REPUBLIC OF NAMIBIA

MINISTRY OF AGRICULTURE
WATER AND RURAL DEVELOPMENT

PHOTO

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

DIRECTORATE OF EXTENSION AND ENGINEERING SERVICES

GROOTFONTEIN, NOVEMBER 2003

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Acronyms and abbreviations

ADC	Agricultural Development Centre
AET	Agricultural Extension Technician
CAET	Chief Agricultural Extension Technician
CBO	Community Based Organisation
DEES	Directorate of Extension and Engineering Services
DVS	Directorate of Veterinary Services
EU	European Union
GDP	Gross Domestic Product
FSA	Farming Systems Area
MAWRD	Ministry of Agriculture, Water and Rural Development
NDP2	Second National Development Programme
NGO	Non-governmental Organisation
NNFU	Namibia National Farmers Union
REMP	Research Extension Management Programme
RWS	Rural Water Supply
SAET	Senior Agricultural Extension Technician
SARDEP	Sustainable Animal and Range Development Programme
SKW	Sesfontein, Kuwarib, Warmquelle Development Programme
SPSS	Statistical Package for the Social Sciences
VCF	Veterinary Cordon Fence

Acknowledgements

The questionnaire survey and the preparation of this report were undertaken by Mr J. Vries and Ms V. Nghipondoka, in collaboration with the rest of the DEES team in the Otjozondjupa region. Financial and technical assistance were provided by the EU supported Research Extension Management Programme. (REMP). Particular thanks are offered to the farmers of the Otjozondjupa region for their generous co-operation in giving their time and providing the information used in this survey. Thanks are also given to the survey enumerators: B. Haraseb, E.M. Awaseb, A.A.B. Aice and A. Kolbooi.

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 the final survey. This period coincides with the span of NDP 2, which is the basic planning timeframe of the extension service.

Comment: So how come it is called a baseline survey?

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 Otjozondjupa 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

Part One of this report provides background information to introduce a baseline study designed to survey selected indicators of extension impact on the broad mass of Namibia's communal farmers during the 2002/03 farming season. This baseline survey was conducted by the Ministry of Agriculture, Water and Rural Development (MAWRD) after it identified a need for improving the monitoring and evaluation of the impact of its agricultural extension and research services. Strengthen ed monitoring and evaluation systems is expected to assist managers in improving the effectiveness of their extension strategies, and to provide evidence to planners and donors of the cost-effectiveness of investing in the extension service. In addition, our collaborators, as well as the Namibian public as whole, want to find out whether the efforts of the agricultural extension service, in trying to inform and advise farmers, are worthwhile.

Comment: So how come it is called a baseline survey?

This baseline survey is intended to explore the current situation; it should be followed by an impact survey, scheduled for the end of the NDP2 planning period in 2005 to see how things have changed over time.

The report discusses some of the conceptual and practical difficulties involved in trying to assess the impact of agricultural extension services by investigating causal linkages between extension and farmer behaviour, farm production, and farmer welfare. It explains the rationale for focussing on the assessment of the extension service's most immediate objective, that is to facilitate change of farmer behaviour in terms of awareness, understanding, and adoption of recommended farm management practices, farm technologies, and organisational practices. 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 subject to many external influences.

To investigate such change 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 extensionists, or visiting demos, or Agricultural Development Centres (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

During 2003, baseline extension impact surveys have been conducted in all of Namibia's regions. Regional questionnaires have been designed to reflect local agricultural development realities.

Part Two of the report provides information on the context of natural resources and agriculture, as well as of extension services in the Omusati region. It also discusses in more detail the survey methodology.

The report points out the marginal nature of farming in the area, due mainly to low and erratic rainfall. Up until recently the government's agricultural extension services were focussed mainly on providing subsidised agricultural services (e.g. farm input sales, the development and maintenance of farm infrastructure), and the administration of government programmes such as drought relief and credit schemes. New approaches have stressed the provision of advisory, information, communications and farmer training services. Extension services mainly aim to help all 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 some places extension has been playing more of a facilitating role relating to a range of rural livelihood issues.

The last section of Part Two describes the survey method that was used, including further discussion of its rational and objectives, sampling procedures, preparation for field implementation, actual field implementation experience, and the data analysis process.

Part Three of the report presents and discusses the survey findings. The first part of the questionnaire aimed to investigate key farmer characteristics. The results showed that that the sample of respondents selected was reasonably representative of the total population of the sub-region. Findings related to questions which aimed to indicate levels of farmer – extension contact, and farmer awareness, understanding and adoption of selected extension recommendations, as well as farmer perception of various issues promoted by extension, revealed a mixed picture.

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 some places extension has been 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 numbers of farmers, such as demonstrations, shows, and training courses.

2.2 QUESTIONNAIRE SURVEY RATIONALE

Extension impact: can you 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. 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 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 17). 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. How can we say that change in farmer behaviour is because of 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 OTJOZONDJUPA REGION

The Otjozondjupa Region consists of an area of 104,800 km², with a perimeter length of 2,088 km. The north the region is bordered by the Oshikoto and Kavango Regions, to the east, along the 21 E Longitude line, the region shares a common border with Botswana, to the south east the region borders onto the Omaheke Region. The Khomas Region is located along the southern boundary, while the Erongo and Kunene Regions lie to the west of Otjozondjupa.

The towns of Grootfontein, Kombat, Otavi, Otjiwarongo, and Okahandja are located along the national road while the secondary urban settlements of Tsumkwe, Okakarara and Okandjira are linked to the main traffic route by trunk roads. A railway line links Grootfontein via Otavi and Otjiwarongo with Okahandja, the latter being an important railway junction point. Although the eastern areas of the region in general lack basic infrastructure, telecommunication, water provision and access to electricity supply to the urban areas are of a high standard.

The total freehold farming area of the Otjozondjupa Region is 73,861.5 km². This represents of 70.48% of the region's total area with the communal farm area constituting the rest.

The Otjozondjupa region, with its immense size, is characterised by agro-ecological and socio-economic diversity. Farming activities in the southern and south-eastern parts of the region are relatively homogenous with extensive cattle farming prevailing, together with lesser numbers of small stock (see Veterinary Census figures below). Moving northwards, increased rainfall allows for increased cropping. Cropping in the former "Hereroland East" and "Bushmanland" is mainly for domestic consumption, while north of Otjiwarongo and especially in the area around Grootfontein and Otavi commercial cropping mainly of maize, groundnuts and latterly of cotton are important enterprises. The latter area, with its high rainfall and fertile soils can be considered as one of the best cropping areas in the country.

3.1 BIOPHYSICAL RESOURCES

3.1.1 RAINFALL

The average annual rainfall in Otjozondjupa region ranges between 300mm - 400mm in the southern and central parts, and up to 600mm in northeastern areas. The rainy season usually lasts from November to April, with the peak in January, February and March.

3.1.2 SOILS

The soils vary from dark alluvial sands and loam to alluvium enriched with organic material. The sandy character of the Sandveld dominates the soils of the eastern part of the region, though variations exist related to local factors, for instance bush encroachment.

3.1.3 GROUNDWATER

Almost all the water for people and livestock comes from underground, pumped from boreholes within the Region. The water is of suitable quality for human consumption except in few boreholes in the western areas, where water contains high levels of salts, including sulphates and fluorides.

Groundwater is found in primary aquifers associated with unconsolidated sediments of the Kalahari Sandveld located under much of the region. As a groundwater source this aquifer is reasonably reliable and the Water quality is of a drinkable standard.

The Otavi Mountains include Mountain Savannah and Karstveld Vegetation zones that are important for terrestrial and freshwater protection. Numerous sinkholes and caves provide a habitat for endemic species that are of botanical interest (Nampower, 2000). In the southern and central parts of the region, the groundwater depth in meters below surface varies between 50-200 meters.

Groundwater reservoirs are located in a belt stretching from Otavi in the west to Grootfontein in the east and to Tsumeb in the north. These are referred to as Karst Aquifers, and are formed by the dissolution of calcium/magnesium rocks referred to as Dolomites by percolating rainwater over many million years. Water from the Dolomite Karst Aquifer supplies water to Okakarara via the Eastern National Water Carrier, and the towns of Grootfontein, Kombat, Otavi and Tsumeb. Investigatons by Namwater are underway on the feasibility of providing water to Windhoek in future from these aquifers.

3.1.4 TOPOGRAPHY

The Otjozondjupa region is predominately flat Northern Kalahari Sandveld with two significant mountain ranges, the Etjo and Otavi Mountains, running in a south-westerly direction from Otavi. The region is characterized by flat gradients of approximately 1:2,500 over the northern parts and 1:5000 to 1: 10000 further south. The elevation is between 950 and 1150 meters above mean sea level, gradually descending from the west towards the Makgadikgadi Depression in northern Botswana.

The Etjo and Otavi Mountains are sandstone formations towering approximately 200 meters above the plains. The Otavi montains reach heights of 1500 to 2000 meters above sea level. (IDC, 1995). The eastern parts of the region are characterized by ancient sand dunes and wind blown sand plains, which are vegetated.

Mainly as a result of the flat topography and the sandy soils, a poor drainage system has developed over the region. The major drainage channels, locally known as Omuramba, are generally well defined. The Omuramba Omatako, originating at the Etjo Mountains and ending in the Okavango river some 600km away, is the most prominent ephemeral river. The Omatako dam, which is linked to the Northern National Water carrier, providing water to Windhoek, is built within the Omuramba Omatako.

3.1.5 RIVERS

The rivers in the eastern parts of the region, which drain into the Okavango delta, are poorly defined and run off is only experienced after heavy rainfall. The only other prominent river course within the region is the Swakop river, which originates in the central Namibia highland east of Okahandja, flowing in a westerly direction ending at the Atlantic Ocean at Swakopmund some 350km away.

The Omatako river flows about 635 km from its upper catchments area to the north of Okahandja. On the south and central parts of the region rivers are dry and flows for a short period. Other main rivers are the Omatako and Gunib. The Otjozondjupa Omuramba, however has silted up and does not flow anymore. Small pans are also present in the area.

3.1.6 VEGETATION TYPES

The vegetation of the Otjozondjupa region can be classified broadly according to geographic regions, namely the Sandveld, the Karstveld, the Etjo Mountain range and the Namibia Central Highland.

Acacia eriolaba (Camel thorn) savannah dominates the vegetation over the eastern parts of the region. These areas are characterized by dense grass stands, and mixed stands of shrubs. Low shrubs trees and bushes of varying density become sparser towards the east.

Dry medium savannah associated with featureless plains are common in the Sandveld, while the vegetation within the central areas is dominated by Acacia Thorn Bush Savannah. As a result of selective grazing practices severe bush encroachment (mainly by Acacia species) at the expense of grass species, occurs in many areas.

The Otavi Mountains, which form part of Karstveld, accommodate the only true Mountain Savannah of Namibia (National Atlas). Mopane and Acacia species dominate this vegetation type. The slopes of the mountains are characterized by a density of vegetation, especially trees and shrubs, but on the plains edible grass species account for a more balanced bush savannah character.

Thorn bush savannah characterizes the Etjo Mountain lands. In the Waterberg area the vegetation changes from an Acacia Savannah to a sub-tropical dry woodland with tall trees and grassy plains.

The Namibia Central Highlands are characterized by highland Savannah. Although Acacia species are still dominant they do not form dense stands. Shrubs are more prevalent than trees. The grass cover is dense and of good quality. Bush encroaching as a result of overgrazing has occurred especially with in the Otjiwarongo district and along some of the overpopulated areas with in the communal farmland, which are easily accessible and where water points are found.

The Otjozondjupa region is probably the most severely affected by overgrazing and hence bush encroachment of all Namibia's regions. A comparison of livestock census data with range areas and carrying capacities indicates that overgrazing is the result of poor distribution of livestock within the region rather than overstocking at a regional level. Success in combating bush encroachment may be expected to significantly increase productivity particularly in the private-tenure farms but also in some communal-tenure areas. Productivity in the eastern part of the region is constrained by poisonous plants.

3.2 POPULATION ISSUES

3.2.1 NUMBER OF FARMING HOUSEHOLDS

According to the 2001 Population and Household Census, the total population of the Otjozondjupa region in 2001 was 135,723, representing 7.43 per cent of the total Namibian population of 1,826,854. The total number of households in Otjozondjupa region was 25,338, with an average size of 4.6 persons. The percentage of the population registered as residing in urban areas was 41%, with 59% residing in rural areas. Hence, the number of rural households can be assumed to be approximately 14,950 (25,338 x 59%). 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 (mainly civil servants and landless farm labourers) 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.

The population of the communal areas (Tsumkwe and Okakarara Constituencies but excluding Ovitoto), that are the subject of this survey, totals 30,159, which is about 22 % of the region's population. Assuming that communal area households are all farming and regional average household size of 4.6 persons per household, the number of communal farming households is approximately 6,556. This includes farm workers and other occupations, which may not be farmers, and excludes part-time farmers residing in towns.

Other interesting data from the 2001 Population and Housing Census include the following:

- the region's population growth rate is 2.8%
- female-headed households represent 33% of the total number of households;
- total area is 105,185, and population density is 1.3 persons per square kilometer;
- 40% of the population is less than 15 years of age;
- literacy rate (15 years +) is 67%;
- access to radio 80%.

Concerning population density, while the overall population density is some 1.3 persons per square kilometer, the Okakarara and Tsumkwe constituencies, which are mainly communal farm land, are most sparsely populated having areas with less than 0.20 persons per km², while the commercial farming land along the fertile valley in the Otavi and Grootfontein constituencies is mostly populated with more than 10 persons per km².

3.2.2 LANGUAGES

The main mother tongue languages spoken in the region are:

- Otjiherero Language – 28% of people
- Nama/ Damara – 22% of people
- Oshiwambo Languages – 20% of people
- San Languages
- Other Languages are Afrikaans, German, Kangwali, but to a lesser extent.

3.2.3 IMPACT OF HIV/AIDS

The HIV/AIDS epidemic is sweeping across Namibia. Since the beginning of the 1990s the prevalence of HIV infections has increased dramatically. AIDS is now the leading cause of death as reported by the Ministry of Health and Social Services. The rate of infection over the five years period between 1992 to 1997 increased ten-fold from 4,045 to 40, 629. The United Nations Development Program estimated that by the end of 2001, the direct and indirect costs of HIV/AIDS on the Namibian economy will be approximately N$8.6 billion.

Otjozondjupa, as the rest of the country, has an HIV/AIDS problem. According to the sentry's survey of 1996, fifteen percent of pregnant women countrywide were HIV positive. This figure has increased in the past seven years to over twenty percent. Otjozondjupa faces, however, an immediate challenge. It sits astride the main transport artery of the country, and as such is annually receives thousands of travelers who are moving from high infection area in the north to the high infection area of Windhoek and the coast. Hence, the number of infected people traveling through Otjozondjupa every year is high, as are the chances that they will infect someone.

Ministerial HIV/AIDS committees have been established in Otjozondjupa region. Their purpose is inform the employees and communities on the causes and effects of HIV/AIDS, and to distribute condoms and pamphlets for awareness raising.

3.3 LIVEHOOD PATTERNS

The farming systems in the region can be divided in to two parts according to land tenure: freehold and communal areas. The small communal reserve of Ovitoto is located near Okahandja. The region consists of livestock and crop farmers as well as traditional hunters and gatherers. The latter are only found in the Tsumkwe area. The majority of farmers depend on livestock production. The main sources of rural income are livestock production followed by crop production, hunting and gathering. Others for the region as a whole are indicated below.

Table . Main Sources of Income for Households.

Main sauce of income	**Households**	**Percentage**
Farming	3709	**15**
Business activities – non farming	1915	**8**
Wages and Salaries	13981	**55**
Pension	1819	**7**
Cash remittance	2441	**10**
Others	912	
Not stated	561	
Total	**25338**	

3.4 LIVESTOCK PRODUCTION

Reflecting the importance of the livestock sector to the region, recent livestock census figures are presented below. Amongst other things these figures reveal a significant drop in numbers following the 1994/95 and 1995/96 drought years in private-tenure areas and some, but not all, communal-tenure areas, and signs of a gradual recovery thereafter.

Directorate of Veterinary Services: Otjozondjupa Region Livestock Census (communal areas in bold)

Cattle - 1995 to 2002

Veterinary Area	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
Grootfontein	67,109	91,002	71,886	97,492	101,028	99,583	97,459	99,503
Tsumkwe	**8,823**	**8,025**	**1,948**	**2,272**	**2,294**	**2,410**	**2,475**	**3,635**
Gam	**-**	**-**	**-**	**-**	**-**	**10,621**	**11,271**	**12,366**
Otavi	51,228	41,997	42,838	42,703	49,305	58,930	49,367	44,308
Otjiwarongo	62,598	57,472	62,976	61,037	60,457	57,371	58,763	71,748
Okakarara	**100,407**	**98,484**	**94,337**	**99,195**	**90,396**	**81,415**	**82,191**	**76,552**
Okahandja	100,300	62,000	85,818	89,742	92,678	105,306	116,734	115,571
Ovitoto	**7,022**	**7,446**	**6,226**	**7,036**	**8,928**	**10,279**	**11,714**	**15,190**
Otjozondjupa Region	**397,487**	**366,426**	**366,029**	**399,477**	**405,086**	428,115	431,975	440,875

Sheep - 1995 to 2002

Veterinary Area	1995	1996	1997	1998	1999	2000	2001	2002
Grootfontein	21,549	31,150	29,368	29,082	30,242	32,258	33,670	33,606
Tsumkwe	**719**	**1,306**	**159**	**291**	**349**	**342**	**400**	**647**
Gam	**-**	**-**	**-**	**-**	**-**	**883**	**695**	**707**
Otavi	7,944	9,242	8,747	8,609	11,608	10,280	9,958	12,216
Otjiwarongo	7,069	16,753	16,225	18,683	17,261	14,519	17,660	15,478
Okakarara	**21,610**	**26,624**	**24,428**	**97,507?**	**22,083**	**21,501**	**23,359**	**9,721**
Okahandja	17,487	16,447	17,833	17,931	19,255	16,087	21,025	19,517
Ovitoto	**1,348**	**1,882**	**2,069**	**2,009**	**1,165**	**1,409**	**1,824**	**1,611**
Otjozondjupa Region	**77,726**	**103,404**	**98,829**	**174,112**	**101963**	99,501	110,592	95,505

Goats - 1995 to 2002

Veterinary Area	1995	1996	1997	1998	1999	2000	2001	2002
Grootfontein	14,543	19,257	12,110	20,882	21,052	18,202	20,287	20,936
Tsumkwe	**1,993**	**5,381**	**738**	**770**	**759**	**712**	**1,018**	**1,374**
Otavi	14,165	12,586	14,113	13,123	31,096	15,051	15,669	19,556
Gam	**-**	**-**	**-**	**-**	**-**	**3,158**	**3,356**	**4,011**
Otjiwarongo	15,357	74,484?	19,837	17,085	17,811	18,650	56,340	22,392
Okakarara	**69,052**	**91,778**	**58,365**	**57,181**	**51,120**	**47,038**	**73,678**	**68,780**
Okahandja	19,660	15,059	16,614	18,214	20,237	18,650	17,931	18,924
Ovitoto	**14,229**	**7,643**	**7,431**	**7,531**	**4,810**	**5,669**	**6,431**	**7,904**
Otjozondjupa Region	**148,999**	**226,188**	**129,208**	**134,786**	**146,885**	129,130	196,711	165,879

Livestock Census Figures for 2002 in Otjozondjupa region.

Area	Cattle	Sheep	Goats	Pigs	Horses	Donkeys	Pou1try
Otavi	44 308	12 216	19 556	42	477	666	14 950
Grootfontein	99 503	33 606	20 936	621	1 426	682	13 479
Tsumkwe	3 636	647	1 374	10	128	211	1 035
Okahandja	115 571	19 517	18 924	703	1 931	1 222	88 911
Ovitoto	15 190	1 611	7 904	41	394	264	1 411
Otjiwarongo	71 748	15 478	22 392	94	678	458	15 417
Okakarara	76 552	9 721	68 780	93	2 080	1 915	8 837
Gam	12 366	707	4 011	0	817	1 599	390
TOTAL	**438 873**	**93503**	**163877**	**1604**	**97 931**	**7017**	**144 430**

At the time of reporting, Otjozondjupa region contains approximately 778 + commercial farms. Of these, the number of privately financed commercial farmers is approximately 506, the number of affirmative action farmers is 130, and the number of resettlement farm is ±12, each aiming to support a varying number of farming households.

The main livestock marketing facilities used in the region are auction pens, through which farmers sell animals during auctions and permit days. Most of auction pens have been transferred to local communities and are currently managed and maintained by farmers' associations. Meatco's main export abattoir is located in Okahandja.

The Veterinary Cordon Fence (VCF) runs along the 20 degree latitude line to the north of the Gam area westwards to the Ovituuo area where it turns north . Therefore, cattle in most of the Tsumkwe Consituency cannot be marketed to the south. Distances to the Meatco abattoir in Oshakati make the costs of formal marketing prohibitive. The area from the VCF south to the Eiseb block in Omaheke region is classified as a surveillance zone. Livestock can be marketed to the south from this zone only after they have undergone 21 days quarantine in a quarantine camp to the south of Gam.

3.5 CROP PRODUCTION

The areas around Grootfontein, Otavi and Tsumeb, are commonly known as the "Maize Triangle", where mainly maize is grown. Due to the unreliability of rainfall, commercial farmers have been encouraged to diversify and also produce cotton and other crops such as groundnuts, sunflower, sorghum (mainly fodder), potatoes, onions, and lucerne. The latter crops are planted on a smaller scale. Mushrooms production has also recently been introduced mainly to commercial farmers. Cropping in the Tsumkwe Constituency, Okakarara and Otjituuo areas are mainly for domestic consumption. The crops grown include maize, pearl millet (mainly Okashana), cowpeas and sorghum. Interest in cotton has been shown but experience is still at the initial stage.

Irrigation takes place mainly around Grootfontein, Otavi and Tsumeb, due to the Karts Aquifer. Approximately 405ha is under irrigation (including the Tsumeb area of Oshikoto). The main crops under irrigation are maize, wheat and vegetables.

3.6 FOOD SECURITY

The average annual household income of the region is N$13,756 p.a . It can also be estimated that rural households have, on average, only one third of the income of their urban counterparts. (UNDP 1998.) The main sources of household income are shown in section 3.3, above.

Household and individual food insecurity is a chronic problem amongst the Region's poor. Most rural people rely mainly on purchased food, using incomes derived from a range of non-farming activities, remittance of both foods and cash, pension and formal employment. The 1993/4 household income and expenditure survey revealed that own production of food comprised 12.3% of total intake in the Otjozondjupa region as a whole: San households are more reliant than other language groups on consumption in kind amounting to 35.5% of total consumption. This reflects the importance of veld products utilization amongst the San (CSO 1996). The household income and expenditure survey (1993/4) states that 41,2% of households spend 60% of their total income (cash and kind) on food. A further 10.8% of the regions households spend more than 80% of their income on food (CSO 1996). Over 40% of

Otjozondjupa households are classified as poverty stricken and three quarters of these are poor and one quarter as extremely poor! Amongst the San 75% of households is classified as poor and one third of these are classified as extreme poor (CSO, 1996).

A health survey (1992) concluded that about 20% of children under five in the Otjozondjupa region suffered from chronic under nutrition. Cases of eye decease Xerophalmia, resulting from vitamin A deficiency, of anemia, resulting from iron deficiency, and of pellagra, resulting from niacin deficiency, are below the national average (MOHSS 1993; MOHSS/ ICCIDD,1992).

4. AGRICULTURAL EXTENSION SERVICES IN OTJOZONDJUPA REGION

4.1 MISSION AND STRATEGY

The Directorate of Extension and Engineering Services (DEES) of the Ministry of Agriculture, Water and Rural Development (MAWRD) has defined its mission as being:

"to provide agricultural 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."

The Ministry hopes to provide basic services and physical infrastructure, equitably distributed throughout the region, in order to inspire and optimize the full economic potential of the region's agriculture and so reduce poverty, through the efficient implementation of the regional plans.

In order to plan, monitor and evaluate its activities effectively, in 2002 the Directorate adopted a logical framework, which is a tool that links long term policies and plans (e.g. National Agricultural Policy (1996); Second National Development Plan [NDP2]) with short-term plans (e.g. Annual Work Plan and Budgets) and which sets out what should be monitored and evaluated. Within this logframe the Directorate has set out its goal and purpose, and defined the outputs as well as the main activities that have to be carried out to achieve the set objectives of the Ministry at large. The core of this logframe is presented below.

NDP 2 Objectives for the Agriculture Sector

- Enhance agricultural production of the regional and household level in a sustainable manner.
- Raise the volume and value of Agricultural exports and reduce the value of agricultural imports.
- Promote complementary on and off-farm income generation, livelihood and employment opportunities.
- Maximize the potential value added to agricultural output.

Logframe Goal: improved food security at household and national level.

Purpose - Farmers have achieved increased and sustainable agricultural production and increased incomes derived from Agriculture.

Output 1
Improve agricultural technology and practice options are available.

Output 2
Relevant staff and farmer support information is available.

Output 3
Human resources in Agriculture sector are developed.

Output 4
Agriculture mutations and organizations are strengthened towards improved services delivery.

Output 5
Co-operation between partner organizations is improved.

Main Activities

1.1 Continuously develop technology information and disseminate them.

2.1 Update staff and inform farmers on policy issues, input and product markets and complementary off-and non-farm activities.

3.1 Train staff in technical, management and facilitation skills.

3.2 Train farmers in technical, management and facilitation skills.

4.1 Facilitate CBO formation and support their development.

4.2 Improve management information systems

4.3 Improve efficiency of resources use

5.1 Strengthen partner cooperation mechanism for joint planning, monitoring and evaluation.

4.2 KEY EXTENSION APPROACHES

4.2.1 FED GROUPS

Only one Farmer Extension Development (FED) group is operating in the Okakarara constituency. This FED group is dealing mainly with issues of improved pasture management: Two FED groups are active in the Tsumkwe constituency dealing with a range of agricultural issues and trying to solve problems on their own.

4.2.2 FARMERS ASSOCIATIONS

There are six Farmer Associations in the commercial areas of Grootfontein and Otavi. Study groups are also established in these areas. Farmers Associations and study groups also occur in the commercial areas of Otjiwarongo and Okahandja. At least six Farmers Associations exist in the communal areas of the region. The Okakarara, Okandjatu, Okamatapati, Otjituuo, Tsumkwe and Gam Farmers Associations are registered at the regional level as well as national level (with the NNFU and NAU). Extension staff act to facilitate their development. Farmers also visit the ADC's for information. In commercial areas, farmers are more organized and visits are mainly on request (e.g. surveying of pipelines, crop fields, etc).

4.2.3 MASS MEDIA

Most farmers in the region have access to mass media, including radios and TV., except for the far northeastern area (Tsumkwe and Gam). Namibia Broadcasting Corporation is, at the time of reporting, in the process of introducing NBC radio transmission in Tsumkwe area. Mass media is believed to be an important tool for easy and cheap dissemination of information and messages for farmers.

4.2.4 ON FARM TRAIL AND DEMONSTRATIONS

On farm trials are done on different aspects of agriculture. Demonstration plots on vegetable production exist at village Okurusu, where different vegetables are produced. Demonstrations are also done on animal health (vaccination, dehorning , castration, etc), and field crop production. Farmers Associations, mainly in the commercial areas, used to hold farmers days on a specific farm to demonstrate aspects such as veld management, breeds, etc. Demonstrations are also done on mushroom production and the planting of sweet potatoes and cassava.

There are five research and demonstration farms in the region, which play an important role in the process of promoting the development of farmers.

4.2.5 FARMER TRAINING

Farmers, especially communal farmers, are trained in different agricultural fields like animal husbandry, crop production and draught animal power. Training is done by mainly agriculture extension technicians working in the area. Training in commercial areas is organized by Farmers Associations. Guest speakers are usually invited to talk on certain topics. Donor projects such as REMP and SARDEP sometimes give financial assistance for the training.

4.2.6 STUDY TOURS

Farmers are sometimes exposed to other areas through study tours facilitated by extension services. The idea is to expose farmers having the same interests to their counterparts in other parts of the region or other regions. Farmers can often learn best from other farmers about how to apply different practices to their own situation. Farmers are also exposed to mini-shows in other regions, but also to demonstration farms in their own area. The research stations and demonstration farms play an important role in this regard. These research stations / demonstration farms are Omatjenne R.S; Uitikomst R.S, Sonop R.S, Okomumbonde Breeding Station and Tsumkwe Breeding Station.

4.2.7 PART-TIME FARMERS

Many farmers in the region, including most of those who bought farms under the Agribank's Affirmative Action Loan Scheme are weekend or part time farmers. This hampers the effective delivery of extension services. In some cases the farm foremen cannot give correct information and cannot make decisions on behalf of the farmer. The issue of whether training and other extension advice should be given to the farm foremen or the farm owner needs to be addressed.

4.3 DEES POST ESTABLISHMENT

The DEES post establishment for professional posts in the Otjozondjupa sub-division (e.g. region) is as follows:

1 x Chief Agricultural Extension Officer (CAEO)

3 x Agricultural Extension Officer (AEO)

3 x Chief Agricultural Extension Technician (CAET)

15 x Agricultural Extension Technician (AET)

The following posts are still vacant and need to be filled at the time of reporting.

1x Chief Agric. Officer (3BL1) - Otjiwarongo
1x Agriculture Officer (2CL2) - Grootfontein
1x Agriculture Ext. Tech (2CL1) - Grootfontein

Each AET is working in a extension ward. The aim is that the extension worker to farmer ratio can range between 150-200 farmers per agricultural extension technician. However, if we assume the number of farming households in the region to be 14,950 we find that the front line extension technician ratio to farming household ratio for the region overall is 1:996 (see section 3.2.1).

4.4 AGRICULTURAL AND RURAL DEVELOMENT CENTRES

There are eleven Agricultural Development Centers (ADCs), two breeding stations, and three research stations that operate under the auspices of the Ministry of Agriculture, Water and Rural Development in the region. These are:

a) OkahaNdja ADC
b) Ovitoto ADC
c) Otjiwarongo ADC
d) Okomumbonde Breeding Station
e) Okakarara ADC
f) Okandjatu ADC
g) Okamatapati ADC
h) Grootfontein ADC
i) Otituuo ADC
j) M'Kata ADC
k) Tsumkwe Breeding Station
l) Tsumkwe ADC
m) Gam ADC
n) Omatjenne Reseach Station
o) Uitkomst Research Station
p) Sonop Research Station

The Directorate of Agricultural Research and Training manages the latter three research stations, while the DEES manages the Breeding Stations and ADCs.

4.5 OPERATIONAL EQUIPMENT

There are thirty-five government vehicles operating in the region, as follows:

Sedans	=	1
Micro bus	=	1
Pick - Ups 2x4	=	3
Pick -Ups 4x4	=	26
Trucks	=	4

Some of these vehicles need to be replaced due to high kilometers traveled and the consequent high maintenance costs currently incurred. In addition to the above listed vehicles there are also tractors operating on demonstration farms and Research Stations, as well as in the Tsumkwe and

Gam area, where ploughing services still continue. At the Tsumkwe farm there is also a grader and a bulldozer.

There are twelve computers allocated to DEES in the region. At the Grootfontein office there are five computers, but only three printers. Audiovisual equipment in the region include television sets, video machines, overhead projectors and slide projectors. This audiovisual equipment is used during farmer and staff training activities. One staff member at Otjiwarongo has been equipped with a digital camera and radio programme production equipment for mass media purposes.

4.6.1 ANNUAL BUDGET BY MAIN MOF VOTE

The table below indicates the money received by DEES Otjozondjupa from 2001/2002 till 2003/04 (excluding remuneration).

Votes	2001-2002 (N$)	2002-2003 (N$)	2003-2004 (N$)
021 Travel & Subsistence Allowance	134000	150000	164000
022 Materials and Supplies	248800	271000	251000
023 Transport	1255500	1230000	1280000
024 Utilities	55000	49150	81400
025 Maintenance Expenses	252600	230000	240200
027 Other Services and Expenses	60600	74000	80000
044 Transfers	20000	20000	70000
101 Furniture and Office Equipment	37500	33000	40000
103 Operational Equipment, Machinery and Plant	58500	57000	73000
	2122499	2114149	2279599

4.7 DONOR PROJECTS:

The main projects operating in the region are REMP and SARDEP, which give financial assistance mainly to farmer and staff training. REMP also provided financial assistance towards the purchase of office equipment like computers, photocopy machines as well as audiovisual equipment and the installation of email and Internet. REMP also bought equipment for the Grootfontein office where a mushroom house was set up and training given to farmers and staff in mushroom production. SARDEP is more farmers oriented and has sponsored farmer training, farmers' days, linkages between Farmers Associations and Unions, grazing assessments and the development of infrastructure. Both these projects are due to be completed in early 2004.

4.8 MAIN COLLABORATORS:

The Directorates of Veterinary Services and of Research and Training are operating in the region, but only to a small extent in the northeastern parts (Tsumkwe area). Veterinary guard's play an important role in controlling the Veterinary Cordon fence (VCF) between the commercial and communal areas of Grootfontein and Tsumkwe, the border between Tsumkwe and Gam, as well as the border between Namibia and Botswana to control livestock and meat movement. Veterinary services and Research are more active in the Grootfontein, Okakarara and Otjiwarongo constituencies. Veterinary services assist the DEES in giving training and demonstrations on animal health during farmers' days. Research is done on crops and cross breeds mainly at the Research Stations at Omatjenne, Sonop and Uitkomst.

Active NGO's and other Ministries involved in extension are:

a) NNFU
b) NAU
c) SARDEP
d) REMP
e) Farmers Association
f) NAYE NAYE Conservancy
g) Churches (Dutch reform Church)
h) Agribank
i) Meatco
j) Meat board
k) World Wildlife Fund (WWF)

The DEES also collaborates with a number of other Ministries in the region, in particular:

- Ministry of Lands Resettlement and Rehabilitation (MLRR)
- Ministry of Environment and Tourism (MET)
- Ministry of Health and Social Services
- Ministry of Youth and Sport
- Ministry of Woman Affairs and Child Welfare
- Ministry of Basic Education and Culture
- Ministry of Regional, Local Government and Housing.

A good relationship exists between agricultural extension services and the regional authorities. Various regional meetings and workshops are usually attended by staff. These include the Regional Emergency Management Unit (REMU), the Community Development Committee (CDC), and the Rural Development Coordinating Committee (RDCC) meetings. Good cooperation also exists between extension and traditional authorities, which are always included in extension programmers planning.

SURVEY METHOD

5.1 RATIONALE

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 final 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 indicators 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.

Comment: So how come it is called a baseline survey?

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. 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. Their attainment, in a country like Namibia, is also a long term objective – which in the absence of miracle technologies, is likely to take many years to become evident.

5.3 QUESTIONNAIRE DEVELOPMENT

This survey has employed a closed questionnaire to gather information from farmers. It is closed in the sense that all answers options are given, and the enumerator simply mark the appropriate pre-coded answer. This makes objective and accurate analysis much easier. The DEES staff member responsible for the survey drew up the questionnaire. The questionnaires used in all the different regions of the country had a common structure, but questions were designed to reflect the specific farming systems and extension services rendered in each region. In the case of southern Otjozondjupa region, the questionnaire was drawn up together with colleagues working in the Omaheke region, because of the similarities that exist in terms of farming systems and consequently extension services in these two areas. The questionnaire was drawn up at two workshops with a process of field pre-testing and consultation with regional extension teams in between.

5.4 SAMPLE SELECTION

The Otjozondjupa region's communal areas, which the survey focussed on, were divided into three major farming system areas (FSA), based on a number of criteria including type of animal and crop farming enterprise, climate and vegetation type, and population density. These were as follows.

- South FSA (Ovitoto) estimated number of farming households = 300

- Center FSA (Otjituo, Okamatapati, Okondjatu and Okakarara) estimated number of farming households = 3,500
- North-east FSA (Tsumkwe and Gam) estimated number of farming households = 1,135
- Total estimated number of farming households = 5,150.

For planning purposes of the number of farming households were estimated as above derived from various sources by extension. This was done before the results of the 2001 Census were available. In the event numbers were slightly underestimated but the percentage of households per FSA remained more or less the same. It was planned that the total number of questionnaires that would be completed in the region would be 150, allocated per FSA in proportion to the breakdown of farming households (in the event the total was 157). Out of a total estimated number of farming households of some 5,150 this amounts to a sample of 2.9%. This stratified random sample method and size was felt to be reasonable given the logistical difficulties that have to be overcome in reaching farmers in the region.

- South FSA – 5.8% of farming households = 9 questionnaires
- Center FSA – 67.9% of farming households = 102 questionnaires
- North-east FSA – 26.2% of farming households = 39 questionnaires

Within each FSA the following villages were randomly selected. It should be noted that the Gam area was not included due to logistical reasons and the high costs that would have been incurred. Within each randomly selected village approximately every second household was surveyed.

The communities randomly selected and total questionnaires applied within the chosen farming households:

Farming System Area	Community/Village	No of Farming Households	No of Questionnaires
South FSA	Onduezongonge (Ovitoto)	28	9
Centre FSA	Okangeamaoma (Otjituuo)	15	8
	Neufeld (Otjituuo)	6	3
	Ongomaeombata (Otjituuo)	5	3
	Orukune (Okondjatu)	11	6
	Orukune (Okondjatu)	10	5
	Okaari (Okondjatu)	13	7
	Omanera (Okondjatu)	12	6
	Omutiondundu (Okondjatu)	10	5
	Okomumbonde (Okakarara)	22	11
	Omahuheke (Okakarara)	11	6
	Otumborombonga (Okakarara)	39	20
	Omutukururu (Okakarara)	20	10
	Ombujondjupa (Okakarara)	5	3
	Omatupa (Okakarara)	18	9
North-east FSA	Grashoek (Tsumkwe)	20	8
	Kukurushe (Tsumkwe)	20	10
	Luhebo (Tsumkwe)	10	4
	Aasvoelnes (Tsumkwe)	25	10
	Appelpos (Tsumkwe)	10	4
	Ben se kamp (Tsumkwe)	15	7

5.5 QUESTIONNAIRE IMPLEMENTATION

The questionnaires were applied by enumerators selected from within the region. The enumerators received one day of intensive training. The enumerators were driven to the farmers by the extension staff – but extension staff were not present during the interviews and efforts were made to explain to the farmers that the information they gave would be treated confidentially. For example, farmers were not asked to give their names. The survey took a total of nine days in May 2003. The total number of kilometres used was 5,384 at a total cost of N$ 11,882.00. This was significantly higher than for any other region in which this baseline survey was conducted, reflecting the large size of the region.

5.6 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, 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

Percentages are calculated based on valid responses and excluding missing data. The total sample size was finally 157.

6.1 FARMER TYPE

As already noted in section 5, the sample of the regional population that the questionnaire was applied to was selected randomly. This section of the report presents information on important characteristics indicating the types of farmers which comprise the sample. These questions are asked (i) as a check on the representativeness of the sample, and (ii) in some cases to learn more about the farmers.

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. Based on our previous knowledge of farmers in the region, it can be concluded that the randomly selected sample was indeed reasonably representative. In addition, it will be important to ensure that, when the impact survey is conducted (planned for 2006/07), the sample then selected displays similar characteristics.

If it were found that the characteristics of the farmers, as sampled in either the baseline or the impact survey to follow, were significantly different from those of the community as a whole (i.e. were not representative) or from each other, this could compromise the findings of the survey related to extension - farmer contact (see 6.2) and extension impact (see 6.3). This is because responses to questions on indicators of extension – farmer contact and of extension impact may be influenced by the characteristics of the farmers, as below. For instance, if the farmers sampled all lived less than 5 kilometres from the ADC, one could say this is not representative of the whole region's population. Further, it is obvious, that one would expect this to have an influence on extension – farmer contact and impact. Likewise, to a greater or lesser extent, with all the characteristics reported on before.

6.1.1 Distance from ADC

Table . Nearest Agricultural Development Centre (ADC)

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Agric Dev Centre	Okondjatu	19.7%	20.9%	20.4%
	Okakarara	-	69.8%	38.2%
	Ovitoto	-	9.3%	5.1%
	Otjituuo	25.4%	-	11.5%
	Mkata	39.4%	-	17.8%
	Tsumkwe	15.5%	-	7.0%

During the survey questionnaire analysis, a distinction was made between the farming systems in the north (Tsumkwe, Otjituuo Constituencies) and south (Ovitoto, Okakarara and Okandjatu Constituencies). Differences in findings between these areas may be of interest in some cases, but the analysis presented below focuses mainly on the findings for the region as a whole.

6.1.2 Selected Farmers Characteristics

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Communal land type	Open communal land	66.2%	82.6%	75.2%
	Fenced communal land	33.8%	17.4%	24.8%

It was observed that 75.2% of the respondent farmers lived and farmed on open communal land, while 24.8% farm on fenced communal land. Given our knowledge of the region, this is reasonably representative of the distribution of farmers regionally.

6.1.3 Selected Farmers Characteristics

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Sex of respondent	Male	84.5%	58.1%	70.1%
	Female	15.5%	41.9%	29.9%
Age of respondent	15-24	12.7%	2.3%	7.0%
	25-34	15.5%	16.3%	15.9%
	35-44	22.5%	24.4%	23.6%
	45-54	15.5%	14.0%	14.6%
	55-64	19.7%	17.4%	18.5%
	>64	14.1%	25.6%	20.4%
Respondent type	Head of household	67.6%	69.8%	68.8%
	Spouse of household head	26.8%	29.1%	28.0%
	Other	5.6%	1.2%	3.2%

70.1% of the respondents were found to be male while 29,9% were female.

It was also revealed that about a fifth of respondents were more than 65 years old. This could have an influence on extension impact because it is often experienced that older people are more conservative when it comes to changing their farming practices. Conversely, relatively few young farmers were interviewed. Only some 22 per cent of respondents were less than 35 years old, and it is likely that these were often not the head of household or the person who takes the farming decisions.

It was found that 68.8% of the respondents were heads of household, 28% were spouses of household head and 3.2% were other family members (e.g. sons). This question does not tell us how many heads of household were women.

6.1.4 Selected Farmers Characteristics

Fig. 1 Family members working on the farm excluding respondent

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Family members working on the farm excluding respondent	<2	78.9%	29.1%	51.6%
	3-5	19.7%	24.4%	22.3%
	>6	1.4%	46.5%	26.1%
Hired labour	None	52.1%	74.4%	64.3%
	<2	14.1%	20.9%	17.8%
	3-5	29.6%	3.5%	15.3%
	>6	4.2%	1.2%	2.5%

The table reveals that 48 per cent of households have three or more family members working regularly on the farm, and that only 17 per cent employ three or more hired labourers on the farm. The latter include both permanent and temporary employees.

On the question of family members assisting regularly with farm work (excluding respondent) it was found that in the south more people are involved in farm work. This may be due to higher numbers of cattle owned in the south (see below).

6.1.5 Selected Farmers Characteristics

Fig. 2 Education level of respondent

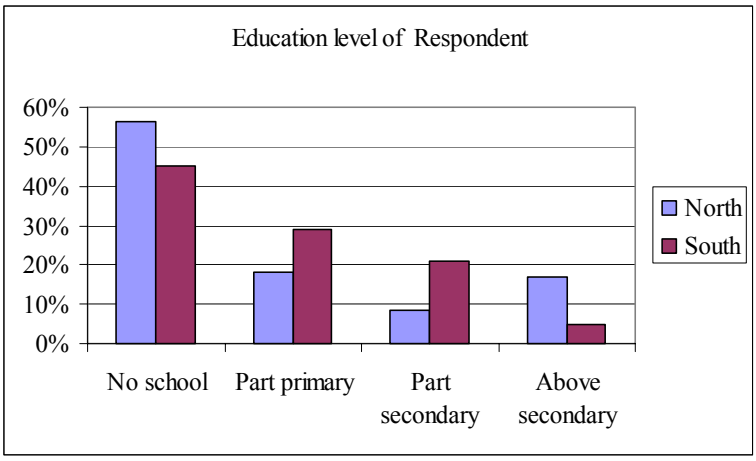
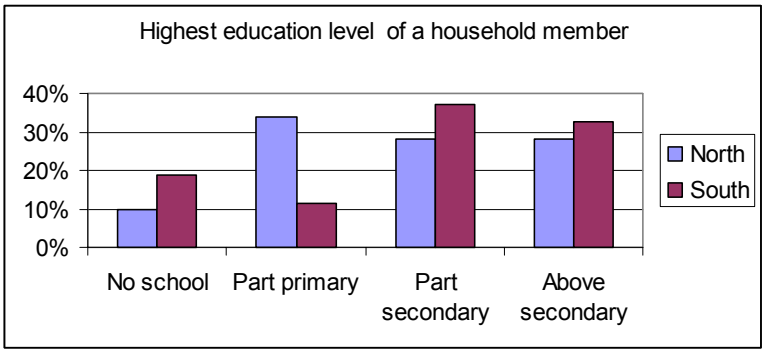


Fig 3 Highest education level of a member of a household



Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Education level of respondent	No school	56.3%	45.3%	50.3%
	Part primary	18.3%	29.1%	24.2%
	Part secondary	8.5%	20.9%	15.3%
	Above secondary	16.9%	4.7%	10.2%
Highest education level of a member in the household	No school	9.9%	18.6%	14.6%
	Part primary	33.8%	11.6%	21.7%
	Part secondary	28.2%	37.2%	33.1%
	Above secondary	28.2%	32.6%	30.6%
Farming experience (taking own farming decisions)	<5 years	28.6%		12.8%
	5-10 years	40.0%	9.3%	23.1%
	>10 years	31.4%	90.7%	64.1%

This table reveals that a high proportion of respondents reported not having attended school. It is likely that this includes some of the older respondents. A surprisingly high 30% of respondents indicated that the highest educational attainment of any member of the household was above secondary level. This can be taken to include those who have completed secondary level. It may have sometimes included those who have completed Grade 10. Nevertheless, it indicates that most households do include members with secondary education. This is of relevance to the design of extension materials such as pamphlets and posters, which could target more formally educated household members in the expectation that the information they contain is passed on to the head of household.

The considerable experience of farm management amongst the sample is also revealed, particularly in the southern areas.

6.1.6 Livestock Ownership

Fig.4 Total number of cattle owned

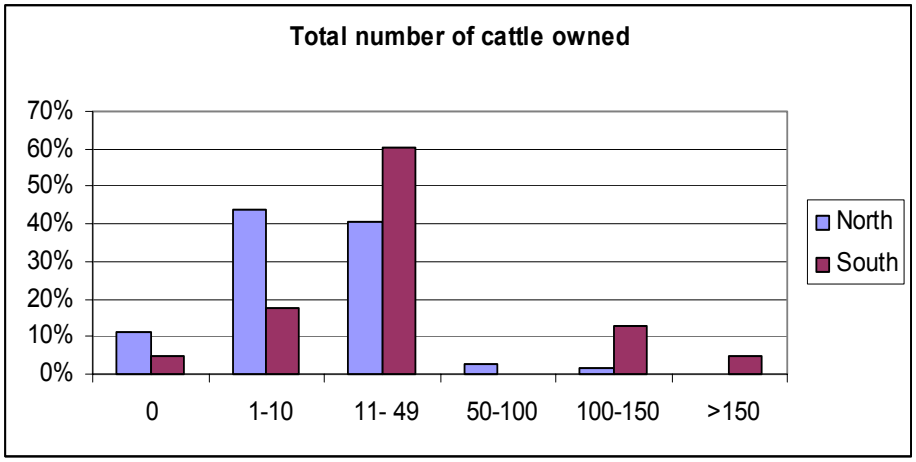


Fig 5. Total number of goats and sheep owned

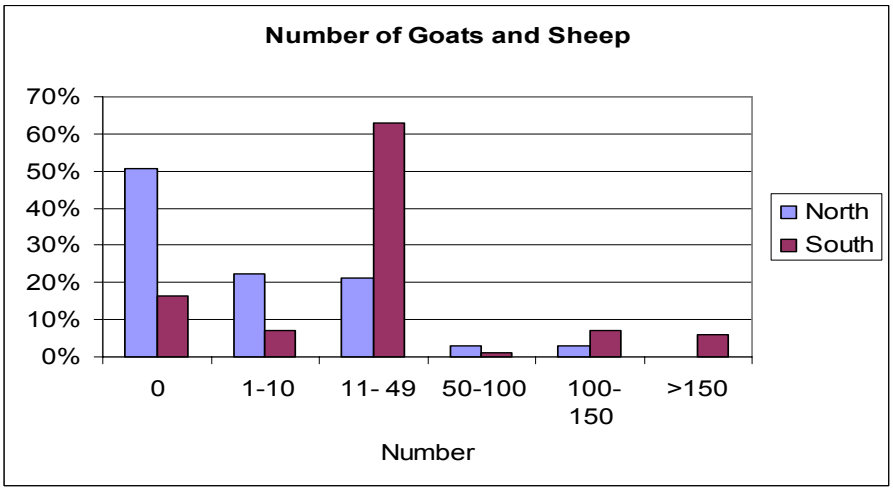


Table . Livestock Ownership

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Total number of cattle	0	11.3%	4.7%	7.6%
	1-10	43.7%	17.4%	29.3%
	11-49	40.8%	60.5%	51.6%
	50-100	2.8%		1.3%
	100-150	1.4%	12.8%	7.6%
	>150		4.7%	2.5%
Total number of goats and sheep	0	50.7%	16.3%	31.8%
	1-10	22.5%	7.0%	14.0%
	11-49	21.1%	62.8%	43.9%
	50-100	2.8%	1.2%	1.9%
	100-150	2.8%	7.0%	5.1%
	>150		5.8%	3.2%
Total number of equines	0	60.6%	34.9%	46.5%
	1-10	28.2%	60.5%	45.9%
	11-49	9.9%		4.5%
	50-100		3.5%	1.9%
	100-150		1.2%	.6%
	>150	1.4%		.6%

The survey shows that nearly all households kept livestock. Only 7.6% reported not keeping cattle. On the other hand, very few households owned more than what may be considered the minimum herd and flock numbers with which to practice systematic production aimed at the market.

6.1.7 Crop Production

Fig 6 Total crop area planted in 2002/03 – bar chart

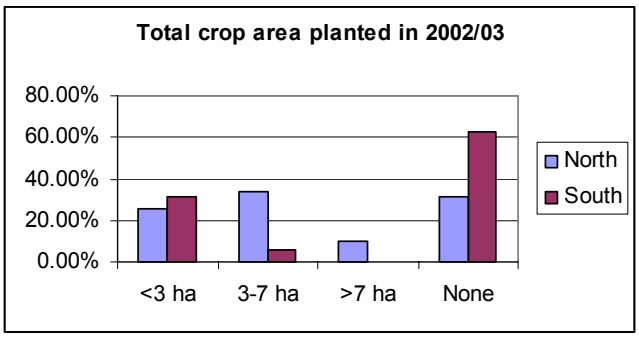


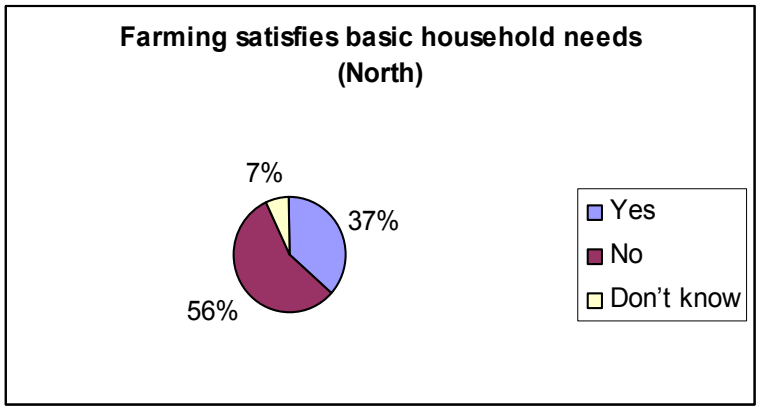
Table . Crop Production

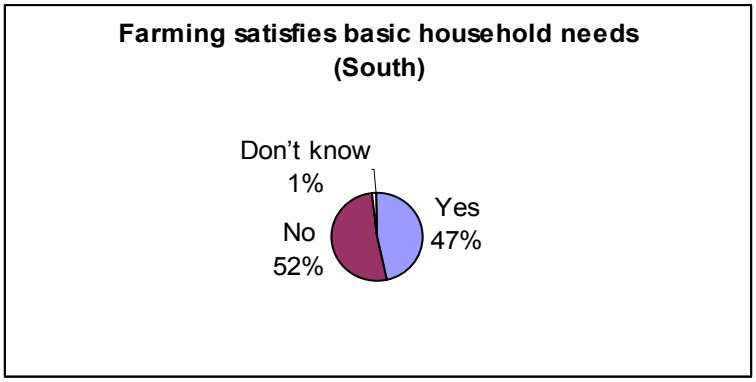
Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Total crop area planted in 2002/03	<3 ha	25.4%	31.4%	28.7%
	3-7 ha	33.8%	5.8%	18.5%
	>7 ha	9.9%		4.5%
	None	31.0%	62.8%	48.4%

Figures for the crop area cropped may be misleading in that the survey, which was a closed questionnaire in which answer options were pre-determined, did not offer any breakdown of areas cropped lass than 3 hectares. It seems likely that those responding that they cultivated less that 3 ha may include many cultivating small and even very small plots.

6.1.8 Satisfaction of Basic Household Needs by Farming

Fig. 7. Farming satisfies basic household needs





Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Farming satisfies basic household food needs	Yes	36.6%	46.5%	42.0%
	No	56.3%	52.3%	54.1%
	Don't know	7.0%	1.2%	3.8%

Farmers were asked as to whether farming income (in both kind and cash) satisfied their basic household needs. Perhaps surprisingly some 42% stated that it did. This corresponds with the information provided in section 6.1.8, which shows that households have few significant alternative income sources.

6.1.9 Sources Of Household Income Other Than Farming

Fig. 8 Sources of Household Income Other than Farming

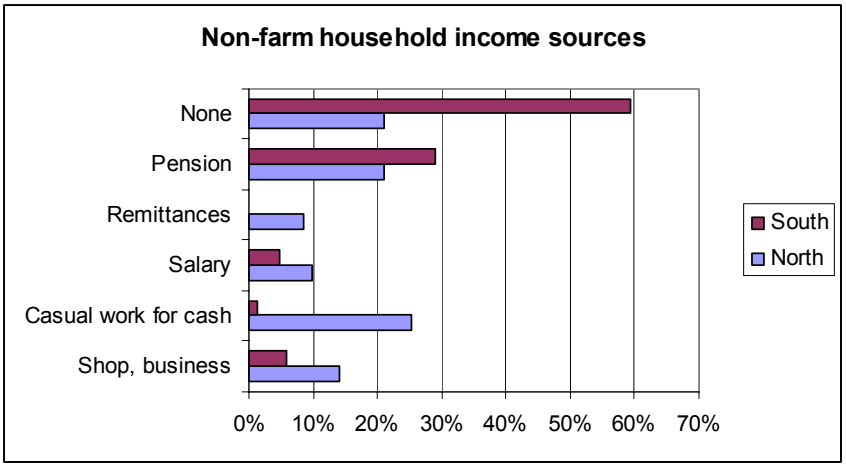


Table . Sources Of Household Income Other Than Farming

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Other household income source	Shop, business	14.1%	5.8%	9.6%
	Casual work for cash	25.4%	1.2%	12.1%
	Salary	9.9%	4.7%	7.0%
	Remittances	8.5%		3.8%
	Pension	21.1%	29.1%	25.5%
	None	21.1%	59.3%	42.0%

The purpose of this question, on sources of household income other than farming, was to collect information on the means survival of the households, since these aspects are very important for the elimination of poverty an the improvement of the living standard of people.

The table shows that there are few alternative sources of income in the area, but that only 42% of households reported having no other sources of income. 25.5% of households reported that one or more member received the monthly State pension of N$ 250. Only 7% reported receiving a salary, and only 3.8% reported receiving remittances – which can be interpreted as referring to significant cash or kind on a regular basis.

6.2 FARMER EXTENSION CONTACT

Questions reported on in this section aim to indicate levels of contact between farmers and the extension services, by various means. Such contact is the first stage and is indeed a pre-requisite to extension work having an impact on farmers.

6.2.1 Agricultural Extension Technicians

Fig. 9 Extensionist (AET) exists and works in the area

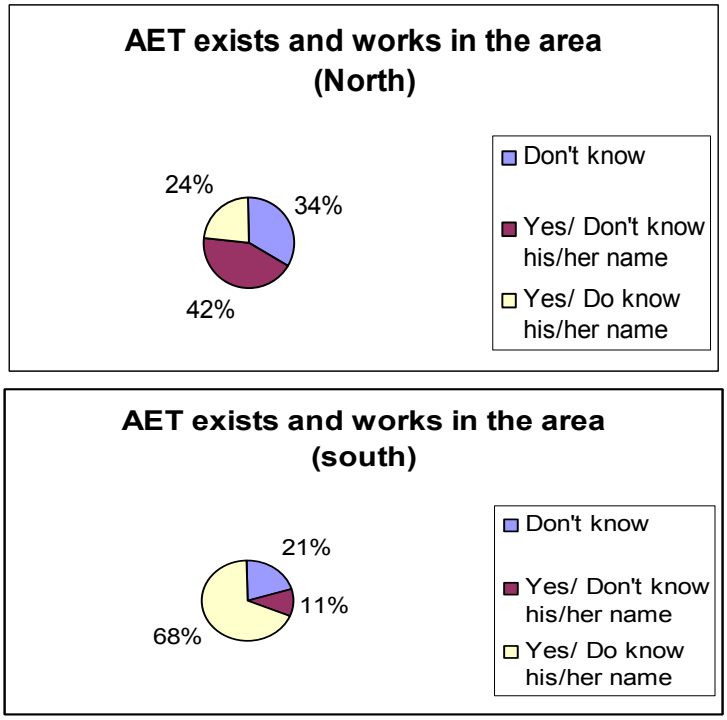


Table . Farmer Awareness of Local Extension Services

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Extensionist (AET) exists and work in the area	Don't know	33.8%	20.9%	26.8%
	Yes/ Don't know his/her name	42.3%	10.5%	24.8%
	Yes/ Do know his/her name	23.9%	68.6%	48.4%

As an indicator of extension-farmer contact farmers were asked whether they knew if there was an agricultural extension technician (AET) working in their area, and if they knew his or her name. Knowing the local AET's name indicates a certain degree of familiarity. The percentage of positive responses given to these questions are amongst the highest of all the regions of the country.

6.2.2 Times farmer got information from AET/extension in last year

Fig. 10 Times farmer got information from AET/extension in last year

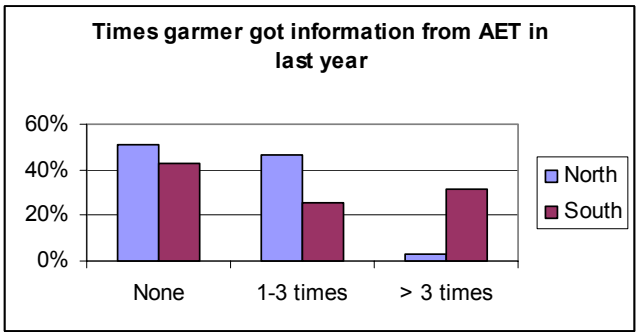


Fig. 11 Usefulness of information given by the extensionist

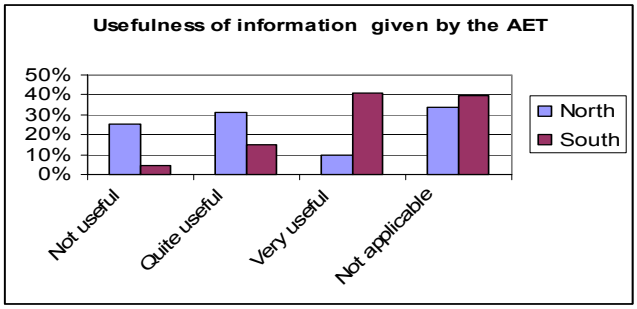


Table . Extension As A Source Of Information For Farmers

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Times farmer got information from AET/extension in last year	None	50.7%	43.0%	46.5%
	1-3 times	46.5%	25.6%	35.0%
	> 3 times	2.8%	31.4%	18.5%
Usefulness of information given by the extensionist	Not useful	25.4%	4.7%	14.0%
	Quite useful	31.0%	15.1%	22.3%
	Very useful	9.9%	40.7%	26.8%
	Not applicable	33.8%	39.5%	36.9%

This question was asked to see whether the farmer gets information from the AET working in the area or not. It was clear that the distance between the ADC and the farmer had an important impact: the further away the ADC is from the farmer the less contact there is and information given to the farmer.

Comment: Nothing here shows distance from ADC? & is it above not below.

Although 46.5% of farmers reported not having received information from the agricultural extension technician in the last year, it is notable that this is about average when compared to other regions in the country.

Moderate levels of satisfaction with the information and advice provided by the AET. It is of concern that some 51% said it was not useful or that they did not receive information.

Comment: Which table reveals…satisfaction?

Respondents were asked to give one example of the topic of information they received on from extension.

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Example of info got from AET	Crop/vegetable production	7.0%	2.3%	4.5%
	Animal health	9.9%	20.9%	15.9%
	Supplementary feeding	1.4%	9.3%	5.7%
	Animal husbandry	12.7%	4.7%	8.3%
	Grazing/range management	1.4%	12.8%	7.6%
	No response	57.7%	50.0%	53.5%
	General agriculture	2.8%		1.3%
	Marketing	7.0%		3.2%

6.2.3 Mass Media in Extension

Fig. 12 Times heard agric. information on the radio in the last year

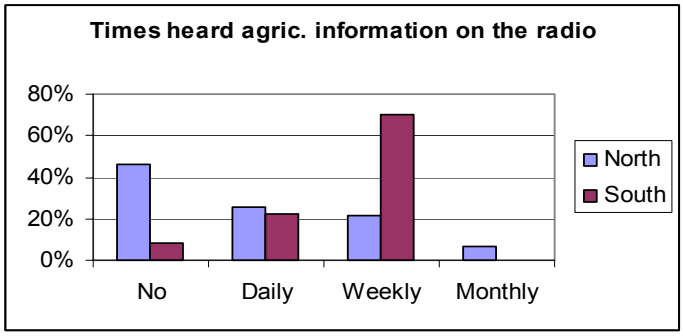


Fig. 13 Usefulness of agricultural information on the radio

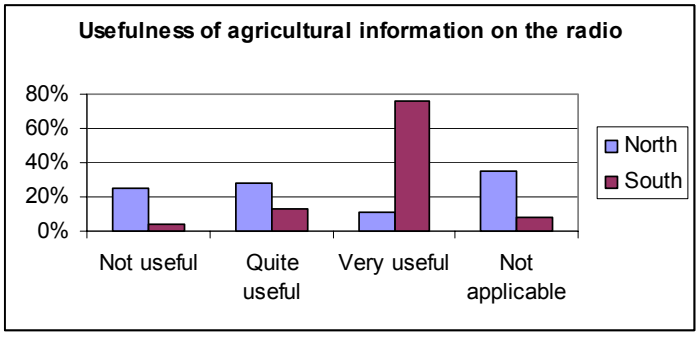


Table . Mass Media as a Source of Agricultural Information

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Times heard agric information on the radio in the last year.	No	46.5%	8.1%	25.5%
	Daily	25.4%	22.1%	23.6%
	Weekly	21.1%	69.8%	47.8%
	Monthly	7.0%		3.2%
Reasons for not listening to agric info on radio	No access	26.8%	1.2%	12.7%
	Not interested	16.9%		7.6%
	Bad programme time	5.6%		2.5%
	Not applicable	50.7%	98.8%	77.1%
Usefulness of info on the radio	Not useful	25.4%	3.5%	13.4%
	Quite useful	28.2%	12.8%	19.7%
	Very useful	11.3%	75.6%	46.5%
	Not applicable	35.2%	8.1%	20.4%
Example of agric. info. from radio	Vaccination /diseases control	7.0%	32.6%	21.0%
	Supplementary feeding	1.4%	7.0%	4.5%
	Animal husbandry	16.9%	7.0%	11.5%
	Marketing prices and timing	12.7%	3.5%	7.6%
	Crop husbandry	1.4%	2.3%	1.9%
	Grazing and range management		1.2%	.6%
	General farming information		3.5%	1.9%
	None	60.6%	43.0%	51.0%

On the question of mass media as a source of information it was clear that farmers in the south have more access to mass media to those in the north (especially the Tsumkwe area) as indicated.

In general, the survey revealed high levels of radio listenership. Notably, in southern areas some 92% of respondents stated they heard agricultural information on the radio either daily or weekly. The main reason for not listening to the radio was that the respondent did not own a radio, which in the case of the Tsumkwe area is because there are no broadcasts in the area.

Of those who had heard agricultural information on the radio in the last year, 46.5 % of respondents said they found it to have been ‘very useful’. This compares favourably with the percentage of those who found information received from the AET ‘ very useful’.

Clearly radio is an important information channel for farmers. The DEES recognises this and intends to strengthen its contributions to NBC radio broadcasts. It is also important to note, however, that information heard on the radio and via direct contact fulfil different and complementary roles. Radio is recognised as being suitable as a source of news and information of immediate relevance, and for creating initial awareness of farming innovations and developments. On the other hand, AET interventions are aimed at increasing understanding of a new innovation, developing associated skills, encouraging testing of an innovation by farmers, and finally supporting adoption by the farmer.

6.2.4 Membership of a Community Based Organization

Fig. 14 Membership of a Community Based Organization – membership of farmers' association etc.

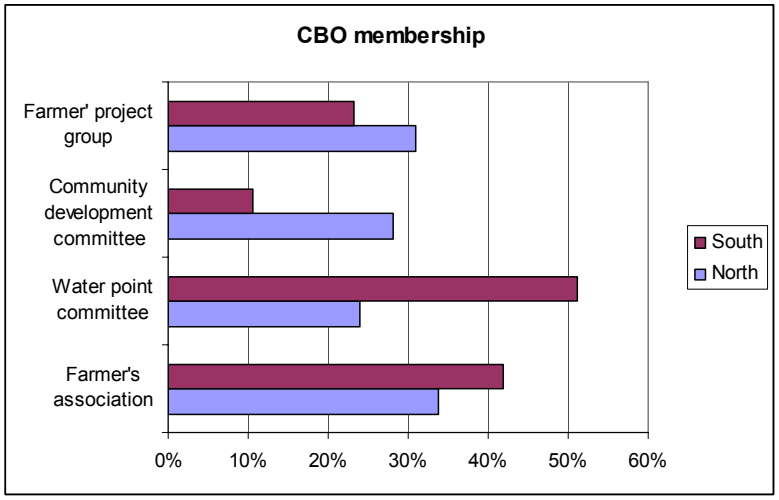


Table . Farmer Membership of a Community Based Organisation

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Member of farmer's association	Yes	33.8%	41.9%	38.2%
	No	66.2%	58.1%	61.8%
Member of water point committee	Yes	23.9%	51.2%	38.9%
	No	76.1%	48.8%	61.1%
Member of community development committee	Yes	28.2%	10.5%	18.5%
	No	71.8%	89.5%	81.5%
Member of farmer' project group	Yes	31.0%	23.3%	26.8%
	No	69.0%	76.7%	73.2%

On the question of whether the respondent (or another household member) participates in a farmers group or other community based organisation, the level of participation observed is probably higher than for any other region in the country. This has important implications for extension approaches; it is clearly advantageous for extension services to work closely with community based organisations.

6.3 EXTENSION IMPACT

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 to section 2.2. for further discussion of the issue of extension impact indicators.

6.3.1 Farmer Perception of Range Management Issues

Fig. 15 Can practice range management on open communal land

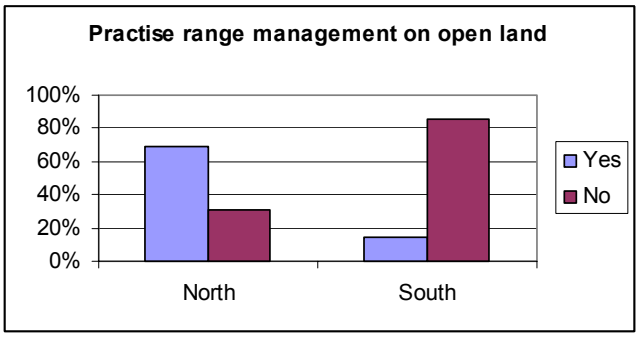
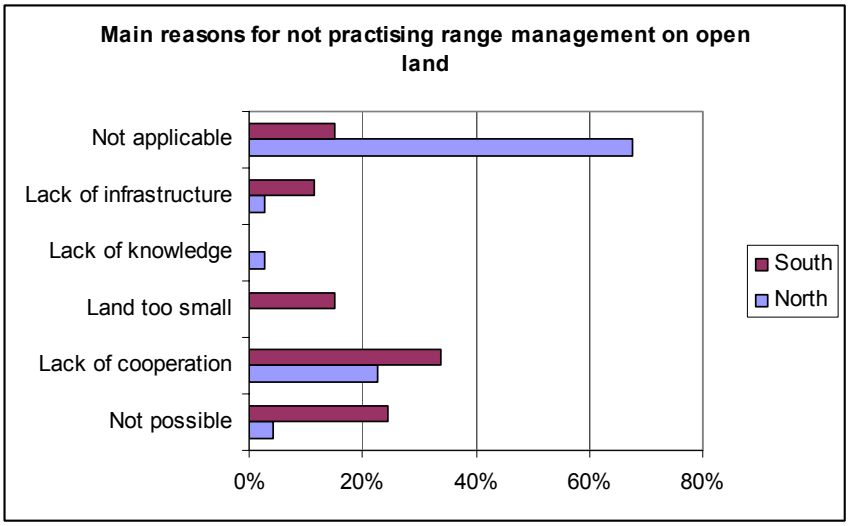


Fig. 16 Main reason for not practicing range management on open communal land



Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Has enough grazing for animals all year	Yes	46.5%	3.5%	22.9%
	No	53.5%	96.5%	77.1%
Main way to ensure good grazing all year	Nothing	11.3%	14.0%	12.7%
	Fencing and resting some parts during the rainy season	22.5%	3.5%	12.1%
	Fencing	1.4%	26.7%	15.3%
	Resettle strong farmers on commercial land	5.6%	29.1%	18.5%
	Resettle poor farmers on commercial land		10.5%	5.7%
	De-bushing	11.3%	1.2%	5.7%
	Other		3.5%	1.9%
	Not applicable	47.9%	11.6%	28.0%
Can practice range management on open communal land	Yes	69.0%	14.0%	38.9%
	No	31.0%	86.0%	61.1%
Main reason for not practicing range management on open communal land	Not possible	4.2%	24.4%	15.3%
	Lack of cooperation	22.5%	33.7%	28.7%
	Land too small		15.1%	8.3%
	Lack of knowledge	2.8%		1.3%
	Lack of infrastructure	2.8%	11.6%	7.6%
	Not applicable	67.6%	15.1%	38.9%

On the question on farmers' perception of rangeland management issues it was observed that most farmers in the southern area indicated that they do not have enough grazing for their animals throughout the year. This is due to the larger number of animals owned by farmers in the south, as compared to the north. The follow-up question on what can be done to improve grazing throughout the year revealed that most farmers in the south felt that stronger farmers should be resettled on commercial land. On the issue of whether rangeland management can be practiced in open communal land, 38.9% said yes.

6.3.2 Animal Husbandry: Use of Licks

Fig. 17 Use lick supplements

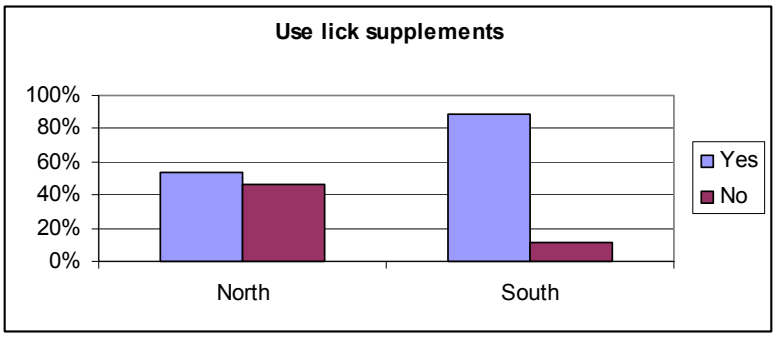
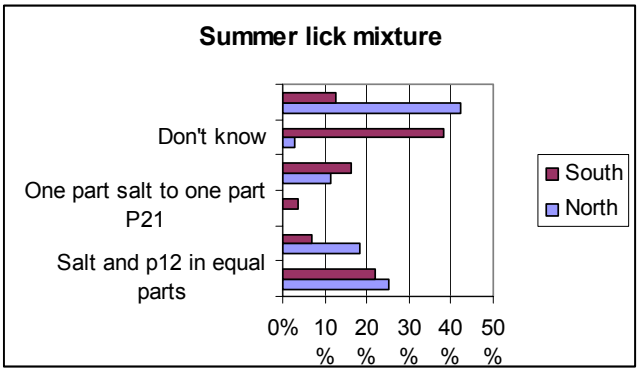


Fig. 18 Summer lick mixture



Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Use lick supplements	Yes	53.5%	88.4%	72.6%
	No	46.5%	11.6%	27.4%
How frequent is lick used	Ad lib throughout the year	22.5%	57.0%	41.4%
	In the dry period only	33.8%	32.6%	33.1%
	When I have money	1.4%		.6%
	Not applicable	42.3%	10.5%	24.8%
Reason for using lick supplements	To supplement minerals and other nutrients not in grazing	5.6%	76.7%	44.6%
	Because my neighbor is using lick	1.4%	1.2%	1.3%
	To supplement scarce grazing	49.3%	11.6%	28.7%
	Not applicable	43.7%	10.5%	25.5%
Reason for not using lick supplements	Lack of money	38.0%	22.1%	29.3%
	Not necessary	5.6%	3.5%	4.5%
	Do not get info on licks	1.4%		.6%
	Make animals sick	1.4%		.6%
	Not applicable	53.5%	74.4%	65.0%

Summer lick mixture	Salt and p12 in equal parts	25.4%	22.1%	23.6%
	Salt and calories 3000 in equal parts	18.3%	7.0%	12.1%
	One part salt to one part P21		3.5%	1.9%
	Use Rock salt only	11.3%	16.3%	14.0%
	Don't know	2.8%	38.4%	22.3%
	Not applicable	42.3%	12.8%	26.1%

Studies on nutrients in forage, range, grazing and browse in much of the communal areas of Otjozondjupa show that phosphorus is widely deficient. Therefore, farmers are recommended to supplement their livestock with either summer lick during rainy season, or winter lick in dry season. Farmers should use licks through out the year.

On the question of whether respondents used licks it may be noted that people in the south are using more licks for their cattle than in the north. This may again be partly is due to the higher cattle numbers in the south. It was also clear that farmers know why licks are used. Those who did not use licks felt it is not applicable because of the low number of cattle they own.

6.3.3 Animal Health - Vaccinations

Fig. 19 Three diseases (Anthrax, Botulism, Black quarter) one should vaccinate against

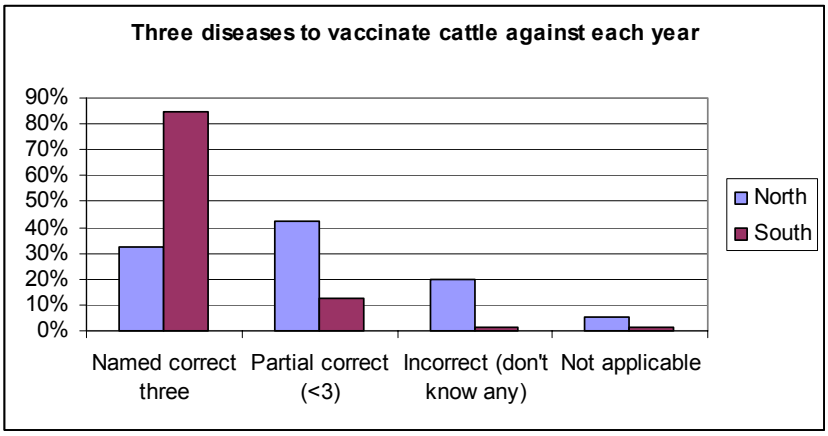
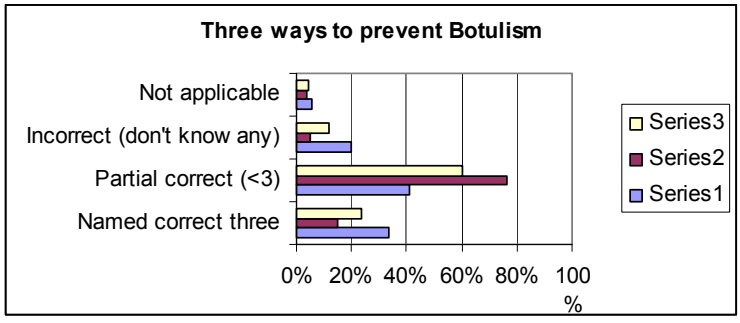


Fig. 20 Three ways to prevent Botulism



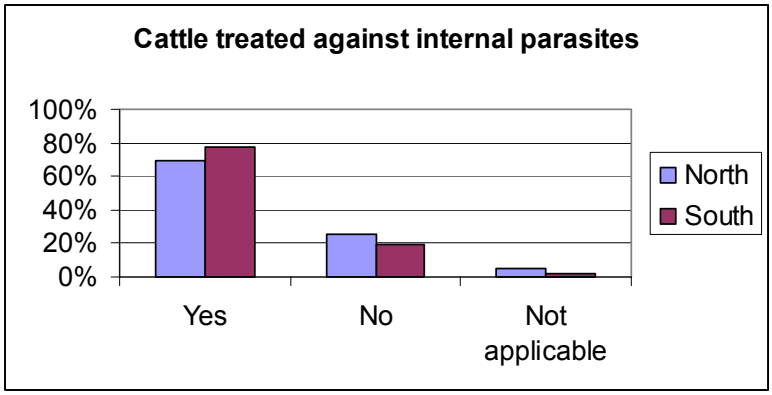
Variable	Category	Otjozondjupa region	Total Percentage

		North	South	
Prevention of animal death due to Anthrax	Vaccinate	47.9%	84.9%	68.2%
	Treat with antibiotics	40.8%	3.5%	20.4%
	Nothing	5.6%	5.8%	5.7%
	Not applicable	5.6%	5.8%	5.7%
Three diseases (Anthrax, Botulism, Black quarter) one should vaccinate cattle against each year	Named correct three	32.4%	84.9%	61.1%
	Partial correct (<3)	42.3%	12.8%	26.1%
	Incorrect (don't know any)	19.7%	1.2%	9.6%
	Not applicable	5.6%	1.2%	3.2%
Three ways to prevent Botulism	Named correct three	33.8%	15.1%	23.6%
	Partial correct (<3)	40.8%	76.7%	60.5%
	Incorrect (don't know any)	19.7%	4.7%	11.5%
	Not applicable	5.6%	3.5%	4.5%

On the issue of vaccinations 68.2% of respondents know how to prevent animals dying from anthrax, 61% could name three diseases one should vaccinate cattle against each year, while only 23.6% know three ways to protect animals against botulism.

6.3.4 Animal Health - Parasites

Fig. 21 Cattle treated against internal parasites



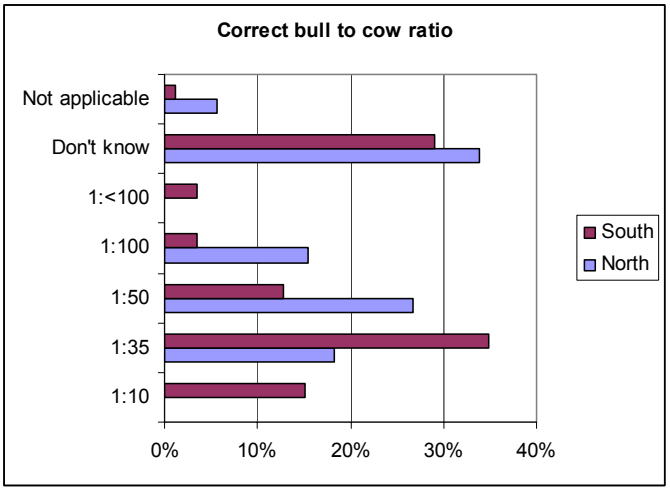
Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Cattle treated against internal parasites	Yes	69.0%	77.9%	73.9%
	No	25.4%	19.8%	22.3%
	Not applicable	5.6%	2.3%	3.8%
Reasons for treating cattle against internal parasites	Don't know	2.8%	14.0%	8.9%
	Because my neighbor is doing it	1.4%		.6%
	Prevent diseases	42.3%	31.4%	36.3%
	To kill worms	32.4%	50.0%	42.0%
	Not applicable	21.1%	4.7%	12.1%

6.3.5 Animal Health – Antibiotics

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Purpose of antibiotics in cattle	To prevent disease	69.0%	8.1%	35.7%
	To treat sick animals	19.7%	81.4%	53.5%
	Don't know		7.0%	3.8%
	Not applicable	11.3%	3.5%	7.0%
Dosage of antibiotic to treat an adult sick cow	Recommended	29.6%	68.6%	51.0%
	Not recommended	63.4%	23.3%	41.4%
	Not applicable	7.0%	8.1%	7.6%

6.3.6 Animal Breeding - Knowledge of Male:Female Ratios

Fig. 22 Correct bull to cow ratio

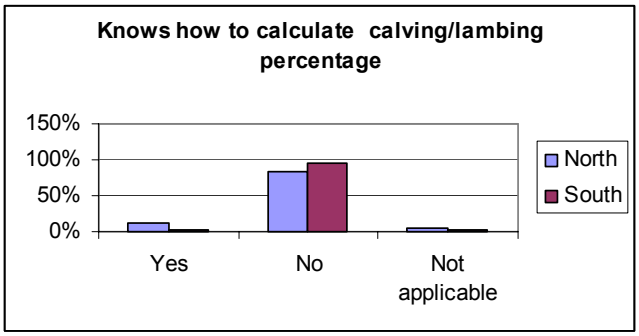


Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Correct bull to cow ratio	1:10		15.1%	8.3%
	1:35	18.3%	34.9%	27.4%
	1:50	26.8%	12.8%	19.1%
	1:100	15.5%	3.5%	8.9%
	1:<100		3.5%	1.9%
	Don't know	33.8%	29.1%	31.2%
	Not applicable	5.6%	1.2%	3.2%
Correct ram to ewe ratio	1:20	9.9%	15.1%	12.7%
	1:30	15.5%	10.5%	12.7%
	1:35	19.7%	4.7%	11.5%
	1:40	12.7%	8.1%	10.2%
	1:<40	2.8%	10.5%	7.0%
	Don't know	33.8%	48.8%	42.0%
	Not applicable	5.6%	2.3%	3.8%

Breeding is one of the crucial issues in successful farming. Traditionally, farmers have not paid much attention to breeding. Extension services are promoting livestock quality improvement through controlled breeding to ensure good prices. Respondents were questioned on animal breeding and specifically, as an indicator of their wider knowledge they were asked about the recommended male/female ratios. It was noticed that the highest percentage do not know the correct bull/cow ratio or the correct ram/ewe ratio.

6.3.7 Animal Breeding - Knowledge of Calving/Lambing Percentages

Fig. 23 Knows how to calculate calving / lambing percentage

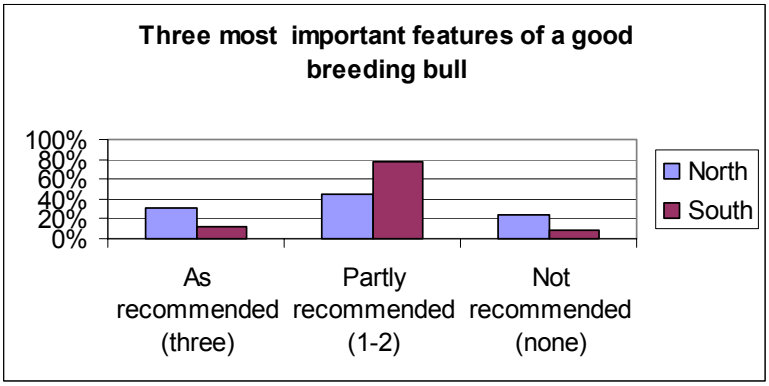


Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Knows how to calculate calving/lambing percentage	Yes	11.3%	3.5%	7.0%
	No	83.1%	95.3%	89.8%
	Not applicable	5.6%	1.2%	3.2%

6.3.8 Animal Breeding - Knowledge of Good Bull Breeding Characteristics

Respondents were asked to list three most important features of a good breeding bull and responded as follows:

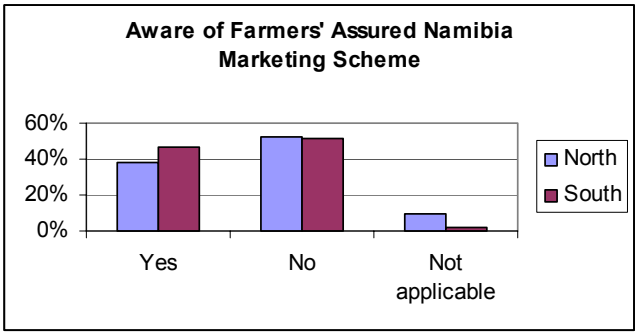
Fig. 24 Three most important features of a good breeding bull



Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Three most important features of a good breeding bull	As recommended (three)	31.0%	12.8%	21.0%
	Partly recommended (1-2)	45.1%	77.9%	63.1%
	Not recommended (none)	23.9%	9.3%	15.9%

6.3.9 Animal Marketing – Farm Assure Namibia Meat Scheme

Fig. 25 Aware of Farmers Assured Namibia marketing scheme



Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Aware of Farm Assured Namibian meat scheme	Yes	38.0%	46.5%	42.7%
	No	52.1%	51.2%	51.6%
	Not applicable	9.9%	2.3%	5.7%
Conforms to the requirements as set under the Farm Assured Namibia meat scheme	Yes	33.8%	46.5%	40.8%
	No	25.4%	33.7%	29.9%
	Not applicable	40.8%	19.8%	29.3%

On animal marketing, respondents were asked about the Meat board's Farm Assured Namibia Scheme. 51.6% of respondent said they did not know about the scheme while 42.7% were aware of it. Nearly all who said they knew of the Scheme claimed that they conformed to its requirements; this is doubtful.

6.3.10 Animal Marking – Farmer Organisation

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
There is a local marketing agency/body in the area (Farmer's Co-op or assoc.)	Yes	23.9%	89.5%	59.9%
	No	71.8%	8.1%	36.9%
	Not applicable	4.2%	2.3%	3.2%
Belongs to a marketing organisation in the area	Yes	43.7%	60.5%	52.9%
	No	52.1%	37.2%	43.9%
	Not applicable	4.2%	2.3%	3.2%
There are benefits for marketing through Marketing organization	Yes	22.5%	57.0%	41.4%
	No	70.4%	30.2%	48.4%
	Not applicable	7.0%	12.8%	10.2%
Examples of benefits for marketing through the mkt. orgn.	Better prices	7.0%	18.6%	13.4%
	Improves market access (buyers/auctions)	5.6%	17.4%	12.1%
	Lick supplement/vaccines		3.5%	1.9%
	Financial help		2.3%	1.3%
	No benefits		10.5%	5.7%
	No response/ N/A	80.3%	44.2%	60.5%
	Commission/premium on sales	1.4%	2.3%	1.9%
	Not applicable	5.6%	1.2%	3.2%

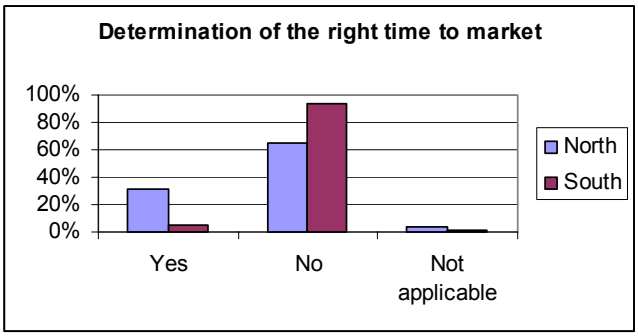
In communal areas, prices being obtained from livestock sales at auctions or permit days is a big concern amongst the farmers. On the question of local marketing agencies/bodies in the area, it is clear that most respondents belong to such bodies and that there are some benefits to marketing through agencies/bodies. There is also a distinction between the north and south of the region. More could be expected of such organisations in terms of marketing. It is important that extension services collaborate closely with agriculture organisations.

6.3.11 Animal Marketing – Prices

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
How to get better prices	Don't know	1.4%	16.3%	9.6%
	Sell many animals	2.8%	1.2%	1.9%
	Sell lean animals when the prices are good	1.4%	3.5%	2.5%
	Market old animals		4.7%	2.5%
	Market animal in good condition and when prices are high	88.7%	62.8%	74.5%
	Not applicable	5.6%	11.6%	8.9%

6.3.12 Animal Marketing – Sources of Information on Marketing

Fig. 26 Determination of right time to market



Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Don't know how to determine the right time to market	Yes	31.0%	4.7%	16.6%
	No	64.8%	94.2%	80.9%
	Not applicable	4.2%	1.2%	2.5%
Get info from AET to determine the right time to market	Yes	9.9%	14.0%	12.1%
	No	90.1%	86.0%	87.9%
Get info from Agents to determine the right time to market	Yes	9.9%	16.3%	13.4%
	No	90.1%	83.7%	86.6%
Get info from Radio to determine the right time to market	Yes	45.1%	67.4%	57.3%
	No	54.9%	32.6%	42.7%

		Otjozondjupa region		Total
		North	South	
Get info from Radio to determine the right time to market	Yes	45.1%	67.4%	57.3%
	No	54.9%	32.6%	42.7%

The main source of information on the issue of livestock marketing is radio.

6.3.13 Interest in Animal Marketing Information

Variable	**Category**	**Otjozondjupa region**		**Total Percentage**
		North	**South**	
Would plan to market at the right if given info	Yes	87.3%	89.5%	88.5%
	No	5.6%	5.8%	5.7%
	Not applicable	7.0%	4.7%	5.7%

Farmers were asked whether they would be able to market their livestock at the right time to ensure maximum income from auctions and permit days should they be provided with information. Most said they would.

6.3.14 Farm Management Record Keeping

Fig. 27 Keeps livestock production records

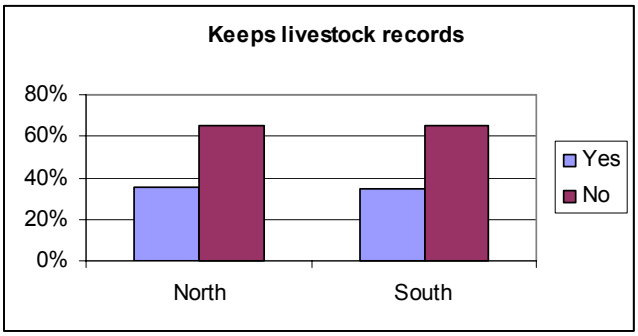
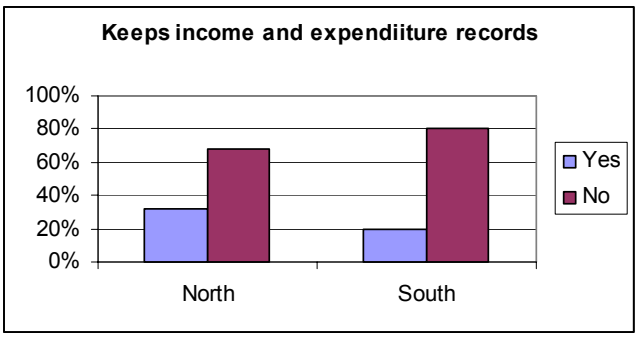


Fig. 28 Keeps income and expenditure records



Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Keeps livestock records	Yes	35.2%	34.9%	35.0%
	No	64.8%	65.1%	65.0%
Keeps income and expenditure records	Yes	32.4%	19.8%	25.5%
	No	67.6%	80.2%	74.5%
Reason for keeping records	Make better decisions	57.7%	84.9%	72.6%
	Become rich		2.3%	1.3%
	Don't know	42.3%	12.8%	26.1%

Record keeping is an important tool that helps the farmers with appropriate planning and decision-making. Yet, it is clear that most of the respondents do not keep records although they know that the reason for record keeping is to make better decisions (72.6%).

35% of respondents reported keeping some livestock management records and 25.5% financial records. This answer tells us nothing of the content or quality of these records, something that requires further investigation.

6.3.15 Crop Production

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Crop grower	Yes	71.8%	41.9%	55.4%
	No	28.2%	58.1%	44.6%
Reasons for not planting crops	Lack of rain/water	16.9%	47.7%	33.8%
	Lack of information		2.3%	1.3%
	No interest	7.0%	9.3%	8.3%
	Seed not available		1.2%	.6%
	Not applicable	76.1%	39.5%	56.1%

On the issue of crop production it was observed that the highest percentage of respondents (55.4%) did report planting crops in 2002/2003, while those who did not plant gave the main reason for not planting as lack of rain/water (33.8%).

6.3.16 Fruit Tree Production

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Plants fruit trees	Yes	38.0%	18.6%	27.4%
	No	62.0%	81.4%	72.6%
Would plant fruit trees if provided with information on fruit trees plant production	Yes	85.9%	53.5%	68.2%
	No	14.1%	46.5%	31.8%

On the practice of fruit tree production 72.6% said they did not plant fruit trees, but 68.2% said they would plant if provided with information.

6.3.17 Vegetable Production

On the question on whether they planted vegetables the following responds were received.

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Grows vegetables	Yes	42.3%	24.4%	32.5%
	No	57.7%	75.6%	67.5%
Would plant vegetables if provided with information on vegetable production	Yes	94.4%	46.5%	68.2%
	No	5.6%	53.5%	31.8%

6.3.18 Cash Crop Production

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Cash crop producer	Yes	23.9%	31.4%	28.0%
	No	76.1%	68.6%	72.0%
Main crops on the farm	Maize	74.6%	37.2%	54.1%
	Pearl millet	23.9%	38.4%	31.8%
	Cash crop	1.4%		.6%
	None		24.4%	13.4%
Gets seed from	Buy	29.6%	43.0%	36.9%
	GRN	56.3%		25.5%
	None/not applicable	14.1%	57.0%	37.6%
Sells produce	Yes	40.8%	14.0%	26.1%
	No	43.7%	50.0%	47.1%
	Not applicable	15.5%	36.0%	26.8%

On cash crop production 72% of the respondents did not produce cash crops. The main crops produced are Maize (54,1%) and Pearl Millet (31,8%).

6.3.19 Use of Fertiliser

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Fertilizer used	Yes	28.2%	7.0%	16.6%
	No	57.7%	55.8%	56.7%
	Not applicable	14.1%	37.2%	26.8%
What is fertilizer for?	To kill weeds	4.2%	1.2%	2.5%
	To kill pests	1.4%	2.3%	1.9%
	To feed crops	22.5%	27.9%	25.5%
	None/don't know		18.6%	10.2%
	Not applicable	71.8%	50.0%	59.9%
Gets fertilizer from	Buy	8.5%	4.7%	6.4%
	Free	19.7%	23.3%	21.7%
	Borrow	1.4%	1.2%	1.3%
	Not applicable	70.4%	70.9%	70.7%
Fertilizer application method	Broadcast	14.1%	29.1%	22.3%
	Mixing with seed	11.3%	2.3%	6.4%
	Side dressing	7.0%	1.2%	3.8%
	Not applicable	67.6%	67.4%	67.5%

6.3.20 Cultivation method

Variable	Category	Otjozondjupa region		Total Percentage
		North	South	
Method used for ploughing	Tractor	76.1%	24.4%	47.8%
	DAP	9.9%	9.3%	9.6%
	None		29.1%	15.9%
	Not applicable	14.1%	37.2%	26.8%
Pays for ploughing services	Yes	32.4%	23.3%	27.4%
	No	53.5%	40.7%	46.5%
	Not applicable	14.1%	36.0%	26.1%