokoane area is situated approximately 50 km east of Groblersdal. The topography is hilly and there are no rivers. The area is highly populated, the majority of the inhabitants belonging to the North-Sotho-speaking Bapedi tribe. The area has deep fertile soils. There is high average annual rainfall of 600–700 mm. The main crops grown in Phokoane are maize and groundnuts.

The Kadishi area is situated in the Bosbokrand region, about 30–40 km west of Graskop. The area is very mountainous and has many small streams. Kadishi is not as highly populated as Phokoane. Bapedi also reside in this area. The area has good soils and an annual rainfall of 600–700 mm.

#### **3.2 Data collection**

Data were collected by means of a questionnaire survey conducted during April to June 1991. The sample comprised 42 households in Kadishi and 131 households in Phokoane; from these only 33 and 92 questionnaires respectively were usable. Owing to the difference between the two areas and for institutional reasons, two different questionnaires were used. Comparison between the two areas was therefore somewhat difficult. Evaluation of the FSP in Kadishi was hindered by political unrest and divisions in the community and also by the fact that the survey was done only one year after implementation.

Two samples were drawn from each area: a two-stage sample taken from the population of rural households in the area, assuming that the total population was aware of LAC's credit scheme, and a simple random sample drawn from a list of past and present FSP farmers. 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).

### 3.3 Survey results

#### 3.3.1 Household demographics

The overall mean household size in the survey areas was 7,8 persons (including migrants). The unemployment rate could not be determined. The economically active proportion of the population in Kadishi (more females than males) was 57 per cent, and in Phokoane (more males than females) 61 per cent. Approximately 35 per cent of household members were under the age of 15 years, and 4 per cent over the age of 65 years.

#### 3.3.2 Household income

The income and expenditure patterns of rural households in Phokoane and Kadishi are shown in Table 1. Estimates of farm income are unreliable as respondents were generally unwilling to give income or expenditure figures. In Kadishi income from the farming enterprise contributed 68 per cent to the total earnings of the household, and the main household expenditures were education, food, transport and durables. The mean total income in the Phokoane area (R5 567) was significantly higher than in Kadishi (R1 525). The main expenditure items in Phokoane were food, clothing, savings and durables.

**Table 1: Household income and expenditure in Phokoane and Kadishi, 1991**

Item	Income		Expenditure		
	Kadishi	Phokoane	Item	Kadishi	Phokoane
Crops	927,27	--	Education	723,24	536,19
Livestock	116,36	-	Food	1 291,56	944,88
Informal trade	-	-	Clothes	522,48	615,36
Rental from land	-	-	Savings	152,76	1 008,93
Hiring out equipment	-	-	Transport	774,48	216,34
Occasional work	3,63	-	Durables	829,08	906,81
Regular cash			Other		
income	478,26	-	household	894,08	306,18
Total	1 525,52	5 567,23	Total	5 187,68	4 534,69

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. In Kadishi also potential income sources may have been omitted from the questionnaire, and respondents may have withheld information.

#### 3.3.3 Farming activities

The average size of land owned in Phokoane was 1,38 ha dryland crop land and a 0,20 ha residential site. These averages should be qualified because of their high coefficient of variance: 84 per cent of respondents owned a piece of land, sometimes as large as 6-9 ha; 80 per cent of respondents' plots varied between 0,8 and 1,2 ha. The average size of rented land was 0,35 ha dryland crop land (the rent being R14/ha).

The average size of land owned in Kadishi was 1,45 ha dryland crop land, 2 ha grazing land and a 0,3 ha residential site.

Maize was produced by the majority of households in the two study areas. In Phokoane 93 per cent of households cultivated maize: 80 per cent of respondents planted 1–1,5 ha of maize. Only 3 per cent of Phokoane households produced sorghum, 24 per cent dry beans and 15 per cent pumpkins (mainly intercropped with maize). Kadishi households cultivated an area of 1,28 ha (coefficient of variance 198 per cent), mainly with maize and cotton.

Crop yields for the 1990/1 season were considerably lower than for 1991/2 owing to drought (Table 2). The estimated yields for 1992/3 were 3,5 tons per hectare in Phokoane and 4,2 tons per hectare in Kadishi.

**Table 2: Maize yields in Phokoane and Kadishi**

	Phokoane	Kadishi
Target yields (t/ha)	3,0	3,0
Actual yields, 1990/1 (t/ha)	2,8	3,5
Actual yields, 1991/2 (t/ha)	0,8	—*

\*No recorded yields due to drought.

Cattle were kept by 90 per cent of households in Kadishi and by 43 per cent in Phokoane where 27 per cent of residents recorded a lack of grazing land. On average, the Kadishi household owned 5,6 head of cattle, 5,6 goats and 4 chickens. The majority of Kadishi respondents (91 per cent) found that there was enough grazing to support the number of cattle, while only 61 per cent in the Phokoane region could say the same.

Kadishi respondents (73 per cent) were in general satisfied with the current land tenure system and 64 per cent were satisfied with the way land was being allocated (all the respondents were registered plot holders). However, 91 per cent of Kadishi respondents preferred to have a title-deed or some proof of ownership of the land they are farming on. Only 18 per cent of Kadishi farmers were prepared to rent out their land to another farmer and 36 per cent wanted to rent extra land if it were available (18 per cent of respondents stated that enough land was available). Of Phokoane respondents 15 per cent rented additional land, some as much as 8 ha.

Employment opportunities in an urban area would be considered by 18 per cent of Kadishi respondents: 73 per cent of residents indicated that they preferred to continue farming; and 18,2 per cent would employ somebody to farm full-time for them. These results could be linked to a

lack of other job opportunities in the region or to the fact that migratory work is a less common practice because of the long distance from the PWV region.

Similarly to Venda farmers, farmers in the two study areas in Lcbowa expressed a need for fencing. The main farming problems indicated by respondents in Kadishi and Phokoane were drought, poor tractor services and land shortage for cropping, soil erosion and inadequate credit (in Kadishi). The availability of good quality drinking water seems to be an important concern for the majority of households in Phokoane in particular.

#### **4. IMPLEMENTATION OF THE FSP ELEMENTS**

The proportion of Kadishi respondents who rated the provision of FSP services as satisfactory was: extension, 46 per cent; inputs, 27 per cent; mechanisation, 9 per cent; marketing, 9 per cent; and credit, 0 per cent. The main reason given by Kadishi respondents (91 per cent) for not joining the FSP was insufficient credit offered by the FSP credit scheme. The credit facilities provided by the Kadishi cooperative, however, are not linked to the FSP.

Phokoane farmers rated the adequacy of services as follows: inputs, 96 per cent; extension, 88 per cent; credit, 81 per cent; mechanisation, 74 per cent; and marketing, 55 per cent.

##### **4.1 Mechanisation**

The cooperatives at Phokoane and Kadishi do not provide direct mechanisation services, but coordinate and facilitate the mechanisation service, which is provided mainly by private contractors or by making available to farmers the cooperatives' own tractors and implements.

The mechanisation package of the Phokoane maize project was transferred to the Phokoane cooperative at outstanding loan value plus capitalised interest. By the programme description, the cooperative could sell tractors and equipment to interested private parties, which it did to fifteen buyers by means of five-year loans. The new tractor owners were to serve the requirements of the cooperative and the local farming community as to where, when and how to plough. With continued growth of the programme the cooperative increasingly relied on private tractor owners, and during the 1992/3 season contracted an additional eighteen.

The cooperative once a year arranges a coordinating meeting between the management committee and the private contractors. The cooperative also compiles a list of tractor owners in the Phokoane area who are prepared to provide ploughing services.

Each farmer group selects a number of contractors to plough its fields. Farmers approach the cooperative to arrange a day and time for their fields to be ploughed. The cooperative draws up a schedule for each of

the contractors, which ensures efficient and fair utilisation of the limited tractor capacity. The use of private contractors requires a control system to ensure contractors maintain acceptable standards of cultivation. The system makes farmers themselves responsible for the quality of ploughing and planting of their fields. Upon concluding their credit agreement with the cooperative, farmers receive a duplicate set of tickets for ploughing and planting. They hand their ticket to the contractor only if satisfied with the contractor's work. The contractor needs the ticket to claim money from the cooperative. This control system is very effective and the contractors are also satisfied as they are guaranteed payment by the cooperative.

The Phokoane cooperative has two tractors with implements which are used mainly for the cooperative's own needs. The cooperative has for hiring out to contractors or farmers at a daily rate of R75. 15 maize planters, 4 cultivators, 8 rolling cultivators and 5 vibrofax soil preparation implements. Members of the Phokoane cooperative are in general satisfied with the mechanisation service provided through the cooperative.

The mechanisation service in Kadishi is similar and there are 7-9 private contractors. The Kadishi farmers are not satisfied with the ploughing services provided by the contractors, who are apparently unwilling to plough to the depth taught to farmers in training courses, and who do not provide planting services or mechanical application of fertiliser: the rocky soils of Kadishi damage implements and prevent contractors from ploughing to the correct depth. At present most farmers in Kadishi plant and fertilise in the traditional way - by hand.

**Table 3: Mechanisation and input costs per hectare - Phokoane**

Season	Tractor services			Fertiliser		Seed: Sensako 2147	Total cost per hectare
	Plough	Disc	Plant	3.2.0	LAN		
1989/90	80.00	40.00	50.00	96.00	44.00	30.00	340.00
1990/1	80.00	40.00	50.00	96.00	44.00	30.00	340.00
1991/2	104.50	66.00	66.00	144.00	66.00	40.00	486.50

#### 4.2 Inputs

In Kadishi manufactured fertiliser was used by 82 per cent of respondents, pesticides by 36 per cent and herbicides by 9 per cent. In Phokoane manufactured fertiliser was used by 97 per cent of respondents, pesticides by 50 per cent and herbicides by 7 per cent. Weeding is still mainly by hand.

All respondents in Kadishi indicated that they had access to fertiliser and seed but only 54 per cent to chemicals and 36 per cent to dips and

sprays. Some 64 per cent of respondents obtained fertiliser through the FSP, 64 per cent seed, 36 per cent chemicals and 27 per cent dips and sprays. The Kadishi farmers were in general dissatisfied with the FSP, with only 27 per cent of respondents approving the availability and quality of farming inputs.

Virtually all (97 per cent) Phokoane farmers could obtain fertiliser and seed, 84 per cent pesticides and 51 per cent dips and sprays. The majority (95 per cent) of Phokoane farmers were satisfied with the operation of the support programme.

Table 4 gives quantities of farm inputs used by Lebowa farmers, but the mean values provided in the table are misleading owing to the high coefficient of variance. Thus some Kadishi respondents used as much as 150 kg of chemical fertiliser and some Phokoane respondents as much as 450 kg.

**Table 4: Mean farm input purchases per rural household in Phokoane and Kadishi, 1991**

Input	Kadishi (n=33)		Phokoane (n=92)	
	Amount (kg)	CV (%)	Amount (kg)	CV (%)
Seed	17,6	79	20,7	107
Chemical fertilisers	65,0	96	210,7	126
Organic fertilisers	50,0	316	104,4	162

Soil surveys and analyses had been carried out to determine the type of fertiliser to use in the FSP areas and the correct application rates. Recommendations were conveyed to the farmers through the training courses. Through the years farmers had applied only the fertilisers that were available (often the wrong type) or that they could afford. The recommended application rates of fertiliser in the Kadishi and Phokoane areas are 3 bags (150 kg) of 3.2.0 per hectare plus 2 bags (100 kg) of LAN per hectare. Farmers were also recommended to use 10 kg of Sensako 2147 (a hybrid maize cultivar) per hectare.

#### **4.3 Credit**

Revolving credit for fertiliser, ploughing, discing, seed, etc. is advanced to members who have access to arable land. Credit is provided according to the area and is calculated on a per hectare basis. In the 1991/2 season credit amounted to R486,50 per hectare at Phokoane and R463,55 per hectare at Kadishi (non-FSP credit provided by the Kadishi cooperative independently of the FSP). The composition of the credit amount for farmers in Phokoane is shown in Table 3. In Kadishi the total credit



was R463,55 per hectare: R128,55 for 3.2.0, R70 for LAN, R35 for seed, R100 for ploughing, R60 for discing and R70 for planting.

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 (40 per cent if a member has already received training). In Kadishi credit is not linked to the training programme. Membership of the Kadishi cooperative qualifies farmers for credit. Credit is available for inputs but not for mechanisation. To qualify for credit, farmers have to clear the previous year's production loan plus interest. FSP credit was introduced in Kadishi during the 1991/2 production season and a total loan of R8 000 was extended to 39 farmers. The interest rate at both cooperatives is 18 per cent per annum (or 1,5 per cent a month) and the farmers are given 9 months to repay their loan.

The training manager at LAC, the managers of the cooperatives, the farmer-group leaders and cooperative directors believe that most farmers know they have to repay their loans and understand the terms involved, the concept of interest and the consequences of not repaying their loans. Crop failure and drought are the main reasons why some farmers were unable to repay their loans. The default rates for the 1990/1 season were 37 per cent at Kadishi and 34 per cent at Phokoane. If members have not repaid their loan after 9 months, the management committee of the cooperative will have a meeting to urge them to repay their debt. Thereafter they are referred to the local council where the chief will do his best to ensure repayment. The last option is court action.

Most of the Phokoane farmers make use of the credit facility at the cooperative. 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 have the money.

The household surveys revealed farmers' sources of credit: Kadishi households borrowed from family or friends (46 per cent), the cooperative (18 per cent), traders (9 per cent) and moneylenders (9 per cent). Kadishi respondents in general had difficulty in borrowing and viewed credit as generally unavailable. Households in Phokoane borrowed from the cooperative (51 per cent), family or friends (14 per cent) and traders (2 per cent). In general, they were satisfied with the availability of credit and the ease of borrowing.

#### **4.4 Extension**

Extension and training are provided to farmers in Phokoane and Kadishi by the LAC training section, which consists of two senior training officers and two extension officers seconded by 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 only became members of the cooperatives after completion of the training schedule. The training schedules are coordinated through the

cooperatives, and the extension officers also use the cooperatives as their base. Training is given in the village or area of each farmer group.

The success of the training programme is evident from the increased yields of most farmers who completed the training programme. The success of these farmers has in turn resulted in an increase in demand for training. Given the limited manpower to provide extension and training in Lebowa LAC began training more officers in anticipation of implementation of the FSP in other areas of Lebowa. The number of farmers who attended training courses is indicated in Table 5.

**Table 5: Number of farmers who completed training courses at Phokoane and Kadishi**

Season	Phokoane		Kadishi	
	Phase 1	Phase 2	Phase 1	Phase 2
1989/90	48			
1990/1	814		146	
1991/2	460	640	0*	31
1992/3	492	386	-†	-†

\*Training was suspended because of political unrest in Kadishi.

†Farmers were involved in non-agricultural activities because of the drought.

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

Farmers were issued with certificates on completion of each training course: by the end of 1992, 1 960 certificates for completion of phase 1 and 1 057 certificates for phase 2. At present it is estimated that 3 200 Phokoane farmers and 146 Kadishi farmers are part of the FSP in Lebowa.

Extension officers have a much smaller part in decision-making over farming than in Venda. Most farmers gained their knowledge from training courses, which have assisted them in decision-making.

Kadishi respondents generally found the extension effort inefficient. With 73 per cent of households wanting to see the extension officer more often, it can be concluded that the demand for information is high. However, despite the problem of inadequate extension, 73 per cent of respondents in Kadishi viewed extension services as unnecessary. This to some extent explains the low attendance of training courses: 55 per cent for

crop production, 18 per cent for crop storage, 18 per cent for livestock improvement, 9 per cent for soil conservation and 0 per cent for farm budgeting (Table 6).

**Table 6: Percentage of respondents attending extension and training courses**

	Kadishi	Phokoane
Crop production course	54,5	97,5
Soil conservation course	9,1	97,5
Crop storage course	18,2	96,9
Farm budgeting course	0	95,0
Livestock improvement course	18,2	88,2

In Phokoane 89 per cent of households wanted to see the extension officer more often and 16 per cent regarded extension services as unnecessary, which is supported by the high attendance of training courses: 98 per cent for crop production, 98 per cent for soil conservation, 97 per cent for crop storage, 95 per cent for farm budgeting and 88 per cent for livestock improvement (Table 6). Some 87 per cent of farmers in Phokoane regarded the quality of extension services as good to excellent. Many attributed their perceived success to the extension and training effort.

Table 7 compares access to extension and training by FSP and non-FSP farmers. In Kadishi the extension officer visited FSP members on average 47 times per annum and non-FSP members 42 times. Despite the high number of contacts, most respondents indicated that they would like to see the agricultural officers more often.

In Phokoane the local agricultural officer visited FSP farmers on average 33 times a year and non-FSP members 23 times. Some 36 per cent of FSP and 18 per cent of non-FSP respondents wished to see the agricultural officer more often.

About 75 per cent of Kadishi respondents believed that training would improve their farming skills. Table 7 shows higher attendance of crop and livestock courses by non-FSP farmers in Kadishi.

Phokoane FSP members indicated that they could get information on ploughing, planting, fertilising, weeding, pest control (all varying between 91 and 100 per cent), animal production (29 per cent) and dipping of animals (26 per cent). Non-FSP members had more difficult access to information.

**Table 7: Access by FSP and non-FSP members to extension and training services, 1991**

	FSP members		Non-FSP members	
	Kadishi	Phokoane	Kadishi	Phokoane
Households sampled	16	80	17	12
Total contacts per household	47	33	42	23
Households that knew the agricultural officer's name (%)	100	92	98	73
Households aware of:				
– crop course (%)	40	95	100	27
– livestock course (%)	20	19	50	18
– management course (%)	–	46	–	18
– crop storage course (%)	20	80	33	18
– soil conservation course (%)	–	83	–	18
Households that attended:				
– crop course (%)	20	99	83	67
– livestock course (%)	0	93	33	50
– management course (%)	–	97	–	50
– crop storage course (%)	20	99	17	50
– soil conservation course (%)	–	99	–	50

#### 4.5 Marketing

The Phokoane and Kadishi cooperatives provide limited marketing facilities to their members, and provide mainly storage facilities and facilities for exchanging whole maize for maize meal. FSP members in Phokoane have the option of delivering their maize for these purposes to either the Phokoane cooperative or the OTK's Sekhukhune mill situated adjacent to the Phokoane cooperative. The OTK mill's milling fee is somewhat lower than that of the cooperative (Table 8). Members also indicated that maize meal originating from this mill tasted better. The exchange fees differ because the cooperative does not own its own mill, but serves as a depot from where the maize is transported by road to the nearest mill, which falls under the jurisdiction of the Maize Board and must comply with its regulations. This arrangement has worked to the detriment of the FSP farmers. Because of the shortage of white maize due to drought in 1992, all millers were compelled to mix white and yellow maize meal.

FSP members who struggled to produce their few bags of white maize received a mixture of yellow and white maize meal in return. As the people prefer white maize this led to frustration and suspicion among the farmers. For this reason the cooperative at one stage thought of investing in its own mill.

**Table 8: Maize exchange and milling fee**

	<b>Phokoane cooperative (R)</b>	<b>OTK mill</b>
80 kg bag (meal)	8,25	7,00
50 kg bag (meal)	7,15	6,50

80 kg maize meal is produced from 96 kg of coarse maize.

50 kg maize meal is produced from 60 kg of coarse maize.

In 1990/1 Phokoane farmers delivered 2 145 tons of maize to the Phokoane cooperative and 3 300 tons of maize to the OTK mill (Table 9). 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 Phokoane (FSP and non-FSP) is about 9 000 tons. It can then be concluded that the area under maize during the 1990/1 season exceeded 3 500 ha. According to the latest estimates total maize production in the Phokoane area during the 1991/2 season was only 2 500 tons, mainly owing to the drought.

The proportion of maize sold relative to stored increased in normal production years. In 1980/90 farmers sold on average 11 per cent of their crop. This increased in the following years to 34 and 16 per cent. This may mean that households were more food-secure and therefore had surplus maize to sell. Or it could mean that farmers were forced to sell more of their crop to settle outstanding debts: food security did not improve but merely stabilised. The drought in the 1991/2 season resulted in reduced deliveries with a larger portion of the total crop being stored for later consumption.

**Table 9: Maize deliveries at Phokoane cooperative**

<b>Year</b>	<b>Phokoane cooperative</b>		<b>OTK mill</b>	
	<b>Total receipts (t)</b>	<b>Storage (t)</b>	<b>Sales (t)</b>	<b>Total receipts (t)</b>
1989/90	1 828	1 620	208	–
1990/1	2 145	1 416	729	3 300
1991/2	820	686	134	1 400

Marketing was similar at the Kadishi cooperative. Maize deliveries increased from 122 tons in 1989/90 to 220 tons in 1990/1, the share of the maize crop delivered to the cooperative increasing from 43 per cent to 60 per cent. The 1991/2 maize yield was virtually nil. Fortunately, from previous good yields some households had maize in storage for 3 years. No data were available for maize stored and sold.

## 5. CONTRIBUTION OF THE FSP

Because of the lack of a baseline study an attempt was made to determine the impact of the FSP in Lebowa by comparing FSP and non-FSP farmers. This procedure, as indicated in the Venda study, has certain flaws and it is therefore only possible to discuss the possible contribution of the FSP in Lebowa through certain key indicators.

### 5.1 Contribution of the FSP to increased agricultural output

From the data for total maize production in Phokoane for the 1989/90 and 1990/1 seasons (Table 9) it might be concluded that the FSP resulted in an increase in total production (deliveries) and in sales of maize. When comparing the maize yields of non-FSP and FSP farmers for the 1990/1 season (Table 10) we find that FSP farmers at Phokoane yielded 1,63 tons per hectare and non-FSP farmers 1,02 tons per hectare ( $p = 0,0366$ ). In Kadishi non-FSP farmers produced on average more per hectare than FSP farmers (0,9 t/ha and 0,49 t/ha respectively).

**Table 10: 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		79	82	
Land planted (%)	98	81		60	70	
Maize produced (t)	1,62	1,83	*	2,71	2,53	*
Maize yield (t/ha)	0,49	0,90	*	1,63	1,02	†
Maize consumed (t)	0,53	0,57		1,25	0,83	+
Maize sold (t)	0,67	0,92		0,69	0,36	‡

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

†Difference between FSP and non-FSP farmers significant at the 5% level.

‡Difference between FSP and non-FSP farmers significant at the 10% level.

The yield difference between FSP and non-FSP farmers at Phokoane, although significant, is not on its own sufficient to indicate that the FSP contributed to increased production. Further analysis is required to

determine whether the FSP elements do in fact contribute to increased, or rather surplus, production. Discriminant analysis is used to determine which factors are associated with surplus production (Table 11). For this purpose households producing more than subsistence needs (12-14 bags) and earning an income from maize production are classed as surplus producers or emerging farmers.

A highly significant factor discriminating between surplus and deficit producers was that surplus-producing farmers owned cattle ( $p = 0,0001$ ). The group means in Table 11 also indicate that deficit producers are more likely not to keep cattle ( $p = 0,0073$ ). This variable gives an indication of wealth, implying that surplus producers are more wealthy and food-secure, and are not solely dependent on maize production for household food needs. The owning of cattle furthermore implies that these households have liquid assets which could easily be sold to finance surplus production.

**Table 11: Variables discriminating between deficit and surplus producers in Phokoane**

Discriminant variable	Standard discriminant function				Group means		
	Coefficient		Partial R*	Significance (P < F)	Deficit producers	Surplus producers	Significance (P < t)
	Deficit producers	Surplus producers					
Own cattle	8.683	6.533	0.1790	0.0001	1,85*	1,42*	0.0073
Area intercropped	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 and 2 = no.

+Phase 1 training course = 1; phase 2 training course = 2; non-participant = 0

The analysis showed that extension and training is 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 can therefore be argued that the extension and training element of the FSP in Phokoane contributes to increased production.

Level of training (Table 11) refers to the different training courses offered through the FSP. The group means in Table 11 tell us that surplus producers tended to have completed the phase 2 training course. In a further analysis the average yield of respondents with phase 1 training was found to be 1,54 tons per hectare and that of respondents with

completed or current phase 2 training 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 to the fact that the first farmers to join the FSP and to finish phase 2 training were all farming in the core region of Phokoane, which is well known for its high potential.

Other important factors were that surplus-producing households made use of mechanical planting and intercropped a smaller area. Differences in group means between surplus and deficit producers were significant in both cases. These variables, through the link with the mechanisation and training elements of the FSP, provide further evidence that the FSP elements contribute to increased agricultural output.

A similar analysis was done for Kadishi but too few observations meant the results were not significant.

The effect of the FSP on agricultural output was studied by Adendorf (1992) in the yields of 1 200 Phokoane farmers (Table 12).

**Table 12: Increase in maize production at Phokoane as a result of FSP training**

		Before FSP (1990)	After FSP (1991)*
Average size of land	(ha)	1,3	1,3
Average yield	(t/ha)	0,4	2,9
Annual home consumption	(t)	1,0	1,0
Average surplus (shortfall)	(t)	(0,7)	1,7

\*After completion of the FSP phase 1 training course.

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

Before training: 1986 : 1,4 (t/ha)  
 1987 : 2,2  
 1988 : 2,2

After training: 1989 : 2,5  
 1990 : 3,6  
 1991 : 4,2

It may be concluded that the FSP in Phokoane, mainly through the provision of training and extension, has contributed to an increase in agricultural output. Climatic conditions affect the extent of the response to training: however, 1988 to 1991 were all average-to-dry years and the



response can therefore to a large extent be attributed to the FSP training programme.

### 5.2 Contribution of the FSP to increased input use

Increased input use is most likely due to increased area cultivated. It is also expected that increased availability of inputs and credit can contribute to increased use especially of fertiliser and hybrid seed. Increased use can also be linked to the FSP training programme as this teaches the type of fertiliser and seed to use, and also application rates.

From the household survey it was determined that, while FSP farmers made more use of pesticides and herbicides than non-FSP farmers, there was not much difference in the use of manufactured fertiliser and seed between these two groups partly because of the demonstration effect and farmers informing other farmers of the new cultivation practices.

Table 13 provides some evidence of this effect. Enough fertiliser was sold by the Phokoane cooperative during the 1991/2 crop season to fertilise at least 3 380 ha at the recommended application rate. This should be compared with a total area of 1 900 ha cultivated with maize by FSP members. Similarly, seed for at least 4 057 ha was sold during the 1991/2 season. These statistics are explained by non-member farmers practising the production techniques taught to FSP farmers. It is clear that the successful yields of FSP members have had a demonstration effect on other households in the area.

**Table 13: Sale of inputs by Phokoane cooperative**

	Fertiliser		Seed		Area cultivated by FSP members (ha)
	t	As hectares	t	As hectares	
1988/9	22	143	2.1	210	300
1989/90	176	1 172	6.7	669	1 036
1990/1	286	1 904	23.0	2 297	1 300
1991/2	507	3 380	40.6	4 057	1 900

From the household surveys it was also determined that FSP farmers in Phokoane used 97 per cent hybrid seed and 3 per cent of the traditional variety, while non-FSP members used 45 per cent of the traditional variety and 55 per cent hybrid.

An econometric model discriminating between Phokoane households that used large quantities of purchased fertilisers (> 150 kg) and those that used less fertiliser (<100 kg) was also estimated to determine if the FSP elements could be associated with increased use of fertiliser. Apart

from fertiliser, all the explanatory variables tested in the model were considered. However, owing to similarities in fertiliser use no significant discriminant function could be obtained.

Further analysis used a model discriminating between Phokoane households that used large quantities of purchased seed (> 20 kg) and those that used small amounts (< 20 kg). Apart from seed, all the other explanatory variables tested in the model were considered. This model was considered because it analyses the household's intention to produce a larger output and supports the other (correlation between seed and fertiliser). Again a significant result could not be obtained.

The non-significant fittings of the two functions described above can be ascribed to similar application rates of seed and fertiliser. This is a result of the training programme and of the demonstration effect 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.

### **5.3 Contribution of the FSP to improved household food security**

From 4.5 and Tables 9 and 12, it can be concluded that the Phokoane FSP resulted in improved household food security, as maize sales and household staple food production increased.

From Table 14, listing the main expenditure items of FSP and non-FSP households, it is further evident that FSP households in Phokoane spent less (R154) on maize meal than did non-FSP farmers (R402), expenditures of respectively 3 per cent and 8,6 per cent of total household expenditure. Thus FSP households produced more maize than the non-FSP group, who are accordingly less food-secure (Dankwa et al, 1992). FSP households are also in a position to spend more on other food (Table 14).

### **5.4 Contribution of the FSP to increased household income and improved standard of living**

Table 14 shows that FSP farmers in Phokoane had a bigger total income and higher expenditures on food, clothes, durables, household and farm goods but not on education. FSP farmers in Kadishi had bigger savings accounts, but smaller funeral policies than non-FSP farmers. Non-FSP farmers earned significantly more from the sale of crops and livestock, and spent more on transport, instalments, durables, and personal and medical needs. These results from Kadishi and Phokoane conflict, but if, as seems the case, political and other groupings are more important in Kadishi, the income and expenditure patterns of FSP households point to a higher standard of living.

**Table 14: Income and expenditure of FSP and non-FSP members, 1991**

	Kadishi			Phokoane		
	FSP farmers	Non-FSP	Significance	FSP farmers	Non-FSP	Significance
Savings account	360,00	16,66	*	-	-	
Crops sold last year	30,00	1 675,00	*	-	-	
Livestock sales	33,60	213,33		-	-	
Total income	-	-		5 678,47	4 758,18	
Funeral policy	340,00	1 536,00	*	-	-	
Education	596,00	990,50	*	345,38	1 923,82	*
Maize meal	-	-		154,16	402,18	
Other food	408,80	1 038,50		801,57	463,72	*
Clothes	944,00	609,83	†	639,96	436,45	
Transport	168,00	1 280,67	*	230,71	111,81	*
Durables	382,00	1 100,00	*	959,67	522,36	*
Personal	199,60	251,00		-	-	
Medical	98,00	183,36		-	-	
Instalments	144,00	840,00	*	-	-	
Household				332,26	116,45	*
Farm				640,05	691,00	

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

†Difference between FSP and non-FSP farmers significant at the 5% level.

## 6. INSTITUTIONAL ASPECTS

The purpose of this section is to discuss how institutional structure promotes the objectives of the FSP in Lebowa and to illuminate any deviation from the institutional structure outlined in the project description.

### 6.1 Farmer committees

The FSP is promoted by officers engaged in the training programme, with the LAC manager of training as the driving force.

### 6.2 Phokoane and Kadishi cooperatives

The secondary cooperatives at Phokoane and Kadishi are important in the implementation of the FSP in Lebowa. The Phokoane cooperative is situated in the Nebo area approximately 50 km east of Groblersdal. In April 1993 the cooperative had 2 703 members. All had paid their R20

membership fee. The Kadishi cooperative, remotely situated 34 km west of Graskop, has 146 members. The full membership fee of R100 is paid over 5 years.

Inputs, credit, ploughing services and advice are provided to the farmers through these two cooperatives. The Phokoane cooperative, supported by FSP and non-FSP members, is currently one of the few cooperatives in South Africa yielding profits. It is estimated that more than 4 000 households (or 28 500 people) do their business here. This cooperative supplies inputs and some support functions for mechanisation and credit, arranges marketing opportunities and acts as a development coordinator. The manager of the cooperative and his accountant are appointed and remunerated by LAC, an arrangement which precludes members learning to manage the cooperatives themselves.

The FSP was implemented in Kadishi in 1991 and it is only since then that credit has been provided to members of the Kadishi cooperative. According to some of the group leaders in Kadishi credit was the main limit to agricultural production in the area. Provision of credit and training services resulted in a marked increase in turnover despite severe drought. As at Phokoane, the manager and the accountant are LAC employees. A comparison of the operation of the cooperatives is provided in Table 15.

**Table 15: Comparison of Phokoane and Kadishi cooperatives**

Season	Phokoane					Kadishi				
	Members	Area planted (ha)	Credit per hectare	Total loan (R)	Repayment (%)	Members	Area planted (ha)	Credit per hectare	Total loan (R)	Repayment (%)
1988/9	239	200								
1989/90	830	1 036	340.00	90 000	77.7					
1990/1	1 637	1 300	340.00	180 000	76.6	126	800	453.55		
1991/2	2 248	1 900	486.50	240 000	66.0	146	23*	463.55	8 000	57.3
1992/3	2 703	†	†	†	†	146	†	†	†	†

\*Owing to drought.

†Unavailable at time of analysis.

### 6.3 Lebowa government

Extension officers previously working for the Lebowa Department of Agriculture observe that the department is not interested in the FSP. Some of the regional directors showed an interest in the programme, but

generally the regional directors envy the success of the FSP and view it as a threat to the department and to their position.

At present more than 500 extension officers are employed by the department. Only the two extension officers seconded to LAC for the FSP are involved in the FSP extension and training programme, the others viewing the programme as 'too much work'. It would appear that the four training officers working on the FSP are effectively reaching more farmers than the department in Lebowa.

#### **6.4 Lebowa Agricultural Corporation**

The Lebowa Agricultural Corporation was instrumental in implementing the FSP in Lebowa. As stipulated in the project description, LAC was responsible for the privatisation of the Phokoane dryland maize project. LAC transferred all movable assets of the maize project to the cooperatives at outstanding loan value plus capitalised interest.

LAC's approach to development is people-orientated and demand-driven. The FSP in Lebowa was designed and implemented by the manager of the Phokoane cooperative and employee of LAC, and the programme became a personal mission pursued with missionary zeal and commitment. Crucial to development of the programme was the freedom he was allowed by LAC. The LAC official responsible for the FSP did not manage or prescribe to him but instead worked with him, listened, met farmers, etc. LAC supports the cooperatives with management expertise. Provision and scheduling of extension and training are a further responsibility of the LAC officials and the two extension officers seconded from LDA.

#### **6.5 Farmers**

Interviews with some farmers who are members of the FSPs in Phokoane and Kadishi revealed that they were generally pleased with their improved situation after joining the FSP. They ascribed this mainly to training, because they viewed their lack of knowledge as inhibiting agricultural production. Inputs were always available but they did not know how to apply them.

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

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

Tribal chiefs have little part in the implementation of the FSP, to an extent indicating little support. Chiefs were against the new FSP approach, but changed their attitude because their people were satisfied and had enough to eat, despite the severe drought.

## **7. SUMMARY AND CONCLUSION**

The current success of the FSP (especially at Phokoane) has depended much on the positive influence and commitment of the LAC officials responsible for the FSP. At the same time this points to insufficient decision-making by participants and the cooperatives, and some failure to meet the objective of learning-by-doing.

The implementing agents in Lebowa are determined to contribute to the upliftment of the rural population. The officials from LAC succeeded in bridging the cultural and communication gap between the implementing agent and the people. Although the approach is somewhat patronising, it is done in such a manner that nobody is offended. Institutional record-keeping is improving.

The success of the FSP in Phokoane derives from extension and training, the other elements following on this service. The success of the extension and training can be attributed to the personal interest of the LAC extension officers in the Phokoane area. It can be argued that their approach was specifically designed for circumstances in Phokoane and was successful because they were always present in the area and viewed the programme as a personal challenge. The institutional structure of the FSP in Lebowa is much slimmer than in Venda and there are no coordination problems as the programme is the sole responsibility of LAC. There is a shortage of training personnel.

Difficulties in implementing the FSP in Kadishi are to some extent because of the political division in the community and the region's isolation from the rest of Lebowa.

The FSP has the support of the people as it helped them to overcome their main daily problem of hunger. The FSP improved food security in these areas and contributed to a better livelihood for thousands of households. The question is, will the programme as currently implemented also help these households to become emerging or small commercial farmers?

## **8. REFERENCES**

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