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**The acceptance of certain  
agricultural innovations in  
the Ditsobotla district of  
Bophuthatswana**

1981

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Human Sciences Research  
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**THE ACCEPTANCE OF CERTAIN AGRICULTURAL INNOVATIONS  
IN THE DITSOBOTLA DISTRICT OF BOPHUTHATSWANA**

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## CONTENTS

CHAPTER		PAGE
1	INTRODUCTION	1
1.1	Background and aim	1
1.2	Method	1
2	ENVIRONMENTAL CIRCUMSTANCES AND BIOGRAPHICAL BACKGROUND OF THE TEST GROUP	3
2.1	Introduction	3
2.2	Land utilization	3
2.3	Biographical background	4
3	ORGANIZATION OF LABOUR, METHOD OF MAIZE PRODUCTION AND THE PASTORAL INDUSTRY	14
3.1	Introductory remark	14
3.2	Organization of labour	14
3.3	Soil cultivation	16
3.4	Soil preparation	17
3.5	Spacing	18
3.6	Hoeing	18
3.7	Knowledge and control of the major insect pests in mealies	20
3.8	Insight into certain aspects of soil cultivation and land utilization	21
3.9	The pastoral industry	21
4	THE ACCEPTANCE OF FERTILIZER AND IMPROVED SEED	24
4.1	Introduction	24
4.2	The use of fertilizer	24
4.3	The use of improved seed	27
5	SUMMARY AND CONCLUSION	30
	APPENDIX: Questionnaire	32
	BIBLIOGRAPHY	50



## CHAPTER I INTRODUCTION

### 1.1 BACKGROUND AND AIM

In 1976 the Human Sciences Research Council conducted an investigation into the acceptance of certain agricultural innovations in tribal areas of the Moretele No. 2 district of Bophuthatswana (Report MM-78 of 1979). The investigation revealed inter alia that the average size of plots in the tribal and trust areas was approximately 2 ha and that certain innovations, such as the use of fertilizers and certified mealie seeds, were being accepted only on a limited scale by Black farmers. The main reason put forward for this state of affairs was that an agricultural input such as fertilizer is too expensive and that because of their small plots and low income they could not afford it (mentioned by 30,3 % of the test group). The largest single percentage, namely 62,7 indicated that they did not use certified seed as they had no knowledge of its advantages (p. 44). All the members of the test group indicated however that they were cultivating their plots.

The above finding led to the question as to what the position would be regarding the acceptance of the same agricultural innovations by farmers on larger plots. Since the 1976 investigation the Moretele No. 2 district was conducted mainly in a mealie producing area, the new area of investigation also had to have mealie production as the main farming activity. After discussions with the government of Bophuthatswana the choice fell on the Ditsobotla area approximately 30 km north-west of Delareyville and 60 km south-west of Mafikeng.

The Ditsobotla area is situated between 26° 00' and 26° 33S, and 25° 00' and 52°E. The Molopo area forms the north-eastern boundary. The total area is approximately 223 023 ha (260 378 morgen). It lies in the catchment area of the Setlagole River, a tributary of the Molopo. Valleys and low hills as well as several large pans are typical of the area. The average height above sea level is approximately 1 250 m.

Observations at the weather stations at Lichtenburg (1904-1950) and Kraaipan (1932-1938) show that the hot months of the year are January (very hot), February, March, September, October, November and December (very hot), June and July are the coldest months and frost can occur from April to as late as September. Rainfall in the area is unevenly distributed. The average rainfall measured at the different weather stations in the area over a period of ten year is 440 mm a year. The highest rainfall in the area (584 mm) occurs in the central area round Mooifontein.

Because of the low rainfall figures, surface water has very little potential for farming and the entire area is therefore dependent on underground water which is fairly general.

White towns and farmers are the main sources of employment.

### 1.2 METHOD

#### 1.2.1 Field exploration

Discussions were held with officers of the Department of Agriculture of Bophuthatswana to determine whether

(a) the area under investigation would be comparable with the Moretele No. 2 district,

(b) the investigation in the proposed area would be of material interest to the Department of Agriculture, and

(c) the Department would co-operate by making agricultural extension officers available as fieldworkers.

From the discussions it became clear that the investigation would serve a useful purpose, especially with regard to the trust area of Ditsobotla which at the time of the investigation fell under the government of the RSA and that of Bophuthatswana (the investigation was conducted just before independence) and was controlled by a community council.

### 1.2.2 The questionnaire

A draft questionnaire was compiled which differed considerably from the one used in the Moretele No. 2 area. Especially the open questions in the previous questionnaire were affected by the modifications. Fewer open questions on fertilizers were included and instead of supplying reasons for certain actions, respondents now had to indicate whether certain statements were true, not true or whether they did not know the answer. This method was also used in regard to the other agricultural innovations proposed by the Department, e.g. immunization and pasture control. As plots in this area are larger than in the Moretele No. 2 area, farmers were also asked to supply information on their implements (Question 7.1).

The questionnaire (see Appendix A) covered mainly the following matters:

- (a) biographical information
- (b) knowledge and use of recommended farming practices
- (c) knowledge of cattle farming
- (d) knowledge of mealie production
- (e) knowledge and use of certain communication media, and
- (f) the farmers' financial position.

### 1.2.3 Interviewing and sample drawing

The fieldworkers met on 11 November 1977 in the office of the senior agricultural officer at Mooifontein where they were trained in the use of the questionnaire.

They were asked to interview 150 of the 259 farmers on plots of 15 morgen\* or more and 150 of the 570 farmers on smaller plots (mainly 10 morgen). Since the fieldworkers, because of their official duties, could not conduct the interviews on a full-time basis, it took three months to complete the survey and because of the limited time available to the fieldworkers the total sample was smaller than originally intended.

Eighty-seven farmers from the plots of 15 morgen and more (sample of 33,6 %) and 124 from the smaller plots (sample of 21,8 %) were involved in the survey (compare Table 2.1, Chapter 2). It was explained to the fieldworkers how to draw the sample. In the case of the larger plots, where possible, every second farmer had to be drawn and every third one from the smaller plots.

It should be mentioned that the people in the investigation area live in villages and that the fields are some distance away. This is in accordance with Tswana customs. The plots are numbered and the extension officers know who the owners of the plots are.

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\*Throughout this report plot size is indicated in morgen as this is the term used in the area.



## CHAPTER 2

### ENVIRONMENTAL CIRCUMSTANCES AND BIOGRAPHICAL BACKGROUND OF THE TEST GROUP

#### 2.1 INTRODUCTION

Knowledge of certain biographical particulars such as age, marital status and educational qualifications helps one to form a better idea of the people in the area and their way of doing things. Age and level of education can also have an effect on the farming industry. A farming community with a high age level and an educational level bordering on illiteracy can have little hope of making progress.

#### 2.2 LAND UTILIZATION

The test group were asked what they did with the land, i.e. whether they cultivated, let or worked it on a share basis or simply left it unused (Question 1.2 of the questionnaire, Appendix A). Their answers showed that the land was utilized only in two ways, namely worked by the owners themselves or by sharecroppers (Table 2.1). There were 100 men and 19 women (56,4 %) who worked their plots themselves and 67 men and 25 women (43,6 %) who had their land worked by sharecroppers. The largest percentage of farmers whose land was worked by sharecroppers was found among owners of the 10 morgen plots. More than half of these persons, namely 41 men and 17 women (54,7 % of the group) had their farms worked by sharecroppers. The absence of lessors can possibly be ascribed to the plottolders' fear that their land may be alienated because they do not cultivate it themselves. After all, the plots are trust (government) lands. Twelve of the persons included in the survey worked other persons' plots on a share basis. Information supplied by them referred only to the plots issued to them.

For the purpose of this report a distinction is made between farmers who worked their lands themselves and those who made use of sharecroppers, firstly to indicate differences between the two groups and secondly because it would not be meaningful to include the second group in a discussion on the acceptance of agricultural innovations which do not concern them. They will however be included in the discussion on the acceptance of innovations in cattle farming as they do own cattle.

TABLE 2.1  
PLOT SIZE OF FARMERS FARMING THEMSELVES AND THOSE USING SHARECROPPERS

Plot size		Farming themselves		Using sharecroppers		Total	
		Men	Women	Men	Women	N	%
25 to 30 morgen	N	26		10	2	38	18,0
	%	68,4		26,3	5,3	100	
20 morgen	N	10		2		12	5,7
	%	83,3		16,7		100	
15 morgen	N	18	8	7	4	37	17,5
	%	48,6	21,6	18,9	10,8	100	
10 morgen	N	40	8	41	17	106	50,2
	%	37,7	7,5	38,7	16,0	100	
5 morgen	N	6	3	7	2	18	8,5
	%	33,3	16,7	38,9	11,1	100	
TOTAL	N	100	19	67	25	211	
	%	47,4	9,0	31,8	11,8	100	

The two groups are subsequently compared in respect of certain biographical characteristics. As there are too few women in the respective groups for analysis, there will be no classification according to sex in the tables.

## 2.3 BIOGRAPHICAL BACKGROUND

### 2.3.1 Ethnic composition

The ethnic composition of the test group is shown in Table 2.2.

TABLE 2.2  
ETHNIC COMPOSITION OF THE TEST GROUP

Ethnic composition	Farming themselves	Using sharecroppers	Total	
			N	%
Tswana	97	76	173	82,0
Northern Sotho	11	6	17	8,1
Xhosa	5	5	10	4,7
Zulu	4	2	6	2,8
Swazi	2	2	4	1,9
Southern Sotho		1	1	0,5
TOTAL	119	92	211	100

Table 2.2 shows that 173 or 82 % of the test group were Tswana. Of the other ethnic groups only one constituted more than 5 % of the test group, namely the Northern Sotho with 17 persons (8,1 %). In the Morotele No. 2 area 52,9 % of the respondents were Tswana.

### 2.3.2 Marital status and position in the family

The marital status and position in the family of the test group can shed considerable light on family circumstances. For example the responses of young people especially are not always valid. Married women cannot take decisions without consulting their husbands whereas widows may do so if they are not dependent on their parents-in-law. Table 2.3 shows the marital status and position in the family of the respondents.

TABLE 2.3  
MARITAL STATUS AND POSITION IN THE FAMILY

Position in the family	Farming themselves		Using sharecroppers		Total	
	Married	Un=married	Married	Un=married	N	%
Grandfather	1		1		2	0,9
Grandmother		1		4	5	2,4
Father	83	8	62	3	156	73,9
Mother	7	11	7	14	39	18,5
Child	6	2	1		9	4,3
TOTAL	N 97	22	71	21	211	100
	% 46,0	10,4	33,6	10,0		

Table 2.3 shows there were only two unmarried children in the test group. The eight unmarried fathers among those who farmed themselves and the three among those who used sharecroppers were widowers. Of those who farmed themselves, the 11 unmarried mothers and the one unmarried grandmother were all widows. Among those who used sharecroppers the 14 unmarried mothers and the four unmarried grandmothers were all widows. In the investigation in the Moretele No. 2 area the percentage of children was considerably higher, namely 13 %.

### 2.3.3 Age and level of education

The age and level of education of respondents who farmed themselves are shown in Table 2.4 and of those who used sharecroppers in Table 2.5.

TABLE 2.4  
AGE AND LEVEL OF EDUCATION OF RESPONDENTS WHO FARMED THEMSELVES  
(MEN AND WOMEN)

Age	Level of education					Total	
	No school education	Std 1 to Std 2	Std 3 to Std 4	Std 5 to Std 6	Form 1 to Form V	N	%
20 to 25 years					1	1	0,8
26 to 30 years			1	4	1	6	5,0
31 to 40 years	5	3	3	6	1	18	15,1
41 to 50 years	3	7	3	7	2	22	18,5
51 to 60 years	14	7	3	5		29	24,4
61 years and older	25	11	3	4		43	36,1
TOTAL	N 47 % 39,5	28 23,5	13 10,9	26 21,8	5 4,2	119	100

Median age = 56 years

TABLE 2.5  
AGE AND LEVEL OF EDUCATION OF RESPONDENTS WHO USED SHARECROPPERS  
(MEN AND WOMEN)

Age	Level of education					Total	
	No school education	Std 1 to Std 2	Std 3 to Std 4	Std 5 to Std 6	Form 1 to Form V	N	%
20 to 25 years						2	2,2
26 to 30 years				2		4	4,3
31 to 40 years	1		1	2		4	4,3
41 to 50 years	4	4	4	5		17	18,5
51 to 60 years	12	6	3	3	1	25	27,2
61 years and older	33	7	4			44	47,8
TOTAL	N 50 % 54,3	17 18,5	12 13,0	12 13,0	1 1,1	92	100

Median age = 51 years

Tables 2.4 and 2.5 show that most of the respondents were of a fairly advanced age. There were only nine persons in the age group 20 to 30 years and the median age for the whole test group was 53,5 years as against 51,8 years in the Moretele No. 2 investigation. There was a considerable difference in the median age of the respondents who farmed themselves and those who used sharecroppers, namely 56 years and 51 years respectively. It appears therefore that there is a tendency to become actively involved in farming only at a more advanced age.

Development studies in Africa (Moris, 1971) showed that functional literacy is reached only after four or five years of school education. For this reason the sub-standards were classified under the category of no school education. Tables 2.4 and 2.5 show that more than half of the test group (53 %) had received school education. It is noticeable that among the respondents who worked their farms themselves, there was a larger percentage of persons with school education than among respondents who used sharecroppers, namely 60,5 % (72 out of 119) as against 45,7 % (42 out of 92 persons). This applies also to the possession of a higher qualification of Standard 5 and higher, namely 26 % (31 out of 119) among the former as against 14,1 % (13 out of 92) among the latter group. Although it cannot be claimed that education is essential for agricultural development, it can serve as a means of accelerating such development (cf. Watts, 1974).

Twenty-five per cent of the whole test group had received training in agriculture at a primary or secondary school. Of the respondents who worked their farms themselves 33,6 % (40 out of 119) had received such training as against the 14,1 % (13 out

of 92) of the respondents who used sharecroppers. In the Moretele investigation it was found that 54 % of the test group had received no school education and 22 % had a school qualification of standard 5 and higher while 29 % had received training in agriculture at primary or secondary school level.

#### 2.3.4 Number of children at school and highest school qualification of one child in the family

The number of children at school and the qualification(s) of the child with the highest school qualification in the family are good indications of the parents' educational aspirations for their children.

These particulars are shown in Table 2.6 for the respondents who worked their farms themselves and in Table 2.7 for those who had them worked by sharecroppers.

TABLE 2.6  
SCHOOL-GOING CHILDREN PER FAMILY

Number of children	Farming themselves		Using sharecroppers		Total	
	N	%	N	%	N	%
None	39	32,8	36	39,1	75	35,5
One	21	17,6	21	22,8	42	19,9
Two	33	27,7	25	27,2	58	27,5
Three	15	12,6	9	9,8	24	11,4
Four and more	11	9,2	1	1,1	12	5,7
TOTAL	N 119 % 56,4	100	92 43,6	100	211	100

TABLE 2.7  
HIGHEST SCHOOL QUALIFICATION OF A CHILD IN THE FAMILY

School qualification	Farming themselves		Using sharecroppers		Total	
	Number of children		Number of children			
	N	%	N	%	N	%
None	14	11,8	18	19,6	32	15,2
Sub. A to Std 2	11	9,2	11	12,0	22	10,4
Std 3 to Std 4	15	12,6	5	5,4	20	9,5
Std 5 to Std 6	35	29,4	24	26,1	59	28,0
Form I to Form II	11	9,2	16	17,4	27	12,8
Form III to Form V	33	27,7	18	19,6	51	24,2
TOTAL	N 119 % 56,4	100	92 43,6	100	211	100

Tables 2.6 and 2.7 show that the parents' educational aspirations for their children were reasonably high. Thus 44,6 % of the families had more than one child at school. Of the respondents who worked their own farms 49,5 % had more than one child at school while for those who used sharecroppers the percentage was 38,1. No explanation can be given for this phenomenon but it does show that the person who farms his property himself is just as able as someone who has it farmed by sharecroppers (of whom more than half practise some other occupation) to pay for his children's schooling. It was also found that 37 % of the families in the test group had one child with a qualification higher than Standard 6 in comparison with 5,3 % in the case of their parents (Tables 2.4 and 2.5). There was no significant difference between the highest school qualifications of children whose parents farmed themselves and those whose parents used sharecroppers.

### 2.3.5 The type of work done by members of the test group

The type of work done by members of the test group is shown in Table 2.8. It appears from this table that 31 (33,7 %) of the respondents who used sharecroppers were employed as against 23 (19,3 %) of those who farmed themselves. In each of the groups of employed respondents who farmed themselves and who used sharecroppers there were six women. Almost two-thirds of the work done was unskilled work.

TABLE 2.8  
TYPE OF WORK DONE BY THE TEST GROUP

Type of work	Farming themselves		Using sharecroppers		Total		
	N	%	N	%	N	%	
Skilled work	5	2,7			5	9,3	
Semi-skilled work	5	21,7	9	29,0	14	25,9	
Unskilled work	13	56,5	22	71,0	35	64,8	
TOTAL	N	23	100	31	100	54	100
	%	42,6		57,4			

In the Moretele area 32,7 % of the heads of families were employed as against 19,9 % (excluding 12 women) in the Ditsobotla area.

Of the 119 respondents who farmed themselves there were 23 persons (19,3 %) who practised some other occupation in addition to their farming activities. A further eight men stated they were seeking employment. Thirty-one (33,7 %) of the 92 respondents who used sharecroppers also had other employment while 61 (66,3 %) had no other employment and depended exclusively on the farming income obtained from sharecroppers or possibly on assistance from their children. Only four of them (three men and one woman) stated that they were seeking employment.

### 2.3.6 Returning home of workers

Table 2.9 shows how often the workers returned to their homes. According to this table, 41 persons (75,9 %) returned home daily. The fact that 20 of the 23 (87 %) respondents who worked their farms themselves returned daily shows that it was possible for them to pay regular attention to their farming activities.

TABLE 2.9  
RETURN OF WORKERS

	Farming themselves		Using sharecroppers		Total	
	N	%	N	%	N	%
Every evening	20		21		41	75,9
Weekends	3		5		8	14,8
Once a month and less often			5		5	9,3
TOTAL	N	23	31	54		
	%	42,6	57,4		100	

### 2.3.7 The financial position of the test group

In agriculture, as in any other industry, the financial position of the entrepreneur is of vital importance to the success of the undertaking. If the entrepreneur lacks sufficient capital it is essential that the necessary capital be made available by some organization such as a farmers' co-operative society. Among Black farmers capital creation occurs mainly through the investment of a portion of the farming income in a savings account, financial assistance from working children and the obtaining of credit from some or other institution or from fellow farmers.

(a) The possession of a savings account

It was established that 50,4 % of the respondents who farmed themselves and 45,7 % of those who used sharecroppers had savings accounts. Although the amounts saved are not known, it is encouraging that the principle of saving has been accepted to such an extent. Twenty-eight (73,7 %) of the holders of plots of 25 to 30 morgen had savings accounts as against 54 (50,9 %) of holders of plots of 10 morgen (compare Tables 2.10 and 2.11).

TABLE 2.10  
THE UTILIZATION OF SAVINGS ACCOUNT FACILITIES BY PLOTHOLDERS WHO  
FARMED THEMSELVES, ACCORDING TO SIZE OF PLOT

Size of plot in morgen		Had a savings account	Did not have a savings account	Total	
				N	%
25 - 30	N	23	3	26	21,8
	%	88,5	11,5	100	
20	N	5	5	10	8,4
	%	50,0	50,0	100	
15	N	8	18	26	21,8
	%	30,8	69,2	100	
10	N	23	25	48	40,3
	%	47,9	52,1	100	
5	N	1	8	9	7,6
	%	11,1	88,9	100	
TOTAL	N	60	59	119	
	%	50,4	49,6		100

TABLE 2.11  
THE UTILIZATION OF SAVINGS ACCOUNT FACILITIES BY PLOTHOLDERS WHO USED  
SHARECROPPERS, ACCORDING TO SIZE OF PLOT

Size of plot in morgen		Had a savings account	Did not have a savings account	Total	
				N	%
25 - 30	N	5	7	12	13,0
	%	41,7	58,3	100	
20	N		2	2	2,2
	%		100	100	
15	N	3	8	11	12,0
	%	27,3	72,7	100	
10	N	31	27	58	63,0
	%	53,4	46,6	100	
5	N	3	6	9	9,8
	%	33,3	66,7	100	
TOTAL	N	42	50	92	
	%	45,7	54,3		100

(b) Assistance from working children

In Black society it is common for working children to help their parents on a regular basis, in fact they are expected to do so. Assistance can be in money or in kind. Tables 2.12 and 2.13 show the assistance rendered by working children.

TABLE 2.12  
FINANCIAL ASSISTANCE RECEIVED FROM WORKING CHILDREN

Financial assistance	Working themselves	Using sharecroppers	Total	
			N	%
R50 and less	35	15	63	56,3
R51 - R100	12	10	22	19,6
R101 - R200	7	4	11	9,8
R201 - R300	1	3	4	3,6
R301 - R400		2	2	1,8
R401 - R500	1	2	3	2,7
R501 - R600		2	2	1,8
R600 +	4	1	5	4,5
TOTAL	60	52	112	100

TABLE 2.13  
ASSISTANCE IN KIND RECEIVED FROM WORKING CHILDREN

Value	Working themselves	Using sharecroppers	Total	
			N	%
R50 and less	19	20	39	37,5
R51 - R100	21	18	39	37,5
R101 - R200	9	3	12	11,5
R201 - R300	4	4	8	7,7
R301 - R400				
R401 - R500	2	1	3	2,9
R501 - R600		1	1	1,0
R600 +	2		2	1,9
TOTAL	57	47	104	100

Tables 2.12 and 2.13 show that 13 (10,9 %) plotholders who farmed themselves and 14 (15,2 %) of those who used sharecroppers had received financial assistance of more than R100. In the above two groups 14,3 % and 9,8 % had in addition received assistance in kind to a value of more than R100. In the Moretele investigation 13,5 % of the test group, as against the 12,8 % in the Ditsobotla investigation, had received financial assistance of more than R100. Another salient point is that plotholders who used sharecroppers had received more assistance in money and in kind from their working children than plotholders who farmed themselves. Thus 52 (56,5 %) and 47 (51,1 %) plotholders who used sharecroppers had received assistance in money and in kind respectively as against 60 (50,4 %) and 57 (47,9 %) in the case of plotholders who farmed themselves.

### 2.3.8 The need for credit and attempts to obtain it

Respondents were asked whether they had ever experienced a shortage of money to buy seed, fertilizer or implements (Question 8.1) and if they had, whether they had tried to obtain money (Question 8.2 of the questionnaire, Appendix A). The respondents' need for credit, their efforts to obtain credit and their success in this regard are shown in Tables 2.14 to 2.19 according to size of plot.

Tables 2.14 and 2.15 show that the vast majority of plotholders in the two categories of plot size had experienced a need for credit in order to obtain the necessary inputs for farming. Only 19 of the plotholders who farmed themselves and 9 of those who used sharecroppers had not experienced a need for credit.

TABLE 2.14  
NEED FOR CREDIT ACCORDING TO SIZE OF PLOT FOR PLOTHOLDERS  
WHO FARMED THEMSELVES

Size of plot in morgen		Need	No need	Total	
				N	%
25 - 30	N	24	2	26	21,6
	%	92,3	7,7	100	
20	N	6	4	10	8,4
	%	60,0	40,0	100	
15	N	21	5	26	21,8
	%	80,8	19,2	100	
10	N	41	7	48	40,3
	%	85,4	14,6	100	
5	N	8	1	9	7,6
	%	88,9	11,1	100	
TOTAL	N	100	19	119	
	%	84,0	16,0		100

TABLE 2.15  
NEED FOR CREDIT ACCORDING TO SIZE OF PLOT FOR PLOTHOLDERS  
WHO USED SHARECROPPERS

Size of plot in morgen		Need	No need	Total	
				N	%
25 - 30	N	10	2	12	13,0
	%	83,3	16,7	100	
20	N	2		2	2,2
	%	100,0		100	
15	N	11		11	12,0
	%	100,0		100	
10	N	52	6	58	63,0
	%	89,7	10,3	100	
5	N	8	1	9	9,8
	%	88,9	11,1	100	
TOTAL	N	83	9	92	
	%	90,2	9,8		100

TABLE 2.16  
ATTEMPTS MADE TO OBTAIN CREDIT BY PLOTHOLDERS WHO FARMED  
THEMSELVES, ACCORDING TO SIZE OF PLOT

Size of plot in morgen		Made attempts	Made no attempts	Total	
				N	%
25 - 30	N	24		24	24,0
	%	100,0		100	
20	N	4	2	6	6,0
	%	66,7	33,3	100	
15	N	20	1	21	21,0
	%	95,2	4,8	100	
10	N	24	17	41	41,0
	%	58,5	41,5	100	
5	N	5	3	8	8,0
	%	62,5	37,5	100	
TOTAL	N	77	23	100	
	%	77,0	23,0		100



TABLE 2.17

ATTEMPTS MADE TO OBTAIN CREDIT BY PLOTHOLDERS WHO USED SHARECROPPERS, ACCORDING TO SIZE OF PLOT

Size of plot in morgen		Made attempts	Made no attempts	Total	
				N	%
25 - 30	N	10		10	12,0
	%	100,0		100	
20	N	2		2	2,4
	%	100,0		100	
15	N	10	1	11	13,3
	%	90,9	9,1	100	
10	N	44	8	52	62,7
	%	84,6	15,4	100	
5	N	7	1	8	9,6
	%	87,5	12,5	100	
TOTAL	N	73	10	83	
	%	88,0	12,0		100

TABLE 2.18

THE DEGREE OF SUCCESS OF PLOTHOLDERS WHO FARMED THEMSELVES TO OBTAIN CREDIT, ACCORDING TO SIZE OF PLOT

Size of plot in morgen		Successful	Un=successful	Total	
				N	%
25 - 30	N	22	2	24	31,2
	%	91,7	8,3	100	
20	N	4		4	5,2
	%	100,0		100	
15	N	17	3	20	26,0
	%	85,0	15,0	100	
10	N	24		24	31,2
	%	100,0		100	
5	N	3	2	5	6,5
	%	60,0	40,0	100	
TOTAL	N	70	7	77	
	%	90,9	9,1		100

TABLE 2.19

THE DEGREE OF SUCCESS OF PLOTHOLDERS WHO USED SHARECROPPERS TO OBTAIN CREDIT, ACCORDING TO SIZE OF PLOT

Size of plot in morgen		Successful	Un=successful	Total	
				N	%
25 - 30	N	9	1	10	13,7
	%	90,0	10,0	100	
20	N	1	1	2	2,7
	%	50,0	50,0	100	
15	N	9	1	10	13,7
	%	90,0	10,0	100	
10	N	26	18	44	60,3
	%	59,1	40,9	100	
5	N	3	4	7	9,6
	%	42,9	57,1	100	
TOTAL	N	48	25	73	
	%	65,8	34,2		100

It is noticeable that plottolders who farmed themselves were much more successful than those who used sharecroppers in their attempts to obtain credit. Thus of the 77 persons who farmed themselves and the 73 who used sharecroppers who had tried to obtain credit, respectively 70 (90,9 %) and 48 (65,8 %) were successful (see Tables 2.18 and 2.19). Most of these persons, namely 58 (75,3 %) who farmed themselves and 43 (58,9 %) who used sharecroppers, had obtained credit from the local co-operative society. The fact that the plottolders who used sharecroppers were less successful than those who farmed themselves in obtaining credit, could have contributed to their position as persons using sharecroppers.

### 2.3.9 Use of certain communication media

To determine the use made by the test group of communication media intended to increase knowledge of farming, respondents were asked to indicate whether they could furnish the name of an agricultural journal, whether they had attended any farmers' days during the previous three years and whether they listened to a radio programme on agriculture (Questions 6.1, 6.5 and 6.11 of the questionnaire, Appendix A).

#### (a) Knowledge of the name of an agricultural journal

A journal called Tswelelopele, at the time of the survey published by the former Department of Information, contains articles on agricultural matters. According to extension officers the test group should have been familiar with this journal. According to Table 2.20 a considerably higher percentage of plottolders who farmed themselves than ones who used sharecroppers knew the name of this journal, namely 17,6 % as against 7,6 %.

TABLE 2.20  
KNOWLEDGE OF THE NAME OF AN AGRICULTURAL JOURNAL

Knowledge	Farming themselves		Using sharecroppers		Total	
	N	%	N	%	N	%
Knew the name	21	17,6	7	7,6	28	13,3
Did not know the name	98	82,4	85	92,4	183	86,7
TOTAL	119	100	92	100	211	100

#### (b) Attendance at farmers' days

Lectures are given and films shown at the farmers' days that are regularly held in the area. Regular attendance at these farmers' days is of particular importance to farmers in a developing area. Table 2.21 shows that a considerably higher percentage of plottolders who farmed themselves than ones who used sharecroppers had attended these farmers' days during the previous three years, namely 55,5 % as against 34,8 %.

TABLE 2.21  
ATTENDANCE AT FARMERS' DAYS

Attendance	Farming themselves		Using sharecroppers		Total	
	N	%	N	%	N	%
Attended	66	55,5	32	34,8	98	46,4
Did not attend	53	44,5	60	65,2	113	53,6
TOTAL	119	100	92	100	211	100

#### (c) Listening to a radio programme on agriculture

According to Table 2.22 the programme Molemi reetsa is very popular among both groups of farmers.

TABLE 2.22  
LISTENING TO A RADIO PROGRAMME ON AGRICULTURE

Listening	Working themselves		Using sharecroppers		Total	
	N	%	N	%	N	%
Listened	96	80,7	70	76,1	166	78,7
Did not listen	23	19,3	22	23,9	45	21,3
TOTAL	119	100	92	100	211	100

## CHAPTER 3

### ORGANIZATION OF LABOUR, METHOD OF MAIZE PRODUCTION AND THE PASTORAL INDUSTRY

#### 3.1 INTRODUCTORY REMARK

Information on the organization of labour is supplied in respect of plotholders who farmed themselves and those who used sharecroppers, whereas information on the method of maize production concerns only plotholders who farmed themselves since those who used sharecroppers were not so directly involved. Both groups will be involved in the pastoral industry as cattle farmers were found in both groups.

#### 3.2 ORGANIZATION OF LABOUR

When Blacks first made contact with Whites they had a subsistence economy. Their needs were small and could easily be provided for. Labour was organized so as to meet the demands of their circumstances. The man's main task was to fight and hunt and in addition to this he cleared new fields. The boys herded the cattle. Women planted seed and hoed and the girls chased away birds from the ripening sorghum and millet. Women harvested the fields and the men helped to carry the crops home where they were stacked for drying. Afterwards the women were responsible for the winnowing (cf. Van Zyl, 1957).

This division of labour changed considerably after contact had been made with Whites and Black men were integrated in the Western economic system. Considerable numbers of men joined the labour market and were often away from home for long periods. This, together with the fact that increasing numbers of children began attending school, resulted in women playing an even more important role in the farming activities. Tables 3.1, 3.2 and 3.3 show which persons assisted the families in the test group in cultivating the fields, reaping the crops and herding the cattle.

For Tables 3.1 and 3.2 a division is made according to plotholders who farmed themselves and those who used sharecroppers as their involvement in agronomy is not the same.

TABLE 3.1  
PERSONS WHO HELPED TO TILL THE FIELDS

Persons	Farming themselves		Using sharecroppers		Total	
	N	%	N	%	N	%
Father	6	5,0	4	4,3	10	4,7
Mother	7	5,9	9	9,8	16	7,6
Sons	28	23,5	8	8,7	36	17,1
Daughters	3	2,5	1	1,1	4	1,9
Sons and daughters	37	31,1	19	20,7	56	26,5
Whole family	11	9,2	5	5,4	16	7,6
Hired assistant(s)*	27	22,7	5	5,4	32	15,2
No family assistance			41	44,6	41	19,4
TOTAL	N 119	100	92	100	211	
	% 56,4		43,6			100

\*Hired by children.

TABLE 3.2  
PERSONS WHO HELPED TO HARVEST

Persons	Farming themselves		Using sharecroppers		Total	
	N	%	N	%	N	%
Father						
Mother	4	3,4	10	10,9	14	6,6
Sons	18	15,1	6	6,5	24	11,4
Daughters	3	2,5	1	1,1	4	1,9
Sons and daughters	34	28,6	17	18,5	51	24,2
Whole family	15	12,6	20	21,7	35	16,6
Hired assistant(s)*	45	37,8	7	7,6	52	24,6
No family assistance			31	33,7	31	14,7
TOTAL	N	119	100	92	100	211
	%	56,4		43,6		100

\*Hired by children.

Tables 3.1 and 3.2 clearly show that the plottolders using sharecroppers were not as involved as the other group in tilling and harvesting. For example, in the case of respectively 41 (44,6 %) and 31 (33,7 %) of these plottolders, members of the family took no part in the above farming activities and it must therefore be assumed that the sharecropper was responsible for all activities - naturally at a price. It is also noticeable that the children of plottolders who farmed themselves were much more involved in farming than the children of the other group. The children of 68 plottolders (28+3+37) (57,1 %) who farmed themselves were involved in the tilling of the fields, as against the children of 28 persons of the other group (8+1+19) (30,5 %). The same order is found with regard to harvesting, namely the children of 55 persons (18+3+34) (46,2 %) as against the children of 24 persons (26,1 %). The reason why members of the families of some plottolders who used sharecroppers were involved in agricultural activities while the children of others were not, is that the agreements between plottolders and sharecroppers differ from case to case. According to informants in the area some plottolders prefer all farming activities to be undertaken by the sharecropper while others do not.

Traditionally women were not concerned with the care of cattle, but Table 3.3 shows that conditions have changed completely. Only in the case of 51 (31,7 %) of the cattle owners was it specifically mentioned that only the father or the sons were involved in herding.

TABLE 3.3  
PERSONS WHO HELPED TO HERD CATTLE

Persons	N	%
Father	19	11,8
Mother	11	6,8
Sons	32	19,9
Daughters	2	1,2
Sons and daughters	67	41,6
Whole family	16	9,9
Hired assistant(s)	14	8,7
TOTAL	161	100

\*The total amounts to 161 since not all families own cattle.

It is often asked how many job opportunities there are in agriculture among Black farmers. To answer this question, respondents were asked how many children (sons) helped with the farming.

Tables 3.4 and 3.5 show that among the plottolders who worked their farms themselves 76 children (63,9 %) and among the other group 51 children (55,4 %) helped on the farms.

It is also noticeable that even on the 18 small plots of five morgen, 18 children assist permanently with the farming activities. This in itself should prove that in the development of agriculture in the Black states, with emphasis on the making available of economic units, a considerable number of job opportunities can be created, provided mechanization is not stepped up.

TABLE 3.4  
CHILDREN WHO HELPED WITH FARMING  
PLOT HOLDERS FARMING THEMSELVES

Number of children who helped	Size of plot					Total	
	25 to 30 morgen	20 morgen	15 morgen	10 morgen	5 morgen	N	%
One	11	5	5	20	3	44	37,0
Two	3	1	3	4	2	13	10,9
Three			1		1	2	1,7
None	12	4	17	24	3	60	50,4
TOTAL	N 26	10	26	48	9	119	
	% 21,8	8,4	21,8	40,3	7,6		100

TABLE 3.5  
CHILDREN WHO HELPED WITH FARMING  
PLOT HOLDERS USING SHARECROPPERS

Number of children who helped	Size of plot					Total	
	25 to 30 morgen	20 morgen	15 morgen	10 morgen	5 morgen	N	%
One	4		2	16	2	24	26,1
Two	2	1		6	3	12	13,0
Three	1					1	1,1
None	5	1	9	36	4	55	59,8
TOTAL	N 12	2	11	58	9	92	
	% 13,0	2,2	12,0	63,0	9,8		100

### 3.3 SOIL CULTIVATION

Before contact was established with Whites the plough was unknown in Black society. After the summer rains had started the women planted seed with the aid of a plant pick. After contact had been made with Whites the plough and later the harrow were adopted, especially by persons with larger fields. The harrow, however, was never as generally accepted as the plough.

Extension officers have for decades kept Black farmers informed of suitable implements and methods of soil cultivation. As a result Black farmers in the Ditsobotla area have been using modern implements for some time now. Table 3.6 shows the type and number of farming implements owned according to size of plot.

Table 3.6 shows that the smaller plottolders (smaller than 15 morgen) proportionately had fewer tractors than the larger plottolders, namely 38,6 % as against 51,6 %. There were 55 plottolders who farmed themselves (46,2 %) who used hired implements in addition to their own.

Although 19 respondents stated that they had ox ploughs, only 12 actually ploughed with oxen. The other seven apparently used tractors for this purpose.

TABLE 3.6  
TYPE AND NUMBER OF AGRICULTURAL IMPLEMENTS OWNED ACCORDING TO SIZE OF PLOT

Type of implement	Size of plot				Total	
	15 morgen and larger		Smaller than 15 morgen		N	%
	N	Percentage of this group	N	Percentage of this group		
Tractor	32	51,6	22	38,6	54	45,4
Turnplough	22	35,5	22	38,6	44	37,0
Disc plough	32	51,6	26	45,6	58	48,7
Ox-drawn plough	2	3,2	17	29,8	19	16,0
Harrow	19	30,6	17	29,8	36	30,3
Trailer	20	32,3	17	29,8	37	31,1
Animal drawn wagon			1	1,8	1	0,8
Lorry	2	3,2			2	1,7
Planter	34	54,8	33	57,9	67	56,3
Fertilizer container on planter	34	54,8	24	42,1	58	48,7
TOTAL NUMBER OF WORKING PLOTHOLDERS	62		57		119	

### 3.4 SOIL PREPARATION

Respondents were asked to indicate what they did with their fields after harvesting. Three possibilities were mentioned to them, namely to plough in the crop remains, to have the fields grazed first and ploughed immediately afterwards and, thirdly, to have them grazed and then to wait for the summer rains before ploughing (Question 5.14). Table 3.7 shows the distribution of the three practices.

TABLE 3.7  
PRACTICE FOLLOWED AFTER HARVESTING

Practice	Total	
	N	%
Plough in crop remains (as soon as possible)	68	57,1
Graze and plough immediately afterwards	41	34,5
Graze and wait for summer rains	10	8,4
TOTAL	119	100

Table 3.7 shows that 68 (57,1 %) plowholders ploughed in the crop remains as soon as possible. They were also the persons who claimed that they ploughed twice a year. Table 3.8 shows that the plowholders who farmed themselves had a good understanding of the objectives of winter ploughing, as can be seen from the reasons supplied by them. Three reasons had to be given but respectively 38 and 83 persons could supply no second and third reason. The second and third reasons that were mentioned corresponded to those given in Table 3.8.

TABLE 3.8  
REASONS FOR WINTER PLOUGHING

Reason	Total	
	N	%
Weed control	24	20,2
Insect control	22	18,5
Moisture retention	51	42,9
Ploughing in of crop remains improves the quality of the soil	17	14,3
Do not know	5	4,2
TOTAL	119	100

### 3.5 SPACING

For the most effective utilization of farming land (in this case for the planting of mealies) it is essential to aim for a specific number of plants per morgen. The ideal spacing for plant has been established through experiments and extension officers have informed the farming communities in the Ditsobotla area what this spacing is.

Among the plottolders who farmed themselves there were 88 persons (73,9 %) who mentioned that their objective was to establish a certain number of plants per morgen. Another 31 persons (26,1 %) had no such objective. Of the 88 persons who had an objective in mind, 49 (55,7 %) stated that they planted in rows 6' to 7'6" (1,80 m to 2,25 m) apart with a spacing of 6" to 8" (15 cm to 20 cm) in the rows, which is satisfactory. Another 37 used the same width between rows but their spacing in the rows was too dense, namely 2 to 3 inches (5 cm to 7,5 cm). Two persons planted 3' (90 cm) apart but they were unable to indicate their spacing in the rows.

### 3.6 HOEING

#### 3.6.1 Hoeing implements

Table 3.9 shows the type of hoeing implements used by the test group.

TABLE 3.9  
TYPE OF HOEING IMPLEMENTS USED

Type of implement	Total	
	N	%
Hand hoe and spike harrow	23	19,3
Hand hoe and spike hoe	18	15,1
Hand hoe and disc harrow	8	6,7
Cultivator	30	25,2
Spike harrow	9	7,6
Spike hoe	18	15,1
Disc harrow	13	10,9
TOTAL	119	100

Table 3.9 shows that the largest single number, namely 30 (25,2 %) of plottolders who farmed themselves, used a cultivator for hoeing. It is also noticeable that the hand hoe was no longer so commonly used as only 49 persons (41,1 %) in this group still used it in addition to some other hoeing implement. It can be asked whether more use cannot be made of the hand hoe as there are enough members of the family to work with it. It is used between rows but especially in rows to control weeds.

#### 3.6.2 Stage of plant growth when first hoeing takes place and number of times hoed per season

Respondents were asked to indicate at what stage of plant growth, i.e. height in inches or feet, they normally began hoeing. The commencement of hoeing is of course determined by the extent of weed infestation but a farmer who does not use weedkillers such as the farmers in the test group, should be able to give an indication of the stage at which he normally begins hoeing. Table 3.10 shows the stage of plant growth when the first hoeing is commenced and Table 3.11 the number of times hoed per season.

Although Table 3.10 shows that almost half of the plottolders (59 or 49,6 %) preferred to start hoeing only when plants were 23 cm (9") and higher, it is encouraging that 60 persons (50,4 %) apparently realized the advantage of early hoeing.



TABLE 3.10  
STAGE OF PLANT GROWTH WHEN FIRST HOEING TAKES PLACE

Plant height in cm	Total	
	N	%
3 to 5	11	9,2
7 to 10	17	14,3
12 to 15	25	21,0
18 to 20	7	5,9
23 to 25	24	20,2
Higher than 25	35	29,4
TOTAL	119	100

TABLE 3.11  
NUMBER OF TIMES HOED PER SEASON

Number of times	Total	
	N	%
Once	5	4,2
Twice	30	25,2
More than twice	73	61,3
When necessary	11	9,2
TOTAL	119	100

Table 3.11 shows that 73 (61,3 %) plottolders who farmed themselves hoed their fields more than twice a season.

### 3.6.3 Knowledge of weeds

To determine whether the respondents were knowledgeable about the most common types of weeds in their area, they were asked to give the names of three weeds in their area. Table 3.12 shows the extent of their knowledge in this regard.

TABLE 3.12  
KNOWLEDGE OF TYPES OF WEEDS

Ability to give name of weed	Total	
	N	%
No name	3	2,5
One name	2	1,7
Two names	32	26,9
Three names	82	68,9
TOTAL	119	100

Table 3.12 clearly shows that the large majority (82 or 68,9 %) of the plot=holders were familiar with three of the major kinds of weeds in their area. Some of the weeds mentioned were castor oil plant, cocklebur, black Jack and khakibos.

### 3.6.4 Knowledge about the advantages of hoeing

Respondents were asked to give two reasons why one should hoe (Question 5.26). To mention, for example, only weed control as a reason without being able to say why weeds should be controlled shows a lack of insight into the practice.

Table 3.13 shows the first reason and Table 3.14 the second supplied by respondents.

TABLE 3.13  
REASONS FOR HOEING  
(FIRST REASON)

Reason	Total	
	N	%
Weed control	90	75,6
Moisture retention	9	7,6
Aeration	4	3,4
Stimulation of plant growth	13	10,9
No reason	3	2,5
TOTAL	119	100

TABLE 3.14  
REASONS FOR HOEING  
(SECOND REASON)

Reason	Total	
	N	%
Weed control	8	6,7
Moisture retention	9	7,6
Aeration	33	27,7
Stimulation of plant growth	16	13,4
No reason	53	44,5
TOTAL	119	100

Table 3.13 shows that 90 (75,6 %) plottolders who farmed themselves were fully aware of the immediate objective with hoeing, namely to control weeds, but only nine persons (7,6 %) were aware of the underlying reasons, i.e. to retain moisture in the soil. Table 3.14 shows that 33 persons (27,7 %) gave aeration as their second reason, but that 53 persons (44,5 %) were unable to supply a second reason. It appears therefore that plottolders were not fully aware of the actual advantages of hoeing.

### 3.7 KNOWLEDGE AND CONTROL OF THE MAJOR INSECT PESTS IN MEALIES

Apart from knowing the correct methods of soil cultivation a farmer must also have some knowledge of major insect pests and of how to combat them. Respondents were therefore questioned in this regard. Their knowledge of a major insect pest and of its control is shown in Tables 3.15 and 3.16.

TABLE 3.15  
KNOWLEDGE OF THE MAJOR INSECT PEST IN MEALIES

Name of pest	Total	
	N	%
Stalk borer	112	94,1
Do not know	7	5,9
TOTAL	119	100

Table 3.15 shows that 112 (94,1 %) of the plottolders knew the name of the pest, the stalk borer. Eighty-five persons (71,4 %) knew of an effective method to combat the pest (Table 3.16). Two methods were mentioned, namely winter ploughing (65 persons or 54,6 %) and spraying with an appropriate insecticide (20 persons or 16,8 %).

TABLE 3.16  
THE MAIN METHOD OF COMBATING THE INSECT PEST

Method	Total	
	N	%
Winter ploughing	65	54,6
Spraying with an insecticide	20	16,8
Do not know	34	28,6
TOTAL	119	100

### 3.8 INSIGHT INTO CERTAIN ASPECTS OF SOIL CULTIVATION AND LAND UTILIZATION

Certain statements regarding the above were made to the respondents who had to indicate whether these statements were true or false or whether they did not know. The following statements were made:

- 1 Weeds have no adverse effect on mealie plants
- 2 If it is dry it is a waste of time and money to practise weed control
- 3 Pumpkins planted between mealies have no adverse effect on the latter
- 4 Soil cultivation, even when practised judiciously, causes fields to dry out faster.

The correct answer to the above statements is "false" and the results are shown in Table 3.17.

TABLE 3.17  
CORRECT STATEMENTS ON LAND UTILIZATION

Statements	Correct answers		Wrong answers	
	N	%	N	%
Statement 1	101	84,9	19	15,1
Statement 2	72	60,5	47	39,5
Statement 3	26	21,8	39	78,2
Statement 4	81	68,1	38	31,9
Mean		58,8		41,2

The answers to statements 2 and 3, of which 39,5 % and 78,2 % were wrong, show that basic knowledge was still inadequate and that especially the level of production might be affected by this inadequacy.

### 3.9 THE PASTORAL INDUSTRY

#### 3.9.1 The possession of livestock

Table 3.18 shows the livestock owned by farmers.

TABLE 3.18  
TYPE AND NUMBER OF LIVESTOCK OWNED (MEN AND WOMEN)

Type	Number						Total	
	1-5	6-10	11-15	16-20	21-30	31-50	N	% of the test group (211)
Cattle	75	48	12	12	7	7	161	76,3
Goats	26	12	5	2	3		48	22,7
Sheep	29	27	8	6	4	2	76	36,0
Pigs	81	4	1	1			87	41,2
Donkeys	25	7	1				33	15,6
Horses	14	2					16	7,6

Table 3.18 shows that cattle were the most popular animals. Altogether 161 persons (76,3 %) owned cattle. More than half of them (53,4 %) owned more than five cattle and 23,6 % more than ten. Sheep were more popular than goats (36 % as against 22,7 % of the test group). Another noticeable fact is that less than half of the test group (41,2 %) kept pigs.

### 3.9.2 Application of pasture control and knowledge of its value

The object of pasture control is to promote the growth of desirable types of grass in a specific area; livestock owners must help to bring this about by inter alia co-operating with regard to rest periods, pasture rotation, the extermination of harmful plants, controlled veld fires, etc.

Only three persons (two men and one woman) stated that they did not practise pasture control. Altogether 16 persons (ten men and six women) were not aware of the value of pasture control.

### 3.9.3 Understanding of immunization

To test the respondents' understanding of immunization they were asked whether it was necessary to reimmunize year-old calves that had been immunized the year before against blackleg. Of the 161 cattle owners 23 % could not answer the question correctly. The test group's knowledge of this important preventive measure was therefore far from adequate.

### 3.9.4 Treatment of sick cattle and possession of means for such treatment

Table 3.19 shows by whom sick cattle were treated and the means owners had for such treatment.

TABLE 3.19  
PERSON TREATING CATTLE AND THE MEANS FOR TREATMENT

Means in possession	Persons treating cattle			Total	
	Owner	Extension officer	Other farmer	N	%
No means	26	86	25	137	85,1
Injection	3	2	2	7	4,3
Disinfectant	2		1	3	1,9
Antibiotics	2	4		6	3,7
Injection and the above	6	2		8	5,0
TOTAL	N 39	94	28	161	
	% 24,2	58,4	17,4		100

Table 3.19 shows that 137 persons (85,1 %) in the test group had no effective means for treating sick cattle. Only 39 persons (24,2 %), of whom 26 had no effective means, treated their own cattle. The remainder of the test group turned to the extension officer and fellow farmers, especially the former who was approached by 94 persons (58,4 %). To a large extent the test group lacked the necessary means for treating sick animals. Thus only 15 persons had a syringe, three a disinfectant, six an antibiotic and only eight had all three these.

It is not known why so few respondents had the necessary equipment, but enquiries revealed that much borrowing took place and that many still resorted to remedies such as used motor oil.

It also came to light that few respondents were able to inject their own cattle, as can be seen from Table 3.20. Only 16 claimed that they knew how to inject cattle while 103 (63,9 %) approached their neighbours or the extension officer for this purpose. Almost a third (42 or 26,1 %) of the test group did not use injections.

TABLE 3.20  
ABILITY TO INJECT CATTLE (MEN AND WOMEN)

Ability	N	%
Knows how to inject	16	9,9
Asks fellow farmer	54	33,5
Asks extension officer	49	30,4
Does not use injections	42	26,1
TOTAL	161	100

### 3.9.5 The provision of a mineral lick for cattle

The regular provision of a mineral lick is desirable to prevent mineral deficiencies in cattle. Table 3.21 shows how often a mineral lick was provided.

TABLE 3.21  
FREQUENCY WITH WHICH A MINERAL LICK IS PROVIDED

	N	%
Regularly	122	75,8
In winter	30	18,6
Not provided	9	5,6
TOTAL	161	100

Table 3.21 shows that 122 persons (75,8 %) in the test group had accepted the practice of regularly providing a mineral lick.

More than half of the test group (88 or 54,7 %) bought a mineral lick as against the 73 (45,3 %) who mixed it themselves. With the exception of 12 persons who used only salt, all the respondents used a mixture of salt and bone meal. It can therefore be concluded that the large majority of cattle owners realized the importance of regular provision of a mineral lick and of its balanced composition and that they had accepted this practice.

CHAPTER 4  
THE ACCEPTANCE OF FERTILIZER AND IMPROVED SEED

4.1 INTRODUCTION

The aim of the so-called Green Revolution that was propagated in America in the sixties was to increase the production of cereals in less developed countries, mainly by bringing important agricultural inputs such as improved seed and the use of fertilizer to the attention of the people in these countries so that they could become less dependent on foreign aid. As a result of this "revolution", for example, the wheat crop in Pakistan rose from approximately 3,9 million tons in 1965/66 to 7,1 million tons in 1969/70 (Johnston and Kilby, 1975). This improvement in yield occurred despite the fact that most farmers were using only nitrogen and no phosphates in their fertilizers. A survey conducted in 1970 revealed that only a quarter of the farmers in three districts of Pakistan Punjab administered phosphates and that half of the farmers had never heard the name.

The use of fertilizer and improved seed has been advocated in the guidance programme of the then Department of Native Affairs since the Second World War. Thus in 1952/53 there were already 1 700 plots that were used to demonstrate the correct use of fertilizer and improved seeds (Tomlinson Report, p. 83). The Department also made attempts to have certain areas declared as improvement areas and by Proclamation No. 31 of 1939 and 116 of 1949 the Minister was authorized to do so. Trust lands were ipso facto improvement areas but before tribal lands could be declared improvement areas permission had to be obtained from the inhabitants.

We can therefore assume that the large majority of plottolders in the Ditsobotla trust area had for many years been advised by agricultural extension officers on the correct use of fertilizer and improved seed.

4.2 THE USE OF FERTILIZER

4.2.1 Knowledge of fertilizer

Plottolders who farmed themselves were asked whether they could supply the name of a fertilizer (Question 3.2). Their ability to supply a name was classified and is shown in Table 4.1.

TABLE 4.1  
KNOWLEDGE OF THE NAME OF A FERTILIZER

Extent of knowledge	Total	
	N	%
No knowledge	18	15,1
Some idea	19	16,0
Reasonable idea	82	68,9
TOTAL	119	100

Table 4.1 shows that 82 (68,9 %) of the plottolders who farmed themselves had a reasonable idea of what fertilizer is. By a reasonable idea is meant that a person involved in agriculture will know what is referred to as fertilizer.

4.2.2 Earliest information on fertilizer and persuasion to use it

Table 4.2 indicates the persons and organizations from whom plottolders first heard of fertilizer and who persuaded them to use it (all plottolders who farmed themselves stated that they used fertilizer).

Table 4.2 shows that 63 persons (52,9 %) had heard of fertilizer from White farmers and 35 (29,4 %) had heard of it from extension officers. White farmers had also played the greatest role in persuading plottolders to use fertilizer. They were followed by the extension officers who had persuaded 49 persons (41,2 %) as against

the 51 (42,9 %) persuaded by White farmers. In the Moretele investigation it was found that White farmers (48 %) followed by Black farmers (29,6 %) were the major first sources of information and that most respondents (39,4 %) had been persuaded by extension officers to use fertilizer. This shows that the White farmer, in addition to the extension officer, can play an important role in the development of Black agriculture.

TABLE 4.2  
EARLIEST INFORMATION ON FERTILIZER AND PERSUADER

Source of information and persuasion	Earliest information		Persuading influence	
	N	%	N	%
White farmer	63	52,9	51	42,9
Black farmer	10	8,4	9	7,6
Extension officer	35	29,4	49	41,2
Co-operative society	5	4,2	1	0,8
Teacher	1	0,8	1	0,8
Shopkeeper	1	0,8	1	0,8
Uncertain	4	3,4	7	5,9
TOTAL	119	100	119	100

#### 4.2.3 Period of use of fertilizer

Table 4.3 shows the period that fertilizer had been used and 4.4 the users' judgment in the use of fertilizer.

TABLE 4.3  
PERIOD OF USE OF FERTILIZER

Period in years	Number of respondents	
	N	%
1 - 4	22	18,5
5 - 10	23	19,3
11 - 15	18	15,1
16 - 20	16	13,4
21 - 30	24	20,2
31 +	14	11,8
Uncertain	2	1,7
TOTAL	119	100

TABLE 4.4  
JUDGMENT IN USING FERTILIZER

Correctness of own judgment or dependence on assistance	Total	
	N	%
Some idea	4	3,4
Reasonable idea	7	5,9
Good idea	7	5,9
Consults others	76	63,9
Does not know	25	21,0
TOTAL	119	100

Table 4.3 shows that plottolders who farmed themselves had been using fertilizer for considerable periods of time. The median period of use was 12 years. If a period of use of more than four years can be regarded as an indication that the use of fertilizer has been accepted, it means that approximately 80 % of this group of people

fall in this category. However Table 4.4 clearly shows that they still lack judgment in the application of fertilizer. For example 76 (63,9 %) mentioned that they consulted other people (mainly the extension officer) in this regard and a further 25 (21 %) simply stated that they did not know how to apply fertilizer correctly. Suitable guidance can therefore do much to rectify this matter.

#### 4.2.4 Insight into the use of fertilizer, with reference to certain statements

To test the respondents' insight into the value of fertilizer they were asked to say whether certain statements were true or false or whether they did not know (Question 3.5). The test total was based on the number of correct answers. There were 11 statements and the highest total that could be obtained was therefore 11. The results are shown in Table 4.5.

TABLE 4.5  
INSIGHT INTO THE VALUE OF FERTILIZER (ACCORDING TO SIZE OF PLOT), WITH REFERENCE TO 11 STATEMENTS

Statements (11)	Size of plot	
	15 morgen and larger % correct answers	Smaller than 15 morgen % correct answers
Fertilizer makes plants grow	100	100
Fertilizer keeps pests away	63	68
Fertilizer ensures a better crop	98	98
Fertilizer improves the quality of the soil	6	18
It does not matter what type of fertilizer is used	53	44
Agricultural lime is an example of a fertilizer	10	11
Kraal manure is a good fertilizer	77	95
Kraal manure improves the quality of the soil	76	93
A nitrogen fertilizer promotes the growth of leaves and stalks	35	49
A phosphate fertilizer promotes the growth and formation of seed	34	63
One can use too much fertilizer	6	14
<b>TOTAL NUMBER OF POINTS SCORED</b>	<b>50</b>	<b>59</b>

The answers to the 11 statements in Table 4.5 show that there was still considerable ignorance regarding the value of fertilizer. Some statements can be taken as examples in this regard:

1 Fertilizer keeps pests away (63 % correct answers among holders of larger plots and 68 % among holders of smaller plots).

2 Fertilizer improves the quality of the soil (only 6 % and 18 % correct answers). Respondents may not have understood what is meant by "quality".

3 It does not matter what type of fertilizer is used (53 % and 44 % correct answers). The low percentage of correct responses to this statement point to a serious shortcoming in the respondent's knowledge of the value of fertilizer. Effective guidance can do much in this regard.

#### 4.2.5 The consumption of fertilizer and the accompanying yield

The Tomlinson Report (Chapter 19 of the full report) points out that according to the 1952/53 Annual Report of the Section for Agriculture of the then Department of Native Affairs, kraal manure and/or fertilizer was applied to only 13,3 % of the cultivated area. The average amount applied at that time was 1,6 tons of kraal manure



or alternatively 110 pounds of fertilizer per morgen. A large proportion of this application was on irrigation schemes. The commission stated at the time that from 8 to 10 tons of kraal manure or 200 to 300 pounds of fertilizer per morgen was necessary to maintain soil fertility.

To encourage the use of kraal manure and/or fertilizer a scheme was introduced in 1934 by which Black farmers could obtain fertilizers from the Trust at a considerable subsidy. However this practice was later discontinued.

The respondents in the test group were asked to indicate their consumption of fertilizer in pockets. Tonnage was converted to pockets and the number of pockets applied per morgen was calculated.

Table 4.6 shows the consumption of fertilizer and yield for the latest season according to size of plot.

TABLE 4.6  
CONSUMPTION OF FERTILIZER AND YIELD FOR THE LATEST SEASON  
ACCORDING TO SIZE OF PLOT

Size of plot	Approximate average amount per morgen	Average yield per morgen
15 morgen and larger	80 to 100 kg	10 bags
Smaller than 15 morgen	70 to 90 kg	7 bags

Table 4.6 reveals that holders of plots of 15 morgen and larger used slightly more fertilizer than holders of smaller plots and they also obtained a slightly better yield per morgen. The average consumption of fertilizer per morgen was approximately 80 kg, which was roughly 60 % more than the average consumption by Black farmers 27 years ago. According to information released by the agricultural office at Mooifontein in the test area the aim of the local Black farmers should be approximately 300 kg of fertilizer per morgen.

The investigation also revealed that some plottolders did not use fertilizer regularly. Thus 26 persons (22 %) used no fertilizer during the two seasons preceding the investigation. Fertilizer should be regularly applied. If it is not used for two consecutive years it can be assumed that these persons are familiar with its use, but they have not accepted it or that they have been unable to obtain credit.

#### 4.3 THE USE OF IMPROVED SEED

##### 4.3.1 Introductory remark

As in the case of fertilizer, the Section for Agriculture of the old Department of Native Affairs helped Black farmers through substantial subsidies to obtain improved seed. According to the Tomlinson Report a subsidy of as high as 50 % was paid in 1946. Problems were encountered, however, in that the seed was sometimes used as food and farmers then had to buy highly expensive seed from traders. According to the commission, sufficient seed was available but only 1 % of the inhabitants used it. Sometimes Black farmers requested that seed be bought on their behalf but upon delivery they were no longer interested in buying it. Subsidizing was consequently discontinued.

It should therefore be interesting to see what results had been achieved through the years with all the above schemes. Table 4.7 shows the types of seed used by the different farmers according to the size of the plots.

TABLE 4.7  
THE USE OF IMPROVED AND UNIMPROVED SEED ACCORDING TO SIZE OF PLOT

Type of seed	Size of plot					Total	
	25 to 30 morgen	20 morgen	15 morgen	10 morgen	5 morgen		
	N %	N %	N %	N %	N %	N %	
Certified seed	19 73,1	4 40,0	6 23,1	42 87,5	8 88,9	79 66,4	
Hybrid seed	7 26,9	6 60,0	20 76,9	4 8,3		37 31,1	
Unimproved seed (ordinary seed)				2 4,2	1 11,1	3 2,5	
TOTAL	N 26 % 21,8	N 10 % 8,4	N 26 % 21,8	N 48 % 40,3	N 9 % 7,6	N 119 % 100	

Table 4.7 shows that with three exceptions, all the respondents used improved seed. Most persons, namely 79 (66,4 %) used certified seed while 37 (31,1 %) used hybrid seed. Another noticeable point is that of the ploholders farming 15 morgen plots there was a much larger percentage using hybrid seeds than among holders of larger plots. Of the former, 76,9 % used hybrid seed as against the 26,9 % of holders of plots of 25 to 30 morgen. This is strange as one would expect holders of the larger plots to be in a stronger financial position to afford hybrid seed which is three times as expensive as certified seed. Farmers buy their seed mainly from the co-operative society.

#### 4.3.2 Period of use

Table 4.8 shows the period of use of improved seed.

TABLE 4.8  
PERIOD OF USE OF IMPROVED SEED

Period in years	Number of persons	
	N	%
1 - 4	36	31,0
5 - 10	42	36,2
11 - 15	22	19,0
16 - 20	7	6,0
21 - 30	4	3,4
31 +	5	4,3
TOTAL	116	100

If it is assumed that an innovation used for more than four years has been accepted, then approximately two-thirds (69 %) of the ploholders who farmed themselves (80 persons) had accepted the use of improved seed according to Table 4.8.

#### 4.3.3 Earliest information on improved seed and persuasion to use it

Table 4.9 shows from whom farmers first heard of improved seed and who persuaded them to use it. It can be seen from this table that most farmers who used improved seed had heard of it from and been persuaded to use it by the agricultural extension officer. Respectively 54 (46,6 %) and 62 persons (53,4 %) fall in these two categories. The next most important source of information is White farmers from whom 47 persons (40,5 %) had obtained their earliest information on the use of improved seed and by whom 38 persons (32,8 %) had been persuaded to use such seed.

TABLE 4.9  
EARLIEST INFORMATION ON IMPROVED SEED AND PERSUADER

Source of information and persuasion	Earliest information		Persuader	
	N	%	N	%
White farmer	47	40,5	38	32,8
Black farmer	9	7,8	7	6,0
Extension officer	54	46,6	62	53,4
Co-operative society	4	3,4	2	1,7
Shopkeeper	1	0,9	3	2,6
Uncertain	1	0,9	4	3,4
TOTAL	116	100	116	100

#### 4.3.4 Reasons for using improved seed

To determine whether the respondents were aware of the advantages of improved seed they were asked to give reasons for using it. These reasons are shown in Table 4.10.

TABLE 4.10  
REASONS FOR USING IMPROVED SEED

Reasons	Total	
	N	%
Increases production	49	42,2
Results in better germination	22	19,0
Free of plant diseases	21	18,1
Have only a vague idea	10	8,6
Did not answer question	14	12,1
TOTAL	116	100

Table 4.10 shows that 92 persons (79,3 %) were aware of the advantages of improved seed. It is assumed that with "free of plant diseases" is meant that such seed does not transmit plant diseases. Those who had only a vague idea were mostly persons who said merely that improved seed was better than ordinary seed.

#### 4.3.5 Ability to mention the name of a cultivar

The respondents were also asked whether they could supply the name of an improved cultivar. Their answers were compared with the most recent list of cultivars compiled by the Department of Agricultural Technical Services and this showed that 84 (72,4 %) of the 116 respondents who farmed themselves and who used improved seed were able to give the name of the cultivar correctly.

## CHAPTER V

### SUMMARY AND CONCLUSION

#### 5.1 SUMMARY

##### 5.1.1 Introduction

In 1976 the Human Sciences Research Council conducted an investigation into the acceptance of certain agricultural innovations in the tribal areas of the Moretele No. 2 district of Bophuthatswana. The investigation revealed that the average size of plots in the tribal and trust areas was approximately 2 ha and that innovations such as the use of fertilizer and certified seed were accepted to a limited extent by the Black farmers. All the respondents in the test group stated that they were farming their plots themselves. This finding led to the question of the degree of acceptance of the same agricultural innovations by farmers on larger plots.

For this purpose a group of farmers living in the Ditsobotla area of Bophuthatswana were interviewed in November 1977 by extension officers using a questionnaire (Appendix A) with regard to their acceptance of certain agricultural innovations such as methods of soil cultivation, knowledge of cattle nutrition and diseases and the possession of certain farming implements. Altogether 211 farmers (167 men and 44 women) were involved. The women were also involved as they were responsible for the farming activities in their husbands' absence. The size of the plots ranged from 5 (4,3 ha) to 30 (25,5 ha) morgen. In this report reference is made throughout to morgen as this is the term used in the area.

##### 5.1.2 Description of the test group

All the members of the test group occupied plots in trust lands. There were 100 men and 19 women (56,4 %) who worked their lands themselves and 67 men and 25 women (43,6 %) who had their plots worked by sharecroppers. Holders of 10 morgen plots, in proportion to holders of 15 morgen and larger plots, more often made use of sharecroppers, namely 54,7 % of this group. In this report plotholders who worked their plots themselves are compared with plotholders who used sharecroppers in order to identify differences between the two groups in certain respects.

The median age for the whole test group was 53,5 years. There is a considerable difference between the median age of the farmers who farmed themselves and that of those who used sharecroppers, respectively 56 and 51 years. More than half of the test group (53 %) had received school education. A larger percentage of those who farmed themselves than of those who used sharecroppers had received school education and the former were also better qualified.

The highest percentage of people employed elsewhere was found among those who used sharecroppers, namely 33,7 % as against the 19,3 % of the other group. Approximately half of the test group had savings accounts (50,4 % of those who farmed themselves and 45,7 % of those who used sharecroppers). Virtually the whole test group mentioned that they experienced problems in obtaining credit for the necessary farming inputs. Plotholders who farmed themselves were more successful than those who used sharecroppers in their attempts to obtain credit.

##### 5.1.3 Maize production

Plotholders who farmed themselves were reasonably well equipped with farming implements. Holders of plots smaller than 15 morgen had relatively fewer tractors than those with larger plots (38,6 % as against 51,6 %). Slightly more than half of those who farmed themselves stated that they ploughed their fields twice a year. They used a suitable plant width but their spacing in the rows was almost half the ideal spacing. Almost half of the farmers hoed for the first time when plants were 23 cm and higher. Their answers to certain statements showed that certain aspects of soil cultivation and land utilization were not fully understood by them.

#### 5.1.4 The pastoral industry

Various types of livestock were owned, namely cattle (74,9 %), sheep (35,4 %), donkeys (15,3 %) and horses (7,4 %). The large majority of cattle owners stated that they had accepted practices such as pasture control and the provision of mineral licks. Roughly three-quarters of the cattle owners realized the importance of immunizing cattle against blackleg. However the large majority had no means for treating sick cattle and few of them were able to inject their cattle.

#### 5.1.5 The use of fertilizer and improved seed

All the plowholders who farmed themselves stated that they used fertilizer but most of them lacked the necessary judgment with regard to the application of a suitable quantity of fertilizer per morgen and there was considerable ignorance concerning the value of fertilizer. They did not use fertilizer regularly; approximately a quarter of them had used no fertilizer during the two seasons preceding the investigation. The average consumption of fertilizer was approximately 80 kg per morgen.

All except three persons used improved seed (seed reaped on their own fields is not improved seed). Certified seed was used by 66,4 % and hybrid seed by 31,1 % of the farmers. Altogether 72,4 % could supply the name of a cultivar correctly and 69 % had been using improved seed for longer than four years. This innovation therefore appears to have been accepted.

#### 5.2 CONCLUSION

The investigation showed that much success had been achieved with the guidance programme of the Department of Agriculture but that there was still considerable room for improvement.

Attention is drawn to some matters requiring special attention. One of these is the practice of soil cultivation and more specifically that of weed control which is seriously neglected in dry seasons. Another is the application of fertilizer. The available amount of fertilizer determines the size of the land the farmer should cultivate. It appears that considerable expenditure with regard to cultivation can be prevented.

The fact that such a large percentage of plowholders who use sharecroppers do not work elsewhere and do not seek employment indicates a certain non-involvement in agricultural and economic development. On the other hand it remains difficult to obtain credit and this may contribute to the extent of sharecropping as plowholders who used sharecroppers were less successful than the other group in obtaining credit. The way of financing agricultural inputs should be further examined.

HUMAN SCIENCES RESEARCH COUNCIL  
 INSTITUTE FOR MANPOWER RESEARCH

THE DIFFUSION OF AGRICULTURAL INNOVATIONS IN THE  
 DITSOBOTLA DISTRICT OF BOPHUTHATSWANA

QUESTICNNAIRE

Area from which information was obtained

 1

GENERAL INFORMATION

(The person from whom information must be obtained, is the one who actually farms. Where a woman's husband e.g. works outside the tribal area and she consequently has to look after the farm, the information must be obtained from the responsible woman).

1.1 Have you got

Trust land

 1

Private land

 2

If "Yes", approximately how big is the land? Indicate in morgen, hectare or acre (the agricultural official should give guidance here).

Trust land .....

 3-4

Private land .....

1.2 What do you do with the land

Cultivate it

 1

Lease it

 2

Lease it for share-cropping

 3

Not cultivated at all

 4

 5

1.3	How long have you already been cultivating the soil?	1		6
	How long have you already been leasing the land?	2		
	How long have you already been share-cropping?	3		
	How long has the land been uncultivated?	4		
1.4	If the land is not cultivated what is the reason for this?			7
	.....			
	.....			
1.5	Except for the land mentioned in question 1.1, is any other land being leased or share-cropped?			8
	Yes	1		
	No	2		
1.6	What kind of soil is found on the land?			9
	Trust land:    sandy soil <span style="border: 1px solid black; padding: 0 5px;">1</span> turf soil <span style="border: 1px solid black; padding: 0 5px;">2</span> loam soil <span style="border: 1px solid black; padding: 0 5px;">3</span> don't know <span style="border: 1px solid black; padding: 0 5px;">4</span>			
	Private land:    sandy soil <span style="border: 1px solid black; padding: 0 5px;">1</span> turf soil <span style="border: 1px solid black; padding: 0 5px;">2</span> loam soil <span style="border: 1px solid black; padding: 0 5px;">3</span> don't know <span style="border: 1px solid black; padding: 0 5px;">4</span>			10
1.7	Does the husband do any other work excepting farming, e.g. work in a factory, shop etc.			11
	Yes	1		
	No	2		
	If so, what kind of work does he do?			12
	Professional (e.g. Teacher, nurse)	1		
	Skilled work (e.g. Artisan, i.e. usually St. 7 + training).	2		
	Semi-skilled (Factory workers, operating machines	3		
	Unskilled (labourers, i.e. cleaners, household servants etc.)	4		
	If unemployed, is he seeking work?    Yes <span style="border: 1px solid black; padding: 0 5px;">5</span> No <span style="border: 1px solid black; padding: 0 5px;">6</span>			
1.8	When does he get home?			13
	Every evening	1		
	Week-ends	2		
	Once a month	3		
	Less than once a month	4		

INFORMATION ON MEMBERS OF THE FAMILY

Information on the responsible person  
(See introductory paragraph)

- 2.1 Age   14
- 2.2 Sex:  Male  Female  
 1  2  15
- 2.3 Ethnic group: .....  16
- 2.4 Position in family (e.g. grandfather, grandmother, father, mother or child)   17
- 2.5 Marital status:  Single  1  18  
 Married  2  19  
 Widow  3  20  
 Widower  4  21
- 2.6 Highest school qualification .....  19
- 2.7 Any additional qualification .....  20
- 2.8 Have you ever worked for a wage?  Yes  1  21  
 No  2  22
- 2.9 What kind of work have you been doing most?  
Professional (e.g. Teacher, nurse)  1  24  
Skilled work (e.g. Artisan, i.e. usually St. 7 + training)  2  22  
Semi-skilled (Factory workers, operating machines)  3  22  
Unskilled (labourers, i.e. cleaners, household servants etc.)  4  22

Information on other members of the family

- 2.10 How many wives has the head of the family? Number   23
- 2.11 How many children has he? Number   24



2.12	Are there any children who work for a wage?	Yes <input type="checkbox"/>	1		24
		No <input type="checkbox"/>	2		
	If "Yes", number <input style="width: 100px;" type="text"/>				25
2.13	How many children help permanently on the farm?				26
	Number <input style="width: 100px;" type="text"/>				
2.14	How many work for a wage outside the homeland?				27
	Number <input style="width: 100px;" type="text"/>				
2.15	What kind of work are they doing?				28
	Professional (e.g. Teacher, nurse)		1		
	Skilled work (e.g. Artisan, i.e. usually St. 7 + training).		2		
	Semi-skilled (Factory workers, operating machines		3		
	Unskilled (labourers, i.e. cleaners, household servants etc.)		4		28
2.16	How many work for a wage inside the homeland area?				29
	Number <input style="width: 100px;" type="text"/>				
2.17	What kind of work are they doing?				30
	Professional (e.g. Teacher, nurse)		1		
	Skilled work (e.g. Artisan i.e. usually St. 7 + training		2		
	Semi-skilled (Factory workers, operating machines)		3		
	Unskilled (labourers i.e. cleaners, household servants etc.)		4		30
2.18	How many children attend school?	Number	<input style="width: 100px;" type="text"/>		31
2.19	What is the highest school qualification attained by one of the children?				32
	.....				

2.20 Has the head of the family received any financial assistance from children who work, during the past year?

Yes 1  
No 2

33

2.21 If so, what is the total amount approximately? R

34

2.22 What is the value of goods received from children during the past year, e.g. blankets, clothing or other commodities?

R

35

2.23 Which members of the family usually help to cultivate the land (specify clearly)

.....  
.....  
.....  
.....

36

2.24 Which members of the family usually help with harvesting?

.....  
.....  
.....  
.....

37

2.25 Which members of the family help with the cattle?

.....  
.....  
.....  
.....

38

KNOWLEDGE AND APPLICATION OF CERTAIN RECOMMENDED AGRICULTURAL PRACTICES

(Artificial) fertilizer

3.1 Are you acquainted with (artificial) fertilizer Yes 1  
No 2

39

3.2	If so, state the name of a certain kind of (artificial) fertilizer you are familiar with .....	<input type="text"/>	40																																				
3.3	From whom did you hear about (artificial) fertilizer for the first time	<table border="0" style="margin-left: 40px;"> <tr><td>White farmer</td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Black farmer</td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Teacher</td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Agricultural official</td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Other (specify)</td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>.....</td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Do not know</td><td style="text-align: center;"><input type="text"/></td></tr> </table>	White farmer	<input type="text"/>	Black farmer	<input type="text"/>	Teacher	<input type="text"/>	Agricultural official	<input type="text"/>	Other (specify)	<input type="text"/>	.....	<input type="text"/>	Do not know	<input type="text"/>	41																						
White farmer	<input type="text"/>																																						
Black farmer	<input type="text"/>																																						
Teacher	<input type="text"/>																																						
Agricultural official	<input type="text"/>																																						
Other (specify)	<input type="text"/>																																						
.....	<input type="text"/>																																						
Do not know	<input type="text"/>																																						
	Do you use (artificial) fertilizer?	<table border="0" style="margin-left: 40px;"> <tr><td>Yes</td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>No</td><td style="text-align: center;"><input type="text"/></td></tr> </table>	Yes	<input type="text"/>	No	<input type="text"/>	42																																
Yes	<input type="text"/>																																						
No	<input type="text"/>																																						
3.4	How long have you been using (artificial) fertilizer? .....	<input type="text"/>	43																																				
3.5	Are the following statements true or false?	<table border="0" style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;"><u>True</u></th> <th style="text-align: left;"><u>False</u></th> <th style="text-align: left;"><u>Dont know</u></th> </tr> </thead> <tbody> <tr><td>Fertilizer makes plants grow better</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Fertilizer keeps pests away</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Fertilizer gives a better crop</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Fertilizer improves the quality of the soil</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>It does not matter what kind of fertilizer you use</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Agricultural lime is an example of a fertilizer</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Kraal manure is a good fertilizer</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>Kraal manure improves the quality of the soil</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>A nitrogen fertilizer encourages the growth of leaves and stems</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>A phosphate fertilizer the growth and formation of seed</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> <tr><td>You can use too much fertilizer</td><td style="text-align: center;"><input type="text"/></td><td style="text-align: center;"><input type="text"/></td></tr> </tbody> </table>	<u>True</u>	<u>False</u>	<u>Dont know</u>	Fertilizer makes plants grow better	<input type="text"/>	<input type="text"/>	Fertilizer keeps pests away	<input type="text"/>	<input type="text"/>	Fertilizer gives a better crop	<input type="text"/>	<input type="text"/>	Fertilizer improves the quality of the soil	<input type="text"/>	<input type="text"/>	It does not matter what kind of fertilizer you use	<input type="text"/>	<input type="text"/>	Agricultural lime is an example of a fertilizer	<input type="text"/>	<input type="text"/>	Kraal manure is a good fertilizer	<input type="text"/>	<input type="text"/>	Kraal manure improves the quality of the soil	<input type="text"/>	<input type="text"/>	A nitrogen fertilizer encourages the growth of leaves and stems	<input type="text"/>	<input type="text"/>	A phosphate fertilizer the growth and formation of seed	<input type="text"/>	<input type="text"/>	You can use too much fertilizer	<input type="text"/>	<input type="text"/>	44-54
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You can use too much fertilizer	<input type="text"/>	<input type="text"/>																																					

3.6 If you want to know more about (artificial) fertilizer, to whom would you go for advice?

.....  
 ..... 55

3.7 How would you know how to use the correct amount of (artificial) fertilizer?

.....  
 .....  
 ..... 56

3.8 Who was the most influential in persuading you to use (artificial) fertilizer?

White farmer	<input type="checkbox"/>	1		57
Black farmer	<input type="checkbox"/>	2		
Teacher	<input type="checkbox"/>	3		
Agricultural official	<input type="checkbox"/>	4		
Other (specify)	<input type="checkbox"/>			
.....	<input type="checkbox"/>			
Do not know	<input type="checkbox"/>			

Certified Maize seed

3.9 Are you acquainted with certified maize seed? Yes  1  
 No  2 58

3.10 If so, from whom did you hear for the first time about it?

White farmer	<input type="checkbox"/>	1		59
Black farmer	<input type="checkbox"/>	2		
Teacher	<input type="checkbox"/>	3		
Agricultural official	<input type="checkbox"/>	4		
Other (specify)	<input type="checkbox"/>			
.....	<input type="checkbox"/>			
Do not know	<input type="checkbox"/>			

3.11	What type of maize seed do you use?		
	Certified maize seed	<input type="checkbox"/>	1
	Maize hybrid seed	<input type="checkbox"/>	2
	Seed harvested from your own land	<input type="checkbox"/>	3
	Ordinary seed bought elsewhere	<input type="checkbox"/>	4
	Blank		60
	Number of fieldworker	<input type="checkbox"/>	61-70
	Questionnaire number	<input type="checkbox"/>	71
	Card and project number	<input type="checkbox"/>	72-74
		<input type="checkbox"/>	75-80

3.12 (a) If you use certified maize seed or maize hybrid seed, give the reasons why you use it

.....  1

.....  2

(b) If you are not yet using one of these two kinds of maize seed, give the reasons for not using it

.....  3

.....  4

3.13 What is the name of the certified maize seed or the maize hybrid seed you use (Only the recognized names of the varieties should be written down).

.....  5

3.14 How long have you been using it? ..... years

6

3.15 Where do you obtain your certified seed or hybrid seed?

.....  7

3.16 Who was the most influential in persuading you to use certified seed?

White farmer	<input type="checkbox"/>	1
Black farmer	<input type="checkbox"/>	2
Teacher	<input type="checkbox"/>	3
Agricultural official	<input type="checkbox"/>	4
Other (specify)	<input type="checkbox"/>	
.....	<input type="checkbox"/>	
Do not know	<input type="checkbox"/>	

8

CATTLE-FARMING

4.1 How many of the following live stock do you own?

Cattle	<input type="checkbox"/>
Goats	<input type="checkbox"/>
Sheep	<input type="checkbox"/>
Pigs	<input type="checkbox"/>
Donkeys	<input type="checkbox"/>
Horses	<input type="checkbox"/>
Mules	<input type="checkbox"/>

9  
10  
11  
12  
13  
14  
15

4.2 Do you practise grazing control in the planned area?

Yes	<input type="checkbox"/>	1
No	<input type="checkbox"/>	2

16

4.3 Are the following statements true or false?

True False Dont know

If your year old calves were immunised against black quarter the previous year, they should again be immunised this year

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3

17

The advantage of grazing control is that valuable grasses can take the place of valueless grasses

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3

18

4.4 What do you do when one of your cattle get sick?

Try to treat it yourself	<input type="checkbox"/>	1
Get a neighbours advice	<input type="checkbox"/>	2
Call in the agricultural extension officer for his advice	<input type="checkbox"/>	3
.....	<input type="checkbox"/>	4

19

4.5 Do you possess any one of the following:

Syringe	1		20
Disinfectant	2		
Antibiotica	3		

4.6 Do you know how to inject an animal or do you get a neighbour to do it?

Know how to do it	1		21
Get a neighbour	2		
Don't make use of an injection	3		

4.7 Do you provide your cattle with a mineral lick?

Regularly	1		22
Only in winter	2		
Not at all	3		

4.8 If so, do you mix the ingrediets yourself, or do you buy it ready mixed?

Mix it myself	1		23
Buy it ready mixed	2		

4.9 If you mix it yourself, what are the main ingredients?

.....

.....

.....

	24
	25
	26

KNOWLEDGE OF MAIZE GROWING

5.1 Did you plant maize the past season on

	Yes	No		
Trust land	1	2		
Private land	1	2		

5.2 Did you plant maize the previous season on

	Yes	No		
Trust land	1	2		
Private land	1	2		

5.3 State whether the following statements are true or false

	<u>True</u>	<u>False</u>	<u>Dont know</u>		
Weeds do not harm plants	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/>	31
If it is dry, weeding your lands is a waste of time and money	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/>	32
Planting pumpkins between the rows is not harmful for the maize	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/>	33
Cultivating your lands makes them dry out faster	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/>	34

5.4 Why are you advised to plough your land in winter after the harvest? Give three reasons

.....

.....

.....

	<input type="checkbox"/>	35
	<input type="checkbox"/>	36
	<input type="checkbox"/>	37

5.5 Who would you say know the most about maize in this area (Give the names of three).

.....

.....

.....

	<input type="checkbox"/>	38
--	--------------------------	----

5.6 Did you use artificial fertilizer during the past season on the following land

Trust land	Yes	<input type="checkbox"/> 1	No	<input type="checkbox"/> 2	Na.	<input type="checkbox"/> 3	<input type="checkbox"/>	39
Private land	Yes	<input type="checkbox"/> 1	No	<input type="checkbox"/> 2	Na.	<input type="checkbox"/> 3	<input type="checkbox"/>	40
Land leased or leased for share-cropping	Yes	<input type="checkbox"/> 1	No	<input type="checkbox"/> 2	Na.	<input type="checkbox"/> 3	<input type="checkbox"/>	41

If "Yes", how many bags did you use on the following land?

Trust land .....	Number of bags	<input type="checkbox"/>	<input type="checkbox"/>	42
Private land .....	Number of bags	<input type="checkbox"/>	<input type="checkbox"/>	43
Land leased or leased for share-cropping .....	Number of bags	<input type="checkbox"/>	<input type="checkbox"/>	44



5.7 Did you use artificial manure during the previous season on the following land

Trust land	Yes	<input type="checkbox"/> 1	No	<input type="checkbox"/> 2	Na.	<input type="checkbox"/> 3	<input type="checkbox"/>	45
Private land	Yes	<input type="checkbox"/> 1	No	<input type="checkbox"/> 2	Na.	<input type="checkbox"/> 3	<input type="checkbox"/>	46
Land leased or leased for share-cropping	Yes	<input type="checkbox"/> 1	No	<input type="checkbox"/> 2	Na.	<input type="checkbox"/> 3	<input type="checkbox"/>	47

If "Yes", how many bags did you use on the following land?

Trust land .....	Number of bags	<input type="checkbox"/>	<input type="checkbox"/>	48
Private land .....	Number of bags	<input type="checkbox"/>	<input type="checkbox"/>	49
Land leased or leased for share-cropping .....	Number of bags	<input type="checkbox"/>	<input type="checkbox"/>	50

\* Na. = Not applicable

5.8 How many bags of maize were harvested during the past season on

Trust land	<input type="checkbox"/>	<input type="checkbox"/>	51
Private land	<input type="checkbox"/>	<input type="checkbox"/>	52
Land leased or leased for share cropping	<input type="checkbox"/>	<input type="checkbox"/>	53

5.9 How many bags of maize were harvested the previous season on

Trust land	<input type="checkbox"/>	<input type="checkbox"/>	54
Private land	<input type="checkbox"/>	<input type="checkbox"/>	55
Land leased or leased for share cropping	<input type="checkbox"/>	<input type="checkbox"/>	56

5.10 Do you keep the harvested maize for

own use	<input type="checkbox"/> 1	<input type="checkbox"/>	57
sell a part	<input type="checkbox"/> 2		

5.11 If a part is sold, to whom is it sold?  
 .....  
 .....

5.12 What price per bag did you obtain last season?

R	<input type="checkbox"/>	<input type="checkbox"/>	58
---	--------------------------	--------------------------	----

5.13	How many times a season do you plough your lands			
	Number of times	<input type="text"/>	<input type="text"/>	59
5.14	What do you do with your land after the lands have been harvested?			
	Ploughing in the remains of the crop	<input type="text" value="1"/>	<input type="text"/>	60
	Grazing and ploughing immediately afterwards	<input type="text" value="2"/>	<input type="text"/>	61
	Grazing untill the first summer rains	<input type="text" value="3"/>	<input type="text"/>	62
5.15	What time of the year do you usually plough? .....		<input type="text"/>	63
	.....			
5.16	Which of the following methods did you use last season to prepare the land?			
	Ox-ploughing	<input type="text" value="1"/>	<input type="text"/>	64
	Tractor ploughing	<input type="text" value="2"/>	<input type="text"/>	65
	Both	<input type="text" value="3"/>	<input type="text"/>	66
5.17	Were <u>most</u> of the implements used for cultivation, your own or were they hired?			
	Own implements	<input type="text" value="1"/>	<input type="text"/>	
	Hired implements	<input type="text" value="2"/>	<input type="text"/>	67
5.18	What is the most important pest that attacks your maize (State name or give a description)		<input type="text"/>	68
	.....			
5.19	What is the best method of combating the pest?			
	.....			
	.....			
	.....		<input type="text"/>	69
	.....			

5.20	Which month is the best for planting maize? .....		70
	Number of fieldworker		71
	Questionnaire number		72-74
	Card and project number	0 2 MM-81	75-80
5.21	Do you aim to get a desired number of plants per hectare? Has no aim	1	1
	Has a certain aim	2	
	If he has an aim what is the width between the rows .....		2
	What is the approximate spacing in the row .....		3
5.22	At what stage of plant growth (i.e. the mealie plant) do you start hoeing your lands for the first time ..... inches or ..... foot		4
5.23	How many times do you hoe your lands during the season? .....		5
5.24	Which tool do you make use of when hoeing .....		6
5.25	When you practice hoeing, is it being done between the rows or in the rows as well Only between the rows	1	
	Both places	2	7
5.26	Why do you practice hoeing? Give two reasons ..... ..... ..... .....		8
			9

5.27 Name the three most important types of weed usually found on your land

.....  
.....  
.....

10

COMMUNICATION

6.1 Can you name any magazine especially for farmers?

Yes 1  
No 2

Name: .....

11

6.2 Who is the person here who knows something about every= thing?

Name: .....

Position/work .....

12

6.3 Did you receive argicultural training at

primary school 1  
high school 2  
received no agricultural training 3

13

6.4 Did the instruction help

a lot 1  
a little 2  
not at all 3  
not applicable 4

14

6.5 Did you attend any farmers days, demonstrations or lectures during the past 3 years?

Yes 1  
No 2

If so, what was the last one you attended about?

.....

16

6.6	Did you learn anything from it?	Yes	1		17
		No	2		
	If so, in what way?				
	.....				
	.....				18
6.7	Sometimes a farmer feels the need to discuss some of his problems on farming. If the agricultural official (molemisi) is not available, whom do you consult in your neighbourhood (write down the name)				
	.....				19
6.8	Have you got a radio at home?	Yes	1		20
		No	2		
6.9	Do you listen to the radio?	Yes	1		21
		No	2		
6.10	If so, how often?		1		22
	daily		2		
	a few times a week		3		
	a few times a month				
6.11	Do you listen to the agricultural programme	Yes	1		23
		No	2		
	If so, what is the name of the agricultural programme?				
	.....				24
6.12	Do you read newspapers?	Yes	1		25
		No	2		
	If so, how often?		1		26
	daily		2		
	a few times a week		3		
	a few times a month				

6.13 If not, are newspapers read to you? Yes  1  
 No  2 27

If so, how often?  
 daily  1  
 a few times a week  2  
 a few times a month  3 28

POSSESSION OF AGRICULTURAL IMPLEMENTS

7.1 Which of the following agricultural implements do you own?  
 Make a cross in the appropriate blocks and fill in the other information)

Tractor  29

Model .....  1  2 30

Year of manufacture .....  31

Hp or Kw. ....  1  2 32

Tractor-plough  33

Mould-board plough  34

Number of furrows .....  1  2 35

Disc plough  36

Working width .....  1  2 37

Ox-plough  38

Working width .....  1  2 39

Harrow  40

Working width .....  1  2 41

Trailer  42

Loading capacity .....  1  2 43

Wagon (mule wagon type)  44

Lorry  45

Loading capacity .....  1  2 46

Planter  47

Number of rows .....  1  2 48

Is it fitted with a fertilizer bucket? Yes  1 49  
 No  2 50

CREDIT FACILITIES

8.1	Did you ever want to buy seed, artificial manure or implemtnes, but were short of money?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2	<input type="checkbox"/>	51
8.2	If so, did you take any steps to borrow the required money?	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2	<input type="checkbox"/>	52
8.3	If so, where did you obtain help? .....		<input type="checkbox"/>	53
8.4	Have you got a savings account	Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2	<input type="checkbox"/>	54
	Blank			55-70
	Number of fieldworker	<input type="checkbox"/>		71
	Questionnaire number	<input type="checkbox"/>		72-74
	Card and project number	<input type="checkbox"/> 0 <input type="checkbox"/> 3 MM-81		75-80

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RGN - Onderzoek na die Onderwys  
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