REPUBLIC OF NAMIBIA

MINISTRY OF AGRICULTURE
WATER AND RURAL DEVELOPMENT

BASELINE SURVEY OF THE IMPACT OF AGRICULTURAL EXTENSION SERVICES IN CAPRIVI REGION

DIRECTORATE OF EXTENSION AND ENGINEERING SERVICES
KATIMA MULILO, NOVEMBER 2003

TABLE OF CONTENTS

Acronyms and abbreviations

ADC	Agricultural Development Centre
AEO	Agricultural Extension Officer
AET	Agricultural Extension Technician
ARDC	Agricultural Rural Development Centre
CA	Clerical Assistant
CAEO	Chief Agricultural Extension Officer
CAET	Chief Agricultural Extension Technician
CBO	Community Based Organisation
CBS	Central Bureau of Statistics
DART	Directorate of Agricultural Research and Training
DEES	Directorate of Extension and Engineering Services
DRWS	Directorate of Rural Water Supply
DVS	Directorate of Veterinary Services
FC	Focus Community
FED	Farmers Extension Development Group
FS	Farming System
FSRE	Farming System Research and Extension
Ha	Hectares
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IFAD	International Fund for Agricultural Development
Km	Kilometres
Km^2	Square kilometres
MAWRD	Ministry of Agriculture, Water and Rural Development
NASSP	Namibian Agricultural Support Services
NCD	North Central Division
NOLIDEP	Northern Regions Livestock Development Programme
NOREESP	Northern Regions Extension and Epidemiological Support Programme
RDSP	Rural Development Support Programme
REMP	Rural Extension Management Programme
SPSS	Statistical Package of Social Sciences
STEAR	Supporting the Transition of Extension and Research
TA	Technical Advisor
UNAM	University of Namibia

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Disclaimer

The views expressed in this report are the responsibility of the authors, and do not necessarily reflect those of the Ministry of Agriculture, Water and Rural Development.

PART ONE

0 FOREWORD

Government's annual operational expenditure on agricultural extension services has averaged about N$ 50 million over the last few years. In addition, international donors have contributed roughly N$ 10 million per year to both operational and capital expenditure. Agricultural Development Centres are found all over the country staffed by qualified officials equipped with vehicles and provided with operational budgets. But, is the extension service achieving what it sets out to do?

This is a report on a baseline study designed to survey selected indicators of extension impact during the 2002/03 farming season. We intend to repeat this survey after the 2006/07 season to gauge change over the period between the baseline survey and this follow up survey. This period coincides with the span of NDP 2, which is the basic planning timeframe of the extension service.

Calls for an assessment of the impact of agricultural extension services have been made by our collaborators, as well as the Namibian public at large. These are the people who ultimately control our purse strings; and as competition for government resources increases, we want to assess whether what we are doing is worth supporting.

As managers, we also want to know whether all the effort we are putting in is actually bearing fruit. If we find, for example, that, after years of promoting a particular farming technology or practice, farmers are simply not interested and have not adopted it, we will obviously need to think again. What are we doing wrong? Is it the wrong technology? Are our methods failing? How can we improve?

We are approaching the task of impact assessment by gathering quantitative information using formal questionnaires and qualitative information using informal, participatory methods. The two approaches need to be integrated; qualitative methods need to build on quantitative.

This report presents the results of a regional questionnaire baseline survey that has produced, we believe, objective results. Each region has designed and managed its own survey. This reflects our decentralised organisational structure which operates regional programmes in response to regional realities.

This report focuses on Caprivi region, and is being distributed to you as important collaborating partners and stakeholders in the cause of regional development. We hope you find it interesting and informative and we look forward to increasing collaboration in future.

D.R. Tshikesho
DIRECTOR OF EXTENSION AND ENGINEERING SERVICES
October 2003

1 EXECUTIVE SUMMARY

DEES managers have recently embarked on a process of improving their program planning, monitoring and evaluation. The first step in this process was to develop a logframe for extension. The next and current step is to establish the baseline information to allow quantitative target setting and impact monitoring in future, starting in 2006/07 which marks the end of NDP2. In addition, this baseline data should help in identifying regional strengths, weaknesses and areas in which extension efforts need to be focused in order to maximise potential impact.

This baseline survey was guided by a funnel structured questionnaire starting from the general and working towards specifics. Questions covered the following areas:

- Farmer type and resources,
- Farmer-extension/research contact,
- Extension impact for specific technologies,
- Access to marketing and policy information and
- Institutional development issues.

The questionnaire used a mix of yes-no, multiple choice and fill-in questions to ensure intensive verification of responses. The questionnaire was pre-tested, enumerators identified and trained. Respondents were selected using simple random and cluster sampling methods. The final sample covered 40 villages. Fifteen villages were in the flood plain agro-zone (3 ADCs) 15 in the middle zone (another 3 ADCs) and 10 in the upland (2 ADCs), totalling 220 respondents. Coded data was analysed using the Statistical Package for Social Sciences (SPSS) and frequency tables and graphics were produced accordingly.

Survey findings regarding farmer type revealed that 65% of respondents were female and 35% male. 63% were household heads and 30% wives of household heads. Only 6% of household heads were less than 30 years of age. A mere 5% of respondent households reported that they had no family member who was literate or numerate. Although 66% of farmers hired farm labour 72% indicated that they were not food self-sufficient. 26% had no cattle, 40% had less than 11; 69% had no goats and 22% owned less than 11 while 30% had no chickens with 48% having less than 11 chickens. 58%, 54% and 15% reported that they did not grow sorghum, maize and pearl millet respectively. For each cereal the majority of growers cultivated between 0.5 and 2 ha annually.

Crop production is the most important income source for 58% of households. Livestock, wages and pensions were rated as most important by 14%, 10% and 12% of the farmers respectively. One percent of the households reported that they had no income source and 26% indicated only 1-2 income sources. Despite the limited income earning options, a meager 2% are trying cotton, sunflowers and tobacco. Only 14% of farmers sell crops every year, while 30% and 12% sell only 1-2 and 3-5 heads of cattle per year. 32% of cattle owners reported that they do not sell yearly. 20% of farmers sell cattle through the quarantine. 18% and 15% sell directly to the bush market and traders respectively.

Concerning the level of contact between extension services and farmers, the survey found that in areas where AET presence was recognised, only 48% knew the AET's name, while 31% did not, a reflection of very little or no contact. Fifty-two percent of farmers reported regular contact and receipt of information from extension, including attendance at organized agricultural activities. 88% indicated no access to agriculture information leaflets. Only 21% reported that they never listen to agriculture programs on the radio. Radio broadcasts and agriculture meetings were rated useful by 57% and 65% respectively. A third of the farmers have good knowledge of technology trails and demonstrations conducted in their areas.

Fifty-five percent reported that they were satisfied with extension support, while 34% believe that agriculture improvement in their communities is due to extension support. Never-the-less adoption of several selected technologies being promoted that were assessed during the baseline survey remained low. Notable are the following – fertilizer <5%, improved small grains seed 5%, improved maize seed 10%, dap 9%, dehorning of cattle 2%, deworming livestock 1%, livestock supplementary feeding 3% and manure use 19%. Poor DAP adoption was attributed to lack of information / knowledge (53%) and lack of money to buy cultivators (28%). However, some technologies have been widely adopted such as the ox plough (84%), line sowing (74%), random intercropping (91%) and castration (88%).

Essential information was reported to be reasonably well shared. About 60% of farmers receive both crop and livestock market information, are aware of the drought and decentralisation policies and the Communal Land Reform Act. 76% are aware of the Stock Brands Act and already 32% adhere to the requirements of the Act.

Farmers demonstrated their understanding of range management principles. A total of 72% produced a list to that includes the need for rest periods and correct stocking rates. 45% of farmers reported that they have a range management plan that works although the principles for sustainability are not applied. The recently introduced community animals health agents were rated as very useful by 42% of the farmers, but an equal proportion has never heard about them. Only 11% of farmers indicated that they had active CBOs in their communities. Nine percent reported existence of inactive CBOs. CBOs did not exist in the remaining communities. However, 33% said that they have Water Point Committees and three quarters of these work well. 29% of farmers have Village Development Plans, two thirds of which were prepared with AET assistance and an equal proportion is being used. Over 50% of the Village Development Plans are judged to be yielding satisfactory results. However, collaboration between GRN, NGOs and farmer CBOs is perceived by about 50% of farmers as poor. Only 33% reported that collaboration was good.

As facilitators in the FSRE context AETs are beginning to participate in broader development issues. 27% of farmers reported that AETs conduct HIV/AIDS awareness discussions. However, at this stage only one fifth of farmers appreciate the implications of the FSRE approach; in particular the need for them to make and implement their own plans while seeking advice from the AET as appropriate.

From the benchmark data collected the following conclusions can be drawn:

1. Literacy is very high implying an equally high potential for print media use in extension. Meanwhile print media only reaches 12% of farmers and this needs to improve.
2. The majority of farmers are not food self-sufficient, only 14% sell crops every year and at the same time crop production is listed as the major income source for the majority. This anomaly needs unravelling using participatory techniques.
3. Livelihood options are very limited. A major challenge currently addressed, in part, through support for off-farm and non-farm income generating projects.
4. Farmer-extension contact is at an average level but adoption of most promoted technologies is low.
5. CBOs are weak and collaboration is poor. Both need to be improved.

2 INTRODUCTION

2.1 WHAT AGRICULTURAL EXTENSION SERVICES DO AND WHO THEY SERVE

Up until recently the government's agricultural extension services were focussed mainly on providing subsidised agricultural services (e.g. ploughing, farming input sales, the development and maintenance of farm infrastructure), and the administration of government programmes such as drought relief and credit schemes. In the mid-1990s, things began to change as it was realised that many of these services were not benefiting the mass of farmers and, in any case, were often best provided by the private sector.

New approaches stressed the provision of advisory, information, communications and farmer training services. Extension services aim to help farmers to develop and adopt improved farming technologies and practices, to organise themselves into self-help groups of various sorts, and to better interact with the world of agricultural markets, services, infrastructure, laws and policies in which they operate. In short, extension is now playing more of a facilitating role relating to a range of rural livelihood issues.

At the same time, greater attention was given to the communal sector, where extension services were supposed to target all farmers. Efforts were made to reach farmers by working with farmers' groups and through the mass media, and through various methods designed to impact on large numbers of farmers, such as group demonstrations, shows, and training courses.

2.2 QUESTIONNAIRE SURVEY RATIONALE

Extension impact: can we prove it?

This section discusses some of the conceptual and practical difficulties involved in trying to assess the impact of agricultural extension services.

How can we prove that changes in farmer welfare, farm production and income, and changes in farmer behaviour (which we can define as including increased farmer knowledge and skills, improved farm technology, farm management practice, and farmer organisations) have occurred because of the work of the agricultural extension service? Many variables influence such changes (for example, other sources of information, rainfall, market prices, availability of credit, health issues, and so on) of which extension may or may not be one. Although it is notoriously difficult to make a causal linkage between the work of extension services and changes in farmer behaviour, let alone farm production, and ultimately welfare; this and subsequent studies aim at estimating the direct and indirect influences of extension on these parameters.

Extension is different from other services. In the field of education, for example, we have exam results, in the field of health we have hospital records, in the field of transport we have roads built and maintained, all clearly visible and easily measurable indicators.

Impact on who?

The agricultural extension service uses different methods to address individual farmers, groups of farmers and the broad mass of farmers, be it information meetings, demonstrations, training, or mass media. Ultimately, the mandate of the extension service is to serve all farmers.

Therefore, this baseline study looks at the impact of extension activities on the broad community of farmers. The rationale for this is that although extension recognises that it cannot directly contact all farmers, it believes that its influence ultimately reaches all farmers through normal farmer-to-farmer dissemination. This assessment does not look at the impact of specific activities on immediate beneficiaries, for example on trainees who have been exposed to specific training activities.

Different types of impact

The DEES has drawn up a logical framework which describes its main activities and their relationship to a set of objectives *(see page …)*. The logframe describes extension activities which should deliver clear outputs, which in turn should contribute to the achievement of a broader purpose, which itself will contribute to a more general goal. It is the job of the extension service to carry out the activities and deliver the outputs.

For extension managers, it is most important to assess impact at the output level: that is to look at service delivery and changed farmer behaviour, as defined above. Changed farmer behaviour should, in turn, lead to the achievement of higher level objectives (e.g. improved yields, better risk management, increased incomes), although these are also subject to many other influences (e.g. rain, market prices, etc.).

Extension services provide information, advice and training to enable farmers to be better managers by enabling them to develop and adopt better technologies and farm management practices, and by being better organized for different types of collective action. We can measure the extent this has happened by looking at rates and degrees of change in farmer practices and management.

To do this we can break down the process of such change into a number of stages – and look at how much of each has occurred with regard to specific changes being advocated. Change requires that farmers have:

1. contact with extension (either directly through participating in activities with AETS or visiting demos, or ADCs, or indirectly through the radio or other farmers who have learned directly from extension);
2. received information, advice or training on the innovation from extensionists;
3. understood the information, advice or training on the innovation;
4. tried out and adapted the innovation to their specific needs; and
5. acted upon or adopted the innovation.

We measure this by looking at indicators of:

- Extension-farmer contact and farmer satisfaction with extension services
- Farmer awareness, understanding, adoption and change

Extension impact assessment aims to review the extent to which these things have taken place, first through revealing the baseline situation, and later through reviewing how things have changed over time.

Concerning extension-farmer contact and farmer satisfaction, we can measure this by asking about the extent farmer involvement with extension activities, and their perceptions of that involvement. Regarding farmer awareness and adoption, we select specific agricultural development issues to focus on. We cannot ask farmers about all the different technologies and practices and other information that extension services promote. We must select a few topics only. We can then say that these things represent the range of issues that extension deals with. In other words, they are indicators of the bigger picture of extension work.

Therefore, each region has designed its own questionnaire to investigate selected topics which they believe represent the many that extension in a specific region is promoting. These key topics have been selected from amongst those the region expects to be the most important over the next few years. Specific questions have been asked to try and pin-point whether farmers are aware of and understand extension recommendations, have reacted to and adopted them.

The hypothesis we are testing therefore is that extension services have a positive impact on farmer knowledge and behaviour. We are not able, at this stage, to test the hypothesis that this improved farmer knowledge and behaviour has in turn led to increased productivity and incomes, or improved agricultural GDP or balance of trade (purpose and goal indicators). To do so we need much better production and incomes data over a long period. Rather, we assume that, all being well in terms of the external environment, in other words when conditions allow, that improved farmer knowledge, technologies and practices will have an impact on production and incomes.

Finally, we must also acknowledge that monitoring extension impact, even at the output level, is not easy. Change in farmer behaviour can not be exclusively attributed to extension Many variables influence farmer behaviour including information provided by other services. However, Namibia's extension services pride themselves on the extent to which they collaborate with other services (government, non-government and private), and are content to share credit should impact, in due course, be revealed.

2.3 QUESTIONNAIRE PROCESS

So far, we have focussed on conceptual issues. Now we move to the practical means of extension impact assessment.

Formal questionnaires are a useful tool for research into people's perceptions, levels of awareness, knowledge and practices related to specific issues under investigation. Questionnaires are essentially a mechanical tool, in which you ask carefully defined questions covering selected issues, to a carefully selected representative sample of the community, you receive answers which are entered on answer sheets in code form, and you analyse these answers statistically.

This survey was undertaken by the regional team of the agricultural extension service, under the leadership of the regional Chief Agricultural Extension Officer, as follows.

Table . Main Steps in the Baseline Study Process

1. Questionnaire design: this involved the elaboration of region-specific indicators used to prepare questionnaires for each region. Questionnaires were based on a common national outline relating to indicators of common concern, but incorporating local specific issues. Questionnaire design also included pre-testing in the field and subsequent modification of questions to ensure they were correctly phrased, relevant and so on. *(January-March 2003)*

2. Planning of field implementation: sampling procedures and logistics. *(April 2003)*

3. Field implementation: to minimize bias, extension staff took no part in interviews. Their role included:
   - hiring of enumerators;
   - training of enumerators;
   - liaising with communities;

- transporting enumerators in the field;
- field supervision of enumerator performance; and
- field checking of completed questionnaires.

(May-June 2003)

4. Data analysis: data entry and analysis was done using the software package Statistical Package for the Social Sciences (SPSS) and was contracted out. *(July-September 2003)*

5. Report preparation. *(July – October 2003)*

This process is revisited in more detail in Section 5 of this report. The questionnaire is presented in Annex 1.

PART TWO

3. AGRICULTURE IN CAPRIVI REGION

Caprivi, one of the 13 regions of Namibia, forms the country's finger-like projection in the northeast, which extends Namibia's borders into the centre of southern Africa. The region lies about halfway between the equator and the southern tip of the continent and midway between the Atlantic and Indian Oceans. Attached to the rest of Namibia along a short border, Caprivi is bounded by four other countries: Botswana to the south, Angola and Zambia to the north, and Zimbabwe to the east. In broad terms, the Caprivi stretches 450km from east to west and ranges from 32 and 100 kilometres in width from north to south. It covers an area of about 20 000km^2. (Mendelsohn and Roberts, 1997)

3.1 BIOPHYSICAL RESOURCES

In a country that is often characterised as hot and dry, Caprivi is distinctly more tropical than any of the other regions. It enjoys a higher rainfall, less evaporation and a warmer winter than the rest of Namibia, providing a home to many plants that are unable to survive elsewhere in Namibia. Even though Caprivi sees the highest rainfalls in Namibia, it is still plagued by rain that is highly variable from year to year and from one place to another, and experiences serious droughts from time to time (Mendelsohn and Roberts, 1997).

3.1.1 RAINFALL

On average, the Caprivi annually receives rainfall ranging from 500mm to 700mm. In eastern Caprivi, rainfall is about 600-700mm (Starkey, 1992), while in the north-east around Katima Mulilo, average total rainfall amounts to just under 700mm and modal values are about 550mm per year. In the southern-most parts of the region, averages are about 500 mm and modal totals are about 400mm. In the west of Caprivi, average rainfall is about 600mm and modal rainfall is about 550mm (Mendelsohn and Roberts, 1997).

Caprivi - Katima Mulilo monthly rainfall data (mm)
[Source-Namibia early warning and food information unit, may 2003]

	Oct	Nov	Dec	Jan	Feb	**Oct-feb**	Mar	Apr	**Oct-apr**
Long term average	20.6	77.9	157.7	178.9	192.4	**627.5**	97.2	21.0	**745.7**
1999/00	3.6	11.5	95.5	67.8	219.8	**398.2**	227.0	53.5	**678.8**
2000/01	0.0	82.2	109.0	109.2	59.9	**360.1**	0.0	71.7	**431.8**
2001/02	0.0	105.3	69.0	61.0	31.1	**266.6**	0.0	341.4	**608.0**
2002/03	16.9	29.7	80.2	71.1	138.0	**235.9**	134.0	18.0	**487.9**
2002/03 as a percentage of average	82.0	38.1	50.9	39.7	71.7	**282.5**	137.9	85.7	**506.1**

3.1.2 SOILS

Soil types in the Caprivi are classified largely on the basis of their textures, with soils consisting of varying amounts of sand and clay having different textures. Caprivi as a whole is dominated by clay-loam soils in the east and south east of Katima Mulilo (about 35% of the area) and sand in the west (about 50%). At one end of the spectrum are the heaviest soils with a high content of clay in areas which are regularly flooded, i.e. The hydromorphic and organic clay soils. Water does not penetrate or drain away easily because the clay is so dense. Areas flooded most frequently hold water for the longest periods, and often have a high content of organic material derived from decomposed reeds, sedges and other plants that grow in water. In some areas such as the Linyanti swamps and around Lake Liambezi, these soils have developed into large deposits of peat. On the other hand of the spectrum are the pure sands. These deep soils do not hold water for long so plants with shallow roots grow only once good rains have fallen. Between these two extremes is a range of intermediate soils (loam, clay-loam, sandy clays, etc.) consisting of varying proportions of sand, clay and organic material. Such intermediate soils also offer the best opportunities for cultivating crops because they retain water to some degree and have fairly high levels of nutrients (Mendelsohn and Roberts, 1997).

Different soil types, vegetation units, the areas they cover and potential for crops (adapted from Mendelsohn and Roberts, 1997).

Soil Type	Vegetation Unit	Area (Km^2)
Hydromorphic	Open Water	166
Organic Clay	Floodplains (Chobe Wetland)	137
Clay-Loam	Floodplains (Liambezi-Linyanti Grassland, Chobe Swamp, Grassland, Mamili Grassland, Zambezi Floodplain Grassland, Woodland, Mopane Woodland, Impalila Woodland	6939
Loam	Floodplains (Bukalo-Liambezi Grassland) Riverine Woodland (Kavango-Kwando Valley Woodland And Fields)	647
Sandy Clay	Floodplains (Kavango-Kwando Grassland)	182
Sandy Clay-Loam	Floodplains (Kwando-Linyanti Grassland)	121
Sandy Loam	Mopane Woodlands (Linaynti Woodlands) Kalahari Woodlands (Omuramba Grassland)	1735
Loamy Sand	Riverine Woodlands (Maningimanzi Woodland And Channels) Mopane Woodlands (Salambala Camelthorn Woodland)	107
Sand	Kalahari Woodlands (Burkea-Combretum Woodland, Burkea-Kiaat-False Mopane Woodland, Burkea Shrubland, Burkea-Teak Woodland, Burkea-Terminalia Woodland, Teak Savanna, Teak Shrubland, Teak Woodland)	9975
	Total	20009
Potential For Crops		
Best		3137
Moderate		2851
Poor		14021
	Total	20009

3.1.3 GROUNDWATER

People and cattle obtain water from several sources in Caprivi. In Katima Mulilo, almost all water is piped, either to communal or indoor taps. In rural areas, however, 32% of households obtain their water from rivers and other open, surface waters, 26% of households depend on wells, 24% on piped water, and 16 % on boreholes.

Underground water reserves generally are fairly abundant, so there is a good chance of finding water in most areas. Water reserves are also fairly close to the surface, between 10 and 40 meters below the ground in most areas, and closest to the surface in the eastern floodplains and in the southern areas of eastern Caprivi. The deepest reserves are in the west.

The volume of water available is often a problem in some areas, especially from boreholes that yield little water, have silted up, or have been fitted with low volume pumps, causing people and cattle to queue for water. Pans have dried up and underground water levels have dropped as a result of the poorer rains in recent years. Finally, there are many problems associated with the quality of the water. In some areas, the water is unpalatable, being salty and unfit for consumption, while in other areas people have to use dirty water from wells and backwaters (Mendelsohn and Roberts, 1997). A typical example is the area north of Linyanti swamps whose underground water reserve is too salty for human and livestock consumption.

3.1.4 TOPOGRAPHY

Topographically, Caprivi is particularly flat without a single feature recognisable as a hill. From the highest areas in the extreme west (about 1100m above sea level) elevations gradually drop to 930 m above sea level near Impalila island in the east. (Mendelsohn and Roberts, 1997). The North-western part is slightly raised. The flat topography combined with the heavy nature of the soil gives the region poor drainage (IDC, 1995)

3.1.5 RIVERS

Caprivi region is mostly surrounded by perennials rivers which sets the region apart from the rest of Namibia. There are five perennial rivers in Namibia for which Caprivi has two. These rivers (Zambezi and Kwando/Mashi) are relatively large and hold water permanently. In years of high rainfall, their water may flood over large areas forming extensive marshes and the legendary lake Liambezi. There are two other rivers in Caprivi that are often regarded as rivers in their own rights. These two are Chobe and Linyanti rivers. They are extensions of the Zambezi and Kwando rivers respectively (Mendelson, 1997).

During years of high rainfall, and subsequently high levels of water, these rivers can connect to one another. The Zambezi and Kwando rivers are often connected through the Chobe and Linyanti rivers and lake Liambezi. Seasonal changes in the levels and volumes of water with flooding at times reflect seasonal changes in rainfall. The increased volumes of water in these rivers are only seen in Caprivi several months after summer rains have fallen in the catchment areas.

The Zambezi's flow peaks in March to May and is lowest in October and November. The Kwando river shows a much longer lag between the summer rains falling in Angola and highest flows passing Kongola in June to august. These rivers contributes enormously to the livelihood and income of the people of Caprivi, particularly those living alongside them. Livestock water supply and fish are some of the benefits to people from rivers.

3.1.6 VEGETATION TYPES

Vegetation in Caprivi is influenced by three main factors: soils, flooding and fire. Soil texture, depth, nutrient content, the concentrations of salts, and the ability to hold water, affect the kinds of plants found, their vigour and size. Water drains through sand easily, washing nutrients away and leaving both the sands and many grasses low in nutrients. Floods restrict the growth of most woody plants because they can not withstand having their roots inundated. For this reason areas subject to flooding are dominated by grasslands, with different species growing in areas subject to different frequencies of flooding. Reeds and sedges predominate in the wettest areas, while coarse grasses grow on leached sands. The effects of fire may be dramatic. Frequent hot fire can kill large trees, prevent the growth of young trees, and often lead to the development of uniform thickets of a few fire resistant species.

The six land types in Caprivi form six broad vegetation communities: open water, floodplains, riverine woodlands, mopane woodlands, kalahari woodlands and Impalila woodlands. There is considerable variation within these categories such that certain plants are abundant and important in one area but absent in other areas or the trees may be tall and well grown in one but small and shrubby in another (Mendelsohn and Roberts, 1997).

3.2 POPULATION ISSUES

3.2.1 NUMBER OF FARMING HOUSEHOLDS

According to 2001 Population and Housing Census, by the National Planning Commission, the total population of the region is 79,826. The population is comprised of 40,749 females and 39, 077 males. The average household size is 4.7, and the number of households is 16, 839. 72 percent of the population is classified as rural, amounting to 12,124 households. This may also be taken as equivalent to the number of farming households in the region if we assume that the number of rural households not farming is the same as the number of farming households actually residing in urban areas and outside the region. The number of part-time or weekend farmers is believed to be significant and growing in the region.

3.2.2 PERCENTAGE OF URBAN, FEMALE HEADED HOUSEHOLDS

The 2001 census reveals that 15% of the total population live in the urban area, and 39% of the households are female headed. 34% of the population are in the economic active age group of which 51% are unemployed; the majority of whom are women.

47% of households are regarded as poor; spending or using more than 60% of their total income (in cash and kind) on food. In this poor group are found the San, female-headed households, the elderly, those with limited remittances and high dependency ratios, and unskilled and unemployed single mothers in Katima urban. The San lack formal education, are extremely poor and highly vulnerable to all potential hazards (natural and man-made). Predominantly located in western Caprivi, their access to services is more limited.

3.2.3 POPULATION BY AGE DISTRIBUTION

The region's population is young with some 39% under 15 years of age. The proportion of the population aged 60 years and above is only 6% , a relatively low percentage.

According to the human development indices for Caprivi region, the life expectancy in years is 43 in females and 41 in males, adult literacy is 78%, school enrolment is 85.7%, and Human Development Index is 0.468.

3.2.3 IMPACT OF HIV-AIDS

The Caprivi region has the highest rate of HIV/AIDS in the country.

In Katima urban those infected include the unemployed and unskilled particularly single mothers with high dependency ratios who are faced with both food insecurity and dangerous exposure to HIV infection. Malnutrition in Caprivi is severe. A 1992 MoHSS national survey indicated malnutrition amongst children was most severe in Kavango and Caprivi with 42% of the all children under five stunted and suffering from chronic malnutrition (MoHSS, 1993). The high association between malnutrition and poor disease resistance may be another factor enhancing the devastating effects of HIV/AIDS in Caprivi.

In 1991 42% of children were found to be suffering from malnutrition. In view of the high association between malnutrition and disease resistance this may explain for the high rates of <5 mortality (132 per 1000 compare with national figure of 87 per 1000) and HIV/AIDS waste away in the region. HIV/AIDS is destroying households and at the same time seriously depleting all the other forms of capital. An alarming 43% of pregnant women in the sentinel 2002 survey tested HIV positive. Access to clinics is made difficult by the poor network of rural roads and in some cases long distance.

Box1. The relationship between HIV/AIDS and food security
(adapted from Erwin Northoff Information Officer, FAO, May 2003)

The relationship between HIV/AIDS and food security

Despite abundant natural resources, sub-Saharan Africa is not an easy place to be a farmer. Droughts, floods and other disasters regularly wreak their havoc, while chronic poverty, social problems, ineffective policies and civil strife can also contribute to food shortages and widespread malnutrition.

But in the last decade, HIV/AIDS has posed an additional challenge to this part of the world, where up to 80 percent of the population depends on small-scale agriculture for their food and livelihood. As the disease continues to kill millions, leaving countless others too sick, too young or too poor to farm and feed themselves, southern Africa is experiencing a new and different kind of crisis—one which is, in turn, creating more opportunities for the virus to spread. The crisis directly affects millions of people living with the disease—many of whom are agricultural workers. Since HIV/AIDS typically strikes during the most productive years—ages 15 to 49—many fields across southern Africa now lay fallow. As a result, families are not only losing food and cash crops, but also valuable resources, such as livestock and tools. “We had to sell everything we own to buy food and pay for our medical expenses,” explains a farmer.

Unfortunately, health services in this part of the world are not meeting the needs of those affected by the epidemic. In such a situation, good nutrition is key. “When people are malnourished, they do not have the strength to withstand infection and AIDS develops that much quicker,” says Karel Callens, an FAO nutrition officer working in the region who provided technical support for the documentary. “Food may not cure HIV/AIDS, but it can help people live longer, more productive lives.”

But the startling number of children left orphaned by the AIDS epidemic—11 million currently living in sub-Saharan Africa alone—shows that much more work needs to be done. “What do

you do when you've never had nurturing, love or affection growing up as a child because your parents died when you were very young?" asks Stephen Lewis, the UN Special Envoy for HIV/AIDS in Africa. "Fifteen or 20 years down the road, God alone knows the destabilizing effects of these kids."
For this reason, many believe the real crisis in southern Africa is yet to come, as these orphans struggle to grow into adults. Fourteen-year-old Sole is one of the luckier ones: Since both his parents died from AIDS three years ago, he has lived with his three younger siblings in a one-room shed, and receives some food assistance. But like so many other orphans, Sole's parents died before they could pass on generations of knowledge about farming, crop varieties and tools to their young children. Without such skills, Sole and his two brothers and sister are unable to produce their own food—or the income to buy it from others—and the prospects for their future become even dimmer. No part of the world is immune from the disease, and FAO urges everyone—health, agriculture and social sectors—to work together to alleviate the impact of HIV/AIDS and stem its transmission."

3.3 LIVELIHOOD PATTERNS

3.3.1 SOURCES OF INCOME FOR DIFFERENT SOCIO-ECONOMIC GROUPS

Caprivi's economy, and that of its households is predominantly rural and subsistence in nature. Most people are thus directly dependent on natural resources, especially those occurring around their homes. A survey of agricultural practices conducted in 1994/95 showed that 59% of all households in rural areas depend on subsistence farming to provide their main source of income. Other rural households obtain most of their income from salaries (17%), pensions (16%), business (5%) or cash remittances (2% of all rural households).

Engaging in several enterprises is a popular strategy to manage risk. Almost all households do cropping and gathering wild food and fishing, 84% keep cattle and 20% have access to formal employment. Remittances are the major source of livelihood for 28% on households. 34% of households (in the main, the poor) are dependent on subsistence cropping. In the event of drought, they often turn to barter trade with their labour, fish, forest wood and non-wood products in exchange for food and grain. Women dominate the informal trade sector due to limited opportunities.

Having no cattle in Caprivi has very severe implications on food security and nutrition. Cattle are the primary source of collateral for credit. Having 1-10 cattle increases the cash income / expenditure balance by 50%, increases the value of consumed livestock products by 3 times and doubles the non-crop households welfare gains.

Sale of natural products (crafts, reeds, thatch, medicines, fruits, nuts, etc) provides a major income for the poor. Some community income generating projects (baking, sewing, gardening, etc) have successfully empowered the poor, particularly women. A few have sustainability problems as a result of inadequate pre-establishment market research and lack of commitment.

3.3.2 MAJOR OCCUPATIONS / SOURCES OF LIVELIHOODS OF THE RURAL POPULATION.

Rural livelihoods in the Caprivi region are based to a large extent on crop and livestock production for sale and consumption, fishing, hunting and gathering timber and non-timber forest products such as wild fruits for consumption, as well as earnings from non-farm activities, including importantly wages, pensions and remittances and the accumulation of productive assets such as cattle.

The Caprivi region is tailor-made for popular nature based or eco-tourism, with the combination of abundant wildlife, rivers, wetland systems, scenic landscapes and its general lack of modern development. Tours are organised as fly-in safaris, vehicle tours and self drive vehicle tours. Tourism is currently one of the biggest income generators in the Caprivi region. Lodges are a popular recreation destination for foreign and local tourists, with a growth in this sector of over 20% in 1998/99, which is faster than in Namibia as a whole. There are no resorts of the Namibia Wildlife Resorts located in this region.

Katima Mulilo was earmarked to become an export processing zone, growth center, following that of Walvis Bay. The location is close to four neighbouring countries. No known manufacture of any significance exists in the rural areas of the Caprivi region. Despite concessions given to attract industrialists, the scheme has not yet taken off. However, at present, there is a fruit juice manufacturing plant in the town.

Agriculture, agro-industry and tourism hold promising potential for business development, but entrepreneurs suffer from shortcomings such as a lack of access to credit and financial institutions, the lack of human resource training and development, particularly in business management as well as a lack of entrepreneurial creativity. Infrastructure with regard to roads and telecommunications are still underdeveloped, while there is a definite lack of sufficient banking facilities.

Forest utilisation is important in much of the region with most people dependant on woodland resources for fuel, building materials, fodder and medicine. Localised overexploitation is a problem particularly in heavily populated areas and for example near Katima Mulilo deforestation has resulted in wood and building pole shortages. There is some trade in hut poles around the town and between flood plain and woodland dwellers in the east

3.3 LIVESTOCK PRODUCTION:

With the exception of the South western tip of the region, which is infested with Trypanosomiasis and sleeping sickness causing tsetse fly, the entire region is suitable for livestock rearing.

Livestock	1996	1997	1998	1999	2000	2001	2002
Cattle	126491	129026	132235	138632	151106	152325	149030
Goats	11135	172261*	7534*	36663*	51448	65005	107825
Poultry				26014	29500	33228	24174
Donkeys				19	13	8	10
Pigs				38	203	253	314
Sheep	21	40	142	450	325	448	763

[Source: 1. DoP MAWRD 1999. Farm Household Economic Survey of Caprivi region.
2. *abnormal trend can not be explained and figures are correctly extracted from source]

84% of households own cattle, <50% own chickens, and about 20% own goats. Cattle off-take is low ((±4%). Like elsewhere off-take is estimated to be higher for smaller herds. Thus, cattle numbers continue to increase despite reported losses due to periodic droughts.

The market for meat in the Caprivi region is isolated from the rest of the northern communal areas, hence animals are sourced locally. However, there is currently an over supply of animals necessitating a high degree of formal control over supply. As a result markets are strictly controlled.

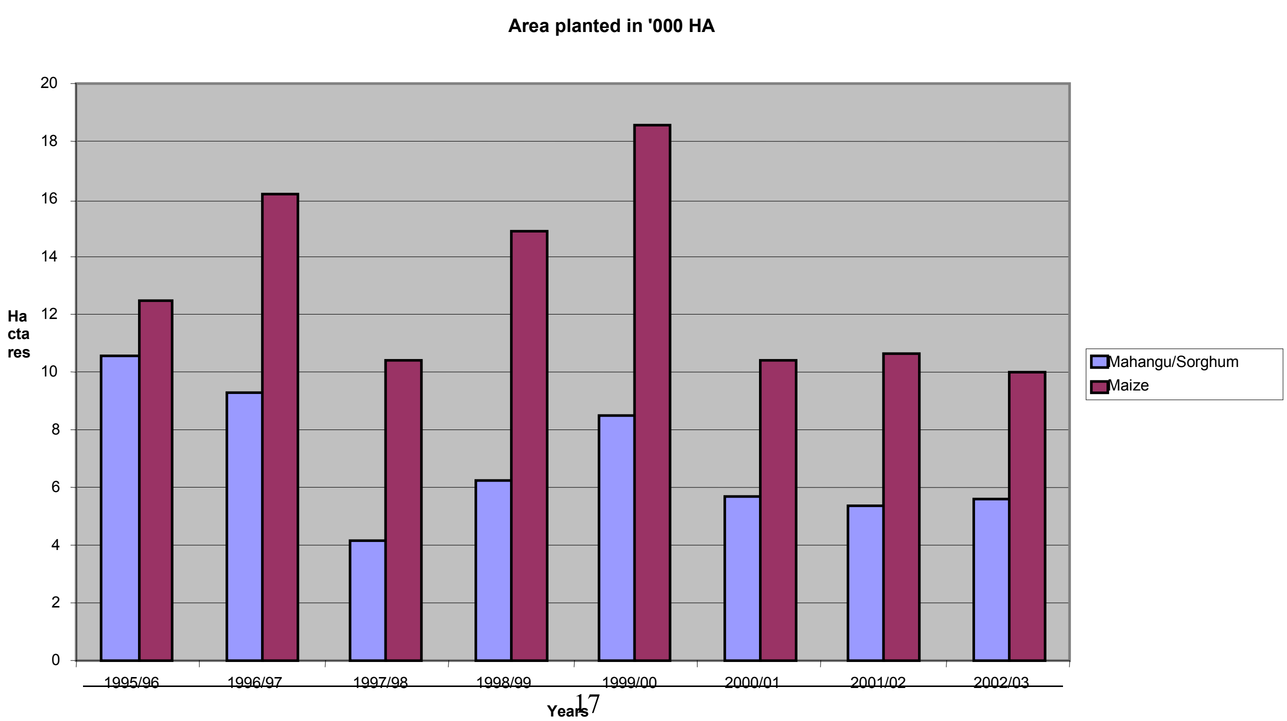
Until 2003, the only formal market infrastructure in Caprivi region was the Meatco managed abattoir at Katima Mulilo. This abattoir can handle about 80 head per day. An auction kraal built with Nolidep funds and was ready for use with effect from May 2003. The auction kraal is an alternative livestock market infrastructure for the region. Informal butcheries are the most commonly used market infrastructures throughout the region. Some of these butcheries are well constructed with good concrete slabs and iron sheet roofs while others operate under trees. Many cattle owners and butchers use these markets for slaughtering cattle and goats.

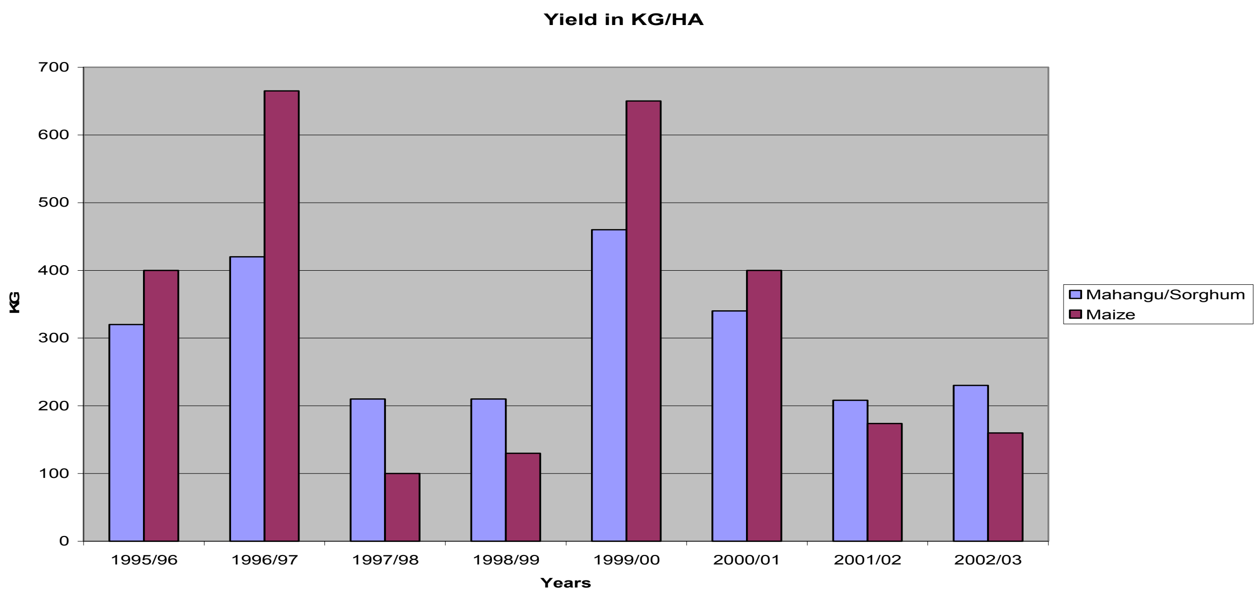
3.5. CROP PRODUCTION

Three crops dominate crop farming in Caprivi. The three crops are maize, millet (mahangu) and sorghum. Maize, produced under rainfed conditions, is the most important crop. However, there has been an increasing interest in pearl millet production in recent years with occurrences of drought and increasing signs of millet market development nationally and internationally. Sorghum is an important staple used mainly for brewing. Maize is planted in the eastern and southern areas while mahangu and sorghum are mostly planted in the western and southwestern part of the region. Other minor crops of which some are intercropped in main crops include; various vegetables especially pumpkins, beans and groundnuts. Cotton and sunflower are two cash crops that are being promoted in the region. Many farmers have grown cotton in 2002/3 rainy season.

Very few fields are fertilized with commercial fertilizers, manure and compost and also few fields are irrigated. Currently, irrigated crops and horticulture production takes place only on small plots. The majority of fields (81%) are prepared using draught animal power, usually cattle to pull ploughs, 12% are prepared by hand (usually woman) and 5% are prepared using tractors (John Mendelson, 1997). Weeding is done mainly by woman. Yields of mahangu and sorghum are low and vary from year to year between 70 to 445 kg per hectare. Much of the variation in yield is due to variation in rainfall with yields being lowest in driest years. Other factors affecting yields includes outbreaks of pests such as locusts, other insects and birds.

Recent crop production data is presented in the graphs below.
Source: Namibia early warning and food information systems





Farm products are sold in a number of ways, ranging from local bartering and sales within villages to the sale of maize, sorghum and millet to buying agencies in Katima Mulilo, Rundu and Windhoek.

3.6. FOOD SECURITY

Most people in Caprivi are directly dependent on natural resources especially those occurring around their homes. However, most rural people rely partly on purchased food using incomes derived from employment, pensions, remittances of both food and cash and a range of non-farm activities including trading.

Domestic production of food comprised only 12.2% of total intake in the Caprivi region as the whole. The 1993/94 household income and expenditure survey revealed that 47.1% of household spent more than 60% of their total income (in cash and kind) on food. This is a generally accepted indicator of poverty. Further 7.0% of the region spent more than 80% of the income on food.

The Caprivi region's poor are mainly female-headed household, elderly and those with limited access to outside sources of income and high dependency ratios. The San speaking people of the region constitute a particularly vulnerable group according to all indicators.

Figures indicate that people in the Caprivi region are amongst the most nutritionally disadvantaged in Namibia. Malnutrition is widespread in among children in the region. In the early 90's about 55% of the population suffered from goitre, a disease caused by iodine deficiency (MOHSS, 1993, MOHSS/ICCIDD, 1992).

4 AGRICULTURAL EXTENSION SERVICES IN CAPRIVI REGION

4.1 MISSION AND STRATEGY

According to the government's National Agriculture Policy document of 1996, the mission of the Directorate of Extension (DEES) is to provide agriculture extension services in the form of advisory, information communication, and training services aimed at empowering farmers, and at encouraging the adoption of improved agricultural and related income generating technologies and practices. This mission is based on the overall goal contained in the National Agricultural Policy which is to increase and sustain the levels of agricultural productivity, real farm incomes and national and household food security, within the context of Namibia's fragile ecosystem.

4.2 KEY EXTENSION APPROACHES

The region is focusing on the farming systems approach. The region's farming systems approach is an open and flexible way of providing research and extension support in a way that is farmer participatory, demand driven, dynamic, iterative, inter-disciplinary, multi disciplinary and collaboration. The organizational matrix for the farming system development team in the region is shown in Figure 1. The team consists of 3 groups. These groups are the management group, Locality group and the Technical support group. Stakeholders outside MAWRD are also members of these three respective groups.

4.2.1 THE LOCALITY (FIELD) GROUP.

This is the engine of the farming system development team of the region. The group composed of field staff who are at the field level i.e. at ADCs. The group is involved in assisting communities in developing their development programs. At this group communities are assisted in the development of their community action plans for their developmental issues. It is at this group where the interaction with farmers is on a day to day basis. This interaction involves the extension agents with individual farmers, Farmer Extension and Development (FED) groups, interest groups and farmer associations, etc. These farmer/community-based organisations are expected to lead and direct the activities of the locality group. Change agents play the support role. And during these operations support is needed from the technical or managerial levels.

4.2.2 TECHNICAL SUPPORT GROUP

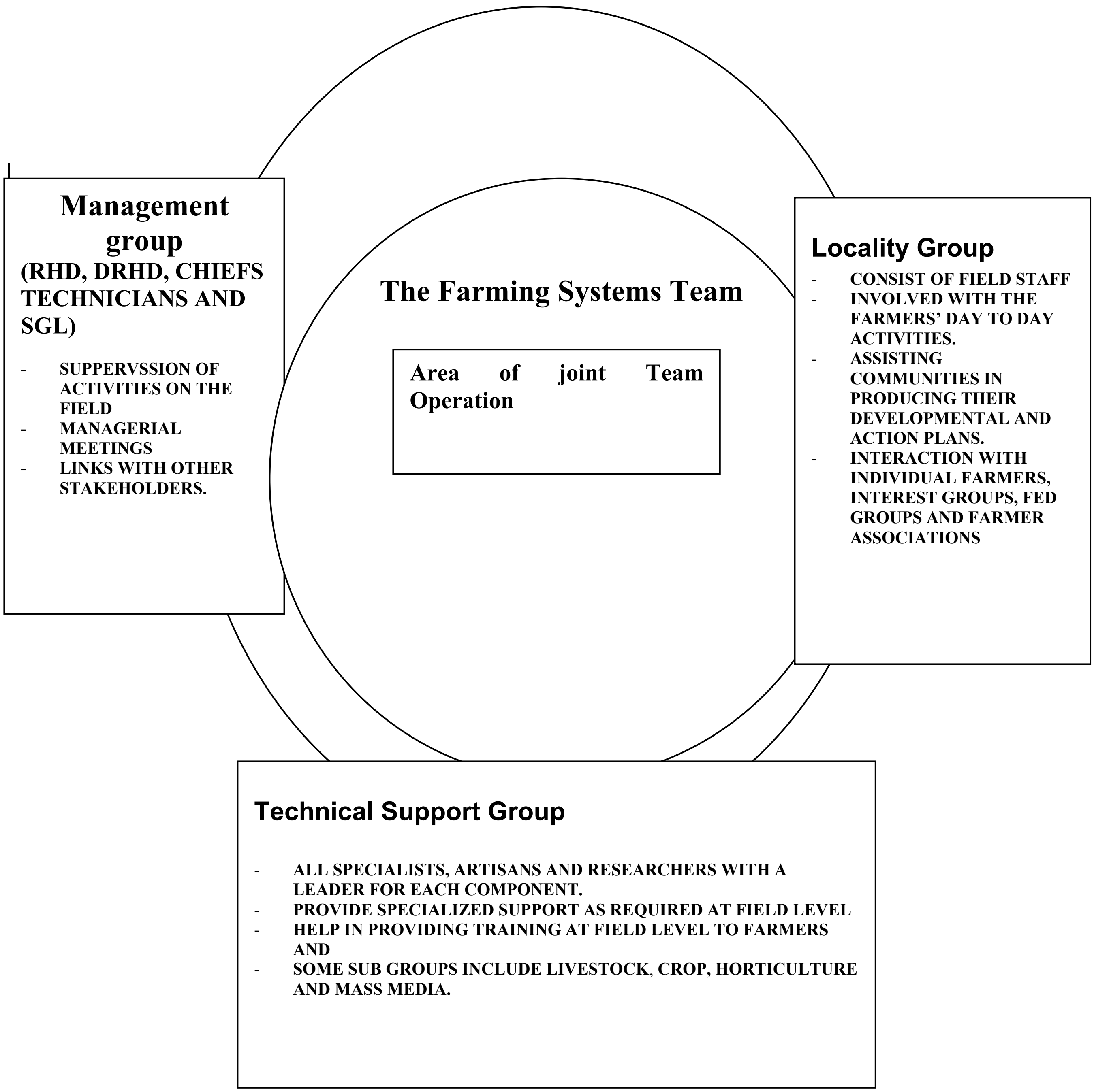
This is a group of specialists who positively respond to calls for their inputs at community level. The group consists of all researchers and subject mater specialists in the region. The membership to this group is mainly based on the knowledge and skills of individuals and not on their employment rank. Therefore, research technicians and extension technicians with specialist knowledge form part of the support group. This group tackles issues of livestock, horticulture, mass media etc. It is at this group where the region faces some problems due to the lack of some expertise in some fields. And it on this ground that some specialized expertise are tapped from other ministries.

4.2.3 MANAGEMENT GROUP

This group is composed of the region's MAWRD structural managers and other stakeholders. the group provides management back up and other resources to the farming system development team. They co-ordinate all activities, monitor and evaluate the team's activities in the region.

The farming systems development team approach is depicted in the diagram below.

THE KEY EXTENSION APPROACH FOR CAPRIVI REGION



4.3 DEES POST ESTABLISHMENT

The Chief Agricultural Extension Officer supported by two Chief Agricultural Extension Technicians heads the region. Under them there are twenty four Agricultural Extensoion Technicians (AET).

The region, as in other regions is faced with a problem of professional staff (Officers). At the moment, there are no Agricultural Extension Officers. All posts are vacant, and the level of education at these posts requires staff to have a first degree.

DEES, Caprivi sub-region posts

	CAEO	AO	CAET	AET	CC	CA	HM	OD	LAB	P/AET
Filled posts	1	0	2	24	1	5	3	12	20	2
Vacant posts	0	4	0	6	0	3	2	8	16	0

As noted in section 3.2.1 the region is home to some 12,124 households. This means the region has an AET post to farm household ratio of 1:505 (24:12,124).

4.4. AGRICULTURAL DEVELOPMENT CENTRES

Caprivi region has a total of sixteen (16) ADCs/ARDCs. Three of the sixteen are agricultural rural development centres (ARDC) namely; Bukalo, Sibbinda and Cincimani. The other thirteen are agricultural development centres (ADCs). These are Katima, Masokotwani, Dudukabe, Ngoma, Linyanti, Sangwali, Kabbe, Sachona, Kasheshe, Itomba, Kongola and Impalila.
The region is administered from Katima Mulilo.

4.5. OPERATIONAL EQUIPMENT

Vehicles - Caprivi region has a total number of thirty two (32) vehicles, comprising of bakkies, car, trucks and passenger vehicles. Out of the 32 vehicles, only 22 are in good running conditions while the remaining ten are either not road worthy or have been standing in garages for a long time.

Computers – DEES Caprivi has a total number of 14 computers centralised in Katima Mulilo. This implies that apart from Katima ADC located in town, no other ADC is allocated with a computer. Field technicians therefore, have to drive to town for their work to be typed.

Audio visual - the office have three overhead projectors, two functional and one broken. In addition there are six video sets used by the region.

4.6 DEES ANNUAL BUDGET

The table below indicates the operational budget received by DEES Caprivi in recent years (excluding remuneration).

		Amount Allocation							
Vote	Title Description	96/97	97/98	98/99	99/0	0/01	01/02	02/03	03/04
021	Travel and Subsistence Allowance	70,000	75,000	80,000			195,000	148,000	160,000
022	Materials and Supplies	371,568	402,000	422,000			195,000	195,500	172,100
023	Transport	715,000	1300,000	1,250,000			1,358,000	1,120,000	1,200,000
024	Utilities	0	47,500	60,000			71,500	42,500	55,500
025	Maintenance expenses	339,450	353,000	355,000			84,600	64,200	80,220
027	Other Services and Expenses	0	0	0			70,400	52,000	62,000
044	Individual and none profit Organisation	0	0	0			90,000	90,000	130,000
101	Furniture and Office Equipment	47,000	9,000	8,000			13,000	12,000	17,700
103	Operation equipment machinery and plants	17,000	20,000	10,000			13,000	6,500	10,000
045	Subsidies	45,000	40,000	50,000			0		
	Total Budget	**1,605,018**	**2,246,500**	**2,235,000**			**2,090,500**	**1,730,700**	**1,887,520**

4.7 MAIN COLLABORATORS

The Ministry of Agriculture, Water and Rural Development is fairly represented in the region with five out of the six Directorates of the Ministry being present.

The five Directorates are:

- Directorate of Extension and Engineering Services
- Directorate of Rural Water Supply
- Directorate of Veterinary Services
- Directorate of Research and Training
- Directorate of General Services.

These Directorates are working together towards the success in the Region. To substantiate this, the Regional Management Unit was established which overseers the Ministry's project activities. There is also a co-ordinating committee which was formed which overseers the Ministry of Agriculture, Water and Rural Development’s activities and thus encourages co-ordination of regional work.

The Unit is mainly composed of the Regional heads. The head of extension services (CAEO)in the region currently chairs the unit. These Directorates are closely working together and facilitating the Ministry's activities in a participatory way with the communities or beneficiaries. The working relationship of these Directorates is evident, through regular Regional Management Meetings held. It is at these meetings where decisions are made and all the Directorates report progress.

Other Ministries such as the Ministry of Regional, Local Government and Housing, Ministry of Environment and Tourism and the Ministry of Health and Social Services are some of the Ministries that work in close collaboration with the Ministry of Agriculture, Water and Rural Development.

5 SURVEY METHOD

5.1 RATIONAL

This is a report on a baseline survey designed to investigate selected indicators of extension impact during the 2002/03 farming season. Baseline findings may be used to draw up impact indicators for the NDP2 period. Up until now it has been difficult to draw up specific impact indicators because the baseline situation has not been known. It is intended to repeat this survey after the 2006/07 season to gauge change over the period between the baseline survey and the subsequent survey. This period coincides with the span of NDP 2, which is the basic planning timeframe of the extension service. It should then be possible to see whether the objectives have been achieved or otherwise. This information should be useful for extension managers in directing their interventions. It should also be of interest to other stakeholders including collaborating agencies as well as the Namibian tax paying public at large.

5.2 SURVEY OBJECTIVES

As discussed in section 2 of this report, this survey looks at indicators of extension impact in terms of the level of objective over which extension managers have most control – that is the impact on farmer understanding, attitudes, awareness and adoption, which we may collectively refer to as “farmer behaviour”. It is the job of extension to facilitate farmers’ efforts to improve their farm management practices. Extension does this mainly by providing information, advice and training. Whether this translates into increased agricultural production and yields, and whether this in turn translates into increased farmer and national income and food security are much more complex questions. The attainment of these objectives is due to many factors of which extension services are but one.

5.3 QUESTIONNAIRE DEVELOPMENT

The first extension impact questionnaire workshop held at Neudamm Agricultural College from January 28-31, 2003 provided valuable knowledge about the structure of the baseline survey questionnaire to the officers responsible for the survey. It was at this workshop that an agreement was reached about a standard structure for the questionnaire to be used in the survey. A logical sequence of questions that explores one topic before shifting to the next was preferred to be a meaningful approach for the questionnaire. The funnel questionnaire structure where one starts with general questions and proceeds to specific questions that focus on problems under study was used in the survey.

The types of questions used include factual questions that request objective information about the respondent, such as their social background or related personal data (sex, age, marital status etc.). Structured questions that indicate a range of possible answers were used. These are questions that give multiple choice answers or guidelines to the respondent. The answers sometimes include yes/no or many possibilities, checklist where the respondent is asked to choose only the most adequate answer or all the suitable answers. Contingency and fill in questions were also used. The latter was used to check relevance of the answers given by the respondent.

Questions were formulated based on the logical framework to take into consideration the impact of specific activities on different objectives. The hypothesis tested was that, extension services have a positive impact on farmer knowledge and behavior particularly in terms of farm technology, farm management and farmer organization. Questions were therefore, designed to cover topics such as questionnaire information, farmer type and resources, farmer extension/research contact, extension impact-technologies and marketing, policy information, institution development (CBO), etc.

Each sub region /division formulated their own questionnaire based on their Logical Framework. For the Caprivi sub-division, management team members and STEAR project technical assistants assisted the survey officials in the development and structuring of questions.

The questionnaire was pre-tested to identify mistakes and improve familiarity with the questionnaire. The pre-testing was carried out in the third week of February 2003. It was carried out at Chefuzwe area, some 15km south of Katima Mulilo. An Agricultural Extension Technician carried out the interview under the supervision of the survey officials. A total of five respondents were interviewed i.e. three female and two male farmers.

During pre-testing, it was observed that the time spent with one respondent ranged between one hour fifteen minutes and one hour thirty minutes. Time spent per questionnaire was basically too long resulting in lack of concentration by the respondent. Other problems cited were farmer expectations. Some farmers thought that the government might directly assist them as a result of the survey. Problems with question formulation and translation difficulties by the interviewer and respondent were also observed. Such questions were re-formulated for easier translation.

5.4 SAMPLE SELECTION

Sampling is essential in any survey because populations tend to be large and resources and time available limited, with the results that it is usually not possible to study each person or object.
During the second Extension Impact questionnaire workshop (March 18-19,2003), sample selection was dealt with in details. During the workshop, various methods of sampling were introduced from which each division/sub-division chose an appropriate method to use for their survey.

Caprivi sub-division Extension Impact baseline survey used the probability sampling method. A combination of two of the probability sampling methods was used. The two were simple random and cluster sampling methods. Using the cluster method, the region was divided according to farming systems (agro-ecological zones). The three agro-ecological zones are; flood plains, middle and upper land. The agricultural development centers (ADC's) that fall under each farming system were clustered and randomized to select eight representative ADCs.

Based on the estimated number of households per farming system, three ADCs were selected from the middle land with estimated 46% households, three from the flood plains with estimated 32% households and two from the upper land with 22% households.

For each ADC, a sampling frame of all the communities was listed from which two communities were randomly selected. Another sampling frame was also developed with the list of all the villages for each community from which five villages were randomly selected.

Table 5.3.1. Proportion of household population with sample size

Farming system	**Approximate household percentage**	**Sample size**
Middle land	46	97
Flood plains	32	69
Upper land	22	44
Total	100	210

A total of 210 questionnaires were planned to be carried out in the whole region (Table 1). In the event a total of 222 questionnaires were completed as below.

Nearest Agricultural Development Centre

ADC	Agro-zone	Frequency	Percent of Households
Impalila	Flood plain	19	8.6
Katima	Flood plain	31	14.0
Bukalo	Flood plain	20	9.0
Sachona	Upland	27	12.2
Masokotwani	Middle land	31	14.0
Sibbinda	Upland	30	13.5
Linyanti	Middle land	34	15.3
Ngoma	Middle land	30	13.5
Total		222	100.0

5.5 PREPARATION FOR FIELD IMPLEMENTATION

5.5.1 ENUMERATOR SELECTION

Enumerator selection and hiring was discussed and agreed upon in the workshop of the 18-19th March 2003. The selection criteria for enumerators included; good communication skills, unemployed with agricultural background, preferably with a Diploma in Agriculture. Other requirements were willingness to work hard, fluency in local languages and some experience in surveys.

Based on the above-mentioned criteria, an announcement was made through the local NBC radio. Four candidates with agricultural Diplomas (three males and one female) were hired as enumerators.

5.5.2 TRAINING OF ENUMERATORS

A one full day training of enumerators was carried out on the 9th of May 2003 in the agricultural conference hall. The purpose of the training was to equip the enumerators with everything pertaining to the survey to ensure smooth implementation during the survey period.

The enumerators were trained in issues such as the overall purpose of the survey and understanding of the survey process. Other issues covered in this training included; how enumerators should introduce themselves, the purpose of individual question and how questions should be asked to the respondents. Training discussions also included how enumerators should behave and react to uncooperative farmers.

The training ended with simulations in which enumerators interviewed themselves. Logistic and commencement and completion dates of the survey were also discussed during training.

5.5.3 COMMUNITY LIAISON

All Agricultural Extension Technicians were constantly informed in monthly staff meetings about the progress of the survey and their role in the survey. Responsible technicians were all provided with programs in which the villages to be covered on specified dates were indicated.

Village headmen were informed in advance by the technicians about the purpose, confidentiality and dates of the survey.

In addition, announcements were also made on NBC local radio every second day of the survey period to remind farmers about the date scheduled for their village.

5.6 QUESTIONNAIRE IMPLEMENTATION

During the survey, each enumerator was able to complete about six to seven questionnaires per day. The total number of questionnaires completed in ten days including one day for traveling was 220. The total kilometer traveled during survey was about 1,265 and a summary of survey costs is presented in the Table below.

Item	Unit/N$	N$
Enumerator Remuneration	4 Enumerator *11 Days N$ 200	8,800
Kilometers	1265 Km N$ 2.10	2,656.50
Enumerator Night Allowance	4 Enumerator*9daysn$900	900
Hiring Boat To Impalila	6 Person Round Trip	120
Total		12,476.50

The survey was not carried out exactly as planned because some areas in the flood plain area were inaccessible due to severe floods. However, a second randomization was carried for areas found in the flood plains that could be accessible. Sample communities from this area were therefore well covered by the survey.

Other practical problems cited during survey implementation included timing of the survey. The time of the survey coincided with the harvesting time, therefore most of the farmers were not available for interviews for much of the day. The problem of heavy drinking of beer, particularly in the afternoon was also encountered in some areas. The other problem encountered was of funerals and meetings. This resulted in enumerators having to conduct interviews during the evening time (up to 21hrs).

5.7 DATA ANALYSIS

Data entry and analysis was undertaken in Windhoek by contracted services. Questionnaires were inspected for errors, double responses, omissions, unanswered questions and general completeness prior to data entry, and where necessary the corrections were made. Coding of responses for some questions that were not pre-coded was done.

Trained data entry assistants transferred the data from the questionnaires into Microsoft Excel. Data analysis was done using Statistical Package for Social Sciences (SPSS) software. The data was transferred from Excel to the SPSS templates. This involved matching the cases and variables from Excel with those defined in SPSS data file. Using SPSS, the initial frequency tables covering all the defined variables per region were generated. These frequency tables were checked for errors, by inspecting values in each column against the codes for each response in the SPSS data file, and tracing the error to the specific source questionnaire. The necessary corrections were made to the data file based on information found on the questionnaire.

The corrected data set was used to generate preliminary frequency tables for all variables for the region and these tables were circulated to Region Survey Officials for review and comments during a two-day workshop. The Regional Survey Officials provided clarity on some errors in particular omissions/ unanswered questions and inconsistencies based on their knowledge of extension in their regions. After the workshop, the comments from regional officials were used in making final corrections to the data set.

Lastly, final frequencies and cross-tabulations were established on the data, and where applicable multivariate analysis was conducted. In addition, appropriate graphics in the form of simple bar graphs, clustered bar graphs and pie charts for selected variables or survey questions were generated to complement the findings presented in the final tables.

The final tables and graphics were sent back to the regions, together with the completed questionnaires, so that report preparation could be completed.

PART THREE

6 SURVEY FINDINGS

6.1 SELECTED FARMER TYPE CHARACTERISTICS

The information presented below, should help us to judge the extent to which the sample was in fact representative of the entire farming community in the region. In addition, it will be important to ensure that, when the impact survey is conducted (as planned in 2006/07), the sample then selected displays similar characteristics.

6.1.1 SEX OF RESPONDENT

Table 2.1. Sex of Respondent

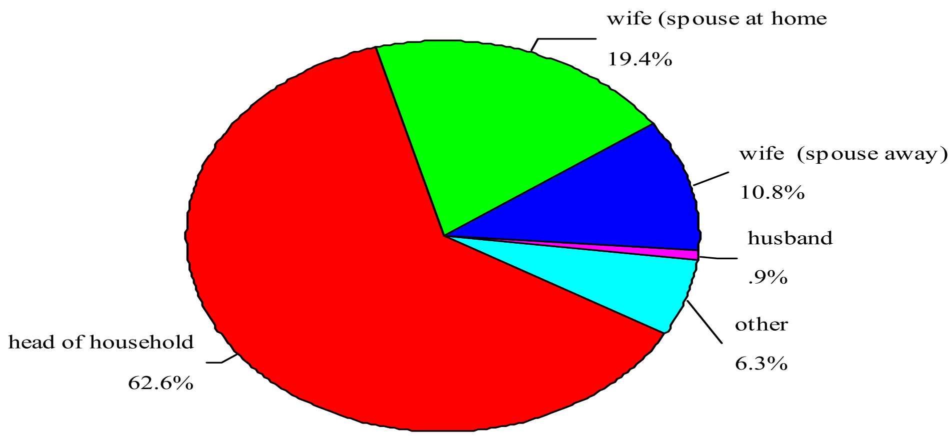
	Frequency	**Percent of Respondents**
Male	77	34.7
Female	145	65.3
Total	222	100.0

The survey revealed that 65.3% of respondents were female farmers and 34.7% were male farmers. This clearly indicates that females in the region are more involved in agriculture as compared to their male counterparts. The similarity between female respondent numbers and the total of de-facto and de-jure female household heads confirms that the survey sample was representative.

6.1.2 HOUSEHOLD HEAD

Variable	**Category**	**Percent of Households**
Respondent type	Head of household	62.6%
	Wife of household (husband in residence)	19.4%
	Wife of household head (husband living away)	10.8%
	Husband of household head	.9%
	Other	6.3%

Fig.1 Respondent type



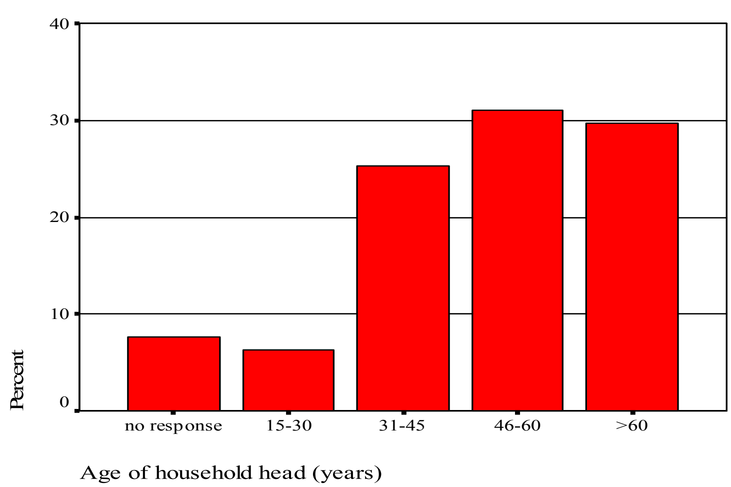
More than three fifths of the respondents (62.6%) were heads of household. Another 30% were spouses. This confirms that the information gathered was reliable since respondents were the farm managers and owners of farm enterprises.

6.1.3 AGE

Table 3.1 Age of household heads

Variable	**Category**	**Percent of Households**
Age of household head	No response	7.7%
	15-30	6.3%
	31-45	25.2%
	46-60	31.1%
	>60	29.7%

Fig. 2



About 60% of the household heads interviewed were above 45 years of age. Below 30 years of age, the percentage of household heads is relatively low because this tends to be a time when focus is largely on landing an urban job and getting out of the rural areas. This figure is expected to improve as young farmers are encouraged to participate more in farming.

6.1.4 AGE OF RESPONDENT

Table 3.2 Age of non-household head respondents

Variable	Category	Percent of Households
Age of respondent	No response	56.3%
	15-30	17.1%
	31-45	14.9%
	46-60	6.8%
	>60	5.0%

Respondents, excluding household heads, were asked about their approximate age. This was done to show the potential relevance and reliability of the information gathered. The survey revealed that, the age of the respondents between 15 and 30 years was 17.1 percent, while between 31 and 45 was 14.9 percent. This indicates that the information collected was reliable.

6.1.5 EDUCATION LEVEL OF RESPONDENT

Table 3.3

Variable	Category	Percent of Households
Education level of respondent	No school	23.4%
	Part primary	30.2%
	Part secondary	38.7%
	Above secondary	7.7%

The education level of the household head is satisfactory. Only about 23.4% of the household heads had not attended school. This implies that most households are able to use written information from DEES. However, due to literacy programs offered by Adult Education, the literacy level is expected to increase in future.

6.1.6 HIGHEST EDUCATION IN HOUSEHOLD

Table3.4

Variable	Category	Percent of Households
Highest education level of any member in the household	No school	5.4%
	Part primary	18.0%
	Part secondary	62.6%
	Above secondary	14.0%

It is interesting that, only 5.4% of the households covered in the survey had all members with no formal school education. This implies that extension messages disseminated by writing, has potential to cover 95% of households in the region.

6.1.7 HOUSEHOLD LABOUR

Table 4.1

Variable	Category	Percent of Households
Persons in the household helping regularly with farm work	0	6.8%
	1-2	36.9%
	3-5	39.2%
	>6	17.1%

The survey revealed that the largest proportion (39%) of the households have 3-5 members helping regularly in farm work. This is good, considering the average size of household for Caprivi region is 5.1. However, more people are required to become involved in farming since agriculture is the primary economic base of the region.

6.1.8 HIRED LABOUR

Table 4.2

Variable	Category	Percent of Households
Hired labor	0	32.4%
	1-2	40.5%
	3-5	16.2%
	>6	10.8%

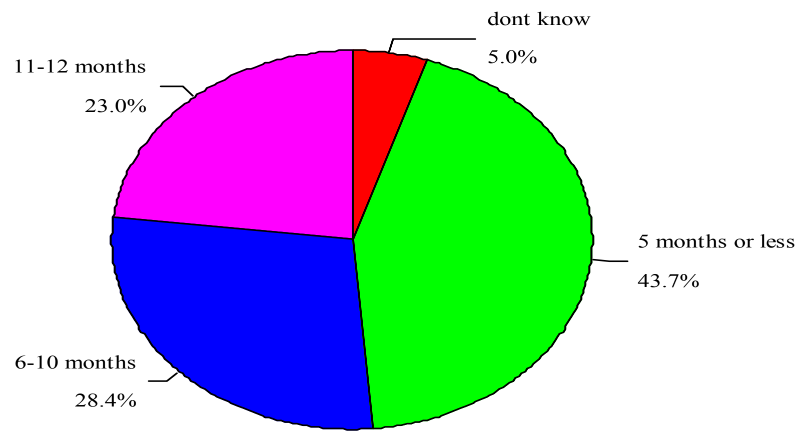
About 40% of the households use 1-2 hired labor for their farming activities. 32.4% of the farmers do not hire any labor. Farmers with bigger fields require more hired labor than those with smaller fields.

6.1.9 FOOD SELF-SUFFICIENCY

Table 4.3

Variable	Category	Percent of Households
Months of adequate food supply for household from own production	Don’t know	5.0%
	5 months or less	43.7%
	6-10 months	28.4%
	11-12 months	23.0%

Fig 3



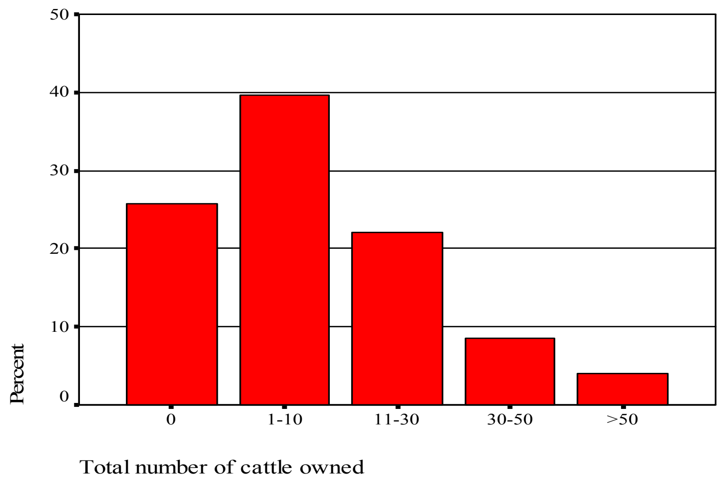
Farmers were asked about the number of months of food supply for their households they produce from their own supplies. The survey revealed that 43.7 percent of farmers subsist on food supply from own supply for only five months or less. This implies that the remaining months are difficult and require additional income sources. 28.4 percent of farmers said their food supply normally lasts between 6 and 10 months. This means that more than 70 percent of farmers face starvation yearly due to insufficient food supply from own production unless they have alternative income sources.

6.1.10 CATTLE OWNERSHIP

Table 5.2. Livestock Ownership

Variable	**Category**	**Percent of Households**
Total number of cattle owned	0	25.7%
	1-10	39.6%
	11-30	22.1%
	30-50	8.6%
	>50	4.1%

Fig 4

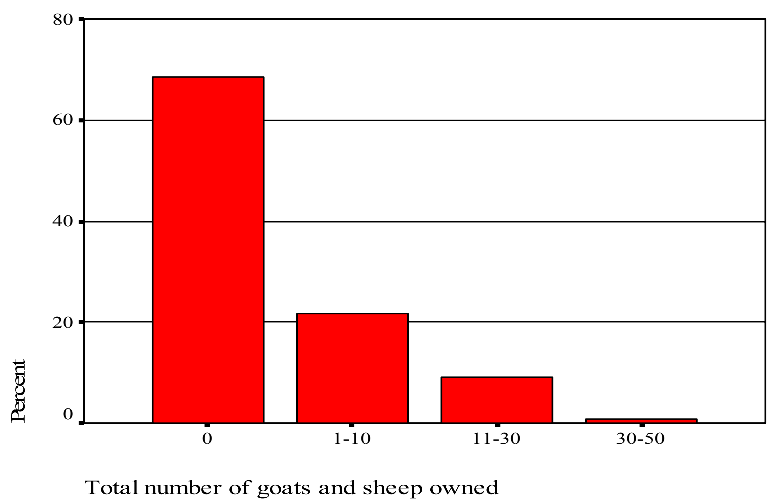


The survey revealed that a quarter of the farmers do not own cattle, and about 40% own fewer than 11 cattle. Cattle are the most important livestock owned by farmers in Caprivi. Farmers are being educated as to the benefits of self quarantine therefore, more farmers are expected to own cattle in future while off-take increases.

6.1.11 SMALL STOCK OWNERSHIP

Variable	Category	Percent of Households
Total number of goats and sheep owned	0	68.5%
	1-10	21.6%
	11-30	9.0%

Fig 5



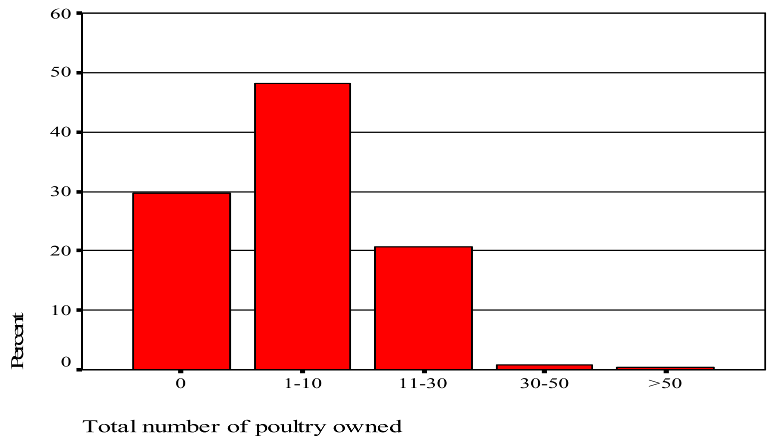
Many farmers in Caprivi do not keep goats. The survey indicates that only 9% of farmers own more than 10 goats. The situation is expected to change in future with NOLIDEP's Small Scale Seed Capital Fund assisting farmers to purchase goats for those without small stock.

6.1.12 OTHER LIVESTOCK

Table 5.3/5.4

Variable	Category	Percent of Households
Total number of equines owned	0	100.0%
Total number of pigs owned	0	99.5%
	1-10	.5%
Total number of poultry owned	0	29.7%
	1-10	48.2%
	11-30	20.7%
	30-50	.9%
	>50	.5%

Fig 6



The survey revealed that only 0.5% of farmers in the region keep pigs. The market for pigs in the region is not well established therefore, farmers may not be keen on keeping pigs. In addition this may be linked to religious beliefs.

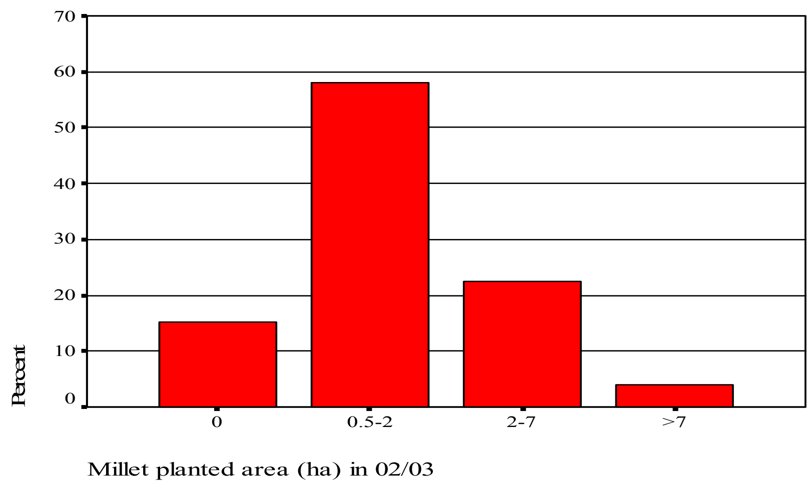
Farmers were asked about the number of poultry they owned. Surprisingly, about 30% of farmers said they did not own poultry and only 5% own more than 50. Chicken is occasionally wiped out by Newcastle disease and at the time of the survey, they may have not yet fully recovered. Poultry are mostly attached to women may be because of their small individual values and absence of herding demand.

6.1.13 MILLET PRODUCTION

Table 5.6. Millet Production

Variable	Category	Percent of Households
Millet planted area (ha) in 02/03	0	15.3%
	0.5-2	58.1%
	2-7	22.5%
	>7	4.1%

Fig 7



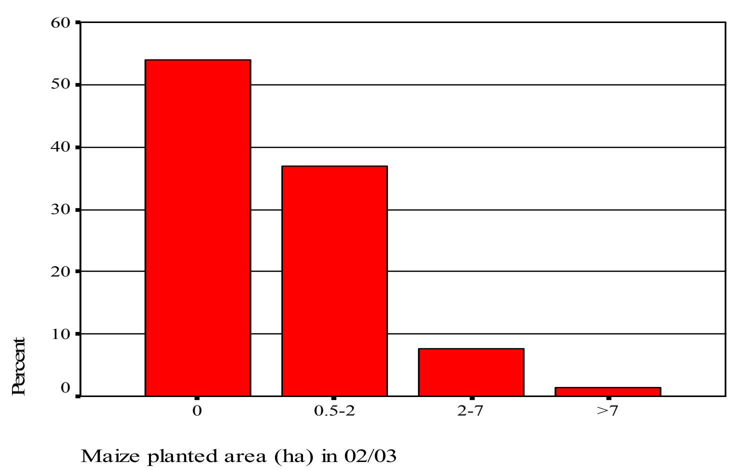
Farmers were asked to estimate the area planted to mahangu in the last season. The survey revealed that close to 60% of farmers grew mahangu on two or less hectares. 22.5% of farmers grew mahangu on 2-7 hectares, much more than the area planted with maize. Most farmers cited lack of enough rainfall and high charges by tractor owners as two major problems limiting farmers to cultivate more land.

6.1.14 MAIZE PRODUCTION

Table 5.7

Variable	**Category**	**Percent of Households**
Maize planted area (ha) in 02/03	0	54.1%
	0.5-2	36.9%
	2-7	7.7%
	>7	1.4%

Fig 8



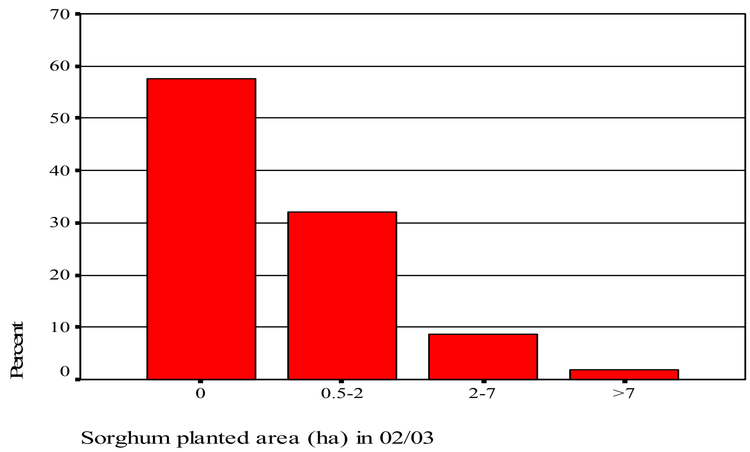
More than half of the farmers did not grow maize in 2002/3 season. Most farmers in Caprivi, particularly in the western parts, are resorting to planting mahangu because of unreliable rainfall. They believe mahangu is more drought resistant than maize.

6.1.15 SORGHUM PRODUCTION

Table 5.8

Variable	Category	Percent of Households
Sorghum planted area (ha) in 02/03	0	57.7%
	0.5-2	32.0%
	2-7	8.6%
	>7	1.8%

Fig 9



6.1.16 HOUSEHOLD INCOME SOURCES

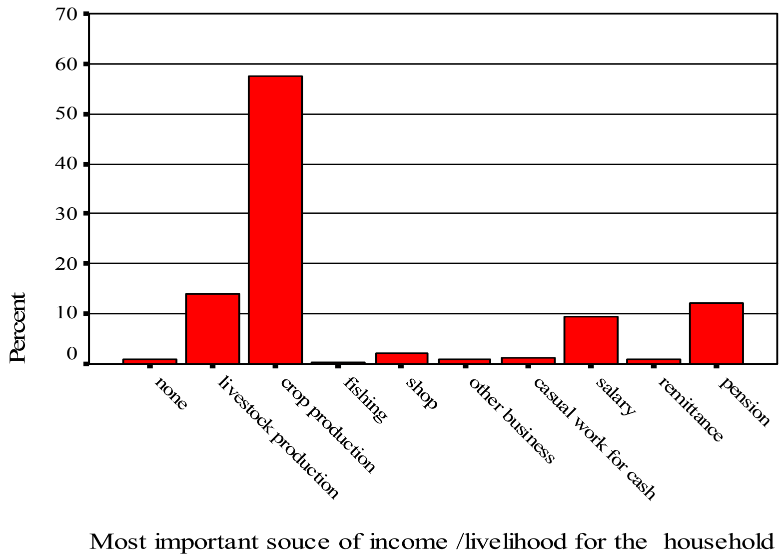
Table 6.0 Sources of Household Income

Variable	Category	Percent of Households
Livestock production	Yes	67.6%
Crop production	Yes	84.7%
Fishing	Yes	20.7%
Shop business	Yes	6.8%
Other business	Yes	21.2%
Casual work for cash	Yes	30.6%
Casual work for kind	Yes	15.8%
Salary	Yes	14.9%
Remittances	Yes	15.8%
Pension	Yes	31.1%
Other source	Yes	4.5%

Table 6.1 Ranking of Sources of Income by Importance

Variable	Category	Percent of Households
Most important source of income /livelihood for the household	None	.9%
	Livestock production	14.0%
	Crop production	57.7%
	Fishing	.5%
	Shop	2.3%
	Other business	.9%
	Casual work for cash	1.4%
	Salary	9.5%
	Remittance	.9%
	Pension	12.2%

Fig 10



The questionnaire asked about the most important source of income /livelihood for the household. The survey revealed that about 57.7% of the farmers ranked crop production as their main source of income/livelihood followed by livestock and pension as the third.

Table 6.2

Variable	Category	Percent of Households
Second most important source of income /livelihood for the household	None	9.0%
	Livestock production	36.9%
	Crop production	18.0%
	Fishing	2.7%
	Shop	1.8%
	Other business	5.9%
	Casual work for cash	7.7%
	Casual work for kind	1.4%
	Salary	.5%
	Remittance	2.7%
	Pension	13.1%
	Other	.5%

Fig 11

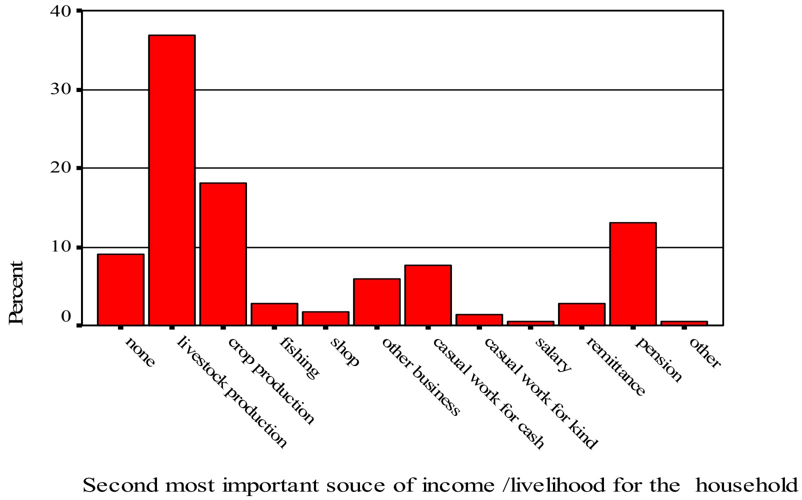
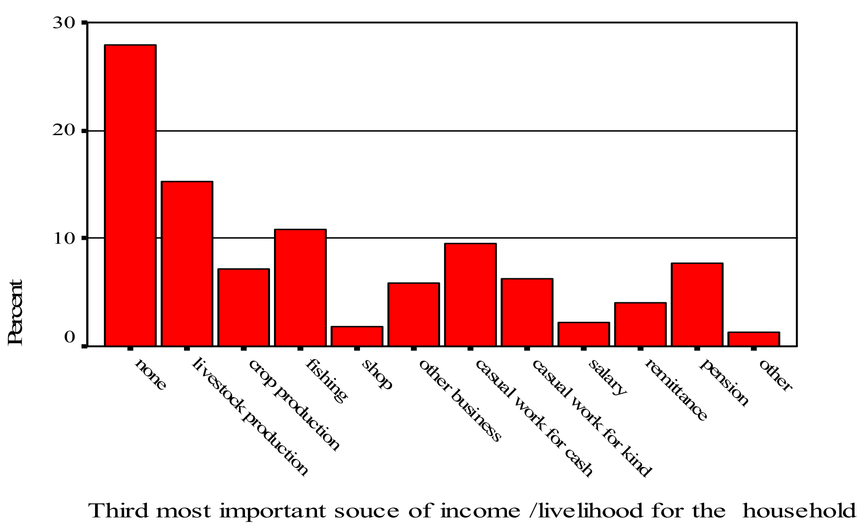


Table 6.3

Variable	Category	Percent of Households
Third most important source of income /livelihood for the household	None	27.9%
	Livestock production	15.3%
	Crop production	7.2%
	Fishing	10.8%
	Shop	1.8%
	Other business	5.9%
	Casual work for cash	9.5%
	Casual work for kind	6.3%
	Salary	2.3%
	Remittance	4.1%
	Pension	7.7%
	Other	1.4%

Fig 12

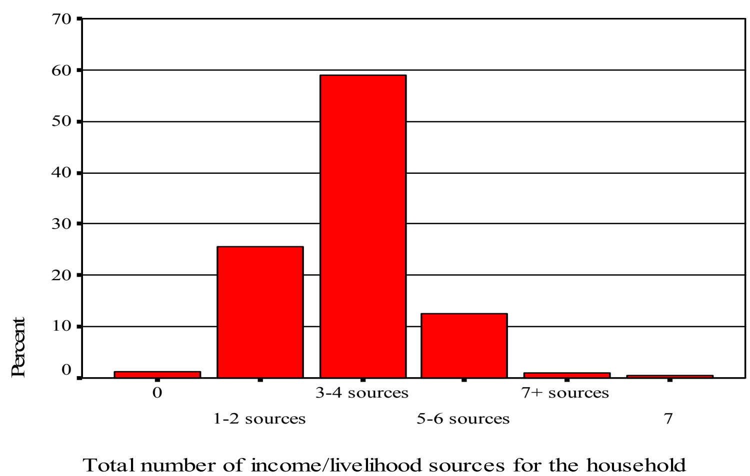


6.1.17 LIVELIHOOD DIVERSIFICATION

Table 6.4. Number of Livelihood Sources (Diversification)

Variable	Category	Percent of Households
Total number of income/livelihood sources for the household	0	1.4%
	1-2 sources	25.7%
	3-4 sources	59.0%
	5-6 sources	12.6%
	7+ sources	.9%
	7	.5%

Fig 13



A quarter of farmers stated that they have 1-2 sources of income, while the majority of them have 3-4. Although data from Table 6.2 and 6.3 suggests that 37% of farmers had 1-2 income sources, the responses to this open ended livelihood diversification question are deemed to be more reliable. With the implementation of Farming System Research and Extension approach, extension is expected to support farmers enhance and/or increase incomes from both off and non farm activities.

6.2 EXTENSION FARMER CONTACT INDICATORS

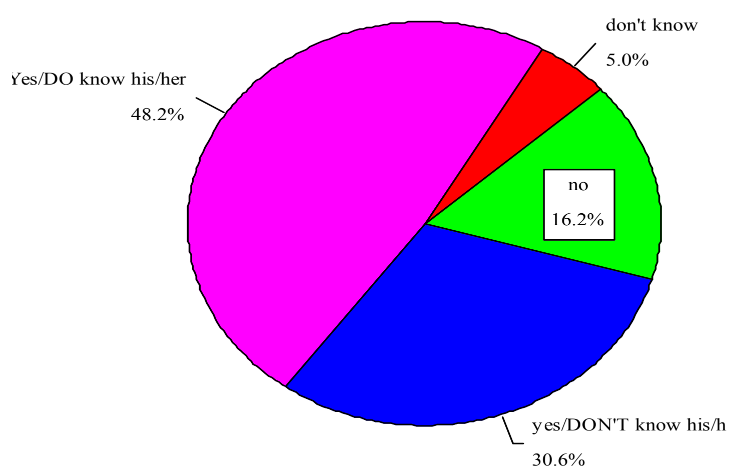
The section reports on indicators of extension impact in terms of farmer awareness, farmer understanding, farmer attitudes and farmer adoption of specific extension recommendations relating to key farming issues in the region. Readers should remember the discussion on the issue of extension impact indicators, in section 2.2 as they page through this portion of the report.

6.2.1 AWARENESS OF AGRICULTURAL EXTENSION TECHNICIAN

Table7.1 . Farmer Knowledge of Local Agricultural Extension Technician (AET)

Variable	**Category**	**Percent of Households**
Extension (AET) present and work in the area	Don't know	5.0%
	No	16.2%
	Yes/DON'T know his/her name	30.6%
	Yes/DO know his/her name	48.2%
		100.00%

Fig 14



Farmers were asked if they knew that there was an extension official working in their area, and if so, what his or her name was. The question aims at indicating the level of familiarity between extension services and farmers.

If farmers know the name of local extension official by name it can be assumed that there is good level of extension contact. The survey revealed that about 48% of farmers know their local extension staff by name as indicated in Fig 14.

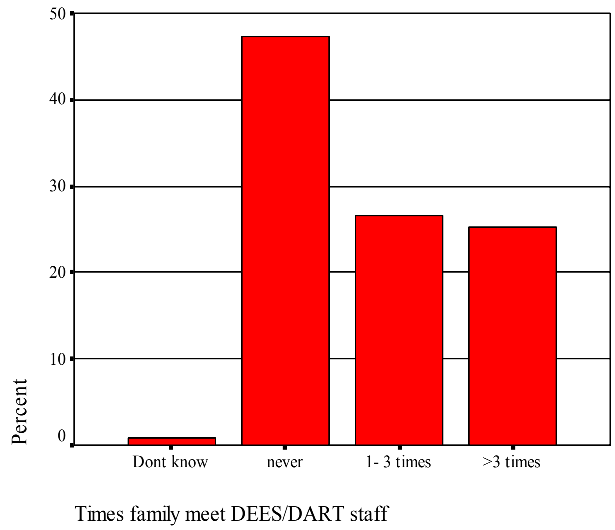
The region expects increased contacts in future. This should result in the increase in the percentage of respondents who know the name of their local extension agent.

6.2.2 CONTACT WITH AGRICULTURAL EXTENSION TECHNICIAN

Table 7.2. Farmer-Extension Contact Indicators

Variable	Category	Percent of Households
Times family meet DEES/DART staff	Don't know	.9%
	Never	47.3%
	1- 3 times	26.6%
	>3 times	25.2%

Fig 15

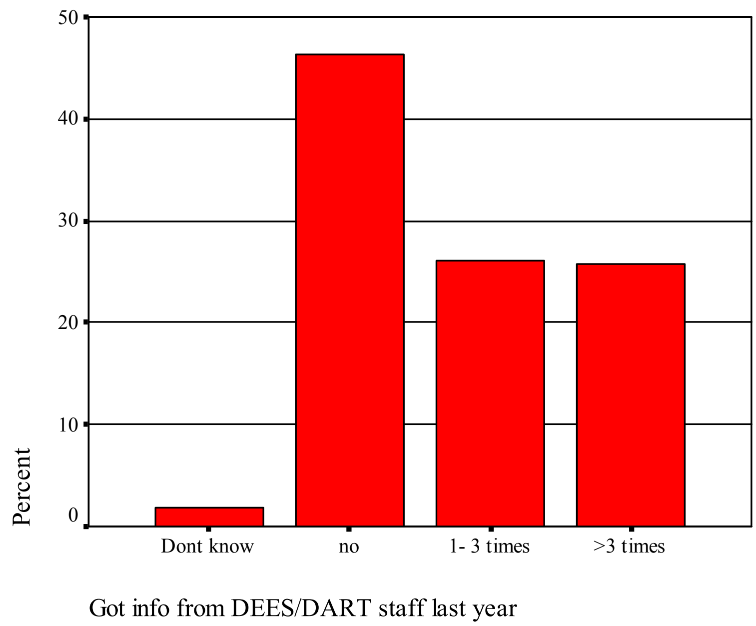


6.2.3 RECEIVED INFORMATION FROM EXTENSION

Table: 7.3

Variable	Category	Percent of Households
Got info from DEES/DART staff last year	Don't know	1.8%
	No	46.4%
	1- 3 times	26.1%
	>3 times	25.7%

Fig: 16

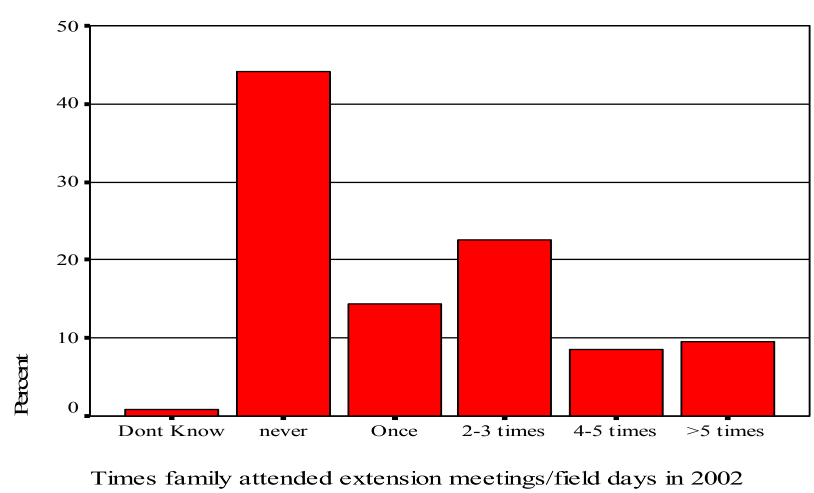


6.2.4 ATTENDED AGRICULTURAL EXTENSION ACTIVITY

Table: 7.4

Variable	Category	Percent of Households
Times family attended extension meetings/field days in 2002	Don't Know	.9%
	Never	44.1%
	Once	14.4%
	2-3 times	22.5%
	4-5 times	8.6%
	>5 times	9.5%

Fig: 17

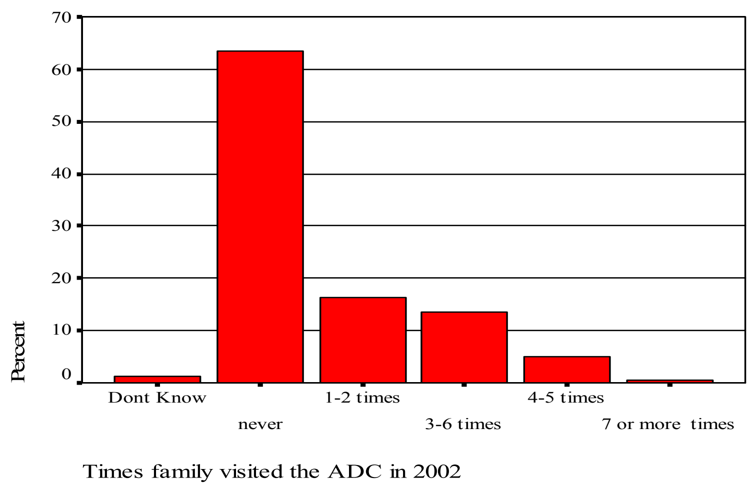


6.2.5 VISITS TO THE AGRICULTURAL DEVELOPMENT CENTRE

Table: 7.5

Variable	Category	Percent of Households
Times family visited the ADC in 2002	Don't Know	1.4%
	Never	63.5%
	1-2 times	16.2%
	3-6 times	13.5%
	4-5 times	5.0%
	7 or more times	.5%

Fig 18



Farmers were asked a number of questions relating to their contact and information exchange with extension services. .

The survey revealed that 63.5% of farmers never visited ADCs while 47.3%, 46.4% and 44.1% never met, got information, and held meetings with extension services respectively.

The contact and sharing of information between extension and farmers should be improved with increased application of the Farming System Research and Extension approach.

6.2.6 EXTENSION LEAFLETS

Table 8.1 Mass Media In Extension

Variable	Category	Percent of Households
Number of different leaflets received from DEES/DART staff in 2002	Don't Know	2.3%
	None	88.3%
	2-4	5.0%
	>4	4.5%

Farmers were asked about the number of agricultural extension leaflets they received in 2002. The survey revealed that about 88.3% of farmers never received leaflets from DEES in 2002.

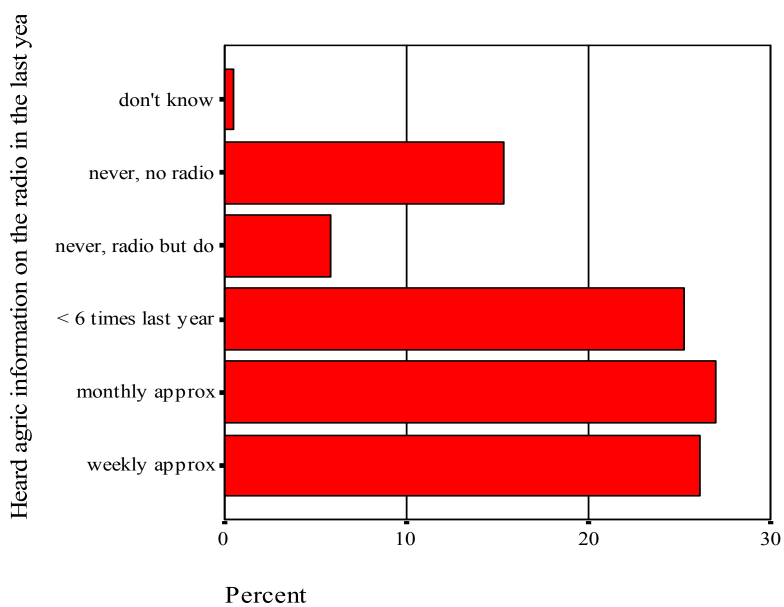
In future farmers in the region are expected to receive more leaflets from DEES because the media office has been fully equipped with modern production equipment and competent officials.

6.2.7 RADIO

Table 8.2

Variable	**Category**	**Percent of Households**
Heard Agric. information on the radio last year.	Don't know	.5%
	Never, no radio	15.3%
	Never, radio but do not listen	5.9%
	< 6 times last year	25.2%
	Monthly approx	27.0%
	Weekly approx.	26.1%

Fig: 19



The questionnaire sought to find out whether farmers received agricultural information via the radio in the last year. Radio is one of the communication methods used to disseminate agricultural information to farmers, hence the local radio station has given more airtime to agricultural programs.

The survey revealed that only 21% of the farmers did not listen to agricultural programs. The regional Agricultural Extension office plans to intensify efforts to use the time allocated to agricultural programs more beneficial. Radio agricultural talk shows and listening groups have been planned with farmers for each ADC to increase the number of farmers listening to such programs, and the benefits they accrue from such listening.

6.2.8 PERCEPTIONS OF THE USEFULNESS OF EXTENSION IN GENERAL

Table 9. 1 Farmer Perceptions of the Usefulness of Extension Services

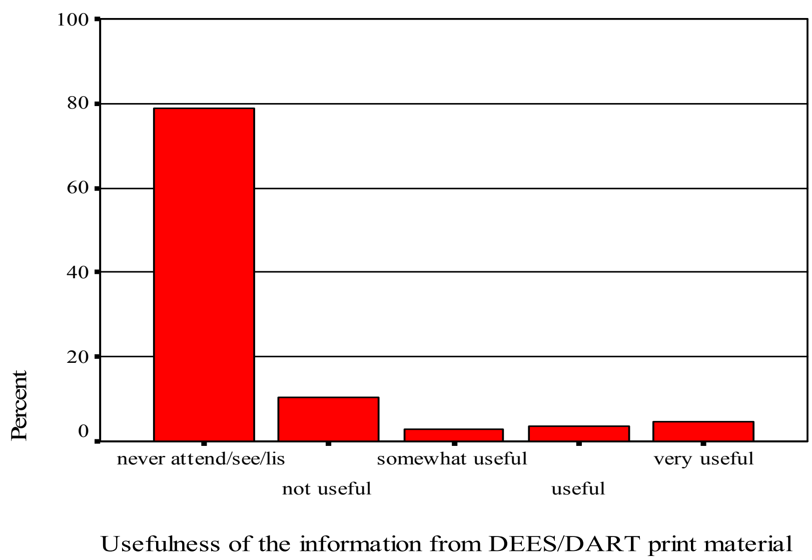
Variable	Category	Percent of Households
DEES/DART meetings	Never attend/see/listen	32.9%
	Not useful	2.7%
	Somewhat useful	5.9%
	Useful	21.6%
	Very useful	36.9%

6.2.9 PERCEPTIONS OF THE USEFULNESS OF EXTENSION PRINTRED MATERIALS

Table: 9.2

Variable	Category	Percent of Households
DEES/DART print material	Never attend/see/listen	78.8%
	Not useful	10.4%
	Somewhat useful	2.7%
	Useful	3.6%
	Very useful	4.5%

Fig. 20

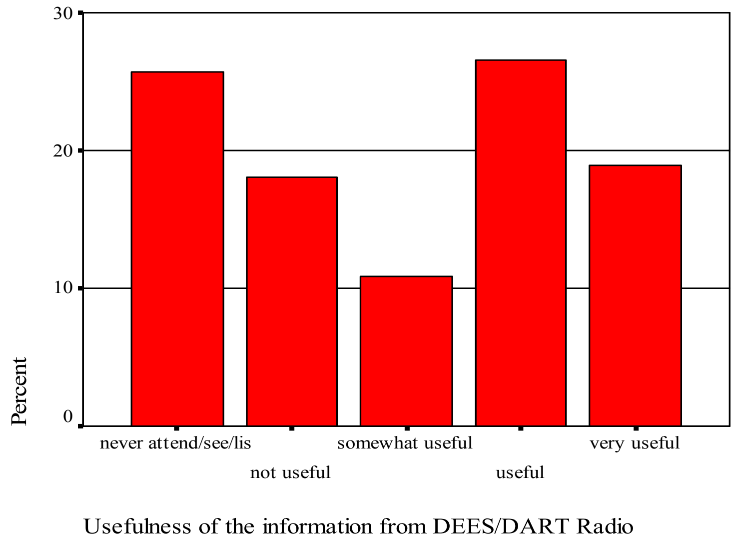


6.2.10 PERCEPTIONS OF THE USEFULNESS OF RADIO IN EXTENSION

Table 9.3

Variable	Category	Percent of Households
DEES/DART Radio	Never attend/see/listen	25.7%
	Not useful	18.0%
	Somewhat useful	10.8%
	Useful	26.6%
	Very useful	18.9%

Fig. 21



Several questions were asked to farmers to find out their perceptions about the usefulness of the Agricultural Extension Services offered by DEES/DART.

With the withdrawal of ploughing services and the selling of inputs by DEES, the Directorate is facing some problems in convincing farmers that without the two services, extensions services are complete.

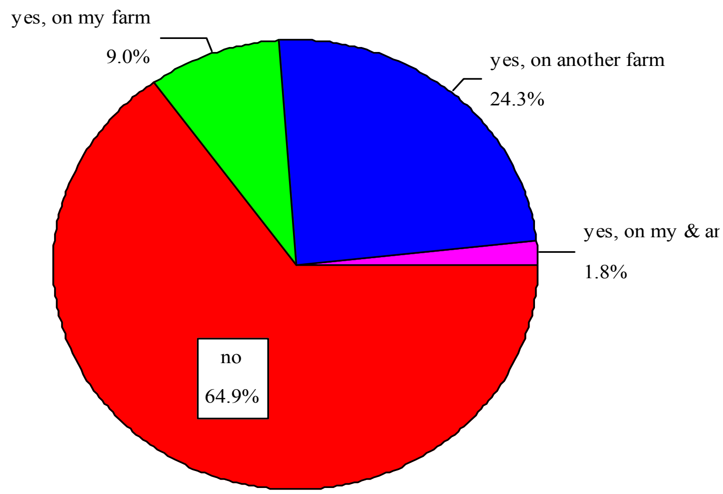
The survey revealed that the majority of farmers find agricultural extension meetings and agricultural radio programs generally useful. However, about 78.9% of farmers said they never received DEES/DART print material, an issue that will require more efforts in future.

6.2.11 ATTENDANCE AT EXTENSION TRIALS/DEMOS

Table 10.1 Attendance at Extension Trial/Demonstration

Variable	**Category**	**Percent of Households**
Knows of a farmer trial/demo in the local area	No	64.9%
	Yes, on my farm	9.0%
	Yes, on another farm	24.3%
	Yes, on my & another farm	1.8%

Fig. 22



6.2.12 KNOWLEDGE OF FARM TRAILS/DEMOS

Table 10.2

Variable	Category	Percent of Households
Knows what the trial or demo is on	No don't know	66.2%
	Yes, do know	33.8%

Fig 23 Knows what the theme of trial or demo

Respondents were asked about their awareness of extension trials/demonstrations. Close to 65% of the farmers stated they have never seen or hosted a trial/demonstration. The trial/demonstration approach is one of the most important tools in FSRE approach and has been used over many years. Farmer driven trials/demonstrations are being promoted by

DEES/DART. More efforts directed particularly to non-FED groups are required in the future to improve on the number of farmers hosting or participating in field days.

The survey revealed that, two thirds of the farmers who had seen or hosted trials/demonstrations did not remember what the trial/demonstration was all about. With the promotion of farmer driven trials/demonstrations, this situation will hopefully change in the future.

6.2.13 ATTENDANCE AT EXTENSION TRAINING

Table 11 . Attendance at Extension Training Course

Variable	Category	Percent of Households
Attended farmer training courses in 2002	Don't know	1.8%
	No	79.7%
	Yes	18.5%
The course was useful and using the skill/knowledge	Not applicable	76.1%
	Don't know	5.4%
	Useful, am not using	6.3%
	Useful, am using	12.2%

Farmers were asked if they had attended training courses in 2002. The survey revealed that close to 80% had not attended any farmer training course in 2002. The percentage of farmers attending training in future is expected to increase with more training conducted at locality and ADC level.

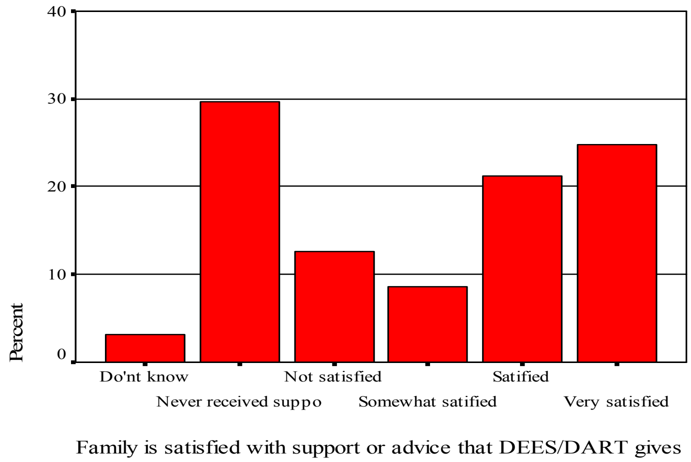
Farmers were asked about the usefulness of the agricultural training received. The survey revealed that the training was useful to all farmers trained. However, about 6.3% of them never used the skills acquired.

6.2.14 FARMER SATISFACTION WITH EXTENSION IN GENERAL

Table 12.1 . Farmer Satisfaction with Extension Support

Variable	Category	Percent of Households
Family is satisfied with support or advice that DEES/DART gives	Don't know	3.2%
	Never received support or advice	29.7%
	Not satisfied	12.6%
	Somewhat satisfied	8.6%
	Satisfied	21.2%
	Very satisfied	24.8%

Fig 24



Farmers were asked if they were satisfied with the support or advice provided by DEES/DART. The survey revealed that 54.6% of farmers are generally satisfied, while 12.6% are not satisfied and the rest say they had never received any support.

It is important that one should be sensitive in interpreting the issue of farmer satisfaction. It was clearly evident, from observations made by enumerators, that farmers stated they were either not satisfied or had never received any support were those who preferred government ploughing services ahead of any Agricultural Extension Service. However, with constant education, such understanding should gradually change.

6.2.15 PERCEPTION THAT CHANGE OF FARMING PRACTICE IS BECAUSE OF EXTENSION SUPPORT

Table 12.2. Perception that Change of Farming Practice is Because of Extension Support

Variable	Category	Percent of Households
Doing something differently because of info or advice received from DEES/DART	Don't know	.9%
	No	65.3%
	Yes	33.8%

Farmers were asked if they were doing something differently because of information or advice received from DEES/DART. About 33.8% have said they had adopted new technologies or practices as a result of DEES/DART advice. However, the majority of respondent farmers (65.3%) said they continued with their own ways.

The percentage of farmers that have adopted new technologies is expected to increase in future with more farmers participating in farmer driven trials/demonstrations.

6.3 EXTENSION IMPACT INDICATORS

The section reports on indicators of extension impact in terms of farmer awareness, farmer understanding, farmer attitudes and farmer adoption of specific extension recommendations relating to key farming issues in the region. Readers are referred back to section 2.2. for more elaborate discussions on the issue of extension impact indicators.

6.3.1 FERTILISER

Table 13.1. Use of Fertilizer

Variable	Category	Percent of Households
Used fertilizer on crops in 2002/03	Don't know	.9%
	No	90.5%
	Yes (basal only)	5.0%
	Yes (top only)	1.8%
	Yes (basal + Top)	1.8%
Used fertiliser on crops in 2001/02	Don't know	2.3%
	No	90.5%
	Yes (basal only)	4.1%
	Yes (top only)	1.8%
	Yes (basal + Top)	1.4%
Knowledge of method of basal fertilizer dressing	Not applicable	85.1%
	Broadcast	12.6%
	In the seed hole	1.4%
	In hole beside seed	.9%
Method of top fertiliser dressing	Not applicable	92.3%
	Broadcast	3.2%
	In the seed hole	.9%
	In hole beside seed	3.2%
	Other	.5%

Various questions were asked to farmers to find out if they used fertilizer in the 2001/02 and 2002/03 rainy seasons, and if so what method of fertilizer application they used. The table above indicates that more than 90% of farmers in Caprivi region do not use fertilizers.

Most farmers know the effects of applying fertilizers in their crop field. The only reason given to enumerators as to why they do not use fertilizers is that soils in Caprivi are very fertile.

Most of the few farmers who use fertilizer do broadcast both basal applications and top dressing. However, although farmers still continue to request some fertilizer trials/demonstrations on their fields, it is doubtful if fertilizer use shall increase because subsidised fertilizers previously sold by GRN are running out. The risk of fertilizer use shall be much greater if it is acquired at commercial prices.

6.3.2 MANURE

Table 13.2. Use of Manure

Variable	Category	Percent of Households
Used manure on crops in 2002/03	No	80.6%
	Yes	19.4%
Used manure on crops in 2001/02	No	81.5%
	Yes	18.5%

Farmers were asked whether they used manure in 2001/2 and 2002/3. In both years, more than 80% of farmers stated that they had not used manure.

The few farmers that used manure said they mostly used it in vegetable gardens. DEES/DART expects an increase in the use of manure because it is abundant and transport is the major cost involved in manure application. However, techniques for minimising weeds in kraal manure are essential to improve the attractiveness of this fertility management approach.

6.3.3 IMPROVED SEED

Table 14.1. Use of Improved Seeds

Variable	Category	Percent of Households
Used improved Maize seeds last season	Not applicable	8.1%
	Neither year	30.6%
	2002/3 only	49.5%
	2001/2 only	1.8%
	Both years	9.9%
Used improved Millet seeds last season	Not applicable	24.8%
	Don’t know	.5%
	Neither year	47.3%
	2002/3 only	22.5%
	2001/2 only	1.4%
	Both years	3.6%
Used improved Sorghum seeds last season	Not applicable	20.3%
	Neither year	45.0%
	2002/3 only	27.5%
	2001/2 only	1.8%
	Both years	5.4%

Farmers were asked if they used improved varieties of the three major crops grown in the region. This question was asked to find out whether farmers are aware of and are using the shorter growing season varieties available on the market. Such varieties are promoted by DEES/DART to improve crop yields.

The survey revealed that only 10%, 5% and 4% of farmers used improved maize, sorghum and pearl millet seed respectively in both 2001/2 and 2002/3 seasons. These figures reflect the true proportion of farmers who invest in improved seeds. The very high proportion of farmers using improved seeds for all crops during 2002/3 was a result of drought relief improved seeds distributed in the region. However, if crop yields are to improve the use of improved seed has to drastically increase.

DEES/DART is busy promoting the use of improved varieties by way of trials/demonstrations therefore the percentage of farmers using improved varieties is expected to increase in future.

6.3.4 CROP AREA PLANTED

Table 14.2. Crops Planted as a Percentage of Total Area Planted

Variable	Category	Percent of Households
Share of crop area planted to Maize	Not applicable	35.6%
	Don't know	.9%
	All	2.7%
	75% approx	22.5%
	50% approx	15.3%
	25% approx	23.0%
Share of crop area planted to Millet	Not applicable	68.5%
	Don't know	1.8%
	75% approx	10.8%
	50% approx	8.6%
	25% approx	10.4%
Share of crop area planted to Sorghum	Not applicable	60.4%
	Don't know	.9%
	All	.9%
	75% approx	10.8%
.	50% approx.	10.4%
	25% approx.	16.7%

Farmers were asked about the area planted to each of the three major crops grown in the region. The table indicates that, maize is planted to a larger proportion of the farmers' fields as compared to other crops.

About 22.5% of farmers planted maize on approximately 75% of their fields, compared with 10.8% for both millet and sorghum. Market forces tend to favour maize while environmental and food self-sufficiency factors would suggest a shift to small grains. Therefore, the proportion of crops grown in future will continue to be determined by the balance between these forces.

6.3.5 MEANS OF CULTIVATION

Table 15.1 . Means of Cultivation

Variable	Category	Percent of Households
Family cultivates land by	Don't know	1.4%
	By hand	2.3%
	By oxen	84.2%
	By tractor	2.3%
	Combination oxen/tractor	9.0%
	Other	.9%

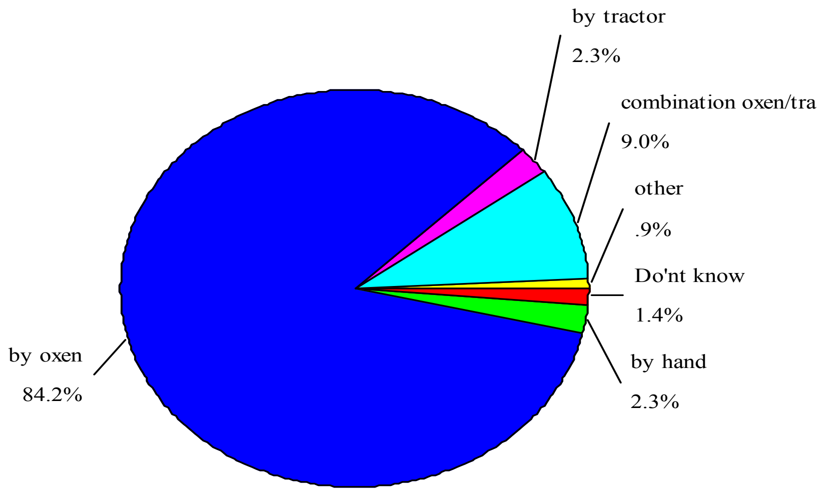


Fig. 25.

Farmers were asked about their means of cultivation. The survey revealed that more than 80% of the farmers use draught animal power (DAP) to prepare their fields. The high percentage of farmers that use animal draught power is very encouraging in view of the on-going promotion of DAP in the region.

6.3.6 PLANTING METHOD

Table 15.2. Planting Method Used in 2002/03 and 2001/02

Variable	**Category**	**Percent of Households**
Planting method mostly used by family in 2002/3	Don't know	4.1%
	Broadcast	10.4%
	Line, behind plough	70.7%
	Line, other	3.2%
	Both (b/cst+ line)	11.7%

Fig 26. Planting method mostly used by family in 2002/03

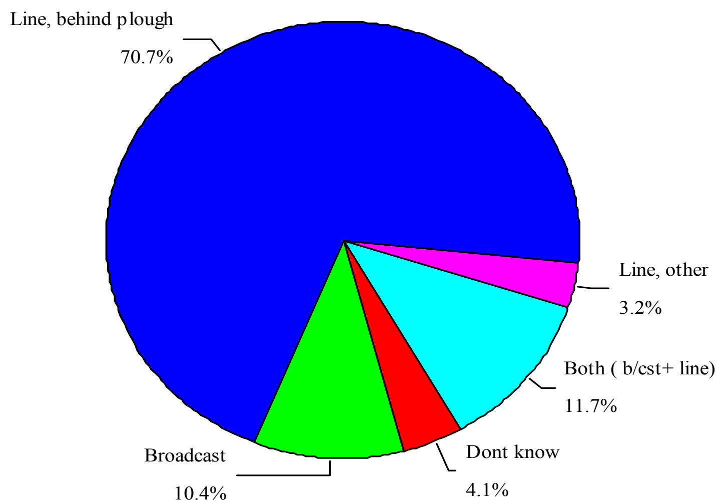
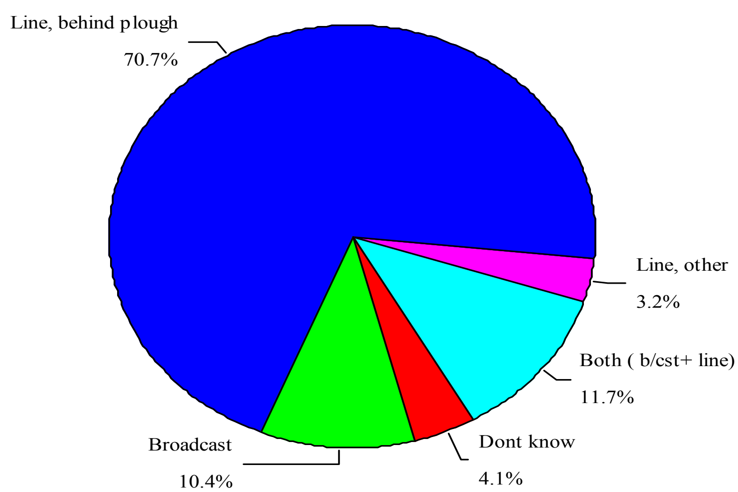


Table 15.3

Variable	Category	Percent of Households
Planting method mostly used by family in 2001/2	Don't know	4.1%
	Broadcast	10.8%
	Line, behind plough	70.7%
	Line, other	3.6%
	Both (b/cst+ line)	10.8%

Fig 27



A question was asked to farmers to find out the planting method mostly used by the family in the 2001/02 and 2002/03 seasons. According to the survey, more than 80% of farmers planted in lines behind the plough in both seasons. Farmers that broadcast were slightly above 10%. Line planting is the recommended method of planting because it enables easier weeding, either by oxen or tractor. DAP trials /demonstrations that involve line planting are annually conducted hence the percentage of farmers that line plant is expected to increase in future.

6.3.7 TIMING OF WEEDING

Table16.1 . Timing of Weeding

Variable	Category	Percent of Households
Time family starts weeding the staple crop	Don't know	1.8%
	Emergence- 3 weeks	50.0%
	3-6 weeks	48.2%

Earlier weeding (less than three weeks after emergence) is the recommended time for weeding crop fields. The survey revealed that half of farmers weed within three weeks from emergence. However, 48.2% of farmers weed their fields after three weeks from emergence. This percentage needs to be reduced by continuously educating farmers.

6.3.8 USE OF DAP FOR WEEDING

Table 16.1. Use of Draught Animal Power (DAP) for Weeding

Variable	Category	Percent of Households
Has attended training in use of ox-drawn cultivator	Don t know	3.6%
	No	77.5%
	Yes	18.9%
Use DAP/ cultivator for weeding in 2002/03	Don't know	2.3%
	No	89.2%
	Yes	8.6%
Use DAP/ cultivator for weeding in 2001/02	Don't know	2.3%
	No	86.9%
	Yes	10.8%

Farmers were asked if they had attended any training in the use of ox-drawn cultivators. 77.5% of farmers said they had never attended training in using ox-drawn cultivators. About 9% of farmers use DAP for weeding compared with 19% who have attended DAP training.

DAP training which encompasses the use of ox-drawn cultivators is a priority technology being promoted by DEES/DART. Farmers are being trained in order to train other farmers. The training programs are being intensified and adapted to improve their effectiveness. Therefore, the percentages of trained farmers and DAP users are expected to increase in future.

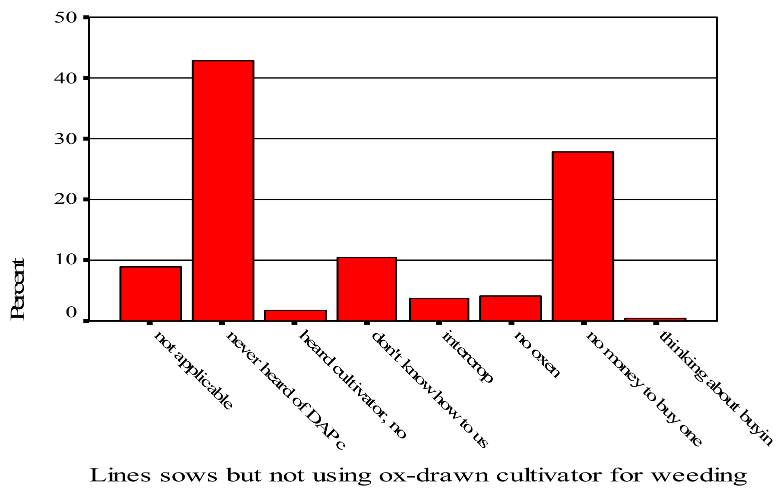
6.3.9 REASONS FOR NOT USING DAP CULTIVATOR

Table 16.3. Reasons for Not Using DAP Cultivator

Variable	Category	Percent of

		Households
Lines sows but not using ox-drawn cultivator for weeding: Reason	Not applicable	9.0%
	Never heard of DAP cultivator	42.8%
	Heard cultivator, no benefit	1.8%
	Don't know how to use it	10.4%
	Intercrop	3.6%
	No oxen	4.1%
	No money to buy one	27.9%
	Thinking about buying one	.5%

Fig 28



Farmers were also asked why they did not weed with a cultivator despite the fact that they line sowed. The survey revealed that 43% of farmers had never heard of a DAP cultivator, 28% had no money to buy a cultivator and 10% did not know how to use it.

All ADCs are involved in DAP programs and every ADC has at least one cultivator for demonstration purposes that is also accessible to farmers on request. However, DAP training needs to be conducted in more areas with an increasing radius from the ADC. In addition collaboration with GRN programs such as Productivity Upliftment Micro- Project [PUMP] needs to be intensified to help interested and trained farmers to acquire cultivators through project subsidies..

6.3.10 CROP PEST MANAGEMENT

Table 17.1 Crop Pest Management

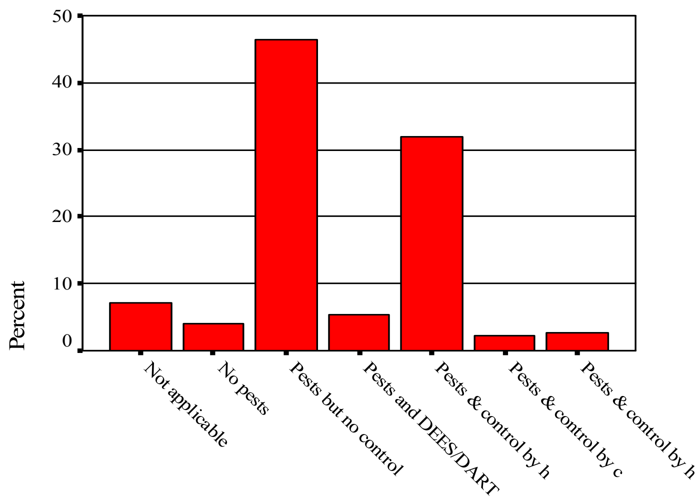
Variable	Category	Percent of Households
Family knows how to control crop pests	No	34.2%
	Yes	65.8%

Table 17.2

Variable	Category	Percent of Households
Method used to control pests/diseases in Maize	Not applicable	7.2%

	No pests	4.1%
	Pests but no control	46.4%
	Pests and DEES/DART controls	5.4%
	Pests & control by hand	32.0%
	Pests & control by chemicals	2.3%
	Pests & control by hand +chemicals	2.7%

Fig. 29

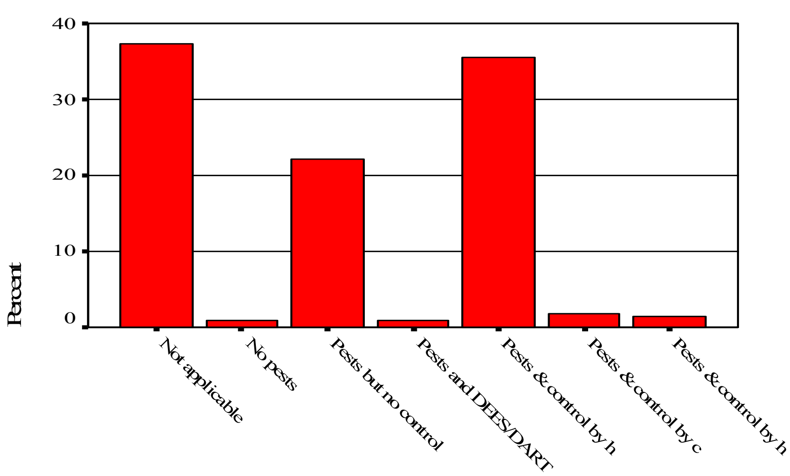


Method used to control pests/diseases in Maize

Table 17.3

Variable	Category	Percent of Households
Method used to control pests/diseases in Millet	Not applicable	37.4%
	No pests	.9%
	Pests but no control	22.1%
	Pests and DEES/DART controls	.9%
	Pests & control by hand	35.6%
	Pests & control by chemicals	1.8%
	Pests & control by hand +chemicals	1.4%

Fig 30

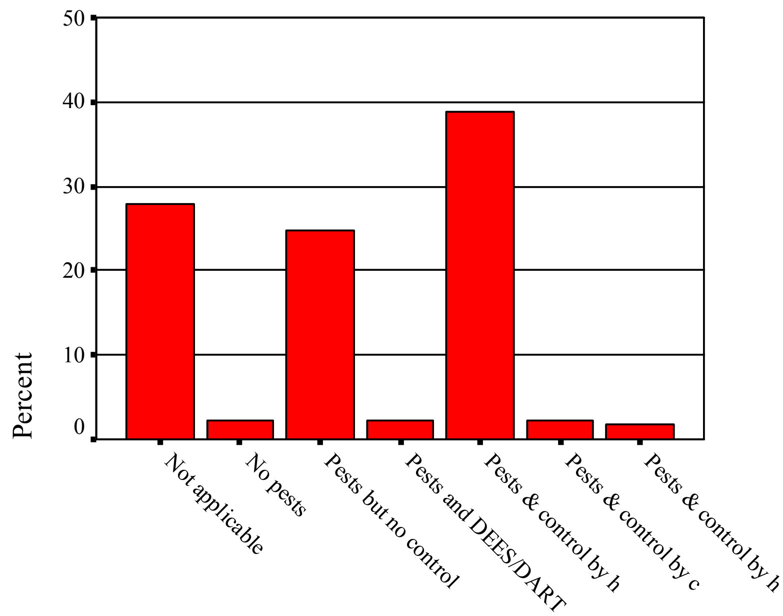


Method used to control pests/diseases in Millet

Table 17.4

Variable	Category	Percent of Households
Method used to control pests/diseases in Sorghum	Not applicable	27.9%
	No pests	2.3%
	Pests but no control	24.8%
	Pests and DEES/DART controls	2.3%
	Pests & control by hand	38.7%
	Pests & control by chemicals	2.3%
	Pests & control by hand +chemicals	1.8%

Fig 31

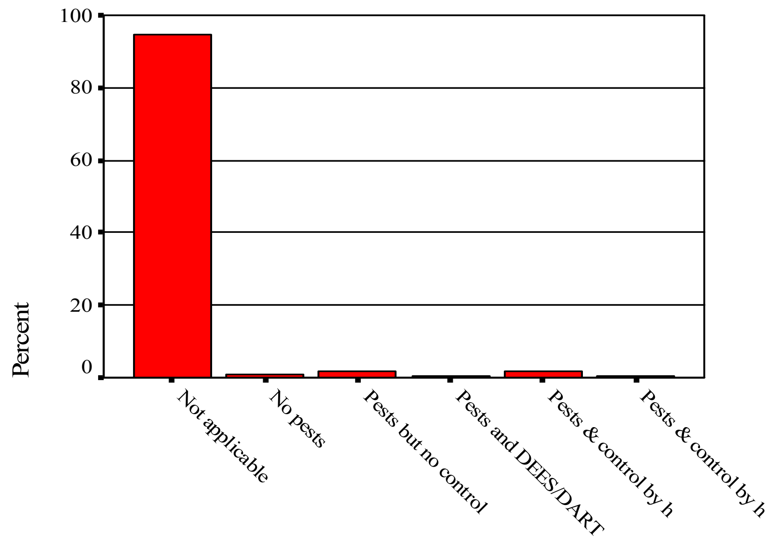


Method used to control pests/diseases in Sorghum

Table 17.5

Variable	Category	Percent of Households
Method used to control pests/diseases in Cotton	Not applicable	94.6%
	No pests	.9%
	Pests but no control	1.8%
	Pests and DEES/DART controls	.5%
	Pests & control by hand	1.8%
	Pests & control by hand +chemicals	.5%

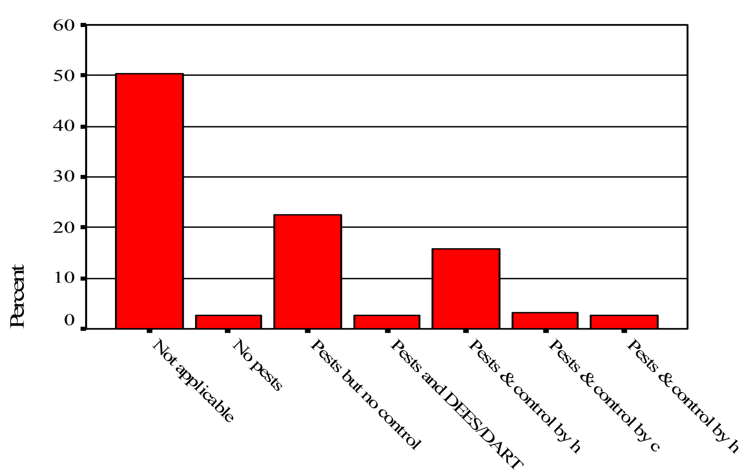
Fig 32



Method used to control pests/diseases in Cotton

Variable	**Category**	**Percent of Households**
Method used to control pests/diseases in Vegetables	Not applicable	50.5%
	No pests	2.7%
	Pests but no control	22.5%
	Pests and DEES/DART controls	2.7%
	Pests & control by hand	15.8%
	Pests & control by chemicals	3.2%
	Pests & control by hand +chemicals	2.7%

Fig 33



Method used to control pests/diseases in Vegetables

Farmers were asked if they know how to control pests and diseases in their crop fields, and what methods they use in controlling such pests/diseases. It has been discovered that 66% of farmers know how to control pests/diseases. However, 46%, 25% and 22% do not practice any pest control on maize, sorghum and pearl millet respectively. Chemical use is very limited with about 5% of farmers using it on maize [the major cereal]. The main method of pest control used by farmers is hand picking which ranges from 32% for maize through 36% for millet to 39% for sorghum.

Most farmers indicated that they do not grow cotton and vegetables, hence pest/disease control in these crops is not applicable. However, the few that grow these crops mostly control pests by hand picking.

6.3.11 CASH CROP PRODUCTION

Table 18.1. Cash Crops Planted in Last Two Seasons

Variable	**Category**	**Percent of Households**
Planted Cotton in the last two seasons	Don't know	3.6%
	No neither year	93.7%
	2002/3 only	1.8%
	2001/2 only	.5%
	Yes both years	.5%
Planted Sunflower in the last two seasons	Don't know	3.2%
	No neither year	95.5%
	2002/3 only	1.4%
Planted Tobacco in the last two seasons	Don't know	4.5%
	No neither year	94.1%
	2002/3 only	1.4%
Planted other crop in the last two seasons	No response	86.9%
	No neither year	11.7%
	Yes both years	1.4%

Farmers were asked if they have planted cash crops in the last two seasons. This question was asked to find out about the level crop diversification among farmers.

The survey revealed that about 95% of farmers did not plant any of the cash crops in the last two seasons. However, a few farmers have started planting some of the cash crops such as sunflower and tobacco (1.4%for both crops in 2002/03 season) and cotton (1.8%) . More trials/demonstrations are planned for the coming seasons, and therefore, more farmers are expected to be growing cash crops in future.

6.3.12 INTERCROPPING PRACTICE

Table 18.2. Intercropping Practice

Variable	**Category**	**Percent of Households**
Family usually intercrops	Not Applicable	2.3%
	Don't know	.5%
	No intercropping	5.0%
	Yes, legumes (cowpea, bean)	.9%
	Yes, cucurbits (pumpkin, melon)	21.2%

	Yes, both legumes & curcubits	69.8%

Fig 34

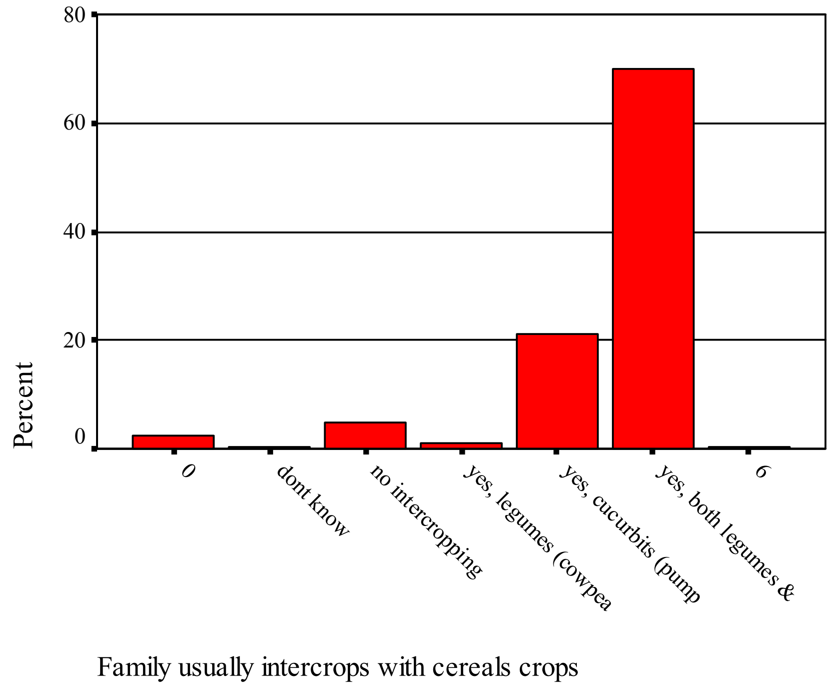


Table 18.3

Area of intercrop currently compared to 5 years ago	0	6.8%
	Less area	27.9%
	About the same	42.8%
	More area	22.5%

Fig 35. Area of intercrop compared to 5 years ago

Farmers were asked if they usually intercrop their cereal crops and the size of intercrop area currently compared with five years ago. Close to 70% of farmers intercrop cereals with both legumes and cucurbits, while 21.2% intercrop with legumes only.

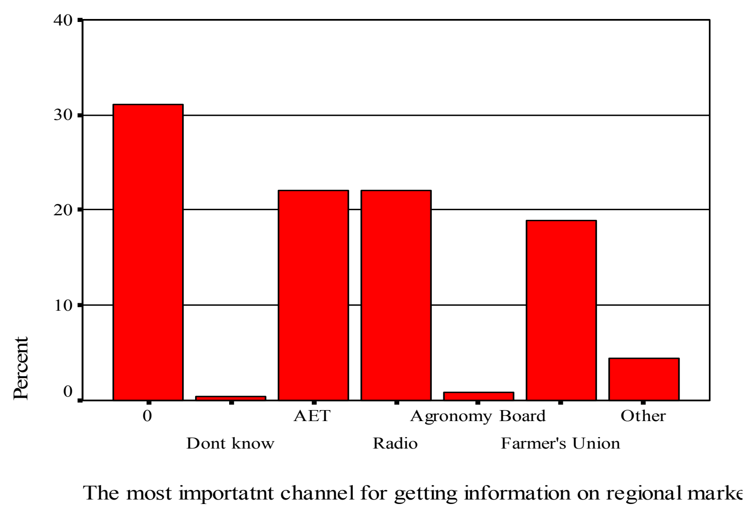
DEES/DART promotes intercropping, particularly of legumes because they provide nitrogen in the soil that is utilized by cereal crops. Some farmers indicated difficulties of weeding with ox-drawn cultivators in intercropped fields and this discourages them from intercropping. Farmers need to be made aware of strategies developed to allow weeding with ox-drawn cultivators in intercropped fields.

6.3.13 CROP MARKETING INFORMATION

Table 19.1. Crop Marketing Information

Variable	Category	Percent of Households
Ever received information on crop prices at regional markets	Not applicable	1.8%
	Don't know	.5%
	No	39.6%
	Yes	57.7%
	5	.5%
The most important channel for getting information on regional market crop prices	Not applicable	31.1%
	Don't know	.5%
	AET	22.1%
	Radio	22.1%
	Agronomy Board	.9%
	Farmer's Union	18.9%
	Other	4.5%

Fig 36



Asked whether they usually receive information on regional market crop prices and what the most important channel for getting this information was, 58% of farmers reported that they normally received such information. Information sources were indicated as AETs (22%), radio

22% and farmers' union (19%). It is important for the number of farmers receiving market information from the various sources to increase..

6.3.14 CROP MARKETING

Table 19.2. Crop Marketing Practice

Variable	Category	Percent of Households
Sells crops each year	Not applicable	2.3%
	No	82.9%
	Yes	14.4%
Way of selling maize	Not applicable	56.8%
	Don't know	.5%
	Sell as individual	36.0%
	Sell as a group with others	6.8%
Way of selling millet	Not applicable	66.7%
	Don't know	.5%
	Sell as individual	30.6%
	Sell as a group with others	2.3%
Way of selling sorghum	Not applicable	64.0%
	Don't know	.5%
	Sell as individual	32.0%
	Sell as a group with others	3.6%
Way of selling vegetables	Not applicable	69.8%
	Don't know	.5%
	Sell as individual	28.4%
	Sell as a group with others	1.4%
Way of selling other crops	Not applicable	97.3%
	Sell as individual	1.4%
	Sell as a group with others	1.4%

Most farmers (82.9%) do not sell crops each year because of low harvests. Only 14.4% of farmers reported that they sell crops each year. However, when asked about the method of selling 36% of farmers indicated that they sell maize as individuals while 7% reported selling as a group with others. The selling methods for millet and sorghum were similar to maize and much higher than the 14% that reported crop sells each year. This means that an additional estimate of 29%, 22% and 19% sell maize, sorghum and pearl millet respectively whenever they produce a surplus over their household annual consumption. Such farmers need support to ensure that they are able to sell every year.

The emphasis by DEES and Farmers Unions is for farmers to sell in groups to reduce the cost of transport and to also attract more buyers. As more farmers enter the market this practice is likely to become more popular.

6.3.15 CROP STORAGE

Table 20. Crop Storage Practice

Variable	Category	Percent of Households
Place where Maize is stored	No response	3.2%
	Don't know	.9%

	Store all privately	95.5%
	Use a community store	.5%
Place where Millet is stored	No response	20.3%
	Don’t know	.9%
	Store all privately	78.4%
	Use a community store	.5%
Place where Sorghum is stored	No response	14.0%
	Don’t know	.9%
	Store all privately	84.7%
	Use a community store	.5%
Place where Vegetables are stored	No response	26.1%
	Don’t store	14.4%
	Don’t know	1.4%
	Store all privately	58.1%

Several questions were asked to find out whether farmers store their crops and if they do, how they usually store them. The survey revealed that almost all responding farmers store their cereal crops privately. The none responding farmers may be indicative of the number that does not grow the crop in question. MAWRD, through the Namibia Agronomic Board, initiated the Caprivi Regional Integrated Storage Project (CRISP) with the aim of establishing improved on-farm storages and community stores integrated into the transportation and marketing system. CRISP also facilitates training of farmers and extensionists in small and medium scale grain storage management. It is expected that in future, farmers will adopt the use of improved on-farm storages and community storage in the marketing chain.

6.3.16 SUPPLEMENTARY FEEDING OF LIVESTOCK

Table 21.1 . Supplementary Feeding of Livestock

Variable	Category	Percent of Households
Feed supplement given to draft animals	Not applicable	23.0%
	Don’t know	.5%
	No	73.9%
	Yes	2.7%
Feed supplement given to milking animals	Not applicable	23.4%
	No	73.9%
	Yes	2.7%
Feed supplement given to bulls	Not applicable	23.0%
	No	73.4%
	Yes	3.6%
Feed supplement given to animals for slaughter	Not applicable	24.0%
	No	72.4%
	Yes	3.6%
Feed supplement given to pigs	Not applicable	79.7%
	No	20.3%

Supplementary feeding of farm animals particularly during dry seasons and drought years is important for animals to thrive through these difficult times. Farmers were therefore asked if they usually give supplementary feeds to their animals. The survey revealed that only about 3% of farmers provided supplement feed to their animals. DEES recommends farmers to give supplementary feeds to the most important farm animals such as bulls, draft animals etc.

Through constant training and demonstrations, more farmers are expected to provide supplement feed to their animals in future.

6.3.17 TYPES OF SUPPLEMENTARY FEED USED

Table 21.2 . Types of Supplementary Feed Used

Variable	Category	Percent of Households
Kind of supplement given to draft animals	Not applicable	94.1%
	Don't know	.5%
	Crop residues	3.2%
	Commercial mineral licks	1.4%
	More than one of the above	.5%
Kind supplement given to lactating animals	Not applicable	95.0%
	Don't know	.5%
	Crop residues	3.2%
	Commercial mineral licks	.9%
	More than one of the above	.5%
Kind supplement given to bulls	Not applicable	94.6%
	Don't know	.5%
	Crop residues	2.7%
	Commercial mineral licks	1.4%
	Home concentrates	.5%
	More than one of the above	.5%
Kind supplement given to slaughter animals	Not applicable	94.6%
	Don't know	.5%
	Crop residues	2.7%
	Commercial mineral licks	1.4%
	Home concentrates	.5%
	More than one of the above	.5%
Kind supplement given to pigs	Not applicable	98.6%
	Don't know	.5%
	Crop residues	.9%

A question was asked to farmers to find out the types of supplementary feeds given to different farm animals by the few farmers (about 3%) who supplement. Crop residues are the primary supplement used by all while about a third of these farmers also provide mineral licks. Demonstrations of crop residues treated with urea have been carried out in some areas in the region, forage production tests are on going both on-station and on-farm and it is therefore, expected that supplementary feeding of animals will increase in the future.

6.3.18 FODDER CROPS

Table 25.4. Fodder Cropping, Cut and Carry Practice for Supplementary Feeding

Variable	Category	Percent of Households
Knows a farm household that are planting fodder/forage crops to feed livestock	No	98.2%
	Yes, I am	.5%
	Yes, another farmer	1.4%

Knows a household that are cutting/carrying grass/crop residues to feed their livestock	No	93.2%
	Yes, I am	4.1%
	Yes, another farmer	2.7%

Questions were asked to farmers to find out if they have ever been involved in, or know a farm household that is planting fodder crops or cutting/carrying grass/crop residues to feed their livestock. In both cases, more than 90% of farmers have never been involved in or known someone planting fodder or cutting/carrying crop residues for feeding livestock. NOLIDEP, through DART AND DEES, is promoting planted fodder/forage by conducting on-station/farm demonstrations. During field days, farmers show interest and receive forage seeds for planting.

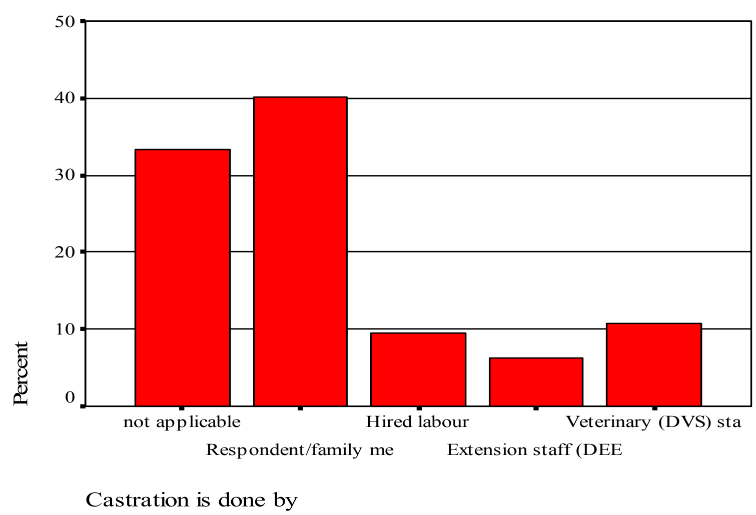
The close on 7% of farmers who indicate that they or another farmer known to them cuts and carry fodder for livestock compared with 3% who report supplementary feeding is an anomaly, which may be due double counting or misinterpretation.

6.3.19 ANIMAL HUSBANDRY - CASTRATION

Table 22.1 Animal Husbandry Practice: Castration

Variable	**Category**	**Percent of Households**
Castrates cattle	Not applicable	22.5%
	No	12.2%
	Yes	65.3%
Castrates goat/sheep	Not applicable	48.2%
	No	41.4%
	Yes	10.4%
Castration is done by	Not applicable	33.3%
	Respondent/family member	40.1%
	Hired labour	9.5%
	Extension staff (DEES/DART)	6.3%
	Veterinary (DVS) staff	10.8%

Fig 37



Farmers were asked if they normally castrate their cattle and goats and if so, who does the actual castration. 65% of farmers said they usually castrate their cattle while only 10% of farmers castrate their goats. The survey also revealed that about 40% of farmers castrate their animals themselves, an indication that farmers are using the knowledge acquired from DEES and DVS.

6.3.20 ANIMAL HUSBANDRY - DEHORNING

Table 23. Animal Husbandry Practice: Dehorning

Variable	Category	Percent of Households
Knows how to dehorn animals	Not applicable	15.8%
	Don't know	2.3%
	No, we don't know how	79.7%
	Yes, we know how	2.3%
Cattle dehorned	Not applicable	23.9%
	Don't know	2.7%
	No	71.6%
	Yes	1.8%
Goat/sheep dehorned	Not applicable	34.7%
	Don't know	2.7%
	No	61.3%
	Yes	1.4%

De-horning is an important animal husbandry practice. Farmers were asked if they know how to dehorn and actually do it. 80% of farmers said they don't know how to dehorn. Almost all responding farmers indicated that they do not dehorn their cattle and goats. The emphasis by DEES and DVS is to train farmers in the techniques of de-horning and make them self-reliant in all such animal husbandry practices.

6.3.21 ANIMAL HEALTH – DE-WORMING

Table 24.1. Animal Health Practice: De-worming

Variable	Category	Percent of Households
Knows how to de-worm animals	Not applicable	15.3%
	Don't know	3.6%
	No	77.9%
	Yes	3.2%
Cattle are de-wormed	Not applicable	26.6%
	Don't know	2.7%
	No	69.4%
	Yes	1.4%
Goat/sheep are de-wormed	Not applicable	38.5%
	Don't know	2.3%
	No	58.4%
	Yes	.9%

Farmers were asked if they know how to de-worm their cattle and goats, and if they usually de-worm their animals. The survey revealed that more than 96% of farmers to whom the question was applicable and knew the status, do not know how to de-worm and never de-wormed their cattle or goats. De-worming is important particularly in the eastern part of region where floods occur nearly every year. DEES and DVS need to work collaboratively with farmers to generate interest in de-worming and develop the needed skills. It is therefore, expected that the percentage of farmers de-worming their animals shall increase in future.

6.3.22 ANIMAL HEALTH – NEWCASTLE VACCINATION

Table 24.2. Animal Health Practice: Newcastle Disease Vaccination

Variable	Category	Percent of Households
Poultry vaccinated against Newcastle Disease last year	Not applicable	12.2%
	Don't know	.9%
	No	44.6%
	Yes	42.3%

Newcastle disease (NCD) in chicken is well known for wiping out chicken in the region periodically. The high proportion of farmers who vaccinated their chickens against NCD last year is explained by the availability of 60,000 doses of NCD vaccine purchased by NOLIDEP and sold to farmers through DVS. During vaccinations, farmers were trained in the different ways of vaccinating poultry against NCD. If availability of the vaccine is maintained the practice of vaccinating chickens for NCD is likely to have wider adoption.

6.3.23 ANIMAL HEALTH – ROLE OF COMMUNITY ANIMAL HEALTH AGENTS

Table 24.5. Role of Community Animal Health Agents (CAHAs)

Variable	Category	Percent of Households
Usefulness of CAHAs as source of advice	Not applicable	3.6%
	Don't know	42.8%
	Not useful	11.3%
	Somewhat useful	3.2%
	Useful	7.7%
	Very useful	31.5%

Fig 38

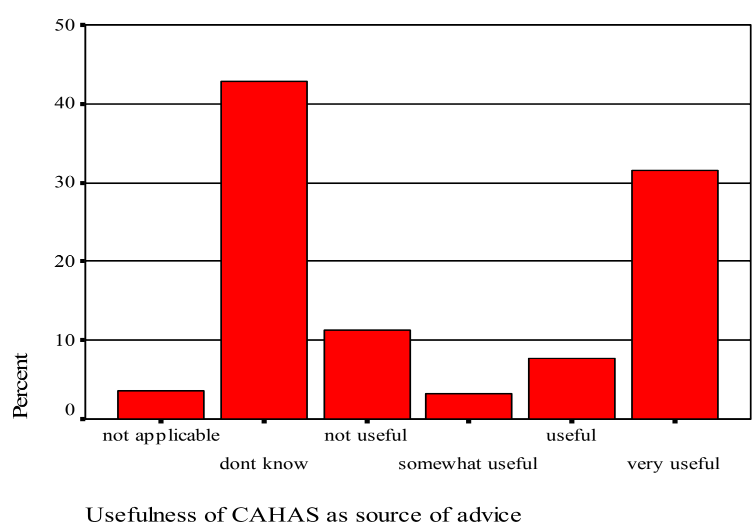
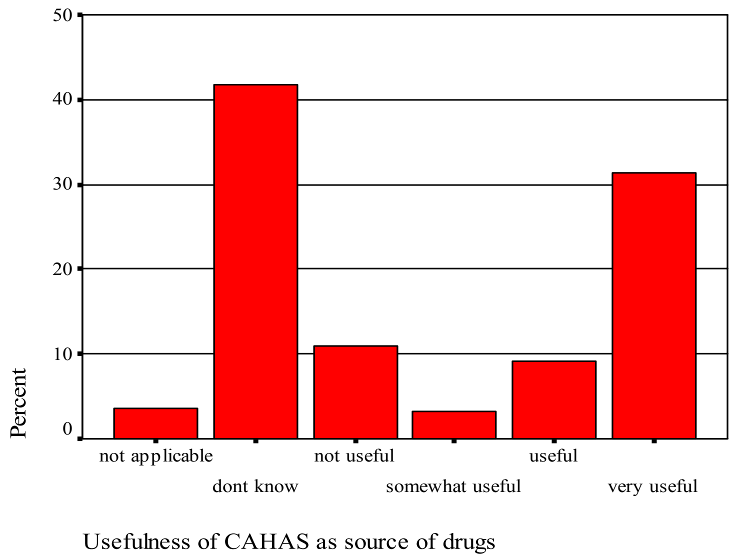


Table 24.6

Variable	Category	Percent of Households
Usefulness of CAHAs as source of drugs	Not applicable	3.6%
	Don't know	41.8%
	Not useful	10.9%
	Somewhat useful	3.2%
	Useful	9.1%
	Very useful	31.4%

Fig 39



Questions were asked to farmers to find out about the usefulness of Community Animal Health Agents (CAHAs) as sources of advice and drugs. 42% of farmers said they have never heard anything about CAHAs. On the other hand, 31% of farmers said CAHAs are very useful both as source of advice and drug supply. 13 CAHAs have been trained by DVS, but only 9 of them are still working in the whole region. Training of more CAHAs in future has been planned and consequently improvements in the provision of their services is expected.

6.3.24 RANGELAND MANAGEMENT - COMMUNITY GRAZING PLAN

Table 25.1. Community Grazing Plan

Variable	Category	Percent of Households
Village/community has a seasonal grazing plan	Don't know	10.4%
	No plan	34.7%
	Yes a plan but not being used	10.4%
	Yes a plan and being used	44.6%

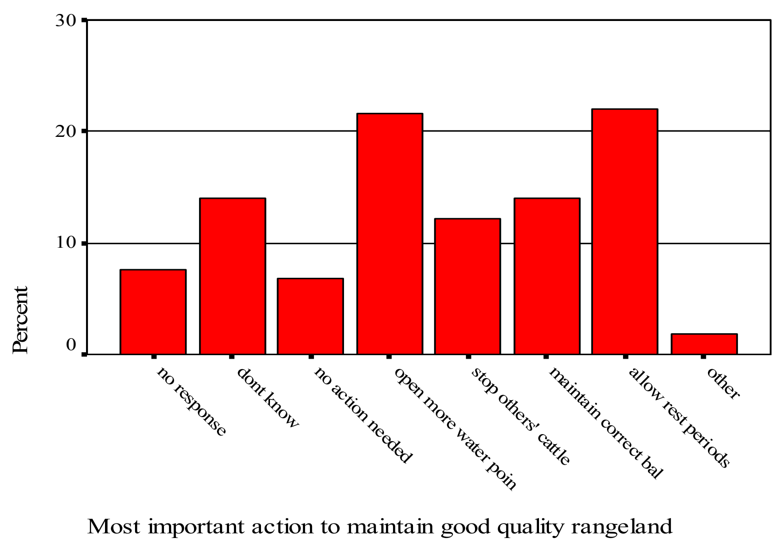
Farmers were asked if they have a village/community seasonal grazing plan. 44.6% of farmers said the village/community seasonal grazing plan exists and is working well. Livestock water development, initiated by NOLIDEP, aims at providing water in areas with good grazing but without water. This prompted some communities, with the help of local AETs, to develop grazing plans for their communities. With the establishment of more livestock water points, more communities will be using their rangelands in a planned manner to ensure sustainability.

6.3.25 RANGELAND MANAGEMENT - FARMER PERCEPTIONS

Table 25.2. Farmer Perceptions of Rangeland Management Practices

Variable	Category	Percent of Households
Most important action to maintain good quality rangeland	No response	7.7%
	Don't know	14.0%
	No action needed	6.8%
	Open more water points	21.6%
	Stop others' cattle grazing	12.2%
	Maintain correct balance between cattle nos. & available grazing	14.0%
	Allow rest periods	22.1%
	Other	1.8%

Fig 40



A question was asked to farmers to find out their perceptions of most important action that can be undertaken to maintain good quality rangeland. The two most popular strategies were allowing rest periods and opening more water points each suggested by 22% of the farmers. Farmers' perceptions in this case were in line with ideas being emphasized by DEES.

6.3.26 ROLE OF WATER POINT COMMITTEE

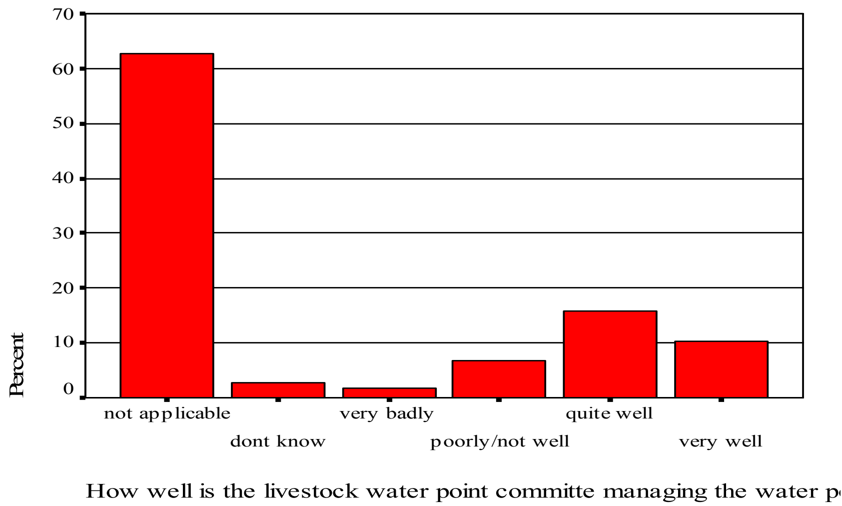
Table 25.3 . Role of Livestock Water Point Committee

Variable	Category	Percent of Households
Livestock water point committee in your area	Don't know	5.0%
	No	61.7%
	Yes	33.3%

Table 25.4

How well is the livestock water point committee managing the water point	Not applicable	62.6%
	Don't know	2.7%
	Very badly	1.8%
	Poorly/not well	6.8%
	Quite well	15.8%
	Very well	10.4%

Fig 41



The establishment of livestock water committee is important for the proper utilization and sustainable use of water infrastructure. Questions were therefore asked to investigate if such committees exist in the communities, and how well they manage the water points.

62% of farmers said no such committee exists in the communities in which they reside. 33% said water point committees exist in their communities. About 25% said such committees manage the water points well. As more water points are established more committees are expected to be set up.

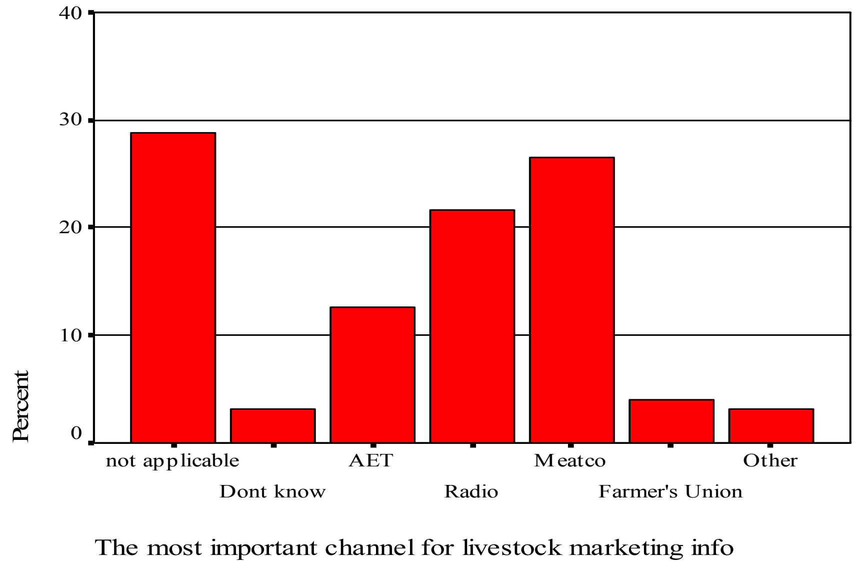
6.3.27 LIVESTOCK MARKETING - INFORMATION

Table 26.1. Livestock Marketing Information

Variable	Category	Percent of Households
Received information on Meatco livestock prices	Don't know	.9%
	No	39.2%
	Yes	59.9%
The most important channel for livestock marketing info	Not applicable	28.8%
	Don't know	3.2%
	AET	12.6%

	Radio	21.6%
	Meatco	26.6%
	Farmer's Union	4.1%
	Other	3.2%

Fig 42



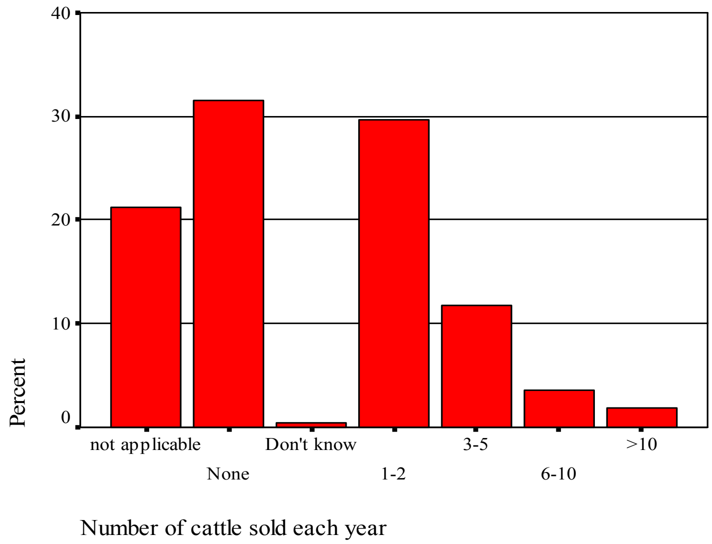
Questions were asked to farmers to find out if they ever received information on Meatco livestock prices, and if so what was the most important channel through which the information was received. 60 percent of farmers stated they had received Meatco price information and the most common channel from which such information was received is Meatco itself, followed by radio and AETs.. 39% of farmers who do not receive livestock marketing information still need to be reached via any one of the channels in use. Print media should be considered as an additional channel.

6.3.28 LIVESTOCK MARKETING - CATTLE SOLD ANNUALLY

Table 26.2 . Livestock Sold Annually

Variable	**Category**	**Percent of Households**
Number of cattle sold each year	Not applicable	21.2%
	None	31.5%
	Don't know	.5%
	1-2	29.7%
	3-5	11.7%
	6-10	3.6%
	>10	1.8%

Fig 43



6.3.29 LIVESTOCK MARKETING - SMALL STOCK SOLD ANNUALLY

Table 26.4

Variable	Category	Percent of Households
Number of goats/sheep sold every year	Not applicable	52.3%
	None	35.1%
	Don't know	.5%
	1-2	6.3%
	3-5	3.6%
	6-10	1.4%
	>10	.9%

A question was asked to find out about the number of cattle and goats sold each year. The proportion of farmers selling between 1 and 2 cattle annually is 30%, the highest percentage. The percentage of selling farmers drops drastically as the number of cattle sold increases. The percentage of farmers selling more cattle in a given year is expected to increase in future as more farmers realize the benefits of self quarantine if MEATCO prices remain competitive. Many farmers are realizing that cattle farming is a business rather than a tool to boost one's status. Not many goats are sold by farmers in the region, with 6.3% of farmers selling between 1 and 2 goats each year. Respondents indicated that lack of formal market is the main reason goats are not sold in big numbers.

6.3.30 LIVESTOCK MARKETING - SALES VOLUMES OVER TIME

Table 26.5

Variable	Category	Percent of Households
Number of cattle sold compared to 5 years ago	Not applicable	47.7%
	Don't know	.9%
	Less number	22.5%
	About the same	11.3%
	More number	17.6%

Fig 44

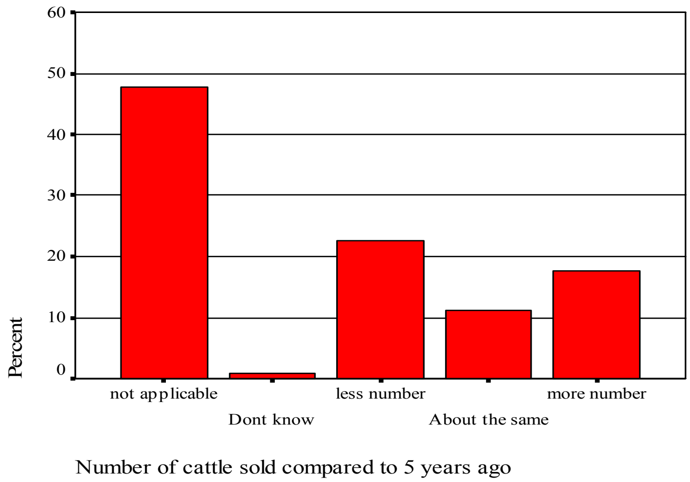


Table 26.6

Variable	Category	Percent of Households
Number of goats/sheep sold compared to 5 years ago	Not applicable	84.2%
	Don't know	1.8%
	Less number	4.5%
	About the same	5.0%
	More number	4.5%

Fig 44

The survey revealed that the highest proportion of farmers (22%) perceive cattle numbers sold nowadays compared with numbers 5 years ago to be less, 11.3% of farmers said they sell the same number of cattle while 17.6% of farmers reckon they sell more cattle. However, since no severe disease outbreaks resulting in serious herd reductions is recorded since 1997; the herd increase trend would suggest that more cattle are sold nowadays because the herd increase was

1-2% between 2000 and 2002 compared with 3-4% between 1997 and 1999. Thus the perception of the highest proportion of farmers is questionable.

Goats are neither raised nor sold in large quantities as cattle because according to farmers they are troublesome to control. However, through the NOLIDEP's Small Stock Seed Capital Fund scheme, many farmers purchased seed goats and therefore, the number of goats is likely to increase faster in the near future.

6.3.31 LIVESTOCK MARKETING CHANNELS

Table 26.7. Livestock Marketing Channels

Variable	Category	Percent of Households
Cattle selling/marketing method	Not applicable	47.3%
	Self-quarantine	20.3%
	Traders	14.9%
	Bush market	17.6%

Fig 45

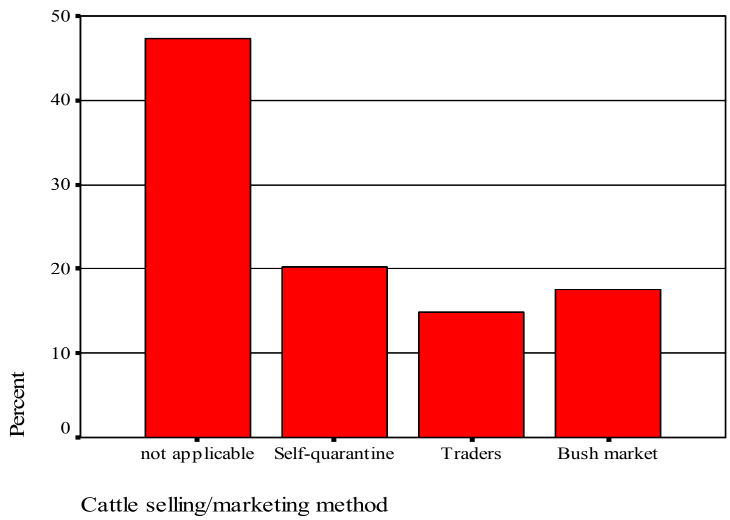
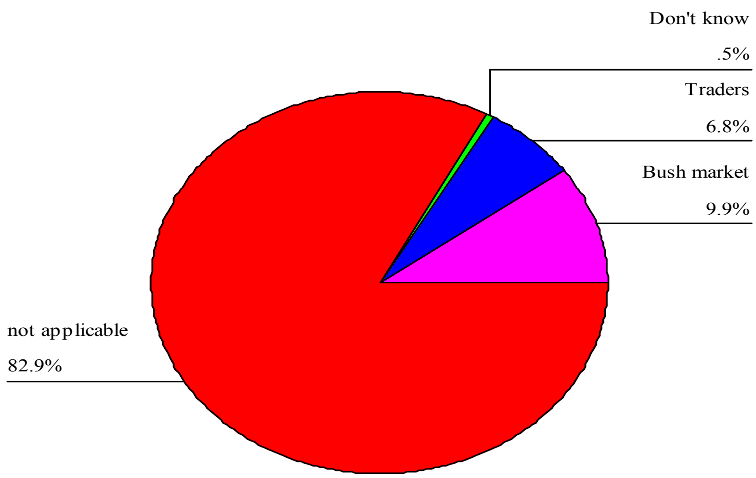


Table 26.8

Variable	Category	Percent of Households
Goat/sheep marketing method	Not applicable	82.9%
	Don't know	.5%
	Traders	6.8%
	Bush market	9.9%

Fig 46



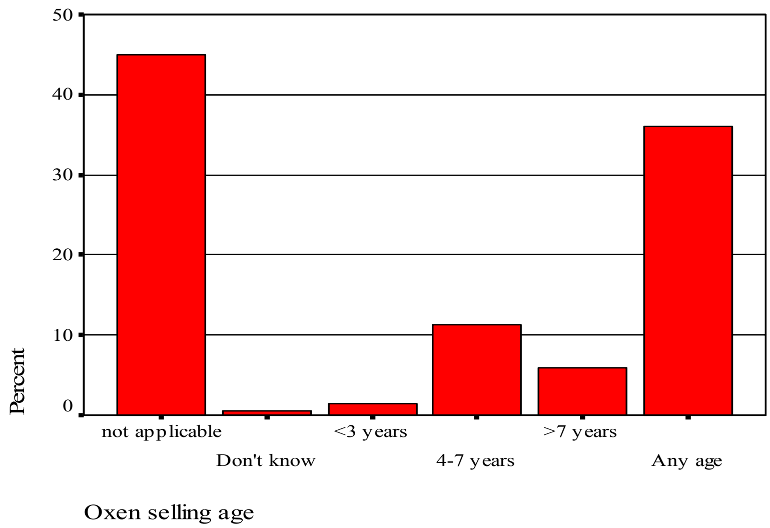
Cattle and goats are sold through different channels in Caprivi region. It is expected that more farmers should be selling their cattle through self-quarantine procedures. However, the survey found that only 20.3% of farmers sell through self quarantine. 18% and 15% sell through the bush market and traders respectively. The few farmers that sell goats do so at bush markets and to traders. No organized formal market is available for selling of goats in the region.

6.3.32 OXEN MARKETING AGE

Table 26.9. Oxen Selling Age

Variable	**Category**	**Percent of Households**
Oxen selling age	Not applicable	45.0%
	Don't know	.5%
	<3 years	1.4%
	4-7 years	11.3%
	>7 years	5.9%
	Any age	36.0%

Fig 47



Farmers were asked the age at which they usually sell their oxen. The majority of those responding (36% of sample) indicated that they sell their oxen at any age depending to the reason of selling such an ox. Farmers are normally advised by DEES to sell their cattle when they are still young (preferably below three years) as they fetch more money at that age. However, the animal should be big enough to avoid loses of processing small framed animals. Meatco, in cooperation with DEES, are busy sensitizing farmers about market demand in terms of the price and age of animals. Once farmers are well sensitized, the percentage of farmers that will be selling younger animals should improve.

6.3.33 FARMER AWARENESS OF AGRICULTURE RELATED POLICIES AND LEGISLATION

Table 27.1 . Livestock Branding

Variable	**Category**	**Percent of Households**
Aware of the Stock Brands Act	Not applicable	4.5%
	No	19.8%
	Yes	75.7%
Brands using a registered brand mark	Not applicable	18.9%
	Don't know	.9%
	No	48.6%
	Yes	31.5%

A great majority of farmers (75.7%) in Caprivi region are aware of the Stock Brand Act. This implies that good sensitization was carried out by DVS and DEES. Despite the high percentage of awareness, only 31.5% of farmers brand their animals with the registered brand mark. Training of farmers in using the brand iron is on-going therefore, many farmers are expected to fully adopt the practice in the near future.

Table 27.4 . Awareness of Selected Government Policies and Legislation

Variable	Category	Percent of Households
Aware of the drought policy	No	36.0%
	Yes	64.0%
Aware of the decentralization policy	Not applicable	.5%
	No	40.1%
	Yes	59.5%
Aware of the Communal Land Act	No	40.1%
	Yes	59.9%

The Ministry of Agriculture, Water and Rural Development, through the Directorate of Extension and Engineering Services, is tasked with the sensitization of farmers on Government policies and legislation related to the agricultural sector. Questions were therefore, asked to find out the level to which sensitization has been carried out. The survey revealed that, about 60% of farmers are aware of the drought and decentralization policies and the Communal Land Act of Namibia. However, sensitization is on-going and the percentage of farmers knowing these policies should improve in future.

6.3.34 FARMER PERCEPTION OF EXTENSION PROCESS

Table 27.2. Farmer Perceptions of Roles in Extension Process

Variable	Category	Percent of Households
Main task of extension staff nowadays	Don't know	15.3%
	Ploughing services	10.8%
	Selling inputs	4.5%
	Teaching/advising	59.5%
	Facilitating farmers' own effort	9.9%

The farmer's perception of the extension service's tasks nowadays is quite interesting because of the recent withdrawal of the ploughing services. A few years back, most farmers regarded this service as the main task of extension staff. The perception seems to be changing and farmers have started realizing the real tasks of extension staff. The survey revealed that most farmers regard teaching and advising farmers as the main tasks of extension tasks. However, only 10% of the farmers precisely knew the extension role in the FSRE context i.e. facilitating farmers' own efforts. With constant AET-farmer interactions, it is expected that most farmers will get to know this new extension role.

Table 27.3 Task of rural households who have contact with extension staff

Variable	Category	Percent of Households
Main task of rural households/farmer who have contact with extension since FSRE	Don't know	14.4%
	Doing what the AET says	15.3%
	Make and implement own plans and seek AET advice.	19.8%
	Asking AET for help & advice	50.0%
	Other	.5%

A question was asked to find out what farmers think are their main tasks since the introduction of the FSRE approach. The survey revealed that half of the farmers thought their main task is asking AETs for help and advice. Close to 20% thought, making and implementing their own plans, and seeking AET advice is their main task. This is a clear indication that this group are fully aware of the extension role in the FSRE context. It is quite interesting to note that the old perception of relying on AETs is gradually fading away.

Table 27. 5. Role of Extension in Fight against HIV/AIDS

Variable	Category	Percent of Households
What the AET does to help the village to fight HIV/AIDS	Not applicable	.9%
	Don't know	37.4%
	Nothing	31.1%
	Provides condoms	1.4%
	Gives awareness talks	27.0%
	Assists HIV/AIDS families	.5%
	Links village with specialists	1.8%

It is encouraging to note that 27% of farmers recognize that AET conduct awareness talk. As AET get more exposure to HIV/AIDS awareness spread strategies, their contribution towards the HIV/AIDS fight should increase.

Table 31.2.

Variable	Category	Percent of Households
Types of household DEES& DART work with	Don't know	23.9%
	Men only	4.1%
	Mostly men	2.7%
	Women only	2.7%
	Men + women equally	66.7%
Types of household DEES& DART should work with	Don't know	4.1%
	Men only	.5%
	Mostly men	.9%
	Men + women equally	94.6%

Two thirds of farmers recognize that DEES and DART work with men and women equally while 95% expect this to happen.

6.3.35 COMMUNITY BASED ORGANISATIONS

Table 28 . Community-based Organizations

Variable	Category	Percent of Households
Belongs to the CBO group in the community/village	Don't know	3.2%
	No	60.8%
	Yes	36.0%
Member in a CBO in the community/village	Not applicable	4.1%
	Don't know	1.8%
	No	79.3%
	Yes	14.9%
There is an active CBO	Not applicable	62.6%
	Don't know	5.0%
	Not active	4.5%
	Not very active	4.1%
	Active	10.8%
	Very active	13.1%

Farmers were asked about the existence of and their involvement in community based organizations (CBOs). The results revealed that most farmers (more than 60%) do not belong to any community based organization. This implies that not many CBOs exist in the region, hence continuous extension efforts to promote the formation of CBOs are important. The percentage of farmers that belong to CBOs is therefore, expected to increase significantly in future.

6.3.36 FARMER PERCEPTION OF COLLABORATION BETWEEN SERVICE PROVIDERS

Table 29. Farmer Perceptions of Collaboration between Service Providers

Variable	Category	Percent of Households
GRN-NGO collaboration in organising joint meetings in villages	Don't know	12.6%
	Very bad	42.8%
	Bad	12.6%
	Good	23.0%
	Very good	8.6%
Collaboration of GRN-NGO agencies with the farmers planning and implementation of field activities	Don't know	16.7%
	Very bad	33.3%
	Bad	14.9%
	Good	27.9%
	Very good	7.2%

Farmers were asked questions regarding collaboration between various Ministries and Non Governmental Organization (NGOs) and also between these organizations and farmers. 42.8%

and 12.6% of farmers said the Ministry and NGO collaboration is very bad and bad respectively. This accounts to more than 60% of farmers that view collaboration as not good.

Collaboration between GRN/NGO and farmers is also perceived by many farmers (48%) as not good enough. Only about 35% of farmers regard such collaboration as good/very good. Continuous extension efforts to promote joint planning and holding of meetings will consequently improve collaboration between GRN, NGOs and farmers in joint planning and implementation of programs.

6.3.37 FARMER PERCEPTION OF VILLAGE DEVELOPMENT PLANS

Table 30. Farmer Perceptions of Village Development Plans

Variable	**Category**	**Percent of Households**
Village has a development plan /with help of AET	Don't know	5.0%
	No village development plan	66.2%
	Yes, a plan, prepared with AET	18.9%
	Yes, a plan prepared without AET	9.9%

Fig 48

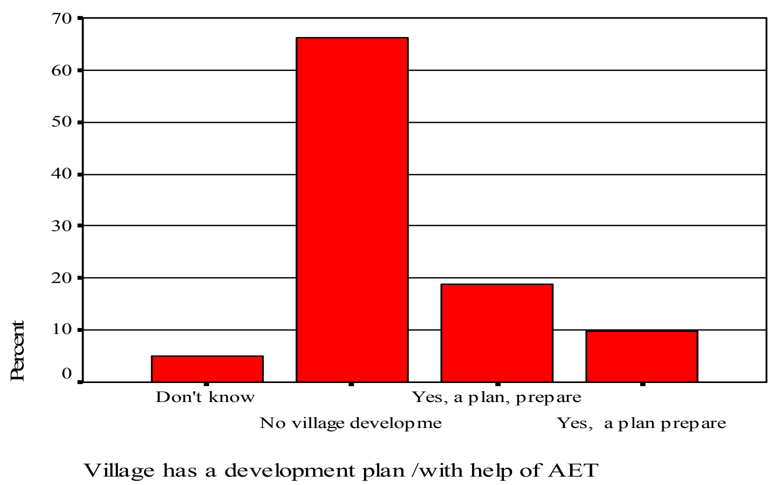


Table 30.2

Variable	**Category**	**Percent of Households**
Satisfied with the development plan	Not applicable	67.1%
	Don't know	2.3%
	Not at all satisfied	9.5%
	A little satisfied	5.0%
	Satisfied	9.9%
	Very satisfied	6.3%

Fig 49

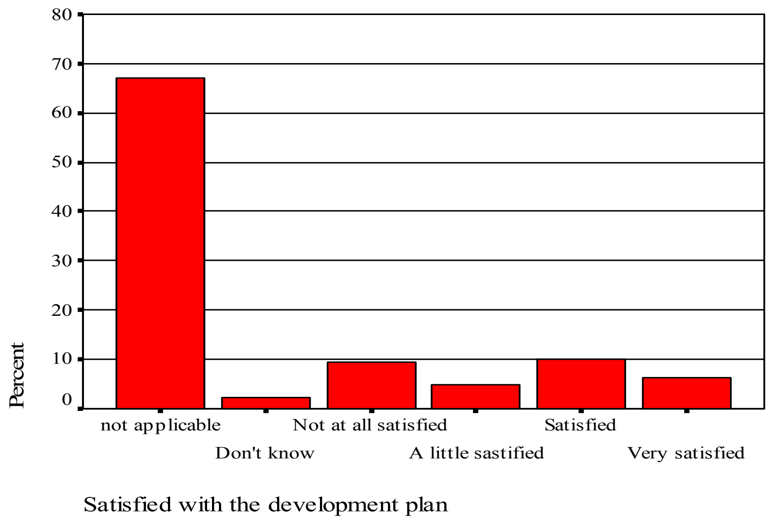


Table 30.3

Variable	Category	Percent of Households
Plan is being used	Not applicable	63.1%
	Don't know	1.4%
	No	16.2%
	Yes	19.4%

Farmers were asked several questions relating to village development plans. 66.2% of farmers said there is no village development plan in their communities. 29% indicated that they had village development plans, (19% facilitated by the local AET and 10% done without AET participation). Impalila ADC initiated the development of village plans by way of community participation. In May 2003, all other ADCs sent some representatives to Impalila to learn from experiences acquired by that community. Further follow-up by Impalila committee members and other AETs was carried out in September 2003. Communities with the help of their local AETs are expected to formulate village development plans in future.

6.3.38 FARM LABOUR AVAILABILITY

Table 31.1 . Availability of Casual Labour Compared to Five Years Ago

Variable	Category	Percent of Households
Availability of casual labour compared to 5 years ago	Don't know	2.3%
	Much less	9.9%
	Less	39.2%
	About the same	6.3%
	More	22.5%
	Much more	19.8%

Farmers were asked about the availability of casual labor compared to five years ago. Close on half of the farmers (49%) said the casual labor availability is less, compared with five years ago while 42% said there is more labor available. Most farmers depend on casual labor to carry out farm work timely. The more the casual labor is available the higher is the expected yield of crops.

7 CONCLUSIONS

Conclusions drawn are set up in three parts. Firstly, lessons learnt, secondly suggested key impact indicators, and thirdly areas that require further study to facilitate clarity in elaborating some suggested indicators in preparation for the 2006/07 impact study. Lessons learned are presented in a manner that should help in guiding extension managers in the region where to focus and in some cases how to direct the focus in order to improve extension impact.

7.1 LESSONS LEARNED

7.1.1 DATA RELIABILITY

With 93 percent of the respondents being the household heads or their spouses, essentially the managers and owners of the farm enterprises, the quality of data collected was high. In addition, the high participation of women who do and manage farm work in most households added to the potential quality of the data. This is confirmed by the observation that the response "*I do not know*" was very rare.

7.1.2 FARMER TYPE

7.1.2.1 LITERACY

Since 95% of households reported that they at least have one literate / numerate family member, the potential of using print media for information sharing including technology dissemination is very high. This is an opportunity that needs to be used by producing quality information and technical leaflets in large enough numbers to reach all rural villages.

7.1.2.2 AGE OF HOUSEHOLD HEAD

There were very few (<7%) household heads below 30 years of age. This indicates that young couples find agriculture unattractive and first focus on finding an off farm urban job. The tendency is to get back to farming as a last resort. In addition, young farmers have less resources especially cattle which further constraints them in their farming ambitions.

7.1.2.3 FOOD SELF-SUFFICIENCY

The report that 67% of households hire farm labour and 72% are not food self-sufficient is potential worrying. It needs further investigation. For example does food self-insufficiency mean food insecurity for the households concerned? If so, what would be the justification for hiring labour? These and similar issues need to be explored through participatory methodologies.

7.1.2.4 LIVESTOCK OWNERSHIP

More cattle are kept compared with any other livestock class. This is because of their high value in the mixed farming system due to the multiple purposes they serve. However, a quarter of the farmers do not own cattle. This does not only limit their income sources but also restricts their crop production capacity. On the other hand less than one third of the farmers own small stock that is generally used as a capital accumulation strategy towards cattle procurement. It needs to be noted that without cattle and draft animals in particular, the degree to which extension can support farmers in their farming enterprises becomes very limited.

7.1.2.5 CEREALS GROWN

While all previous studies have shown that maize is the dominant cereal, it is surprising to note that the highest proportion (85%) of respondent farmers grow pearl millet. This should be compared with 46% for maize and 42% for sorghum. With the majority growing between 0.5 and 2.0 ha i.e. 58%, 37% and 32% for millet, maize and sorghum respectively, this may be wrongly construed to mean that pearl millet is the major cereal in the region because the ranges used in the survey [0.5-2.0; 2.0-7.0; >7] were too broad. A follow up study with small ranges needs to be conducted to produce are more accurate picture.

7.1.2.6 INCOME SOURCES

Income opportunities and options for Caprivi rural households are very limited. More than a quarter have less than three income sources. Increasing income options is one of the biggest challenges facing the region. At this stage support for non-farm and off-farm income generating activities is seen as one potential strategy to address this challenge. However, location specific details can only be gathered through PLA leading to development plans for individual communities. The principles of supplementing incomes and opportunity cost for own labour need to be adequately highlighted during the search for additional options. The focus should be on additional and not alternative options.

The survey results clearly show that a much larger proportion of farmers (47%) sell livestock compared with the proportion that annually sells crops (14%). Therefore, the indication that crop sales constitute the major income source for the majority needs further participatory investigations.

7.1.3 FARMER-EXTENSION CONTACT

7.1.3.1 EXCHANGE VISITS AND INFORMATION SHARING

Nearly half of the farmers say that they have no contact with the AET at all and receive no information what so ever. Although this finding needs to be treated with caution due to potential bias as a result of poor inter-personal relationships, the degree of extension-farmer contact leaves a lot to be desired. It is very poor and needs lots of improvement. While AETs focus on FED / contact groups it would be useful to periodically arrange or attend information meetings in areas not covered by these contact groups. Meetings, rated useful by 65% of the households need to continue to be judiciously used for sharing information including technical opportunities and development options.

7.1.3.2 MASS MEDIA

Print media is the weakest category of the region’s communication strategies. 88% reported that they do not get any leaflets while only 21% do not listen to agriculture programs on the radio. The communications Technical Support group needs to focus on producing technical and information bulletins for distribution to all farmers. The radio programs [rated useful by 57% of farmers] need to be maintained with increasing diversity and time relevance to increase interest.

7.1.3.3 TRAINING

Getting close to one fifth of farmers attending training sessions in 2002 was a good achievement. This needs to be maintained while improving the relevance and applicability of training rendered.

7.1.3.4 THE EXTENSION IMAGE

Extension in the region has an average reputation. 55% are satisfied with extension support while only 34% believe that agriculture improvement in their areas is due to extension support. All team players need to focus on building the extension image by timely rendering relevant support without creating dependency.

7.1.4 EXTENSION IMPACT

7.1.4.1 ADOPTION OF PROMOTED TECHNOLOGIES

The adoption / adaptation of technologies being promoted by extension staff in the region is still low. Notably low are the use of improved seed, fertilizers, supplementary feeding, dehorning and de-worming. The relevance and appropriateness of these technologies as well as methodologies used in promoting them need to be reviewed using participatory techniques. Whenever a technology has high cost implications (e.g. fertilizer) facilitators need to fully respect the farmers' approaches towards risk management. It is important to note and accept that choices such as the use of hand picking to control pests as opposed to chemical spraying are guided by unwritten but accurately conducted cost-benefit calculations.

Two additional factors that clearly come out as having a large influence on technology adoption are accessibility and perception. Accessibility was clearly demonstrated in the case of Newcastle Disease vaccine whose adoption in 2002 went up to over 40% because it was readily available. On the other hand farmers do not see the need to use manure and fertilizer because they perceive their soils as being fertile enough for their target yields.

DAP weeding now at 9% adoption warrants special attention in view of the fact that ox ploughing is at 84%. Furthermore, the potential for DAP weeding is enhanced by the fact that about three quarters of farmers plant in rows. Lessons learnt in a 2003 DAP weeding adoption survey have already led to a shift from traditional training approaches to PLA based training. During 2004 this shall be intensified in collaboration with DAPAP to quickly reach the 53% who do not have the knowledge and skills to manage DAP weeding. Within the same framework links with PUMP need to be quickly established, all the logistic requirements cleared and information disseminated to ensure that farmers who do not have money to purchase cultivators (28%) readily and quickly access the 80% implement subsidy.

7.1.4.2 DIVERSIFICATION

With less than 2% of farmers trying potential crops such as cotton and sunflowers, adoption is not likely to take place unless the marketing support logistics improve. For example, cotton produced during 2002/03 is not yet bought and this seriously dampens the farmers' spirits. Specific shortcomings for each option being tried can only be obtained through participatory interactions with farmers currently trying each technology.

7.1.4.3 MARKET INFORMATION AND MARKETING

The proportion of farmers that receive market information (about 60%) is low. This needs to improve. For crop market information where AETs, radio and unions each contribute to 33% of information dissemination; extension needs to both increase their dissemination efforts and collaborate more to increase crop market information radio broadcasts. In the case of livestock market information unions and AETs are the least effective accounting for 5% and 20% respectively. Both need to liaise more with MEATCO and increase their share of information dissemination. In conjunction with MEATCO extension needs to arrange for the radio to broadcast more livestock market information.

The observation that only 14% of farmers sell crops every year when 58% record crops as their major income source suggests that many farmers do not have an annual income. On the other hand, 32% of farmers who own cattle also do not derive income from their herds annually. In addition, those who sell do not have planned schedules because steers/oxen tend to be sold at any age by 66% of those who sell each year. These are complex issues that are difficult to explain. Attempts to unravel them need to be made using participatory methodologies as a basis for developing community action plans to improve situations deemed necessary at each local level.

7.1.4.4 RANGE MANAGEMENT

Farmers have a good understanding of range management principles such as the need for correct stocking rate and grazing rest. However, they do not apply these principles in their working range management plans. Reasons for not applying the principles need to be investigated using participatory techniques. In addition, the rudimentary range management plans being implemented need to be appreciated and praised accordingly. Through participatory planning, extension needs to facilitate the process of building on these existing strengths.

7.1.4.5 COMMUNITY ANIMAL HEALTH AGENTS (CAHAs)

About two thirds of farmers where CAHAs operate rated them as useful although this is a fairly new position. With close to half of the farmers having no information and knowledge on CAHAs it is important to increase the CAHA network in the region. In addition, the concept of community agents needs to be expanded to cover other disciplines. In this regard, the planned engagement of DAP Community Promoters through DAPAP is a welcome development.

7.1.4.6 COMMUNITY BASED ORGANISATIONS (CBOs)

CBOs are weak in the region. Only 11% of farmers reported presence of active CBOs. This situation needs to be improved within the context of the Decentralisation policy; focusing on the development of Village Development Plans (VDPs) and setting up of Village Development Committees (VDC) to manage plan implementation. The disparity between CBOs (11%) and VDPs (29%) spells bad planning. A VDC without a VDP is disaster and vice versa. But first a plan needs to be developed and the committee set up to implement the plan. In this regard the experience and successes of Water Point Committees (WPCs) provides useful lessons. With tasks and plans clearly laid down before the WPC is set up, over 75% of WPCs were rated to be effective.

7.1.4.7 COLLABORATION

About 50% of farmers rated collaboration “bad” and only 33% rated it “good”. Therefore, extension needs to work on improving the collaboration amongst GRN, NGOs and CBOs. This is not an easy task because in general everyone likes collaboration but no one likes to be coordinated. A starting point for extension should be the elaboration of the specifics of what farmers term good and bad collaboration using participatory techniques followed by participatory planning and action to remedy the situation. As appropriate all relevant stakeholders need to be involved in these location specific PLA exercises.

7.1.4.8 BROADER DEVELOPMENT ISSUES

Because of their facilitation role AETs are increasingly getting involved in broader development agendas pertinent to specific communities. For example, more than a quarter of the farmers reported that AETs were facilitating HIV/AIDS awareness discussions. This is good but the level is too low. Therefore, extension management needs to encourage improvements in this regard.

7.1.4.9 FARMERS’ PERCEPTION OF EXTENSION

Only 20% of farmers perceive their role and that of extension within the FSRE context. Focus to improve the situation is needed through multi-media channels complemented by PLA VDPs in all contact groups.

7.2 SUGGESTED BASELINE INDICATORS FOR IMPACT ASSESSMENT

To assess the degree to which extension impacts on farmer knowledge and behaviour with respect to farm technology, farm management and farmer organisations indicators for use in Caprivi at the end of NDP 2 are listed in Table 7.2.1. For each indicator the baseline status is shown in the Table while specific targets shall be elaborated in the Sub-divisional Logframe.

Table 7.2.1 Extension impact indicators for Caprivi region

Indicator definition	2003 Benchmark	Comments
Proportion of households who are food self-sufficient	23%	The relationships between this indicator and food security in the region need to be understood because food security is the more important aspect.
Proportion of farmers relying on the enterprise as the most important income source	Cropping 58% Livestock 14% Wages 10%	Reflected crop and livestock proportions need verification through participatory techniques.
Number of income sources per household	<3 ……....27% 3-4……… 59% 5-6 …….. 13% >6 ………. 1%	The focus should be on additional sources that supplement each other and ensure labour deployment through out the year and not necessarily alternative income sources.
Proportion of farmers selling crop every year	14%	Benchmark needs participatory verification
Proportion of farmers selling cattle every year	0 ………32% 1-2 …….30% 2-5 ……12% >5 …….. 5%	To allow proper extension focus the relationship between herd size and sales per year need to be established through participatory techniques.
Average age of oxen / steers at selling	N/A ....36% <3 …….. 1% 4-7 …….11% >7 ……..6%	In addition to qualitative data that may emerge during participatory interactions verification of these benchmarks through MEATCO records are essential.
Extension-farmer contact • Total interactions per year • Meetings/field days attended per year	<4 ……… 27% >4 ………. 25% <4 ……… 37% >4 ……… 18%	There should be no further probing on these parameters during the follow up participatory interactions because this may bias subsequent survey results.
Proportion of farmers with access to specific agriculture information a. General information b. Crop market information c. Livestock market information d. Policy information e. Leaflets f. Radio broadcasts	a. ………. 52% b. ………. 58% c. ………. 60% d. ………. 60% e. ………..10% f. …………78%	No further probing should be done on benchmark levels. However, normal PLA interactions in pursuit of improvements should be conducted.
Adoption level of promoted technologies i. DAP ii. Improved maize seed iii. Improved sorghum seed iv. Improved millet seed v. Fertilizer use vi. Manure use vii. Cattle dehorning viii. Livestock de-worming ix. Supplementary feeding x. Crop diversification	i. ---------- 9% ii. -------- 10% iii. --------- 5% iv. --------- 4% v. --------- 4% vi. -------- 19% vii. --------- 2% viii. --------- 1% ix. ---------- 3% x. ----------< 2%	In addition to ensuring appropriateness, relevance, affordability, cost-benefit ratio, etc of technologies and promotion methodologies; extension has to establish the necessary collaborative linkages to ensure that essential hygiene factors for technology adoption and/or adaptation are in place.

Proportion of farmers [communities] applying the known principles of sustainable range management	0%	Disciplined herding as is happening now is what is needed and not fences.
Proportion of farmers reporting presence of effective CBOs	11%	Effectiveness should include presence of development plans and proper management of their implementation.
Farmers' perception of the level of stakeholders collaboration	Poor ….50% Good …33%	Benchmarks need to be defined using participatory techniques.
Proportion of farmers recognizing the AET's input in facilitating HIV/AIDS campaigns	27%	Indicator needs to be broadened to capture community participation.
Proportion of farmers with good understanding of their role in the FSRE context	20%	Focus on learning by doing through PLA and not merely on mass media.
Degree of satisfaction with extension services • % rating agriculture meetings useful • % rating agric radio broadcasts useful • % satisfied with extension support	 63% 57% 55%	No further probing on benchmark levels. Identify weaknesses and strengths through PLA and apply lessons learnt accordingly.

7.3 AREAS FOR FURTHER STUDY

7.3.1 RE-ANALYSIS OF DATA

Data re-analysis by agro-ecological zone needs to be done to gain greater location specific insights for local application.

7.3.2 QUALITATIVE ASSESSMENT OF BASELINE DATA

Topics listed below have been identified for follow up study using participatory methods and techniques to allow in-depth understanding of situations and refinement of baseline data. Each topic is given the appropriate reference from the lessons learnt section from which specific details are briefly highlighted. The topics selected for further qualitative study include:

- food self-sufficiency [7.1.2.3];
- cereals grown [7.1.2.5];
- income sources [7.1.2.6];
- adoption of promoted technologies [7.1.4.1];
- diversification [7.1.4.2];
- market information and marketing [7.1.4.3];
- range management [7.1.4.4] and
- collaboration [7.1.4.7].

The specific details of approaching each component of the qualitative study, the scheduling, etc shall be subjects of participatory planning with all research and extension staff in the region.

References

1. Mendelson J. and Roberts C. 1997, An Environmental Profile and Atlas of Caprivi, Directorate of Environment and Tourism, Namibia

2. Northoff E. 2003, Relationship between HIV/AIDS and food security, FAO

ANNEXURE 1. FARMER QUESTIONNAIRE

ANNEXURE 2. QUESTIONNAIRE RESULTS TABLES