

**World Vision International**

**Mozambique**

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Mr. Sidney Bliss  
USAID, Maputo

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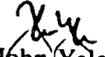
Dear Sidney

The Agricultural Recovery Program carried out a post-harvest survey of 1992/93 "Ag-pak" beneficiaries in Zambezia, Sofala and Tete Provinces as part of its evaluation process. Interviews were conducted in Nicoadala, Luabo, and Gurue in Zambezia Province, Sena and Caia in Sofala Province, and Changara, Manje and Chidzolomondo in Tete Province. The survey addressed various issues related to family sector agriculture, including labor and land resources, principle constraints to production, opinions of "Ag-pak" beneficiaries concerning the quality and quantity of seed received in the "Ag-pak" and farming practices.

The survey report is attached for your information and I hope you find it informative. Please feel free to direct any queries that you may have to me.

Thank you for your continued interest in our program.

Yours sincerely

  
John Yale  
Country Director

1994-04-19

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WORLD VISION MOZAMBIQUE  
AGRICULTURAL RECOVERY PROGRAM  
SURVEY OF "AG-PAK" BENEFICIARIES  
1992/93 SEASON



## INTRODUCTION

World Vision International-Mozambique (WVI-M) has been an active participant in relief efforts in Mozambique since 1984, with an increasing focus on recovery and development particularly since 1989. The goal of WVI-M's Agricultural Recovery Program (ARP) is to improve food production by the family sector and to strengthen the potential for sustainable agricultural development. The ARP has been involved in rehabilitating war displaced populations since 1986 through a distribution program of information, quality seeds and essential hand tools. The program was initiated with the distribution of 5,600 "Ag-paks" in Tete, Manica, Zambezia and Sofala Provinces during the 1986/87 season. Over subsequent years, the numbers of "Ag-paks" distributed to war and drought affected families was increased. Between the 1987/88 and the 1991/92 seasons, the number of "Ag-paks" distributed increased from 25,000 to 45,000. However, the number of "Ag-paks" distributed jumped to more than 128,000 in 1992/93 as a consequence of the 1991/92 drought and to almost 250,000 in 1993/94 to satisfy the demands of the large influx of returnees arriving into the provinces bordering Malawi. Dry season "Veg-pak" distributions were initiated in 1988 with a distribution to 28,000 families. This program has also increased and during 1993 110,000 "Veg-paks" were distributed to returnees, internally-displaced families and populations in the newly-opened RENAMO areas.

Throughout these years of emergency distributions, the ARP has developed a multi-locational program of variety trials of the principle crops with the objective of identifying varieties which are acceptable and productive under family sector conditions. The contents of "Ag-Paks" and "Veg-Paks" have been modified and upgraded based on results obtained from these trials.

This report describes the results of a survey of 1992/93 "Ag-pak" beneficiaries in the districts of Nicoadala, Gurue, and Chinde (Luabo) in Zambezia Province, the district of Caia (Caia and Sena) in Sofala Province and Macanga (Chidzolomondo), Chiuta (Manje) and Changara Districts in Tete Province.

## OBJECTIVES

The objectives of this survey were to:

1. Determine the labour and land resources of "Ag-pak" beneficiaries in selected districts;
2. Identify the principle constraints to production;
3. Determine the opinion of the beneficiaries of the quality and quantity of seed received in the "Ag-pak" and the extent to which "Ag-pak" seed is supplemented by regional seed.
4. To obtain preliminary information on farming practices, particularly relating to the cultivation of maize.

## METHODOLOGY

### 1. The Questionnaire

The questionnaire underwent a number of modifications as a consequence of extensive testing in distribution areas which were not included in the actual survey. The final survey consisted of 47 questions, as follows (see Appendix IA and IA):

#### Identification details

Questions 1-2: number of family members and number working on the farm  
Questions 3-6: number and size of family farms  
Questions 7: problems which restricted the area cultivated  
Questions 8-11: use of regional varieties  
Questions 12-15, 19-20: opinion of "Ag-pak" contents (quality and quantity)  
Questions 16-18: saving of "Ag-pak" seed  
Questions 21: problems which limited production  
Questions 22-26: use of farm products  
Questions 27-32: information on farm yields  
Questions 33-44: farming practices used in maize cultivation  
Questions 45-47: grain processing and grain type preference  
The questionnaire was prepared in Portuguese.

### 2. Selection of Survey Districts and Villages

The distribution plan for the 1992/93 season is shown in Appendix II. The most extensive distributions were made in Zambezia, Sofala and Tete provinces. It was therefore decided to survey selected districts in these three provinces. The districts that were selected were Nicoadala, Chinde (Luabo) and Gurue in Zambezia Province, Caia (Caia and Sena) in Sofala Province and Macanga (Chidzolomondo), Chiuta (Manje) and Changara in Tete Province.

Within each distribution area, 9 or 10 individual villages were identified which had received similar "Ag-paks" and the number of beneficiaries in each village was determined from the beneficiary lists. To minimize logistical problems, the survey was carried out in six recipient villages chosen at random in each distribution area.

### 3. Sample Size and Selection of Individual Samples

The survey was conducted using the two stage cluster sampling method used by the World Health Organization/Expanded Program on Immunization. Where possible a sample size of 240 was used in each distribution site. This sample of 240 interviews was divided into 30 groups of interviews, or "clusters", with eight interviews per cluster. The 30 clusters were divided between the six selected villages in proportion to the number of beneficiaries in each village. Hence, villages with a larger number of beneficiaries were sampled with a larger number of clusters than villages with a smaller number of beneficiaries. Details of the villages surveyed in each distribution area, the number of beneficiaries and the number of clusters sampled in each village in Zambezia and Sofala Provinces are given in Table 1, as an example.

The total number of beneficiaries interviewed in each location was as follows: Nicoadala 239; Sena 237; Caia 240; Luabo 256; Gurue 79; Changara 241; Manje 138; and Chidzolomondo 180. The numbers of beneficiaries interviewed in Manje and Chidzolomondo were fewer than planned due to a shortage of interviewers.

For villages which were sampled with more than one cluster, the village was divided into sections on the basis of the grouping of houses, each section representing the focus for one cluster. The selection of the households for interview in each cluster started with the random selection of a starting household at a geographically central location. By spinning a bottle or pen on a level surface, a random direction was chosen and all households along a line from the center to the periphery of the cluster in the specified direction were counted. One of these houses was then randomly selected as the

starting point. After completing the first interview, additional households were chosen by finding the next nearest household (the one whose front door was closest to the house in question). At each household, the interviewee was asked whether they had received an "Ag-pak" and if they did not receive an "Ag-pak" the interviewer moved on the next nearest household.

TABLE 1: NUMBER OF 1992/93 "AG-PAK" BENEFICIARIES AND NUMBER OF INTERVIEWS CARRIED OUT IN THE DIFFERENT VILLAGES SURVEYED IN ZAMBEZIA AND SOFALA PROVINCES.

DISTRICT /LOCALITY	VILLAGE	NO. OF BENEFICIARIES	NO. OF CLUSTERS (i)	
<b>ZAMBEZIA PROVINCE</b> Nicoadala	Momede	299	10	
	Derre Machindo	157	4	
	Paz/7 Abril	149	3	
	Milange	142	5	
	Murhonhe	180	5	
	TOTAL	927	30	
	Chinde/Luabo		(ii)	8
		Biane		4
		Central		2
		7 de Abril		3
Cassoa			12	
Guerreiro		1,342	30	
Gurue	TOTAL	200	(iii)	
		200		
<b>SOFALA PROVINCE</b> Caia	Etocolo			
	TOTAL	610	7	
		320	3	
	Nhampunga	306	4	
	D.A.F.	454	5	
	Amilcar Cabral	559	7	
	A	344	4	
	Phaza	2,593	30	
	Caia/Sena	Amilcar Cabral	890	11
		C	65	1
		Malumainibo	126	1
			78	1
		TOTAL	518	7
			676	9
		Nsona	2,353	30
Bairro A				
Machizana				
Bairro C				
Maringue				
Chemba				
TOTAL				

Notes:

- (i) A cluster is a group of eight interviews  
(ii) In Luabo, the "Ag-pak" distribution was carried out in a central location, not to individual villages. Consequently information of the number of beneficiaries per village was not available. Therefore, the number of clusters to be sampled in the different villages was determined on the basis of the relative populations of the different villages.  
(iii) In Gurue, "Ag-pak" distribution was limited to 200 and therefore a random sample of 79 beneficiaries (39.5%) were interviewed.

#### 4. Training of Supervisors and Interviewers

A total of three supervisors and 15 interviewers were selected for training and participation in the actual survey in Zambezia and Sofala Provinces. In Tete Province, four interviewers were used, one of whom underwent training in Zambezia and participated in the Zambezia and Sofala surveys. All supervisors and interviewers were part of the ARP team.

Training involved a discussion of the purpose and objectives of the survey, methods of village, cluster and household selection and a thorough review of the questionnaire. This was followed by half a day of field surveys. Following the first field survey session, all interviewers and supervisors reviewed the individual questions and problems were clarified. Certain questions were rephrased as necessary and a further day of trial surveys was carried out. A final revision of the survey was then carried out.

#### 5. Conduct of the Interviews

An average of 15 clusters (120 interviews) were surveyed each day in the districts in Zambezia and Sofala Provinces. The team was divided into three groups of five interviewers and a supervisor, each group surveying three clusters (40 interviews) per day. In Tete Province, all four interviewers worked together as a single team.

During the survey the supervisors were responsible for reviewing each questionnaire immediately after completion and providing individual feedback to each interviewer. Any queries were clarified, where possible, by the interviewer or, if not possible, by returning to the interviewee for clarification.

The survey was conducted in Portuguese. However, in cases where the interviewee did not understand/speak Portuguese, the interviewer or an assistant translated the questions into the local dialect.

#### 6. Data Analysis

The questionnaire and data were entered and analyzed using the Epidemiology Info 5.0 computer program. The data were analyzed by distribution area, by province and also across provinces. Frequency distributions were produced for each variable.

### **RESULTS**

To facilitate discussion of the results of the survey, the responses to the various questions have been addressed under different subject areas. Where responses were similar in the eight distribution areas surveyed, the results are expressed as a frequency across provinces. However, in cases where the response differed between provinces or between distribution areas within a particular province, the individual results are indicated. Due to the similarities between the majority of the distribution areas surveyed in Zambezia and Sofala Provinces, data from these provinces were often analysed together.

#### 1. Population Movements Among "Ag-pak" Beneficiaries

(i) Timing of arrival in "Ag-pak" beneficiaries in the distribution areas

Questions: Where is your family from originally?

What year did you arrive? (Year)

Of the 939 people who responded to the second question, only 26.3% had arrived during 1987 or before. Of the remainder, there were two phases of arrival into the "Ag-pak" distribution areas common to all three provinces. The first large influx of people arrived in 1988 (21.0%) and a further influx arrived in 1992 (27.7%). The 1988 influx was particularly pronounced in Manje and Changara (Tete Province), in Nicoadala (Zambezia) and Caia (Sofala), with people moving from the surrounding war-affected rural areas to the increased security of these urban zones. In 1992, following the signing of the peace accord, returnees arrived in large numbers into Caia and Sena from Malawi and also into Gurue. The majority of the people who did not respond to this question were native to the district in which they were living at the time of the 1992/93 "Ag-pak" distribution.

(ii) Timing of anticipated departure from the "Ag-pak" distribution areas

Question: When do you plan to leave? (Year)

Among the 346 respondents who were non-residents and planned to return to their zones of origin, 25.7% planned to leave during 1993, 65.6% during 1994 and the remaining 8.7% after 1994. Clearly the majority of respondents were uncertain whether the peace would hold and had decided to wait for a further season in their temporary home.

The most significant levels of population movement were anticipated in Nicoadala in Zambezia Province, where 64.0% of the 239 interviewees indicated that they would leave Nicoadala from 1993 onwards. In Tete Province, the proportion of beneficiaries who had plans to return to their zones of origin was highest in Chidzoloondo, where 30.6% of the 180 interviewees stated that they would be leaving Chidzoloondo, with the majority planning to leave in 1994. The populations of Caia, Sena, Luabo, Gurue, Manje and Changara appeared to be more settled.

## 2. Family Size

Question: Number of people in the family: Adults.. Children..

Aggregate family size varied between districts. The number of adults ranged from 0 to 10, with an average of 2.13 over the three provinces. However, in Zambezia/Sofala Provinces, the average number of adults was higher than in Tete (2.32 and 1.76 respectively), possibly because there was more destruction of individual family units in Zambezia and Sofala leading to aggregate families representing adults from different but related family units. This was particularly noticeable in Nicoadala, Sena and Luabo. The lower average number of adults in Tete Province indicates a higher proportion of single-headed households in this province.

Of the 1611 families interviewed, 266 (16.5%) represented single-headed households. Of these, 232 (87.2%) were female-headed and 34 (12.8%) were male-headed households. The high number of female-headed households partly reflects the fact that these communities are polygamous and that the "Ag-pak" beneficiaries are women, and therefore in a polygamous family each wife would receive an "Ag-pak".

The number of children per family ranged from 0 to 17, with most families having 3 to 4 children (mean of 3.44).

The average family size, adults plus children, across the three provinces was 5.57. This supports the general assumption that an average Mozambican family has 5 or 6 members.

## 3. Family Contributions to Farm Labour

Question: How many people work on your farm(s)? Women.. Men.. Children..

The numbers of women working on the family farm ranged from 0 to 5, with an average of 1.13. In comparison, the number of men working on the farm varied from 0 to 6, with an average of 0.98. There are probably various factors which contribute to this gender difference, namely: some female-headed households will represent families where the husband was killed during the war; a number of the "Ag-pak" beneficiaries interviewed are second wives who may work on their own machambas without the help of their husbands; and in a number of families the husband may have off-farm employment.

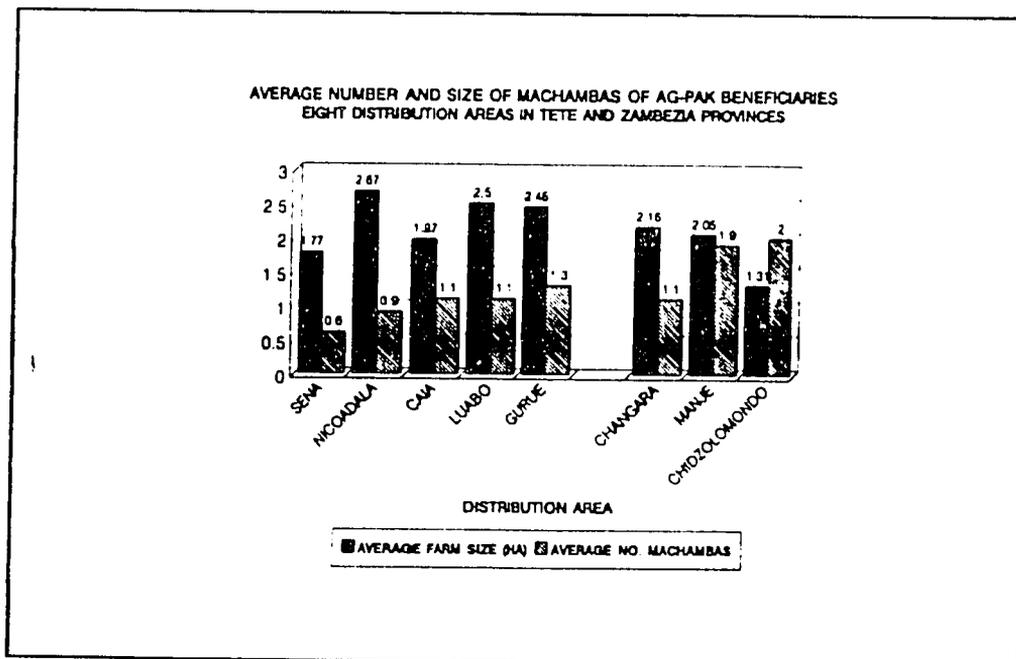
**In 51.0% of the families interviewed, at least one child worked on the family farm.** In these cases, the number of children working on the farm ranged from 1 to 12, with an overall average of 1.12. Child labour is clearly an important contribution to farm labour.

#### 4. Average Farm Size of "Ag-pak" Beneficiaries

**Questions:** How many machambas do you have? (No.)  
How much land did you cultivate last season (1992/93)?  
(m<sup>2</sup>/hectares)

It is generally considered that a dislocated or refugee family with an average of 5 family members is able to prepare a machamba of approximately 1 hectare in the first year. The "Ag-pak" therefore contains sufficient seed to allow a machamba of 1 hectare to be planted. Although we appreciate that, without measuring individual fields, it is difficult to determine the average farm size of "Ag-pak" beneficiaries, we considered it important to address these questions.

The numbers of machambas ranged from 1 to 9 with an average of 2.11. In practice, it is common to find that a family has one major machamba with the principal starch crop, such as maize in the higher rainfall areas or sorghum and millet in the drier areas, intercropped with cowpea. A second machamba may contain a mixture of crops, including perennial crops such as cassava and pigeon pea, or may be a machamba of groundnut, often grown as a monocrop.



There were apparent differences in the number and size of machambas in the different districts. Figure 1 shows the average number of machambas and the average farm size in the eight distribution areas. Average farm sizes were smallest in Sena (0.6 hectares) and Nicoadala (0.9 hectares), reflecting the high proportion of refugees and the lack of available land in these districts. In Sena, the number of machambas was also small, reflecting the fact that the major influx of returnees into Sena occurred from November 1993 onwards, giving the beneficiaries little time to open up a larger number of machambas. WVI-M's Emergency Health Program nutrition surveys indicate that many of the returnees also arrived in a poor state of health. In Nicoadala, however, the number of machambas is slightly higher. In this area the high population pressure has meant that, in order to find adequate land, beneficiaries have had to open up a larger number of smaller machambas further away from the accommodation centers. In all other districts, average farm sizes were in excess of 1 hectare; specifically 1.1 hectares in Caia, Luabo and Changara, 1.3 hectares in Gurue, and approximately 2 hectares in Chidzolomondo and Manje where the population density is low.

**Question:** Do you plan to increase the size of your machambas? Yes.. No..

Of the 1608 respondents, 1108 (68.9%) said that they planned to increase the size of their machamba. These people represent the majority of the 1265 interviewees who were not planning to leave the distribution areas. However, the proportion of people planning to increase the size of their machambas differed between districts, with a higher proportion of positive responses in Caia (82.1%), Sena (82.7%), Gurue (74.7%) and Chidzolomondo (70.6%). With the exception of Sena, these areas are relatively productive with a low population density and would represent relatively attractive areas to settle. A lower proportion of positive responses were received in Nicoadala (60.0%) and Changara (51.5%). In these cases, high population pressure, a lack of available land and poor soils mean that these are less attractive or impossible areas in which to settle.

##### 5. Problems Which Limited the Area Cultivated by "Aq-pak" Beneficiaries

**Question:** What are the problems which limited the area which you cultivated?

Of the 1611 respondents, only 14.6% said that they did not encounter any problems which restricted the area of land they cultivated during the 1992/93 season. The problems cited by 1376 of the respondents were: lack of seeds, hand tools, labour or available land; insufficient time to prepare the machamba; distance to the machamba; illness; lack of security; poor soil; and flooding. The problems cited differed considerably between districts and provinces and the results are shown in Table 2.

In Zambezia and Sofala Provinces the most important factors which limited the area cultivated were a lack of seeds (cited by 46.4% of the interviewees in the province) as a consequence of the 1991/92 drought, a lack of hand tools (36.9%) and illness (33.3%), consequences of the refugee status of the majority of the beneficiaries. Secondary problems were a lack of land (27.6%), particularly in Nicoadala and Sena where the population pressure is very high and a lack of security (21.6%), particularly in Gurue. In Gurue, 15.0% of respondents said that they lacked time to prepare the machamba.

TABLE 2: MAJOR PROBLEMS LIMITING THE AREA CULTIVATED DURING THE 1992/93 SEASON BY "AG-PAK" BENEFICIARIES IN EIGHT DISTRIBUTION AREAS OF ZAMBEZIA, SOFALA AND TETE PROVINCES

PROBLEMS ENCOUNTERED	ZAMBEZIA			SOFALA	
	NICOAD	LUABO	GURUE	CAIA	SENA
LACK OF SEEDS	43.3	42.1	58.3	49.3	47.0
LACK OF HAND TOOLS	32.2	38.6	53.3	35.7	35.9
INSUFFICIENT LAND	40.6	27.9	18.3	12.1	34.3
ILLNESS	32.8	17.3	30.0	42.0	41.4
LACK OF SECURITY	11.1	21.3	43.3	23.2	23.2
DISTANCE TO MACHAMBA	20.0	21.8	11.7	22.7	19.7
INSUFFICIENT TIME TO PREPARE MACHAMBA	6.7	7.1	15.0	6.3	6.1
LACK OF LABOUR	2.2	0	1.7	1.0	0
POOR SOILS	0.6	1.5	1.7	0	0
FLOODING	0.6	0	0	1.0	0.5

PROBLEMS ENCOUNTERED	TETE PROVINCE		
	CHID.	MANJE	CHANG.
LACK OF SEEDS	19.2	16.0	10.4
LACK OF HAND TOOLS	7.0	2.3	0
INSUFFICIENT LAND	10.5	19.8	7.8
ILLNESS	61.0	80.2	81.4
LACK OF SECURITY	38.4	10.7	19.0
DISTANCE TO MACHAMBA	24.4	30.5	33.3
INSUFFICIENT TIME TO PREPARE MACHAMBA	19.2	42.0	64.5
LACK OF LABOUR	5.2	16.0	13.0
POOR SOILS	0	0	0.9
FLOODING	0	0.8	0

In Tete Province the most important limiting factor was illness, cited by 74.5% of interviewees. A lack of time to prepare the machamba was cited by 42.0% of respondents in Manje and 64.5% of respondents in Changara. In these cases, many of the beneficiary families returned after the signing of the peace accord in October, leaving little time for land preparation. Other limiting factors were distance from the machamba (29.8%), a lack of security (23.2%) particularly in Chidzomondo and a lack of seeds (14.6%). Surprisingly few people cited a lack of seeds as a limitation.

This implies that, where the farm size was small the quantity of seed supplied in the "Ag-pak" was sufficient and that local seeds were also available to allow the larger farms to be completely planted.

#### 6. Farming Practices Among "Ag-pak" Beneficiaries

Although this survey was designed to determine the acceptability of the "Ag-pak" distributed during the 1992/93 season and the principle limitations to crop production during that season, certain questions addressed the issues of farming practices. Questions focussed on the use of rotation, fallow and intercropping practices within the maize production system, as follows:

- (i) Extent of intercropping in maize

Questions: Do you usually plant maize as a monocrop or do you intercrop it with other crops? Monocrop.. Intercrop.. Both ways..  
What are the other crops which you usually plant with maize?

When asked whether maize was grown as a monocrop or intercropped, only 9.2% of the 1587 respondents claimed to grow maize in monoculture, 84.8% to grow it intercropped with a range of crops and 6.0% to use both systems of maize production. The relative importance of these two cropping systems was similar in all three provinces.

In response to the second question, the interviewees stated all the crops that they plant with maize, regardless of their relative importance. It is therefore not possible to distinguish clearly, which of these crops are principal intercropping species and which are added to vary the diet. However, cowpea was intercropped with maize by 84.1% of all interviewees across the three provinces. In Zambezia and Sofala, pigeon pea and cassava were also intercropped with maize by 47.2% and 43.3% of the respondents respectively and in Gurue sorghum intercropping was apparently important. Other widely grown intercropped species were okra and squash.

(ii) The use of fallow and rotation practices in the maize cropping system

Questions: Do you usually leave your machamba fallow or do you practice a rotation? Fallow .. Rotation .. Continue to plant maize ..  
For how many years do you usually plant maize in your machamba? (No. of years)  
After how many years do you feel that the yields start to go down? (No. of years)  
For interviewees who use a fallow period:  
How long do you leave your land fallow? (No. of years)  
For interviewees who practice rotation:  
Which crop do you plant after maize in the rotation?

When asked whether they introduced a fallow period into their maize cropping system, 10.7% of the 1580 respondents said "yes", with an average of 2.27 years in fallow. However, this practice was most widely used in Nicoadala, being practiced by 26.7% of the respondents in that district, and to a lesser extent by beneficiaries in Gurue (16.5%) and Sena (15.2%). This practice was rarely used in Tete Province.

The use of rotations to improve soil fertility varied depending on the province. In Zambezia and Sofala Provinces, this technique was used by an average of 57.1% of the farmers questioned. However, in Tete Province only 3.9% of farmers used this technique; the majority of the farmers (94.0%) stated that they continuously planted the staple cereal crop, maize or sorghum. Continuous cropping of maize was practiced to varying degrees by farmers in Zambezia and Sofala; being most widely used in the Zambeze Valley, Luabo, Caia and Sena, by 44.1%, 36.6% and 35.9% of farmers respectively. In these areas, a shortage of land results in widespread continuous cropping of maize. Continuous crops of maize were planted for periods of between 1 and 9 years, with an average of 3.51 years across provinces. Yields were considered to decrease after an average of 3.68 years of continuous maize cropping. It is clear that a rotation was generally introduced at the time when the maize yields were becoming prejudiced by continuous cropping.

Of the 617 interviewees who introduced a rotation into their maize cropping system, the majority of the farmers followed the maize with sweet potato (68.0%), cassava (63.2%) and cowpea (61.1%). Sweet potato would usually be planted as a dry season crop, to be followed in the subsequent rainy season by maize or a second starch crop. Cassava is traditionally planted during the dry season and cowpea is a standard intercrop during the dry as well as rainy seasons. Other crops cited were pigeon pea (Nicoadala and Sena), sorghum (Gurue) and sugar bean (Sena).

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## 7. Problems Limiting Production

Question: What were the problems which limited production?

Of the 1611 respondents, 1561 (96.9%) cited one or more problems which limited production in their machambas. The problems cited were poor germination or plant growth, insects, weeds, excess rain, drought, poor soil, theft from the machamba, loss of produce due to birds, rats, or animals, or a lack of labour. **Although losses due to insects was the most important problem in all areas, cited by 79.7% of the respondents, the other problems were specific to the different provinces and districts.** Details of the individual problems cited are given in Table 3.

**TABLE 3: MAJOR PROBLEMS LIMITING PRODUCTION IN THE MACHAMBAS OF THE "AG-PAK" BENEFICIARIES IN EIGHT DISTRIBUTION AREAS OF ZAMBEZIA, SOFALA AND TETE PROVINCES DURING THE 1992/93 SEASON**

PROBLEMS ENCOUNTERED	ZAMBEZIA PROVINCE			SOFALA PROVINCE	
	NICOAD.	LUABO	GURUE	CAIA	SENA
INSECTS	82.2	78.5	70.0	81.3	87.8
WEEDS	4.2	0.4	2.9	2.1	1.3
DROUGHT	80.9	90.2	27.1	58.7	70.3
EXCESS RAIN	2.5	15.2	2.9	21.3	21.8
POOR SOIL	0.8	0	20.0	0	0.4
POOR GERMINATION	3.8	3.9	15.7	1.7	6.6
POOR GROWTH	6.4	10.9	18.6	6.4	4.8
BIRDS	0.4	0.8	48.6	0.4	0.9
ANIMALS	0	0	0	2.6	0.4
ROBBERY	25.8	11.3	1.4	9.4	6.6
RATS	0.4	1.6	0	10.6	10.5
LACK OF LABOUR	0	0	0	0	0

PROBLEMS ENCOUNTERED	TETE PROVINCE		
	CHID.	MANJE	CHANG.
INSECTS	57.1	66.4	95.3
WEEDS	13.1	61.8	63.1
DROUGHT	8.3	14.5	1.3
EXCESS RAIN	15.5	0	1.7
POOR SOIL	28.0	2.3	0.4
POOR GERMINATION	4.8	19.8	2.5
POOR GROWTH	10.1	3.1	0.4
BIRDS	2.4	10.7	0
ANIMALS	20.8	10.7	0
ROBBERY	0.6	4.6	0.8
RATS	0.6	0	0
LACK OF LABOUR	0	0.8	0.8

In Zambezia and Sofala, 81.5% and 72.1% of the interviewees said that yields were severely reduced by insects or drought respectively. Insect attacks were the principle problem in all five distribution areas surveyed. During the 1992/93 season the Zambeze Valley suffered initial heavy rains followed by drought. Consequently, both drought and excess rain were cited as important factors in Caia, Sena and Luabo, affecting both maize and rice. Gurue was less affected by drought as this is a higher rainfall, upland area. Poor germination and plant growth limited yields in Gurue, as a consequence of the poor, mainly acid soils. Robbery significantly reduced production in Nicoadala (25.8%). Farmers in the area blame this on a lack of land and

consequently a lack of food. Birds reduced yield specifically of sorghum, in Gurue (48.6%).

In Tete Province, weeds were the second most frequently mentioned problem, cited by 61.8% of respondents in Manje and 63.1% in Changara. Manje also suffered from drought (14.5%), poor seed germination (19.8%), presumably due to the drought and losses due to birds and animals (10.7%). Chidzolonondo suffered from poor soil (28.0%), excess rain (15.5%) and losses due to animals (20.8%).

**Question:** What are the most important problems which limited maize yield?

As well as supporting the observations stated above, this question also produced more information concerning the major disease and insect problems in maize. Among the insect pests, the edible grasshopper (*Homorocoryphus nitidulus vicius*) and stem borers were cited as important problems by 46.6% and 46.4% of the 1052 respondents in Zambezia and Sofala Provinces. In Tete Province, insect problems were limited to edible grasshopper attacks in Changara, a problem cited by 86.2% of 218 respondents.

**8. The Extent to Which "Ag-pak" Beneficiaries Also Planted Regional Seeds**

(i) Frequency of interviewees who also planted regional seeds and their source

**Questions:** Did you plant seeds of regional varieties? Many.. Few.. None..  
Where did you obtain your regional seeds from? Exchanged..  
Bought.. Saved.. Received from others.. Received from World  
Vision..

In addition to growing seeds of the "Ag-pak", 80.7% of the 559 respondents in Tete Province also grew seeds of regional varieties, in comparison to only 46.3% of the 1052 Zambezia/Sofala respondents. In addition to this significant difference between the provinces, differences were also evident between the distribution areas. The proportion of beneficiaries also growing seed of regional varieties is discussed below and Table 4 shows the sources of the regional seed planted in the different districts.

In Sena and Caia, only 26.6% and 31.7% of the beneficiaries also grew regional seed respectively. During the 1991/92 season, these areas suffered badly from drought and consequently there was presumably a shortage of regional seeds for the 1992/93 planting. Of the interviewees who planted regional seed, only a small proportion of beneficiaries had saved seed, the remainder bought seed or received seed from others (Table 4). In Nicoadala and Luabo, the proportion of beneficiaries planting regional seed was higher at 54.6% and 56.6% respectively. In both these areas, a significant proportion of these seeds were obtained commercially. A particularly large amount of regional seed was planted in Gurue. This area was less affected by the 1991/92 drought and therefore a larger proportion of the farmers saved enough seed to cover their seed requirements for the 1992/93 season. Seeds were also available commercially in Gurue.

TABLE 4: SOURCE OF SEED OF REGIONAL VARIETIES GROWN IN SURVEY DISTRICTS OF ZAMBEZIA, SOFALA AND TETE PROVINCES

LOCATION	EXCHANGED (%)	BOUGHT (%)	SAVED (%)	RECEIVED FROM OTHERS (%)
<b>ZAMBEZIA</b>				
Nicoadala	3.8	42.9	7.9	7.5
Luabo	5.5	35.5	12.5	14.1
Gurue	0	20.3	46.8	12.7
<b>SOFALA</b>				
Sena	0	12.2	5.5	8.9
Caia	0.8	14.6	6.7	13.3
<b>TETE</b>				
Chidzolomondo	4.4	38.3	22.8	7.2
Manje	0	40.6	16.7	16.7
Changara	2.1	25.3	42.3	26.6

In Tete Province, local seeds were apparently more widely available. The proportion of the interviewees who also grew seed of regional varieties was 65.0% in Chidzolomondo, 75.4% in Manje and 89.6% in Changara. These seeds were either saved from the previous season, or were bought from people who had saved seeds.

In this discussion, it has been assumed that when interviewees stated that they "bought" seed, this meant that the seed was purchased for cash rather than exchanged for another item of value. It has also been assumed that where seed was "exchanged" the seed was exchanged for seed or for something else of equivalent value. It is not clear whether these assumptions are correct as the number of people who use the "exchange" process appears to be surprisingly small and the level of commercialization of regional seeds appears to be high. Some interviewees may have felt that they "bought" seed by exchanging it for something else of equivalent value. If this is the case, there may be some overlap in positive responses involving "exchanged" or "bought" and it may explain the fact that surprisingly little exchanging of seeds occurs in the "Ag-pak" distribution areas.

(ii) Which crops were planted with regional seeds and why?

Questions: Which crops did you plant with regional seeds?  
Why did you plant regional seeds?

Regional seed was planted for all principle crops, with maize, rice, cowpea and pigeon pea being most important in Zambezia and Sofala Provinces and maize, sorghum, millet, cowpea and groundnut being most important in Tete. Of the people planting regional varieties, 51.7% stated that they planted these varieties because they were the only ones available at the time. In such cases, they usually began to plant regional varieties before they had received the "Ag-pak" and had also planted regional varieties to fill up land which had been prepared but which they were unable to plant with "Ag-pak" seed because the quantity was insufficient. Other important reasons cited were that regional seed was available because they had saved the seed the previous year (14.0%) and that they traditionally grew such varieties (12.4%).

9. Opinions of the "Ag-pak" Beneficiaries Concerning "Ag-pak" Varieties compared with Regional Seed

Questions: What do you prefer, seeds of the "Ag-pak" or your own regional seeds? "Ag-pak".. Regional.. No preference..  
Did you save seed from the "Ag-pak"? Yes.. No..  
Which seeds did you save from the "Ag-pak"?  
Which maize variety are you growing at this time, during the dry season? (Name)  
Why did you choose this variety?

When asked which the interviewee preferred, the seed of the "Ag-pak" or his local seed, responses were not given for all crops included in the "Ag-pak". In most cases, the interviewee gave an opinion concerning the crops which he/she considered the most important staple crop(s), such as maize in the case of Zambezia and Sofala, and maize and sorghum in the case of Tete, or commercially important crops such as groundnut in Tete. Opinions were not generally given on the other, more minor crops. However, it was felt that the responses obtained were not really representative of the true opinion of the preferences of the "Ag-pak" beneficiaries, as the interviewees tended to say that they preferred the "Ag-pak" in all crops. Therefore, we considered that the fact that people saved seed of a particular "Ag-pak" component/variety and planted it during the 1993 dry season, as in the case of maize, could be considered a more reliable indication of the acceptability of the "Ag-pak" variety.

Summed across the three provinces, 89.8% of the 1611 respondents said that they saved seed from the "Ag-pak". Tables 5 and 6 shows the frequency of interviewees who saved seed of the different "Ag-pak" maize varieties (Matuba, Kalahari, MMV600 and Manica), the proportion who had planted each variety during the 1993 dry season, in comparison to the proportion who planted regional maize, and the reasons given for the choice of the dry season maize variety. Also included are opinions of the sorghum, rice and groundnut "Ag-pak" varieties.

Matuba maize was distributed in Nicoadala, Sena, Caia and Luabo. In these areas, 54.5% of the respondents stated that they had saved seed of Matuba and 52.7% said that they had grown Matuba during the 1993 dry season. In all four locations, the principle reasons given was that it was early and productive (see Table 5). The maturity of Matuba is ideal for the growing conditions in the Zambeze Valley and it would generally be considered to be earlier than the later maturing regional maize. In these distribution areas, the regional maize was only grown by 17.6% of the respondents and the principle reason given was that it was the only variety available. In Caia, Kalahari was also distributed and this variety was saved by only 33.5% of the respondents, compared with the 46.5% who saved seed of Matuba. Kalahari was grown by 31.5% of the respondents during the 1993 dry season, compared with 44.4% who grew Matuba. The predominant reason why the farmers planted Kalahari was that it was the only variety available. Matuba is a hard grained variety and Kalahari is a soft grained variety. When both varieties are available it is understandable why Matuba might be preferred, as it allows early harvest and therefore fills the hunger gap. Its hard grain type also results in better storage due to reduced weevil attack.

TABLE 5: FREQUENCY OF BENEFICIARIES INTERVIEWED IN ZAMBEZIA AND SOFALA PROVINCES WHO SAVED SEED OF THE "AG-PAK" MAIZE, RICE, AND GROUNDNUT VARIETIES. THE FREQUENCY OF PEOPLE WHO PLANTED "AG-PAK" MAIZE DURING THE 1993 DRY SEASON AND THE REASON GIVEN FOR THEIR CHOICE.

LOCATION/ CROP	VARIETY	NO INTER- VIEWEES	% SAVED SEED*	% GROWING IN DRY SEASON*	REASONS STATED FOR PLANTING VARIETY DURING 1993 DRY SEASON (%/NO. RESPONDENTS)**
<u>NICOADALA</u> - MAIZE	MATUBA	240	80.4% (204)	73.8% (221)	EARLY (50.9%/161); AVAILABLE (34.8%/161); PRODUCTIVE (12.4%/161) AVAILABLE (68.6%/35)
	REGIONAL	240	-	16.3% (221)	
	- RICE	ITA-312	240	13.2% (204)	
<u>SENA</u> - MAIZE	MATUBA	237	42.9% (219)	44.8% (221)	EARLY (44.3%/97); AVAILABLE (41.2%/97); PRODUCTIVE (17.5%/97) EARLY (24.0%/25) AVAILABLE (87.5%/24)
	MMV600	237	12.8% (219)	11.3% (221)	
	REGIONAL	237	-	10.9% (221)	
- GROUNDNUT	NATAL COMMON	237	9.6% (219)	-	-
<u>CAIA</u> - MAIZE	MATUBA	240	46.5% (100)	44.4% (216)	EARLY (44.9%/89); PRODUCTIVE (37.1%/89); AVAILABLE (30.3%/89) AVAILABLE (65.1%/63); PRODUCTIVE (12.7%/63) AVAILABLE (92.3%/26)
	KALAHARI	240	33.5% (215)	31.5% (216)	
	REGIONAL	240	-	12.5% (216)	
- GROUNDNUT	NATAL COMMON	240	5.6% (215)	-	-
<u>LUABO</u> - MAIZE	MATUBA	256	49.8% (223)	47.6% (227)	EARLY (59.6%/104); PRODUCTIVE (27.9%/104); AVAILABLE (25.0%/104) EARLY (69.2%/13) AVAILABLE (67.3%/49)
	MMV600	256	7.2% (223)	5.7% (227)	
	REGIONAL	256	-	23.3% (227)	
- GROUNDNUT	NATAL COMMON	256	1.8% (223)	-	-
<u>GURUE</u> - MAIZE	KALAHARI	79	91.8% (61)	82.1% (67)	EARLY (43.1%/51); AVAILABLE (33.3%/51) AVAILABLE (40.7%/27)
	REGIONAL	79	-	41.8% (67)	
	- GROUNDNUT	NATAL COMMON	79	41.0% (61)	

\* Frequency (number of respondents)

\*\* AVAILABLE = only variety available.

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TABLE 6.

FREQUENCY OF BENEFICIARIES INTERVIEWED IN TETE PROVINCE WHO SAVED SEED OF THE "AG-PAX" MAIZE, SORGHUM AND GROUNDNUT VARIETIES. THE FREQUENCY OF PEOPLE WHO PLANTED "AG-PAX" MAIZE DURING THE 1993 DRY SEASON AND THE REASON GIVEN FOR THEIR CHOICE.

LOCATION/ CROP	VARIETY	NO INTER- VIEWEES	% SAVED SEED*	% GROWING IN DRY SEASON*	REASONS STATED FOR PLANTING VARIETY DURING 1993 DRY SEASON (%/NO RESPONDENTS)**
CHANGARA - MAIZE	KALAHARI	127	34.1% (217)	39.2% (189)	EARLY (33.8%/68); PRODUCTIVE (33.8%/68); AVAILABLE (29.4%/68) AVAILABLE (60.2%/128)
	REGIONAL	127	-	67.7% (189)	
	- SORGHUM	215	75.1% (217)	-	
CHIDZOLOMONDO - MAIZE	MANICA	179	57.4% (176)	58.1% (179)	EARLY (68.0%/103); PRODUCTIVE (67.0%/103) PRODUCTIVE (73.9%/69); EARLY (66.7%/69)
	REGIONAL	179	-	39.1% (179)	
MANJE - MAIZE	KALAHARI	137	91.7% (133)	91.2% (137)	EARLY (32.8%/122); PRODUCTIVE (32.0%/122); AVAILABLE (26.2%/122)
	REGIONAL	137	-	67.9% (137)	
- GROUNDNUT	NATAL COMMON	119	19.5% (133)	-	PRODUCTIVE (41.1%/90); EARLY (32.2%/90)

\* Frequency (number of respondents)

\*\* AVAILABLE = only variety available

In areas where Kalahari was the only variety distributed, such as in Gurue, Changara and Manje, seed of Kalahari was saved by 61.3% of the respondents and was planted by 64.6% of the respondents. In comparison, the regional was planted by 63.4% of respondents. In Manje and Changara, both Kalahari and the regional were considered to be early and productive. Kalahari has been distributed in these areas for a number of years as part of the emergency support program. It is probable therefore that the regional variety in these areas is a derivative of Kalahari.

**Manica** was only distributed in Chidzolomondo. In this area, seed of this variety was saved by 57.4% of the respondents and was planted during the 1993 dry season by 58.1% of the respondents. Relative to the regional variety it was considered to be both early and productive, although it would be slightly later to mature than Matuba. The frequency of respondents growing Manica (58.1%) was also higher than the frequency growing the regional (39.1%).

**MMV600** was only distributed in Sena and Caia. **MMV600** is a variety with a growing cycle that would generally be considered to be slightly long for these Zambeze Valley areas and would be more suitable in higher rainfall areas. However, due to an unexpected increase in the number of returnees into these areas, there were insufficient "Ag-paks" available. **MMV600** was planted late in the low lying areas, where water was not limiting therefore and an acceptable yield was obtained. **MMV600** was only saved by 10.0% of the respondents and was grown by only 8.5%. The restricted subsequent use of this variety indicates that it is not ideal for such conditions.

Among the other crops included in the "Ag-pak", Tables 5 and 6 also examine the acceptability of the rice variety, ITA-312, the sorghum varieties WSV 387 and SV2, and the groundnut variety Natal Common. In the case of ITA-312, very few people were able to save seed after the 1992/93 harvest, as rice yields were devastated by grasshopper attacks. The two sorghum varieties WSV 387 and SV2 appeared to be acceptable and were saved by 75.1% of the respondents in Changara, the only area where they were distributed. The groundnut variety Natal Common was distributed in Sena, Caia, Luabo, Gurue and Manje. Seed of this variety was saved by 10.3% of the respondents in these areas. Natal Common tends to mature earlier than the regional variety. Groundnuts are an important cash crop in a number of these areas and therefore it is likely that the majority of the seed was either sold or consumed.

#### 10. Adequacy of the quantity of seed supplied in the "Ag-pak"

Questions: Did you have sufficient seed in the "Ag-pak"?  
What was lacking?

As stated previously, the "Ag-pak" contains sufficient seed to plant one hectare of land. The composition of the different 1992/93 "Ag-paks" is given in Appendix III.

Across the three provinces, 49.3% of the interviewees said that the quantity of seed supplied in the "Ag-pak" was sufficient. However, 50.7% felt that it was not sufficient. In Zambezia and Sofala, the majority (51.5%) of the 1052 interviewees considered the quantity of maize to be inadequate. This opinion was expressed most frequently in Nicosadala (51.1%), Sena (57.3%) and Luabo (62.3%), where local seed supplies may have been limited and replanting an early drought following the initial rains meant that excess seeds were needed to allow replanting. In Tete, the quantity of maize supplied was considered insufficient by 86.4% and 96.1% of the interviewees in Chidzolomondo and Manje respectively. Both these districts are important maize growing areas and the average size of the machambas is approximately 2 hectares, suggesting that seeds from other sources would have been necessary to plant an average machamba in these areas. In Changara, only 36.8% of the respondents considered that the quantity of maize distributed was limiting.

Changara is a major sorghum and millet growing area and therefore the beneficiaries were more concerned with the quantity of seed supplied for these crops. Here, sorghum and millet supplies were considered to be inadequate by

53.3% and 47.4% of the interviewees respectively. In these areas, larger seed supplies are needed to allow sequential planting of sorghum and millet, a technique which is practiced to cope with the limited and irregular rains and to ensure success. In Tete, 55.7% of the interviewees from all three districts felt that the quantity of groundnut seeds in the "Ag-pak" should be increased. Groundnut is an important commercial crop in Tete and seeds of regional varieties are not widely available.

**11. Estimated Yields of "Ag-pak" Beneficiaries**

Questions: How many 50 kg sacks (of grain) did you produce?  
 The harvest will supply your family with food for how long?  
 3 months of less.. 4 to 6 months.. 7 to 9 months.. 10 to 12 months.. more than one year..  
 Do you have a silo? Yes.. No..  
 How many silos do you have? (No.)  
 Are they full? Yes.. No..

It was very difficult to obtain reliable data from these questions. In many cases, particularly in Nicoadala, it was clear that the interviewees were reluctant to give details of their yields, presumably because they felt it would prejudice their chances of receiving further seeds and food assistance. The yield estimates obtained by this survey were clearly underestimates.

In Zambezia/Sofala, the principle crops are maize and rice. The average stated yields of maize per family in Zambezia Province were 36 kg in Nicoadala, 56 kg in Sena, 88 kg in Luabo, 119 kg in Gurue and 156 kg in Caia, with an provincial average yield of 87 kg. The relative yields between locations is probably accurate. The more reliable rains in Gurue and the larger average farm size in Caia would be expected to give higher relative yields compared to those in Nicoadala, Sena and Luabo, where irregular rains and smaller farm size reduced yields. The stated average rice yield was 6 kg. Again this is an underestimate, although these areas did suffer very badly from grasshopper attacks which devastated yields.

In Tete, the principle crops are maize, sorghum and millet. The average maize yields per family were 520 kg, with yields of 622 kg in Chidzolomondo, 1064 kg in Manje and 135 kg in Changara. These yield estimates appear to be more realistic. Low yields would be expected in Changara, due to low rainfall. In comparison, the relative productivity of Chidzolomondo and Manje, together with the larger average farm size, would be expected to give higher average yields in these areas. Average sorghum yields in Manje and Changara were 108 kg and 162 kg respectively. Average millet yields were 66 kg in Manje and 116 kg in Changara.

The number of silos per family ranged from 0 to 9 with an average of 1.29. Only 25% of interviewees admitted that these silos were full.

Table 7 shows, for each district, the proportion of interviewees who felt that their food supplies would last 0 to 3 months, 4 to 6 months, 7 to 9 months, 10 to 12 months or more than one year. It is clear that the yields in Zambezia and Sofala Provinces were generally low and averaged across the five distribution areas, 80.2% of the interviewees considered that their food supplies would not last more than 3 months. Food supplies were particularly poor in Nicoadala and slightly higher in Caia and Gurue. Food security was apparently better in Tete Province, where over 50% of respondents felt that their food supplies would last at least 6 months and 25% felt that it would be sufficient for up to one year.

TABLE 7: ESTIMATED FOOD SECURITY OF "AG-PAK" BENEFICIARIES IN ZAMBEZIA AND TETE PROVINCE AT THE END OF THE 1992/93 CROPPING SYSTEM.

LOCATION	0-3 MONTHS	4-6 MONTHS	7-9 MONTHS	10-12 MONTHS	MORE THAN ONE YEAR
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<b>ZAMBEZIA PROVINCE</b>					
NICOADALA	91.0%	6.4%	1.7%	0.4%	0.4%
LUABO	78.3%	17.7%	3.1%	0.8%	0%
GURUE	63.6%	22.1%	13.0%	1.3%	0%
<b>SOPALA PROVINCE</b>					
SENA	88.6%	9.3%	1.7%	0%	0.4%
CAIA	68.8%	21.3%	7.1%	2.1%	0.8%
ACROSS 5 LOCATIONS	80.2%	14.4%	4.1%	0.9%	0.4%
<b>TETE PROVINCE</b>					
CHIDZOLOMONDO	36.1%	20.6%	15.0%	20.0%	8.3%
MANJE	27.5%	13.8%	18.1%	29.7%	10.9%
CHANGARA	21.3%	30.0%	20.4%	25.4%	2.9%
ACROSS 3 LOCATIONS	27.6%	22.9%	18.1%	24.7%	6.6%

## 12. Principle Uses of Products from the Family Farm

Questions: What is the final destination of the products from your farm?  
Consumption.. Sale..  
Where do you sell your products? To friends.. In the local market.. In the city market..

Of the 1611 interviewees, 99.8% stated that they consumed the products from their farms. Very little of the products from the family farm is apparently sold. Only 93 interviewees (5.8%) admitted that they also sold products from the farm. The crops which were commercialized were maize, rice, sorghum, groundnut and cowpea. The types of markets used to commercialize these products are given in Table 8. Data is based on numbers of people selling in a particular market. As some interviewees sold produce at more than one location and most interviewees did not sell all crops, the totals do not add up to the total number of respondents (92).

Commercialization is most common for maize and rice. In most crops, products were sold either to friends or in the local market, with the exception of maize, where a significant number of people also sold their produce in the city market.

TABLE 8: THE NUMBERS OF INTERVIEWEES SELLING THEIR PRODUCE TO FRIENDS, IN THE LOCAL MARKET OR IN THE CITY MARKET, AVEPAGED ACROSS ZAMBEZIA, SOPALA AND TETE PROVINCES.

PRODUCT	SELL TO FRIENDS	SELL IN THE LOCAL MARKET	SELL IN THE CITY MARKET
MAIZE	36	60	16
RICE	21	22	2
SORGHUM	3	5	0
GROUNDNUT	5	10	0
COWPEA	8	16	0

Questions: Do you exchange products from your farm for other products? Yes.. No..  
Do you use products to pay workers? Yes.. No..  
Do you receive products in payment for work done on other people's farm? Yes.. No..

Not all interviewees answered all these questions. However, there was no real

difference in the responses given in the different provinces. Summed over all three provinces, 216 (13.4%) of the 1608 respondents said that they exchanged products for other products. This is not surprising because in these war- and drought-affected areas, the cash economy is limited. The use of products to pay workers was cited by 139 (8.7%) of the 1604 respondents. As the "Ag-pak" distribution is targeted to family sector farmers who, for reasons out of their control, are unable to be self-sufficient, it is no surprising that very few "Ag-pak" beneficiaries will be employing other people to work on their farms. It is not surprising therefore that 41.8% (671) of the 1606 respondents admitted to receiving products in payment for work that they do on other peoples farms. This would be an important supplementary form of income or food supply.

### 13. Grain Type Preferences in Maize

Questions: Do you normally pound maize or do you take it to the mill?  
Pound.. Mill.. Both..  
Do you prefer hard grained maize or soft grained maize? Hard grain.. Soft grain.. No difference..  
Why do you prefer hard grain/soft grain?

Averaged across of the three provinces, 44.8% of the 1597 respondents usually pounded maize to produce flour, only 8.4% took the maize to the local mill and 46.8% said that they used both methods of flour preparation. Of these interviewees, 57.2% preferred hard grained types, 35.4% preferred soft grained types and 7.4% had no opinion on the issue. The principle reasons cited for a preference of hard grained maize was that such varieties were easier to pound (78.3%) and that they produced more flour (42.2%), less of the endosperm being lost with the bran during the pounding process. In addition, 36.5% said that hard grain varieties stored better, as they were less susceptible to weevil attack. Interviewees who preferred soft grain types, did so because such varieties were easy to pound (78.3%).

### LIMITATIONS TO THE QUESTIONS INCLUDED IN THE SURVEY

The following questions were considered to be poorly developed and therefore did not successfully address the issue:

Question: What do you prefer, seeds of the "Ag-pak" or your own regional seeds? "Ag-pak".. Regional.. No preference..  
This was considered to be a leading question and the interviewee appeared to be under pressure to support the "Ag-pak".

Question: How many 50 kg sacks (of grain) did you produce?  
Many of the interviewees either refused to acknowledge the fact that they were able to harvest anything from their farms or they gave underestimates of the yields obtained. It was felt that this was probably because these beneficiaries were concerned about losing the opportunity of receiving seed the following year if they admitted to a reasonable harvest. To a lesser extent, the same problem occurred when asked whether they had saved seed from the "Ag-pak". A number of people denied saving seed, but when asked what maize they had planted during the 1993 dry season, they were growing seed of the "Ag-pak" variety.

Question: For how many years do you usually plant maize in your machamba?  
There was a certain amount of confusion involved in this question. The intention was to find out for how many years the farmer grows maize on one particular piece of land. However, to the farmer, the machamba may include various pieces of land and consequently he always grows maize on the machamba, although he may rotate on plots within the machamba.

Questions: Did you have sufficient seed in the "Ag-pak"?  
What was lacking?  
The question "What was lacking" was open to misinterpretation. The intention

was to determine whether there were any crops for which the quantity of seed distributed was insufficient. In some cases one might assume that there would be some crops which were not included which were of interest to the farmer. However, in a number of cases, the farmer just listed off the crops which he did not receive.

Questions: If you had local seed, would you exchange 10 kg of the regional variety of maize for 10 kg of the "Ag-pak" variety? Yes.. No..  
If you had local seed, would you exchange 10 kg of the regional variety of sorghum for 10 kg of the "Ag-pak" variety? Yes.. No..

This question was not understood by the majority of the interviewees. The problem was that many of the interviewees did not have seed of the regional variety and they considered that they were therefore not able to exchange this seed for seed of the "Ag-pak" variety. The hypothetical nature of the question was confusing and, even with explanation, it was not possible to obtain a reliable response.

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APPENDIX IA

PROVINCIAL DEPARTMENT OF AGRICULTURE / WORLD VISION

SURVEY OF "AG-PAK" BENEFICIARIES 1992/93

DID YOU RECEIVE ~~THE~~ "AG-PAK" FROM WORLD VISION? If "Yes", continue with the survey.

Ref: \_\_\_\_\_  
Name of Interviewer: \_\_\_\_\_  
District: \_\_\_\_\_ Locality: \_\_\_\_\_  
Name of Interviewee: \_\_\_\_\_  
Where is your family from originally? \_\_\_\_\_  
What year did you arrive (year): 19\_\_\_\_  
When do you plan to leave (month/year): \_\_\_\_\_/19\_\_\_\_

1. Number of people in the family (No.): Adults \_\_\_\_ Children \_\_\_\_
2. How many people work on your farm(s)? (No.):  
Women \_\_\_\_ Men \_\_\_\_ Children \_\_\_\_
3. How many machambas do you have? (No.): \_\_\_\_
4. When did you open your farm? (year): 19\_\_\_\_
5. How much land did you cultivate last season (1992/93) (m2 or hectares of each machamba)?: \_\_\_\_
6. Do you plan to increase the size of your machamba?:  
Yes \_\_\_\_ No \_\_\_\_
7. What are the problems which limited the area which you cultivated?:  
(Initially ask the question without giving any options to see whether there are any problems not included in the list; and then ask specifically about the other options on the list)  
  
No problems: \_\_\_\_\_  
Lack of seeds: \_\_\_\_\_ Lack of time: \_\_\_\_\_  
Distance from machamba: \_\_\_\_\_ Illness: \_\_\_\_\_  
Lack of security: \_\_\_\_\_ Lack of hand tools: \_\_\_\_\_  
Lack of land: \_\_\_\_\_ Others: \_\_\_\_\_
8. Did you plant seeds of regional varieties?:  
1.Many \_\_\_\_ 2.Few \_\_\_\_ 3.None \_\_\_\_ (If No, see 11)
9. Which crops did you plant with regional seeds?:  
(multiple answers possible; register all)  
Milho: \_\_\_\_\_ Rice: \_\_\_\_\_  
Sorghum: \_\_\_\_\_ Millet: \_\_\_\_\_  
Cowpea: \_\_\_\_\_ Sugar bean: \_\_\_\_\_  
Pigeon pea: \_\_\_\_\_ Groundnut: \_\_\_\_\_  
Other: \_\_\_\_\_
10. Why did you plant regional seeds?:  
(multiple answers possible; register all)  
Resistance to pests/diseases: \_\_\_\_\_ Only ones available \_\_\_\_\_  
Resistance to drought: \_\_\_\_\_  
Resistance to poor soils: \_\_\_\_\_  
Have a good taste: \_\_\_\_\_  
Conserve well: \_\_\_\_\_  
High yield: \_\_\_\_\_  
Other: \_\_\_\_\_

11. Where did you obtain your regional seeds from?:  
(multiple answers possible; register all)
- Exchanged: \_\_\_\_\_ Bought: \_\_\_\_\_  
 Saved: \_\_\_\_\_ Received from others: \_\_\_\_\_  
 Received from World Vision: \_\_\_\_\_
12. Which crops did you receive in the "Ag-pak"?:  
(multiple answers possible; register all)
- Maize: \_\_\_\_\_ Rice: \_\_\_\_\_  
 Sorghum: \_\_\_\_\_ Millet: \_\_\_\_\_  
 Cowpea: \_\_\_\_\_ Pigeon pea: \_\_\_\_\_  
 Groundnut: \_\_\_\_\_
13. What do you prefer, seeds of the "Ag-pak" or your own regional seeds? (For the crops of the "Ag-pak" only):

	"Ag-pak"	Regional	No preference
Maize:	_____	_____	_____
Rice:	_____	_____	_____
Sorghum:	_____	_____	_____
Millet:	_____	_____	_____
Cowpea:	_____	_____	_____
Pigeon pea:	_____	_____	_____
Groundnut:	_____	_____	_____

14. Did you have sufficient seed in the "Ag-pak"?: Yes \_\_\_\_\_ No \_\_\_\_\_  
(If yes, see 16)

15. What was lacking?: (multiple answers possible; register all)

Maize:	_____	Rice:	_____
Millet:	_____	Sorghum:	_____
Cowpea:	_____	Sugar bean:	_____
Pigeon pea:	_____	Groundnut:	_____

16. Did you save seed of the "Ag-pak"?:  
 Yes \_\_\_\_\_ No \_\_\_\_\_ There was no harvest \_\_\_\_\_  
 (If No/There was no harvest, see 19)

17. Which seeds did you save from the "Ag-pak"?:  
(multiple answers possible; register all)

Maize, Kalahari:	_____	Maize, Matuba:	_____
Maize, MMV 600:	_____	Maize, Manica:	_____
Rice:	_____	Sorghum:	_____
Millet:	_____	Cowpea:	_____
Pigeon pea:	_____	Groundnut:	_____

18. Why did you save seed of this variety?:  
(multiple answers possible; register all)

Liked the yield: \_\_\_\_\_ Like the earliness: \_\_\_\_\_  
 Has a good taste: \_\_\_\_\_ Only one I had: \_\_\_\_\_  
 Other: \_\_\_\_\_

19. If you had local seed, would you exchange 10 kg of local seed of maize for 10 kg of the "Ag-pak" variety?:  
 Yes \_\_\_\_\_ No \_\_\_\_\_

20. If you had local seed, would you exchange 10 kg of local seed of sorghum for 10 kg of the "Ag-pak" variety?:  
 Yes \_\_\_\_\_ No \_\_\_\_\_

21. What were the problems which limited production?:  
(multiple answers possible; register all)

Insects/diseases:	_____	Weeds:	_____
Poor growth:	_____	Poor germination:	_____
Excess rain/flooding:	_____	Drought:	_____
Robbery:	_____	Birds:	_____
Poor soil:	_____	Other:	_____
No problems:	_____		

22. What is the final destination of the products of your farm?:  
 (multiple answers possible; register all)  
 Consumption \_\_\_\_\_ Sale \_\_\_\_\_ (If they do not sell, see 24)

23. Where do you sell your produce?: (multiple answers possible; register all)

	To friends	In local market	In city market
Maize	_____	_____	_____
Rice	_____	_____	_____
Sorghum/	_____	_____	_____
Millet	_____	_____	_____
Groundnut	_____	_____	_____
Cowpea	_____	_____	_____

24. Do you exchange products from your farm for other products?:  
 Yes \_\_\_\_\_ No \_\_\_\_\_

25. Do you use products to pay workers?: Yes \_\_\_\_\_ No \_\_\_\_\_

26. Do you receive produce in payment for work done on other people's farm?: Yes \_\_\_\_\_ No \_\_\_\_\_

27. Do you have sufficient seeds for next season?:  
 Sim \_\_\_\_\_ Não \_\_\_\_\_

28. Do you have a silo?: Yes \_\_\_\_\_ No \_\_\_\_\_ (If No, see 31)

29. How many silos do you have? (Try to obtain a number): \_\_\_\_\_

30. Are they full? (Try to obtain an answer): Yes \_\_\_\_\_ No \_\_\_\_\_

31. How many 50 kg sacks (of grain) did you produce?:  
 (multiple answers possible; register all)

There was no harvest: \_\_\_\_\_

Maize: _____	Sorghum: _____
Millet: _____	Cowpea: _____
Groundnut: _____	Rice: _____

(Indicate here if you think the answer was: True \_\_\_\_\_/False \_\_\_\_\_)

32. The harvest will supply your family with food for how long?:

3 months or less _____	4 to 6 months _____
7 to 9 months _____	10 to 12 months _____
more than 1 year _____	No harvest _____

**INQUERITO SOBRE ATITUDES EM RELACAO A CULTURA DE MILHO**

33. Do you usually plant maize as a monocrop or do you intercrop it with other crops?:

Monocrop \_\_\_\_\_ Intercrop \_\_\_\_\_ Both ways \_\_\_\_\_

34. What are the other crops which you usually plant with maize?:  
 (multiple answers possible; register all)

Cowpea: _____	Sugar bean: _____
Sorghum: _____	Millet: _____
Squash: _____	Okra: _____
Pigeon pea: _____	Cassava: _____
Groundnut: _____	Other: _____

35. Which maize variety are you growing at this time, during the dry season?:

(If you do not know the name of the variety, make a note of whether it is from the "Ag-pak" or a regional variety)  
 Name: \_\_\_\_\_

36. Why did you choose this variety?:  
 Reason: \_\_\_\_\_

37. Does this variety also have any problems?:

Yes \_\_\_\_\_ No \_\_\_\_\_ (If No, see 39)

38. Which problems does this variety have?:  
 Problems: \_\_\_\_\_
39. Do you usually leave your machamba fallow or do you practice a rotation?:  
 Fallow \_\_\_\_\_ Rotation \_\_\_\_\_ Continue to plant maize \_\_\_\_\_
40. For how many years do you usually plant maize in your machamba?: (No. of years) \_\_\_\_\_
41. After how many years do you feel that the yields start to go down?: (No. of years) \_\_\_\_\_
- (For interviewees who use a fallow period, ask the following question):  
 42. How long do you leave your land fallow?: No. of years \_\_\_\_\_
- (For interviewees who practice rotation, ask the following question):  
 43. Which crop do you plant after maize in the rotation?:  
 Sorghum: \_\_\_\_\_ Millet: \_\_\_\_\_ Pigeon pea: \_\_\_\_\_  
 Cowpea: \_\_\_\_\_ Sweet potato: \_\_\_\_\_ Cassava: \_\_\_\_\_  
 Groundnut: \_\_\_\_\_ Sugar bean: \_\_\_\_\_
44. What are the most important problems which limited maize yield?:  
 (multiple answers possible; register all)
- |                       |                     |
|-----------------------|---------------------|
| Poor soil: _____      | Drought: _____      |
| Grasshoppers: _____   | Stem borer: _____   |
| Maize streak: _____   | _____               |
| Diseases: _____       | Weeds: _____        |
| Lack of labour: _____ | Lack of land: _____ |
| Other: _____          | _____               |
45. Do you normally pound maize or do you take it to the mill?: Pound \_\_\_\_\_ Take to the mill \_\_\_\_\_ Both \_\_\_\_\_
46. Do you prefer hard grained maize or soft grained maize?:  
 Hard grain \_\_\_\_\_ Soft grain \_\_\_\_\_
47. Why do you prefer hard grain/soft grain?:  
 Reason: \_\_\_\_\_

BEST AVAILABLE DOCUMENT

APPENDIX IB

**DIRECCAO PROVINCIAL DE AGRICULTURA / VISAO MUNDIAL**

**LEVANTAMENTO DA CAMPANHA 1992/93**

**DOS BENEFICIARIOS DAS EMBALAGENS AGRICOLAS**

RECEBIU SEMENTES DA V. M.? SE SIM, CONTINUA COM O INQUERITO.

**Ref:**

Nome do Pesquisador: \_\_\_\_\_

Distrito: \_\_\_\_\_ Localidade: \_\_\_\_\_

Nome do Entrevistado: \_\_\_\_\_

A família é natural de: \_\_\_\_\_

Data de chegada (ano): 19 \_\_\_\_\_

Data de partida prevista (mes/ano): \_\_\_\_\_/19 \_\_\_\_\_

- 
1. Numero de pessoas na família (No.): Adultos \_\_\_\_ Crianças \_\_\_\_
  2. Quantas pessoas trabalham nas suas machambas? (No.):  
Mulheres \_\_\_\_ Homens \_\_\_\_ Crianças \_\_\_\_
  3. Quantas machambas tem? (No.): \_\_\_\_
  4. Quando é que abriu a sua machamba? (ano): 19 \_\_\_\_
  5. Qual é a area que cultivou na campanha passada  
(m2 ou hectares de cada machamba?): \_\_\_\_
  6. Vai aumentar a area das suas machambas?: Sim \_\_\_\_ Não \_\_\_\_
  7. Quais são os problemas que limitaram a area que cultivou?:  
(Inicialmente, faça a pergunta sem dar algumas opções, para ver se há um problema não incluso nesta lista; depois pergunta especificamente sobre as outras opções)  
  
Nao havia problemas: \_\_\_\_\_  
Falta de sementes: \_\_\_\_\_ Falta de tempo: \_\_\_\_\_  
Distancia até a machamba: \_\_\_\_\_ Doença: \_\_\_\_\_  
Falta de segurança: \_\_\_\_\_ Falta de instrumentos: \_\_\_\_\_  
Falta de terra: \_\_\_\_\_ Outro: \_\_\_\_\_
  8. Plantou algumas sementes locais?:  
1. Muito \_\_\_\_ 2. Pouco \_\_\_\_ 3. Não \_\_\_\_ (Se Não, ver 11)
  9. Quais culturas plantou com sementes locais?:  
(respostas multiplas possiveis; registre todas)  
Milho: \_\_\_\_\_ Arroz: \_\_\_\_\_  
Mapira: \_\_\_\_\_ Mexoeira: \_\_\_\_\_  
Feijão nhemba: \_\_\_\_\_ Feijão manteiga: \_\_\_\_\_  
Feijão boer: \_\_\_\_\_ Amendoim: \_\_\_\_\_  
Outro: \_\_\_\_\_
  10. Porque plantou as sementes locais?:  
(respostas multiplas possiveis; registre todas)  
Resistência a pragas: \_\_\_\_\_ Unicas disponiveis \_\_\_\_  
Resistência a seca: \_\_\_\_\_  
Resistência a solos fracos: \_\_\_\_\_  
Têm bom sabor: \_\_\_\_\_  
Pode-se guardar sem problemas: \_\_\_\_\_  
Alto rendimento: \_\_\_\_\_  
Outro: \_\_\_\_\_

11. Onde é que conseguiu as sementes esta ultima campanha?:  
(respostas multiplas possiveis; registre todas)

Trocou: \_\_\_\_\_ Comprou: \_\_\_\_\_  
Guardou: \_\_\_\_\_ Recebeu de outros: \_\_\_\_\_  
Recebeu de Visão Mundial: \_\_\_\_\_

12. Quais são as culturas que recebeu na embalagem?:  
(respostas multiplas possiveis; registre todas)

Milho: \_\_\_\_\_ Arroz: \_\_\_\_\_  
Mapira: \_\_\_\_\_ Mexoeira: \_\_\_\_\_  
Feijão nhemba: \_\_\_\_\_ Feijão boer: \_\_\_\_\_  
Amendoim: \_\_\_\_\_

13. O que você prefere, sementes da embalagem ou a sua propria semente local? (Para as culturas da embalagem só!):

	"Ag-pak"	Local	Não há diferença
Milho:	_____	_____	_____
Arroz:	_____	_____	_____
Mapira:	_____	_____	_____
Mexoeira:	_____	_____	_____
Feijão nhemba:	_____	_____	_____
Feijão boer:	_____	_____	_____
Amendoim:	_____	_____	_____

14. Tinha sementes suficiente na embalagem?: Sim \_\_\_\_\_ Não \_\_\_\_\_  
(Se Sim, ver 16)

15. O que faltou?: (respostas multiplas possiveis; registre todas)

Milho:	_____	Arroz:	_____
Mexoeira:	_____	Mapira:	_____
Feijão nhemba:	_____	Feijão manteiga:	_____
Feijão boer:	_____	Amendoim:	_____

16. Guardou sementes da embalagem depois da época chuvosa?:

Sim \_\_\_\_\_ Não \_\_\_\_\_ Não havia rendimento \_\_\_\_\_  
(Se Não/Não havia rendimento, ver 19)

17. Quais sementes guardou da embalagem?:  
(respostas multiplas possiveis; registre todas)

Milho, Kalahari:	_____	Milho, Matuba:	_____
Milho, MMV 600:	_____	Milho, Manica:	_____
Arroz:	_____	Mapira:	_____
Mexoeira:	_____	Feijão nhemba:	_____
Feijão boer:	_____	Amendoim:	_____

18. Porque é que guardou sementes destas variedades?:  
(respostas multiplas possiveis; registre todas)

Gostou do rendimento: \_\_\_\_\_ Gostou da precosidade: \_\_\_\_\_  
Têm bom sabor: \_\_\_\_\_ Unica que tinha: \_\_\_\_\_  
Outra: \_\_\_\_\_

19. Se voce tivesse sementes locais, trocaria 10 kg de sementes locais de milho por 10 kg da variedade da embalagem?:

Sim \_\_\_\_\_ Não \_\_\_\_\_

20. Se voce tivesse sementes locais, trocaria 10 kg de sementes locais de mapira por 10 kg da variedade da embalagem?:

Sim \_\_\_\_\_ Não \_\_\_\_\_

21. Quais foram os problemas que limitaram a produção?:  
(respostas multiplas possiveis; registre todas)

Ataque de insectos/doenças:	_____	Falta de sacha:	_____
Fraco crescimento:	_____	Semente não nasceu:	_____
Excesso de chuva/enchente:	_____	Seca:	_____ Roubo: _____
Solo pobre:	_____	Passaros:	_____
Não havia problemas:	_____	Outra:	_____

22. Qual é o destino dos produtos da sua machamba?:  
(respostas multiplas possiveis; registre todas)  
Consumo \_\_\_\_\_ Venda \_\_\_\_\_ (Se não inclui Venda, ver 24)

23. Onde é que vende o/a: (respostas multiplas possiveis; registre todas)

	Ao amigos	No mercado local	No mercado na cidade
Milho	_____	_____	_____
Arroz	_____	_____	_____
Mapira/	_____	_____	_____
Mexoeira	_____	_____	_____
Amendoim	_____	_____	_____
Feijão	_____	_____	_____

24. Troca os produtos da machamba por outros produtos?:  
Sim \_\_\_\_\_ Não \_\_\_\_\_

25. Usa os produtos para pagar trabalhadores?: Sim \_\_\_\_\_ Não \_\_\_\_\_

26. Recebe produtos em pagamento por trabalhos feitos nas machambas dos outros?: Sim \_\_\_\_\_ Não \_\_\_\_\_

27. Tem sementes suficientes para a proxima campanha?:  
Sim \_\_\_\_\_ Não \_\_\_\_\_

28. Tem celeiro?: Sim \_\_\_\_\_ Não \_\_\_\_\_ (Se Não, ver 31)

29. Quantos celeiros tem? (Tentar conseguir um numero): \_\_\_\_\_

30. Estão cheios? (Tentar conseguir uma resposta): Sim \_\_\_\_\_ Não \_\_\_\_\_

31. Quantos sacos de 50 kg (em grão) produziu de? (N° sacos/kg):  
(respostas multiplas possiveis; registre todas)

Não havia rendimento:	_____		
Milho:	_____	Mapira:	_____
Mexoeira:	_____	Feijão:	_____
Amendoim:	_____	Arroz:	_____

(Indique aqui se a resposta pareceu: Verdade \_\_\_\_\_/Falso \_\_\_\_\_)

32. A colheita vai abastecer a sua família durante quanto tempo?:

3 meses ou menos	_____	4 a 6 meses	_____
7 a 9 meses	_____	10 a 12 meses	_____
mais de 1 ano	_____	Não havia colheita	_____

### INQUERITO SOBRE ATITUDES EM RELACAO A CULTURA DE MILHO

33. Costuma cultivar milho sozinho ou em consorciação com outras culturas?:

Sozinho \_\_\_\_\_ Em consorciação \_\_\_\_\_ Ambas maneiras \_\_\_\_\_

34. Quais são as outras culturas que costuma por com milho?:  
(respostas multiplas possiveis; registre todas)

Feijão nhemba:	_____	Feijão manteiga:	_____
Mapira:	_____	Mexoeira:	_____
Abóbora:	_____	Quiabo:	_____
Feijão boer:	_____	Mandioca:	_____
Amendoim:	_____	Outra:	_____

35. Qual é a variedade de milho que está a utilizar neste momento?:  
(Se não souber o nome da variedade, escreve se é do embalagem ou uma variedade local)  
Nome: \_\_\_\_\_
36. Porque é que escolheu esta variedade?:  
Razão: \_\_\_\_\_
37. Será que esta variedade também tem alguns problemas?:  
Sim \_\_\_\_\_ Não \_\_\_\_\_ (Se Não, ver 39)
38. Quais são os problemas que esta variedade tem?:  
Problemas: \_\_\_\_\_
39. Você costuma deixar a machamba em pousio ou faz uma rotação?:  
Pousio \_\_\_\_\_ Rotacao \_\_\_\_\_ Continua plantar o milho \_\_\_\_\_
40. Quantos anos costuma pôr milho numa machamba?: N° de anos \_\_\_\_\_
41. Depois de quantos anos de produção é que você sente a produção baixar?: N° de anos \_\_\_\_\_  
(Se deixa a machamba em pousio, faça esta pergunta):
42. Durante quanto tempo você deixa a machamba em pousio?:  
N° de anos \_\_\_\_\_
- (Se faz rotação, faça esta pergunta):
43. Qual é a cultura que planta a seguir o milho na rotação?:  
Mapira: \_\_\_\_\_ Mexoeira: \_\_\_\_\_ Feijao boer: \_\_\_\_\_  
Feijao nhemba: \_\_\_\_\_ Batata Doce: \_\_\_\_\_ Mandioca: \_\_\_\_\_  
Amendoim: \_\_\_\_\_ Feijao manteiga: \_\_\_\_\_
44. Qual é o problema maior que você tem para conseguir uma boa produção de milho?:  
(respostas multiplas possiveis; registre todas)
- Pobreza do solo: \_\_\_\_\_ Seca: \_\_\_\_\_  
Gafanhotos: \_\_\_\_\_ Broca: \_\_\_\_\_  
Listrado: \_\_\_\_\_  
Doenças: \_\_\_\_\_ Ervas daninhas (a sachá): \_\_\_\_\_  
Mão ue obra: \_\_\_\_\_ Falta de terra: \_\_\_\_\_  
Outra: \_\_\_\_\_
45. Normalmente, você costuma pilar o milho em casa ou leva para a moagem?: Pilar em casa \_\_\_\_\_ Leva para a moagem \_\_\_\_\_ Ambos \_\_\_\_\_
46. Você prefere milho de grão duro ou de grão mole?:  
Grão duro \_\_\_\_\_ Grão mole \_\_\_\_\_
47. Porque prefere graos duros/graos moles?:  
Razão: \_\_\_\_\_

DISTRIBUTION OF "AG-PAKS" FOR THE 1982/83 SEASON - TYPE BASE - FINALIZED FEBRUARY 1983.

Type of Ag-Pak and Site for Distribution	Number of Ag-Paks	mt	No. of Hoes	No. of Machetes	Tools Overall Total mt	Overall Total mt	Mode of Transport
<b>TYPE GIE LOW</b>							
Tsangano (Mtengobalame)	1388	13.88			13.88	13.88	Truck via Malawi
Tete City Madue	1269	5.90			5.90	5.90	Truck
<b>TYPE GIE MAMIDA</b>							
Angonia (Domwe/Msaladzi)	4849	91.11			91.11	91.11	Byroad (Domwe)
Tsangano (Mtengobalame)	1860	42.83			42.83	42.83	Truck via Malawi
Boatize	1687	35.01			35.01	35.01	Truck
Bulima	4420	145.12			145.12	145.12	Truck
Milange-SAMBESHA	2470	58.04			58.04	58.04	Truck via Malawi
Changara Barara/Chirodzi	2852	41.67			41.67	41.67	Truck
Mwaladzi Chiuta	800	15.02	600	600	1.20	16.22	Truck
-----							
Tools are UNICEF	Total	19987	439.70	0.00	0.00	0.00	440.90
<b>TYPE UPLAND GIE UNICEF</b>							
Chifunde (Cassacatiza)	1296	19.44	100	100	0.20	19.64	Airlift
Angonia	5615	84.23	3254	2495	5.98	90.21	Truck via Malawi
Tsangano	688	9.00			0.00	9.00	Truck via Malawi
Boatize	2868	42.98	706	420	1.21	44.11	Truck
Matarara	585	0.78			0.00	0.78	Truck via Malawi
-----							
Total	18956	164.35	4060	3015	7.39	171.73	
<b>TYPE UPLAND</b>							
Macanga (Chidzolonondo) *	494	7.67	600	1000	1.48	9.15	Airlift from Estima
Macanga (Purancango)	500	7.77	400	200	0.66	8.43	Airlift from Estima
-----							
* UNICEF	Total	994	15.44	1000	1200	2.14	17.58
600 Hoes/Machetes							
<b>TYPE CENTRAL</b>							
Chiuta (Caunda)	1750	24.55	200		0.26	24.81	Convoy
Carola	1000	14.83	800	400	1.32	15.35	Airlift from Estima
Chifunde	600	2	600	220	0.93	9.35	Airlift from Estima
Pingoe	950	13.33	450		0.59	13.91	Airlift from Estima
Chipera	900	11.22	800		1.04	12.26	Airlift from Estima
Nanje	3100	43.49	300	100	0.46	43.95	Convoy
Boatize (Cambulatsini)	300	4.21				4.21	Truck
-----							
Total	8500	119.26	3150	720	4.60	123.85	
<b>TYPE CENTRAL/SEMI-ARID</b>							
Cabora Bassa	2800	35.06	750		0.98	36.04	Truck
Boatize	2848	35.96			0.00	35.96	Truck
Changara (Mazoe/Marara)	2443	42.83	1724		2.24	45.07	Truck
Mago (sede)	1080	17.53	600		0.78	18.31	Truck via Zimbabwe
Mago (Mucumbura)	1400	24.54	500		0.65	25.19	Truck via Zimbabwe
Junbo	1000	17.53	100		0.13	17.66	Truck via Zimbabwe
-----							
Total	9891	173.39	3674	0	4.78	178.17	
<b>SEMI-ARID</b>							
Changara (sede)	4200	56.83	4540	340	6.14	62.97	Truck
Goro-MANICA	2300	31.12			0.00	31.12	Convoy
-----							
Total	6500	87.95	4540	340	6.14	94.05	

Type of Ag-Pak and Site for Distribution	Number of Ag-Paks	Ag-Paks mt	No. of Hoes	No. of Machetes	Tools Total	Overall Total mt	Mode of Transport
<b>NORTHERN MANICA</b>							
Tanbara (Mbacafula)	1500	21.05	1500	1500	3.00	24.05	Airlift from Yete
Tanbara (sede)	500	7.02	500		0.65	7.67	Airlift from Yete
<b>Total</b>	<b>2000</b>	<b>28.06</b>	<b>2000</b>	<b>1500</b>	<b>3.65</b>	<b>31.71</b>	
<b>YETE/MANICA SUMMARY</b>							
<b>Grand Total Zete Base</b>	<b>70114</b>	<b>1093.57</b>	<b>10424</b>	<b>6375</b>	<b>20.69</b>	<b>1122.26</b>	
<b>Airlift Total Zete Base</b>	<b>6304</b>	<b>90.50</b>	<b>5650</b>	<b>3000</b>	<b>9.67</b>	<b>100.17</b>	
<b>Total Zete Province</b>	<b>65296</b>	<b>909.67</b>	<b>10364</b>	<b>5275</b>	<b>27.57</b>	<b>1017.23</b>	
<b>Total Manica Province</b>	<b>4300</b>	<b>59.10</b>	<b>2000</b>	<b>1500</b>	<b>3.65</b>	<b>62.03</b>	

**DISTRIBUTION OF AG-PAKS FOR THE 1992/93 SEASON - QUELINANE BASE - FINALISED FEBRUARY, 1993.**

Type of Ag-Pak and Site for Distribution	Number of Ag-Paks	Ag-Paks mt	No. of Hoes	No. of Machetes	Tools Total	Overall Total mt	Mode of Transport	Maize KEP	Maize Matuba
<b>ZAMBESI VALLEY</b>									
Chenba (*0/930)		5.50				5.50	Airlift from Quelimane		
Mutarara (*0/1600)		9.60			0.00	9.60	Airlift from Quelimane		
Inhangona (*568/0)	752	9.04	740		0.96	10.00	Airlift from Quelimane		
Sena (*414/3150)	2152	35.94	3020		4.97	40.91	Airlift from Quelimane		
Morraca	1440	0.01	2260		2.94	10.95	Airlift from Quelimane		
Caia sede	600	3.32	2400		3.12	6.44	Airlift from Quelimane		
Luabo (*2000/0)	2000	31.06	1100	1100	2.30	33.36	Maritime/Barge		
*MWV600 Maize 10/06kg Add-On	<b>Total</b>	<b>6952</b>	<b>103.34</b>	<b>10400</b>	<b>1100</b>	<b>14.29</b>	<b>117.63</b>		
<b>ZAMBESI VALLEY</b>									
Mutarara	1200	8.44	1200		1.56	10.00	Airlift from Quelimane		4.44
Inhangona (*740)		4.44				4.44	Airlift from Quelimane		9.84
Sena (*1640)	2000	29.52	3700	4000	7.61	37.13	Airlift from Quelimane		
Chenba	1075	7.56	1080		1.40	8.96	Airlift from Quelimane		
Morraca (*1450)	437	11.77	220		0.29	12.06	Airlift from Quelimane		8.70
Caia sede	437	3.07	100		0.13	3.20	Airlift from Quelimane		
Mopeia (*1110)		6.60				6.60	Truck		6.60
Luabo (*2000)		12.00				12.00	Maritime/Barge		12.00
*Maimba Maize 6kg Add-On	<b>Total</b>	<b>5949</b>	<b>83.40</b>	<b>6300</b>	<b>4000</b>	<b>10.99</b>	<b>94.39</b>		
<b>LOWLAND ZAMBESIA</b>									
Luabo	2000	20.00			0.00	20.00	Maritime/Barge		
Chinde	5700	60.02	3220	1100	4.96	64.98	Maritime/Tractor		
Inbassunge	698	6.98			0.00	6.98	Barge/Tractor		
Micoadala/Mopeia (450)	2300	24.22			0.00	24.22	MV Truck		
Micoadala	4604	23.02	4500 **			23.02	MV Truck		
*Rice only	<b>Total</b>	<b>15302</b>	<b>134.24</b>	<b>7720</b>	<b>1100</b>	<b>10.81</b>	<b>145.05</b>		
** BRICEP GIX									

Type of Ag-Pak and Site for Distribution	Number of Ag-Paks	Ag-Paks	mt	No. of Boes	No. of Hachetes	Tools Total	Overall Total	mt	Mode of Transport	3/4
<b>UPLAND SAMBESIA</b>										
Hopeia/Morrumbala	160	1.84					1.84		WV Truck	1.28
Caia (*2200)	3600	45.91				0.00	45.91		Airlift from Quelimane	28.80 4.40
Morraca	556	6.41				0.00	6.41		Airlift from Quelimane	4.45
Nicoadala (*1500)	232	5.67		300		0.27	5.94		WV Truck	1.86 3.00
Morrumbala (*1000)	1000	13.53				0.00	13.53		Convoy/WV Truck	0.00 1.00
Mulevala (*3000)	3000	46.00				0.00	46.00		Convoy/WV Truck	27.20 6.00
Seaa (*1107)	748	18.99				0.00	18.99		Airlift from Quelimane	5.98 2.37
Carue (*200)	200	2.71				0.00	2.71		Convoy	1.60 0.40
<b>Total</b>	<b>9996</b>	<b>133.09</b>		<b>300</b>		<b>0.27</b>	<b>133.36</b>			<b>39.94 35.00</b>

SAMBESIA/SOPALA SUMMARY	Number of Ag-Paks	Ag-Paks	mt	No. of Boes	No. of Hachetes	Tools Total	Overall Total	mt
Total Quelimane Base	40527	464.78		24420	6500	36.35	501.13	
Airlift Quelimane Base	15805	200.40		15520	4000	22.90	223.30	
Total Sambesia Province	30192	356.51		11900	3800	18.19	374.69	
Total Sofala Province	13853	168.00		13500	4000	20.45	188.54	

DISTRIBUTION OF AG-PAKS FOR THE 1992/93 SEASON - HAMPULA BASE - FINALISED FEBRUARY, 1993.

Type of Ag-Pak and Site for Distribution	Number of Ag-Paks	Ag-Paks	mt	No. of Boes	No. of Hachetes	Tools Total	Overall Total	mt	Mode of Transport
Gile (SAMBESIA)	3000	42.09		3000	1300	4.81	46.90		Convoy
<b>HAMPULA</b>									
Mocate				2660	310	3.68	3.68		Truck
Murrupula	1800	27.33		1950	700	3.03	30.35		Convoy
Mogovolas*	1050	17.88		1900	650	2.93	20.81		Convoy
Lalaua*	1000	17.03		1085	500	1.76	18.79		Convoy
Ribane*	500	8.52		546	330	0.94	9.46		Convoy
Bacala-a-Velha	1150	15.56		1754	400	2.56	18.12		Convoy
Hanapa (Alua/Hanairoa)	3744	50.66		3746	1700	6.06	56.72		Convoy
Neconta (Corrane)	2500	33.83		2800	1000	4.34	38.17		Convoy
Bacarroa	1256	21.84					21.84		Convoy
<b>Total Hampula Base</b>	<b>16000</b>	<b>212.89</b>		<b>19441</b>	<b>6890</b>	<b>30.10</b>	<b>242.98</b>		
<b>Total Hampula Province</b>	<b>13000</b>	<b>170.80</b>		<b>16441</b>	<b>5590</b>	<b>25.29</b>	<b>196.08</b>		

DISTRIBUTION OF AG-PAKS FOR THE 1992/93 SEASON - BEIRA BASE - FINALISED FEBRUARY, 1993.

4/4

Type of Ag-Pak and Site for Distribution	Number of Ag-Paks	No. of mt	No. of Hoes	No. of Hachetes	Tools Total	Overall Total mt	Mode of Transport
Masungena (seed)	2000	15.06			0.00	15.06	Airlift from Beira

OTHER SEED DISTRIBUTIONS

Site for Distribution	Number of Families	Seed Crop	Seed Variety	kg/ha	Seed Total mt	Mode of Transport
<b>YETE</b>						
Changara (Nbantrese)	675	Sorghum	MSV-307	2.0	1.35	Truck
Changara (Ptenagao)	1000	Maize	Natuba	2.0	2.00	Truck
Masacama	1962	Maize	HW-600	10.0	19.62	Truck
Yete City Green Zones (LMT)	1269	Milho	R201	4.7	5.90	Truck
Yete City Green Zones	6300	Millet	RMP-1	1.5	9.57	Truck
		Maize	Natuba	2.1	17.00	
		Peanut	N.Common	1.3	10.00	
<b>ZAMBESIA</b>						
Morrumbala/Bopeia	2420	Sorghum	SV2		10.72	Truck
		Coupea	Blue Mix		3.00	
		Millet	RMP-1		0.45	
		Sorghum	MSV-307		1.70	
	13714				01.31	

SUMMARY ALL PROVINCES	Number of Families	Seeds mt	No. of Hoes	No. of Hachetes	Tools Total	Overall Total mt
Total Yete	65296	909.67	10364	5275	27.57	1017.23
Total Masica	4300	59.10	2000	1500	3.65	62.03
Total Zambezia	30192	356.51	11900	3000	10.19	374.69
Total Sofala	13053	160.00	13500	4000	20.45	180.54
Total Namputa	13000	170.00	16441	5590	25.29	196.00
Total Gaza	2000	15.06	0	0	0.00	15.06
Grand Total All Provinces	120641	1759.29	62285	20245	95.14	1054.44