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# **SHIKORO BASELINE HOUSEHOLD SURVEY**

**Rural Development Support Programme**

**Analysis by Harriet Mutsaert, Kavango Farming Systems Research &  
Extension Team.**

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## 1. INTRODUCTION

### Notes on the Methodology

This survey was carried out in May 1995. It was one of 6 baseline household surveys carried out in RDSP focus communities in Kavango. The questionnaire was designed by RDSP (see appendix for questionnaire). The field work was carried out by Agricultural Extension Technicians, Marcus Muhera and Paulinus Muhako, after a one day briefing by RDSP. All 70 households in Shikoro hamlet were interviewed. Data was entered and analysed by Harriet Mutsaert, using Epidata 6.

All 70 households in the community were interviewed. A household was defined as a unit who eat together. Such a unit, could be made up of several family units, living in different sub compounds. Interviews were carried out with the acting household head.

While information on some areas, such as trees used for different purposes, seems to be quite complete, some information on cropping practices appears to be of doubtful accuracy. Members of this community have received drought relief for the last two years and it appears that household heads are reluctant to reveal the extent of their crop production, in case this jeopardises their chances of receiving drought relief in the next year. This problem may also be due to a lack of understanding by the community of the purpose of the survey. The findings of the questionnaire have been discussed by together with the Marcus Muhera, the local extension technician and his comments have been incorporated into this report.

The guidelines for the survey indicate that the initial questionnaire survey should be rapidly followed by participatory problem analysis and planning. Sadly, this has not yet taken place due to lack of personnel to carry out survey analysis or to train and assist Agricultural Extension Technicians in the use of participatory methods.

## 2. HOUSEHOLD AND POPULATION CHARACTERISTICS

There are 70 households in the community with a total recorded population of 631 people. The average household size is 9 people, but variation is high with household size ranging from 1 - 20 people.

Female headed households make up 36% of the total number of households. Female headed households also range in size from 1 - 20 persons. Surprisingly, there appear to be no significant differences between male and female headed households in terms of area of land cultivated, number of cattle owned or access to off farm cash or food. Female headed households do however tend to have a lower literacy rate than male headed households.

### Breakdown of population

Adult Males	81
Adult Females	141
Children:	

<5 years	118
5 - 10 years	141
10 - 15 years	80
15 - 20 years	71

*Add graph*

Percentage of dependants (children under 15yrs) is 53% (65% if children up to 20, who may be studying, are included)

The number of people contributing to household farm labour is 158, equivalent to 25% of the population. Given a level of 65% dependants, it can be assumed that the remaining 10% of the community are in paid employment, or seeking employment (in fact 61% of households indicated that they are supported by off farm food or cash).

### 3. LAND

Households were asked to estimate the area of land available to them for cultivation.

*Add graph*

Area of land available for cultivation (estimate)	Percentage of households
<1	14
1 - 2	18.5
2 - 5	48
>5	20

NB Estimates of the areas of land available for cultivation are likely to be inaccurate as farmers have problems estimating land sizes in hectares.

The number of separate plots cultivated by households ranged from 1 - 3 [response 56]. Half of the households interviewed (50%) had one plot only. Marcus Muhera, AET, confirmed that many households in this community subsist mainly from working for others and cultivate only a small area themselves. Mr Muhera feels that shortage of labour (or money to hire labour) is the main constraint to increasing the area under cultivation.

Plots	Percentage of households
1	50%

2	41%
3	9%

There is an agricultural project consisting of 18 5 ha plots, adjoining the village. However only one household (the headman's) has a plot on the project. Other plot holders come principally from Ndiyona, Ncara and Nguma villages. Plot holders on the scheme have access to tractor ploughing services.

There was no difference between male and female headed households in terms of area of land, or number of plots, cultivated.

Households were asked how long they had had use of any of this land.

Use of land for:	Percentage of households
<5 years	40.6
5 - 10 years	40.6
10 - 15 years	6.3
More	12.5

The fact that 59% of households have remained on one area of land for more than 5 years may reflect the decrease in shifting cultivation, as population density increases in the riverine zone. The replacement of shifting cultivation by long term cropping may be linked to the problem of low yield (as soil fertility declines). 31 households indicated that low yield is one of their major farming problems (see section 15)

Average distance of plots from the household ranged from 0 - 10 km. 93% of households had a plot within 2 km of the house. Lack of water sources inland is a severe constraint on opening up new fields further inland. All households who responded to the question, indicated that there water source is the river (distance 0 - 3 km from homestead).

72% of those who responded to this question [61] said they had at least one fenced plot. Fencing methods included:-

	frequency
live trees and bushes	11
dead trees and bushes	30
post and wire	1
trees and wire	2

#### 4. FARM LABOUR

25% of the community were said to be available to work on home farms. The average labour available was 4 persons per household, with a range of 0 - 13 recorded. In addition to using household labour 63% of households [of the 55 who responded to this question] said they sometimes hire labour to work on their land.

Bushman labourers, often seen in inland villages, are not found in this village, as they do not favour the deforested riverine zone.

#### 5. CROP PRODUCTION

##### 5.1 Land Preparation

16 households (23%) had work oxen ( a total of 41 animals).

##### Tractor Hire:-

Year	Hired or plan to hire tractor.
1993/94	7%
1994/95	6%
1995/96	38%

##### Oxen Plough Hire:-

Year	Hired, or plan to hire, ox plough
1993/94	59%
1994/95	41%
1995/96	24%

Looking at the figures for 1994/95 - oxen owners (23%), tractor users (6%) and plough hirers (41%). It can be assumed that the remaining 30% have access to family oxen, or are preparing their fields by hand. The *nzambi* system where households help each other with land preparation and planting no longer occurs in this community.

Shikoro is relatively well situated for access to tractor hire services (2km from ADC, 10 km from NDC farm). However, it can be seen that the number of farmers who have managed to get access to tractor ploughing is low. Access also seems to be restricted to the least needy. Of the 4 households who had access to tractor ploughing services in 94/95, 3 were cattle owners and 2 had their own oxen teams. Priority goes to plots in the fenced development scheme in the village,

which are ploughed every year by government tractors<sup>1</sup>.

Predictions for 1995/96 indicate that many farmers are interested in using tractors for land preparation, in preference to draught animals. This may relate to the relatively cheaper price of tractor hire. The cost of tractor hire in 1995/96 was \$24 per hectare, compared to approx \$30 perday for an ox plough (personal communication Marcus Muhera).

The low availability, and unreliability of ploughing services (both tractor and ox powered) was indicated as a major farming problem by 17% of households (see section 15).

## 5.2 Crop Production 1994/95

Farmers were asked how much land had been prepared for this years crops (q. 6). The majority of households (62%) said they had prepared no land. In answer to the question, 'what crops are being grown this year?', there was some positive response, but again numbers seem very low. M. Muhera explained that farmers were reluctant to reveal the extent of their production (see section 1). His own estimation of crops grown, is given next to the findings of the questionnaire.

### Main crops

Crop	Percentage of households (from questionnaire)	Estimation by Agricultural Extension Technician.
Millet	74%	100%
Mutete	33%	-
Maize	28%	100%
Sorghum	27%	few farmers only
Pumpkin	23%	100%
Cowpea	6%	100%
Melon	9%	100%

Other crops (grown by less than 10 households) were beans, groundnuts and *mavhumbura*.

Millet varieties grown this season were:- Okashana (48%) and local (88%) (local variety not specified).

When asked what is intercropped with cereals, households listed pumpkin (73%), beans (18%), melon (14%) and sugar reed, groundnuts, mutete (few households only).

<sup>1</sup>In the 1995/96 season the government tractor did not complete ploughing on the fenced scheme until February 1996. After finishing on the Ndiyona project the tractor moved to Mabushe project.

### 5.3 Fallowing

89% of respondents told the enumerator that they normally do not fallow land. However areas of land are left as 'fallow' if time does not allow them to be ploughed.

## 6. LIVESTOCK PRODUCTION

70% of households indicated that they have some livestock.

	Percentage of households	Total numbers of livestock in community (from individual household estimations)
Cattle*	39	445 (herd size ranges from 1 - 80)
Goats	30	198 (herd size 1 - 29)
Pigs	5	(Numbers 2 - 8)
Poultry	57	246 (flock size 1- 20)
Geese	4	16

\*16 households have work oxen. 5 households indicated that they have milking cows. Sex of household head was not associated with livestock ownership, as might have been expected. In fact the ownership of cattle by female headed households (44%) was slightly higher than that of the population as a whole.

### Herd Changes in 1994

The following herd changes had taken place in 1994.

Livestock	Percentage of households to own	Sales in 1994 (% of households)	Slaughter for household use in 1994 (% of households)	Death of livestock in 1994 (% of households)
Cattle	39	10	19	27 (90 animals)
Goats	30	3	7	7 (14 animals)
Pigs	5	3	None recorded.	1 (8 animals)
Poultry	57	No sales recorded.	3	3 (49 animals)

Causes of livestock death were:- (number of households in ( ))

Cattle: lung sickness (15), lumpy skin disease (1), ruvadi (1), theft (1), cause unknown or other (2).

Goats: lung disease (1), lumpy skin (1), unknown (3)

Poultry: kapaka (1), lung sickness (4).



Figs: car accident (1)

## 7. FRUIT PRODUCTION

The following trees were growing or had been planted on farm holdings.

	No. of households
Ugongo (mangetti)	6
Mudika	5
Orange	2
Mango	2*
Puyuma	1
Papaya	1*
Banana	1*
Guava	1*
Lemon	1*

\*Same farmer

These figures show that domestic fruit production is still of minor importance in this community. In contrast, gathered forest and river products play a vital role in community food supplies.

## 8. FOREST & RIVER PRODUCTS

The majority of households (82%) gather foods outside their holdings. The most important products gathered were:-

	Percentage of households.
<i>Nsivi</i>	44%
<i>Makwewo</i>	33%
<i>Ngongo (mangetti)</i>	31%
<i>Maguni</i>	29%
<i>Mughome</i>	19%
<i>Matu</i>	19%

In addition *mutete*, *maka*, *munyandi*, *mashiva*, *ntimba*, *mpundu*, *makopa*, *mbeti*, *pumpkin*, *ntswa*, *nsha*, *nshika* and *nyamo* were gathered by a smaller number (less than 10) households.

Fishing was mentioned by 8 households only. However Marcus Muhera estimates that the

majority of households are involved in fishing.

Several households (34%) stated that sales of fish is an important income source (see section 11)

## 9. FOOD SECURITY

Households were asked how long their farm produce had lasted in 1993/94, 1994/95 and 1995/96 (predicted).

1993/94

In this year the majority of households (70%) had finished their own food supplies by November 1993. 10% of households had no harvest in this year. A minority (3%) had stores available for 12 months after harvest. Farmers received drought relief in 1994 (pers comm. Marcus Muhera).

1994/95

In this year the majority of households (70%) had finished their own food supplies by January 1995. 33% of households claimed they had no harvest in this year. 1 household only predicted that stores would last until the next harvest (June). Farmers received drought relief later in 1995 (pers comm. Marcus Muhera).

1995/96

Only 15 households responded to this question. Of these 11 predicted that they would have no harvest. 4 households predicted that their harvest would last for twelve months.

In 1994, 96% of households had bought maize meal. Only 8 households (11%) had sold millet meal in 1994.

Food security appears to be a serious problem in this community. It would be interesting to compare these figures with those of an inland community. It seems likely that deforestation and consequent reduction in forest resources (as well as the impact of reduced soil fertility on crop yields) may have a significant impact on food security.

## 10. USE OF NON FOOD FOREST PRODUCTS

In addition to their importance for food security, trees have important uses for fencing, building, tools and medicine. The following uses were indicated (see Appendix 2) for list of tree species in each category.

Tree Use	No. of households using trees for this purpose.
Fencing	80
Kraal	54
Building	91
Firewood	90
Tools	28

Medicine	30
Fodder	16

### 11. OFF FARM INCOME SOURCES

Of those who responded to this question [64 households] 61% indicated that they sometimes receive support in terms of off farm cash or food.

Main sources of off farm income described were

	% of households
Employment	15
Baskets	20
Mats	27
Fish sales	34
Pension	21
Other	15
Beer sales	11

Other less common sources (less than 5 households) were cake sales (2) and witchcraft. Casual labour was mentioned by only 4 households. However, Marcus Muhera believes that most households are involved in paid labour for farm work. Working for other farmers is known as 'stickwerk', rather than 'casual labour' (which implies more formal employment with NDC or government schemes). A main source of employment is the fenced scheme. Many Shikoro household members are employed in weeding these plots. The average wage is \$4 per day.

### 12. CREDIT

All households stated that they had received no loans in the period 1992 - 1995<sup>2</sup>. If loans were made available to them they would be used for:-

	No. of households
Ploughing services	30 43%
Purchase of oxen	29 41%
Purchase of plough	23 33%

<sup>2</sup>This figure differs dramatically from the recent credit study by Devereux, Von Rooy and Matsuert which estimated that 70% of farmers in Kavango had taken loans in the past year. It may be that households were referring to 'formal loans' only.

Labour for weeding	19	27
Labour for harvesting	13	18.5
Labour	13	18.5
Cattle	11	15.7
Seeds	8	11
Fertiliser	8	11
Other	7	10
Digging out stumps	6	8.5
Fencing wire	5	7

These credit needs underline the serious constraints in land preparation and labour (particularly for weeding) experienced by this community.

### 13. HEALTH PROBLEMS

Households were asked to name the main health problems experienced in the family. The most important were:-

	No. of households	
Malaria	67	95.7
Headache	23	33
Diarrhoea	16	23
Cough	14	20

Others (mentioned by less than 10 households) were colds, eye sickness, fever, TB, meningitis, toothache, swollen leg.

Shikoro is situated relatively close to a large mission hospital, Nyangana. It has benefitted from the health outreach programme, and pit latrines have been constructed in many compounds. It is likely that health standards are higher here than in many other Kavango communities.

### 14. LITERACY/ACCESS TO INFORMATION

86.6% of households had at least one literate adult member. The level of literacy was slightly lower for women headed households (72% had one literate member).

50% of households have radios. They were asked which were the best radio programmes for

farmers:-

Radio Programme	No. of households
Mupukuruli (advice programme)	18
News	11
Agriculture Programme	8
Announcements	3
Bible	2
Health	1

### 15. MAJOR FARMING PROBLEMS EXPERIENCED BY SHIKORO HOUSEHOLDS

Respondents were asked what they saw as their major farming or other problems. The most frequently cited problems were:-

Problem	% of households	Causes (frequency of response in 0)
No oxen	77%	Poverty (23) Death of animals (17) Lung sickness (11) No credit (2)
No money	61%	No credit (21) Unemployment (5)
Low yield	44%	Rainfall (20) Soil fertility (6) No seed (4) Late seed (2) Locusts (2) Small field (1)
No seed	44%	Not available (27) No cash to buy (6) Storage problems (3)
No fencing	34%	Cash (11) Materials (10) Trees becoming scarce (2)
Labour shortage	23%	Cash (13)

Fields are too small	23%	Shortage of labour (7) Shortage of cash (4) Lack of credit (3) Lack of equipment (2)
Cattle damage crops	20%	Lack of fencing (14)
Weeds	20%	Shortage of labour (13) Shortage of cash (1)
Ploughing services	17%	Low availability (5) Unreliable (3) Poor quality work (1)

Other problems, indicated by less than 10 households were:- vegetable production (lack of seeds and information), no cattle, lack of fertiliser (access, cost), marketing (transport), pests (lack of treatment), worms, birds (trees), transport, silted vegetable garden (flooding), no plough (cash), no enough tree planting (lack of seedlings and information), poor health (clinic too far), animal diseases (lack of treatment), children miss school (no cash to pay fees).

Shortage of cash and labour seem to be recurrent themes underlying all of these problems. It is likely that these problems are particularly severe in riverine communities which have become increasingly integrated in the cash economies, resulting in a breakdown in traditional systems of exchange and cooperation.

Low yield is a major problem for many households. This is primarily attributed to poor rainfall. However declining soil fertility is noted by a number of households as playing a role in yield reductions.

The problem of ploughing services is related to the very few oxen in the community (41 animals). Lateness and unreliability of ploughing services, must contribute to low crop yields. Tractor services appear to be reaching few farmers despite the easy access to this village.

The severe lack of oxen in this community is apparently due to a previous epidemic of lung disease. Lung disease appears to still be a major problem for this community. In 1994 (see section \*)90 animals (approximately 17% of the community herd) are recorded to have died. Of these, 82 or 91% died of lung disease.

It is interesting that lack of fencing is seen to be a major problem. In section \* we noted that 80% of households already have at least one fenced field. A growing and heterogenous community may be resulting in a reduction in cooperation and care in livestock herding during the growing season.

## 16. CONCLUSIONS

The results of this survey reveal Shikoro to be an extremely vulnerable community in terms of food security.

The results also highlight the vital importance of forest products and fish for this community. Low levels of food security may be linked to the growing population and consequent overuse of these natural resources.

It appears that interventions such as the fenced Ndiyona and the farmer support programme have brought benefits to a small number of households only. These schemes which support the fencing of large areas of land (making them accessible to few households only), and encourage the removal of trees to facilitate tractor ploughing, may in fact have actively contributed to the overall decline in the welfare of the wider community.

### Priority Areas for Extension and Research Interventions

Priority Area	Possible Action
Improve efficiency of seed supply	Improve extension seed supply <sup>3</sup> , local seed multiplication project. Village seed storage scheme.
Improve access to and efficiency of ploughing services	Credit for purchase of oxen and donkeys.
Labour constraints for weeding	Adaptive research on weeding devices. Oxen drawn cultivator <sup>4</sup>
Improve health care for cattle and poultry	Action by Veterinary services especially on lung sickness. Further training for veterinary assistants.
Low yield: associated with low & unreliable rainfall, late planting and poor soil fertility.	Adaptive research with early maturing/drought avoiding crop varieties.  Adaptive research - soil fertility improvement. Local transport for manure.  Adaptive research - agroforestry

<sup>3</sup>Marcus Muhera informed me that an improved distribution system was set up in the 1995/96 season. This involved giving seed to headmen for local distribution.

<sup>4</sup>Though it appears that few households would be able to make use of this, unless they can also get access to draught animals.

Reduce cattle damage to crops	Community livestock management strategies? Fencing strategies (live fencing?).
Improve food security	Promote dry season vegetable production <sup>5</sup> . Forest management strategies. Develop integrated forest/crop management systems. Develop small enterprise/off farm income opportunities.

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<sup>5</sup>M Muhera indicated that lack of seed is a problem here.



**APPENDIX 2**  
**SHIKORO TREES**

**Trees used for fencing**

Local Name	Scientific Name	Number of Households
Ugumbahambo	<i>Acacia fleckii</i>	15
Untu	<i>Acacia erioloba</i>	15
Haruveya		12
Mweye	<i>Dichrostachys cinerea</i>	3
Mugoro	<i>Terminalia sericea</i>	2
Uhahe	<i>Baikiaea pluriga</i>	8
Thorned trees/Yitji jomega		11
Ukekete	<i>Ziziphus mucronata</i>	1
Kankata	<i>Acacia mellifera</i>	5
Bushes/Yihwa		4
Udywa		2

**Trees used to construct Kraal**

Local Name	Scientific Name	Number of Households
Untu	<i>Acacia erioloba</i>	5
Mweye	<i>Dichrostachys cinerea</i>	2
Udjwa		1
Utundungu	<i>Burkea Africana</i>	3
Uhahe	<i>Baikiaea pluriga</i>	11
Haruveya		4
Kankata	<i>Acacia mellifera</i>	2
Mugoro	<i>Terminalia sericea</i>	3
Unyondo	<i>Combretum imberbe</i>	1
Mugumbahambo	<i>Acacia fleckii</i>	1

Thorn trees		4
Acacia trees		1

### Trees used for building

Local Name	Scientific Name	Number of Households
Mugoro	<i>Terminalia sericea</i>	51
Mbango	<i>Croton gratissimus</i>	18
Mweye	<i>Dichrostachys cinerea</i>	20
Untu	<i>Acacia erioloba</i>	8
Vikulikuli	<i>Rhus quartiniana</i>	1
Uhahe	<i>Baikiaea pluriga</i>	6
Shido		2
Local used trees		2
Building trees		1
Unyondo	<i>Combretum imberbe</i>	1
Mbungururu		1
Acacia trees		1

### Trees used for firewood

Local Name	Scientific Name	Number of Households
Any dry wood		28
Mweye	<i>Dichrostachys cinerea</i>	8
Mugoro	<i>Terminalia sericea</i>	6
Shido		1
Upupu	<i>Combretum molle</i>	2
Mupanda	<i>Lonchocarpus capensis</i>	1
Mugoro	<i>Terminalia sericea</i>	4
Uhahe	<i>Baikiaea pluriga</i>	1
Vikulikuli	<i>Rhus quartiniana</i>	14
Utundungu	<i>Burkea Africana</i>	1

Upupu	Combretum molle	1
Untu	Acacia erioloba	9
Unyondo	Combretum imberbe	1
Undirundiru		1
Udjara		2
Musu		1
Unginda		1
Vido		2

#### Trees used for Tools/Equipment

Ugoro		16
Upupu	Combretum molle	5
Untu	Acacia erioloba	4
Mupanda	Lonchocarpus capensis	4
Mweye	Dichrostachys cinerea	5
Ughuva	Pterocarpus angolensis	1
Ugongo	Schiziphyton rautanenii	1

#### Trees used for Medicine

Local Name	Scientific Name	Number of Households
Murere	Diplorrhynchus condylocarpon	1
Mugoro	Terminalia sericia	9
Libombanturo		1
Mbango	Croton gratissimus	1
Mbundje	Baphia massaiensis subsp. Variety obovata	3
Vihorowa	Diospyros lycioides	3

Untughona	<i>Acacia erioloba</i> (small tree)	2
Kalipi	<i>Eucalyptus</i> sp.	1
Shitwampuku	<i>Clerodendrum uncinatum</i>	1
Ghupaka		1
Muviyu	<i>Securicaca longipedunculata</i>	1
Lipungunyanga		1
Usivi	<i>Guibourtia coleosperma</i>	2
Likenge		1
Untu	<i>Acacia erioloba</i>	4
Unyondo	<i>Combretum imberbe</i>	2
Makwewo	<i>Diosypros chamaethamnus</i>	1
Utimba	<i>Dialium englerianum</i>	1
Utu	<i>Strychnus madagascariensis</i>	1
Ughuva	<i>Pterocarpus angolensis</i>	1
Mulyangwe	<i>Abrus precatorius</i>	1
Uyambi yambi		1
Upako		4
Uge	<i>Sclerocarya birrea</i> subsp. <i>caffra</i> .	1
Mutumba	<i>Combretum hereroense</i>	1
Ukekete	<i>Ziziphus mucronata</i>	1
Matingindjamba		1
Mulilira		1
Mukugho		1
Mukena		1
Mpumutji	<i>Euclea divinorum</i> Hiern	1
Utumbanatyuki		0

**Trees used for fodder**

<b>Local Name</b>	<b>Scientific Name</b>	<b>Number of Households</b>
Mbundje	<i>Baphia massaiensis</i> subsp. Variety obovata	10
Mutjeke-tjeke		1
Mushoni		1
Untu	<i>Acacia erioloba</i>	2
Ugumbahambo	<i>Acacia fleckii</i>	1
Ukekete	<i>Ziziphus mucronata</i>	1
Shido		1
Mupanda	<i>Lonchocarpus capensis</i>	1