

SPECIAL REPORT

FAO/WFP CROP, LIVESTOCK AND FOOD SECURITY ASSESSMENT MISSION TO NAMIBIA

14 July 2009



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, ROME



WORLD FOOD PROGRAMME, ROME

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Mission Highlights

- Northern Namibia was seriously affected by excessive rains and flooding in February/March 2009 which caused extensive damage and loss to homes, crops, livestock and infrastructure, especially in low-lying areas.
- On the upland, however, despite considerable waterlogging, many farmers have harvested better crops than in 2007/08 which was also a flood year. The impact of heavy rains and flooding on livestock mortalities in the northern communal areas (NCAs) was not as severe as originally thought.
- National production of cereals in 2008/09 is estimated at 138 797 tonnes, comprising 63 324 tonnes of millet, 6 758 tonnes of sorghum and 56 552 tonnes of maize, and forecast amount of 12 000 tonnes of winter wheat, representing 31 percent increase over last year's poor harvest of 105 700 tonnes.
- With an estimated national annual utilization requirement of about 290 000 tonnes of cereals, an import requirement of 151 000 tonnes is forecast during the 2009/10 marketing year (May/April). This is expected to be covered by local millers.
- Unprecedented outbreak of Lumpy Skin Disease (LSD) was also observed in cattle and internal parasites mostly in small stock in most regions of NCAs.
- The 2009 floods exacerbated the impact of the 2007 drought and the 2008 floods on subsistence farmers, aggravating the chronic food insecurity of vulnerable households in the Northern and Eastern Central regions. As a consequence, an estimated 163 000 people require immediate food assistance.
- The Directorate of Emergency Management (DEM) has the budgetary capacity to address the food assistance needs but the introduction of improved targeting mechanisms is required.
- In the livestock sector, there is an urgent need for a proactive vaccination against LSD in the NCAs and to undertake African Swine Fever surveillance to determine the extent of the problem in Omusati and Oshana regions, as well as in southern Angola to document the epidemiology of this outbreak.

1. OVERVIEW

The northern part of Namibia comprising the regions of Kunene North, Omusati, Oshana, Ohangwena, Oshikoto, Kavango and Caprivi experienced excessive rainfall between January and March 2009 which caused severe flooding particularly in low-lying areas as well as prolonged water logging on the uplands. The floods in the flood plains or 'oshanas' caused severe damage to homes and infrastructure, displaced hundreds of families, destroyed food stocks in granaries, and led to major losses of livestock. Among other measures to mitigate the effects of this emergency, the Government of Namibia appealed to the international community for assistance, especially to assess the extent of damage and loss to the economy and to estimate the magnitude of resources required for immediate and medium to long-term recovery. In response, the World Bank jointly with UNDP and WFP fielded a Post-Disaster Needs Assessment team (PDNA), while FAO fielded a Crop, Livestock and Food Supply Assessment Mission to the country with the WFP member from the PDNA mission providing contributions on food insecurity and vulnerability to this Mission. The two missions were closely coordinated to avoid duplication of effort.

The Mission was in the country from 24 May to 17 June 2009. It spent a few days in Windhoek, the capital city, holding discussions with and receiving briefings from various Government departments, particularly divisions of the Ministry of Agriculture, Water and Forestry (MAWF), as well as parastatal bodies such as Namibia Agronomic Board. The Mission then split into three groups and spent 10 days in the affected northern regions accompanied by national experts from the National Early Warning Unit (NEWU), whose assistance and contributions to the work of the Mission are hereby gratefully acknowledged. The first team covered the regions of Kunene North, Omusati and Oshana, the second covered Ohangwena and Oshikoto (and one region in the centre – Otjozondjupa – at the request of MAWF even though the region had not been affected by the flood emergency), while the third assessed Kavango and Caprivi.

The Mission received excellent cooperation and briefings from regional technical and administrative staff (agricultural and veterinary extension services staff at all levels, Regional Governors and Councillors) and their assistance is also hereby acknowledged. After discussions and briefings at regional headquarters and collecting pertinent reports, the Mission travelled extensively in the field accompanied by local extension staff and interviewed many farmers while inspecting their crop fields and animal herds. Where present, local

markets, cooperatives, research stations and grain milling companies were also visited and interviews conducted.

Upon return to Windhoek, further meetings were held with various relevant organizations, departments and agencies (e.g. Meatco, Central Bureau of Statistics, Namibia Central Bank, Directorate of Emergency Management, Meteorological Department, USAID/Millennium Challenge, Namib Mills, etc). On 9 June, the Mission participated in the WB/UNDP-PDNA briefing to donors on their findings and recommendations, and the FAO Mission leader made a brief oral presentation of the Mission's preliminary findings to the gathering.

The Mission found that, northern Namibia was seriously affected by excessive rains and flooding in February/March 2009 and this caused extensive damage and loss to homes, crops, livestock and infrastructure, especially in low-lying areas. On the upland, however, despite considerable waterlogging, many farmers have harvested better crops than in 2007/08 which was also a flood year. Overall crop production is estimated at 138 797 tonnes, comprising 63 324 tonnes of millet, 6 758 tonnes of sorghum and 56 552 tonnes of maize, and forecast amount of 12 000 tonnes of winter wheat, representing 31 percent increase over last year's poor harvest of 105 700 tonnes. Crop yields are very low in the communal sector, but the introduction of Conservation Agriculture has shown over the past three years that yields can be increased by a factor of two or more without large scale investment or increases in labour. Conservation Agriculture can also reduce the level of soil erosion that is happening in Namibia due to deforestation and overgrazing by livestock numbers that are far in excess of the carrying capacity of the land.

With an estimated national utilization requirement of about 290 000 tonnes of cereals, it is projected that the country will need to import 151 000 tonnes of cereals during the current (2009/10) marketing year (May/April). Local millers have the capacity to handle this amount (and more), as they have access to the necessary resources. Moreover, the country is in a satisfactory foreign exchange reserve position at present. However, poor households face high local grain prices and may need assistance.

The impact of heavy rains and flooding on livestock mortalities in the northern communal areas (NCAs) was not as severe as originally thought. The floods and heavy rains did, however, result in unprecedented outbreak of Lumpy Skin Disease (LSD) in cattle and internal parasites mostly in small stock in most regions of NCAs. The average annual number of LSD cases in Namibia is about 200 and this year, for the first five months, the cases of LSD had already reached 6 876, a clear indication of a serious outbreak. LSD causes high deaths in young animals and reduces fertility, draught power, and market value of animals.

Although the government intervened in controlling the LSD outbreak, the assistance came too late and had limited impact. The chances of the disease reoccurring with the seasonal rains in November/December are high, and this would adversely affect ploughing and prolong the impact of the floods on the communities. Therefore, proactive intervention in the form of free vaccination of all cattle in the NCAs is recommended.

The 2009 floods exacerbated the impact of the 2007 drought and the 2008 floods on subsistence farmers, causing a deterioration of the chronic food insecurity situation of vulnerable households in the Northern and Eastern Central regions, moving into acute transitional food insecurity. These households are already having poor food access, and will have difficulties in maintaining an adequate level of food consumption in the coming months of August/September to the next main harvest in April, unless they are provided with food assistance.

While the Directorate of Emergency Management (DEM) has the budgetary capacity to address the food assistance needs, the implementation of the food assistance is facing some challenges that need to be addressed in order to reach the population in need. Introduction of improved targeting mechanisms is required to identify the groups in need of assistance reducing inclusion and exclusion errors. It is recommended that new criteria based on the socio-economic household profile are defined for beneficiary targeting and that a registration of beneficiaries is done accordingly.

Other measures that require urgent attention include a proactive vaccination against LSD in the NCAs to prevent another massive outbreak of LSD before the next rainy season. In addition, there is an urgent need to undertake African Swine Fever surveillance to determine the extent of the problem in Omusati and Oshana regions, as well as in southern Angola to document the epidemiology of this outbreak.

2. BACKGROUND TO NAMIBIA

2.1 Physiographical and socio-economic setting

2.1.1 General

Namibia is situated in south-western Africa, bordered by Angola in the north, Zambia to the north east, Botswana to the east, South Africa to the south and the Atlantic Ocean to the west. It covers 824 000 square kilometres but has a population of just over 2 million people (density: 2.5 persons/sq.km). It is a dry country with an annual average rainfall of about 100 millimetres and accommodates two major deserts, namely, the Kalahari Desert in its eastern parts and the Namib Desert which stretches about 80 kilometres inland from the Atlantic Ocean. The only perennial rivers are the Kunene and Kavango which form the borders with Angola, the Zambezi with Zambia, and the Orange with South Africa. All other rivers in the country carry water only during heavy rainfall. In the north-central, the regions are characterized by extensive plains or "Oshanas", which are often severely flooded by water overflows from the Kunene River, as a result of heavy rains in southern Angola. This happened in 2008 and 2009, displacing many families and causing serious losses in agricultural and livestock production and damage to infrastructure.

Although agriculture (crop, livestock, forestry) contributes only an average of about 5.6 percent to the country's GDP (2000-2008)¹, over 70 percent of the total population directly derive their livelihoods from it. North-central Namibia (largely the subject of this assessment), where a large proportion of the population are subsistence farmers living on communal land, is the most populous area of the country. The 2001 census estimated that the four constituent regions (Oshana, Omusati, Oshana and Oshikoto – the 4 "O"s) were home to 43 percent of the nation's total population on just 7 percent of the land area of the country.

Namibia is classified as a "lower middle income" country, currently with an estimated GNI per capita of around USD 4 210 (Atlas method). However, income and wealth distribution is highly unequal, with a Gini coefficient estimated at 0.6 (National Household Income and Expenditure Survey, 2003/04).

The country has significant deposits of a range of minerals, including diamonds, uranium, copper, zinc, lead, gold and others, and mining is the backbone of the economy contributing more than 60 percent of total export earnings.

The economy is closely linked to that of South Africa, with the Namibian dollar pegged to the South African rand on a one-to-one basis. Since Namibia sources over 80 percent of its imports from South Africa, this relationship serves it well, although it also means that it may import South African inflation.

Namibia faces a serious HIV/AIDS challenge. It is estimated that about 20 percent of the country's total population are infected with the HIV, one of the highest rates in the world exceeded only by Swaziland, Botswana and Lesotho. Partly as a consequence of this, life expectancy at birth is estimated to have dropped from over 60 years in the mid-1990s to around 47 years currently.

2.1.2 Economic performance indicators

At an average of 5.7 percent per annum over the last five years, GDP growth has been quite satisfactory (see Table 1). However, it has slowed down in 2008/09 to an estimated 2.7 percent largely due economic recession in the developed world. Prices for Namibia's leading foreign exchange earner, diamonds, have fallen by at least 30 percent since September 2008, reflecting a sharp decline in demand by cutting centres. Further falls are expected. Some diamond companies have responded by sharply reducing output in order to reduce costs. Other metals have been affected similarly, except uranium the output of which is expected to rise significantly owing to steady international demand. Other major export commodities, namely fish and beef, as well as tourism, are also experiencing falling demand. The Bank of Namibia forecasts GDP growth rate at less than 1 percent in 2009/10.

¹ Central Bureau of Statistics.

Table1. Namibia: Summary of performance indicators

Population (2009), million	2.1
Average population growth rate (%) 2003-2007	1.1
Population density (persons/sq.km)	2.5
Unemployment, total (% of total labour force)	37
GDP (million – current USD) 2008	8 000
GNI per capita, Atlas method (current USD)	4 210
Real GDP average growth rate (%) – 2004-2008	5.7
Average inflation, consumer prices (end-period, %) – 2004-2008	6.3
Average exchange rate NAD:1USD (end-period) – 2004-2008	7.0
Official foreign exchange reserves (NAD bn – April 2009)	13.9
In months of imports of goods and services	4

Sources: Central Bureau of Statistics; World Bank Country Brief, March 2009; Bank of Namibia and Economist Intelligence Unit.

Official foreign exchange reserves are currently estimated at the equivalent of NAD 13.9 billion, enough to finance around 4 months of imports of goods and services. In addition, the Bank of Namibia reported that commercial banks were holding reserves equivalent to NAD 2 billion. Thus, the country's reserve position would seem to be quite satisfactory. However, this situation is expected to be adversely affected by the unfavourable external economic environment. Moreover, declining revenues from the Southern African Customs Union (SACU), to which Namibia belongs, will further erode the reserve position.

The exchange rate for the Namibian dollar (which is fixed to the South African rand), has fallen sharply in consonance with the rand since September 2008. It has fluctuated between 8 and 9 NAD per USD since that time, from an average of 7 over the period 2004-2008.

Annual price inflation (year-on-year) averaged 6.3 percent during the period 2004-2008, with a peak of 12 percent at the end of 2008. However, it has slowed down in recent months and averaged 11.5 percent in January-March 2009 and currently stands at 10.3 percent. In view of lower world food prices, weaker domestic demand and a downward trend in inflation in South Africa, further declines in Namibia's inflation can be expected. However, currently rising oil prices on the world market could reverse the trend.

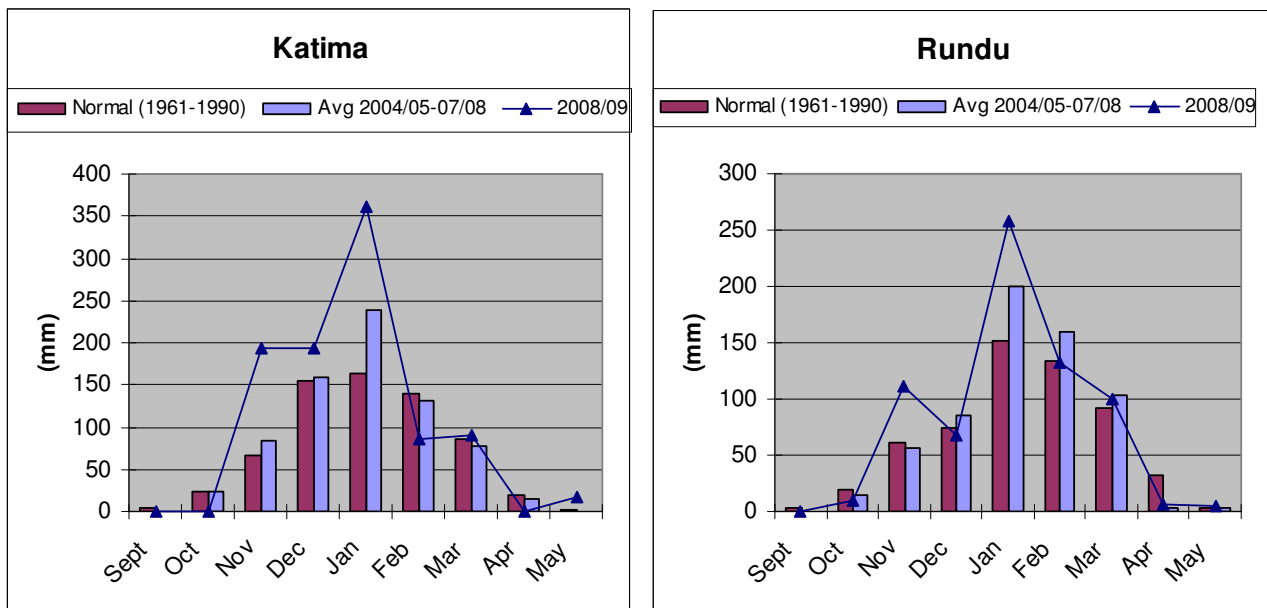
At 37 percent, the rate of unemployment in Namibia is unacceptably high. The most affected population group are the young people, especially school leavers.

2.2 Agricultural background

Agriculture in Namibia is divided into two main production systems, based respectively on large private commercial farms and on smallholder subsistence farming in the communal land areas. Communal crop farming is confined mainly in the regions of Caprivi, Kavango, Ohangwena, Oshikoto, Omusati and Oshana. Commercial crop farming is largely concentrated in the "Maize Triangle" around the towns of Grootfontein, Otavi and Tsumeb, with maize being the most important crop, grown both under rainfed and irrigated conditions. Wheat is also grown under irrigation on about 2 400 ha annually at various irrigated sites around the country.

Crop yields in communal agriculture are very low compared to those obtained in the commercial sector. This is despite the fact that the communal areas of Namibia have the highest rainfall in the country. Average maize yields in communal agriculture are estimated in the 0.5- 0.55 t/ha range this year while yields in the commercial sector, which includes both dryland and irrigated maize, average 3.87t/ha. Millet and sorghum are primarily smallholder crops, with yields varying from 0- 0.45t/ha this year. Yield differences are primarily the result of lower use of improved seed and fertilizers in the communal sector, due to a lack of working capital.

Figure 1. Monthly rainfall in 2008/09 crop growing season in comparison with the five-year average and standard climatologically normal



This year rainfall exceeded 800mm in many of these areas, with quite good distribution as shown in Figure 1. The rest of the tables and charts provide climatological information on Namibia.

Soils in the communal areas are generally very sandy and the trees have been removed in large numbers over the past fifty years, leaving large areas of soils totally unprotected from wind and rain. House and compound construction requires large amounts of wood, as noted in a publication of the Ministry of Lands, Resettlement and Rehabilitation, as follows: "A typical Owambo homestead requires over 20 000 poles, more than 100 cubic metres of construction wood from surrounding woodlands. The favoured woods are the harder, slower – growing species such as mopane and *Combretum* spp which are more resistant to termites and usually last for about six years before needing replacement."²

Large numbers of cattle graze every hectare of land and consume virtually all crop residues, leaving soil micro-organisms without any feedstock. In recent years, large ranches have been fenced in the communal areas and this has put increased pressure on the limited grazing lands in the commonage areas. Population pressure is putting increasing demands on land which used to be grazed by livestock. Temperatures of uncovered soils rise to levels that preclude the survival of necessary micro-organisms essential for the maintenance of soil fertility and for rendering phosphate and other nutrients available to plants.

Soil organic matter levels decline under these conditions, reducing the water and nutrient holding capability of the soil, such that the little nitrogenous fertilizer that is applied does not remain for long in the soil but is easily leached out by the first rains. Fertilizers are little used in communal areas and manure is only seldom used due to the high cost of transporting it from cattle camps. As a result, crop yields are showing clear indications of long term decline in the communal areas.

Subsistence farmers in these areas do not have access to credit as they have no collateral in terms of land titles. Cattle are not accepted by many lending institutions as collateral, leaving farmers with little or no working capital, especially after three or more poor farming years.

Access to markets is difficult in the more remote areas, though there have been major road improvements in recent years. Only a very small proportion of millet production enters the market at present.

Agricultural situation by region is provided in Annex 1.

² Land as a Factor in Poverty Alleviation in Namibia – Environmental Considerations by C.J. Brown. A publication by the Ministry of Lands, Resettlement and Rehabilitation. Windhoek, 1993. pp. 83-84.

3 CEREAL PRODUCTION IN 2008/09

3.1 Area estimates

The Extension Service reports on the area of land under cultivation each year. Estimation of land areas is done by eye and not by actual field measurement. This method of measurement is not accurate and it is recommended that GPS instruments be used in future to measure fields accurately. This would provide a database on land ownership for local extension staff and would also provide a better measure of agricultural productivity per hectare. Data on land areas cultivated vary between sources, with wide discrepancies being noted between figures provided by Regional Councils, Regional Departments of Agriculture, Water and Forestry and the Namibia Early Warning Unit.

3.2 Factors affecting yields

3.2.1. Seed availability and seed quality

Most farmers in the communal areas keep their seed supplies from season to season. However, the 2007/08 season was a poor one and some farmers could not maintain their seed stocks and had to buy from the Ministry of Agriculture, Water and Forestry or from open markets and cooperatives such as Likwama in Caprivi or obtain supplies from neighbours and friends.

Namibia has a requirement of 120 tonnes of millet seed each year and it is usually supplied through seed cooperatives around Omahanene Research Station in Omusati Region and from Kafasepco Seed Cooperative in Caprivi Region. Nationally, stocks of millet seed were below the requirements in 2008 and the MAWF secured 60 tonnes of millet seed from a supplier in South Africa. These supplies turned out to be of poor quality and farmers complained that they were not up to the required standard.

Maize seed is supplied by cooperatives such as Likwama in Caprivi, from input traders in Katima Mulilo and from stocks procured in Zambia and from home saved supplies. Sorghum seed is largely provided by home saved stocks and from seed Cooperatives such as Kafasepco in Caprivi and Northern Namibia Seed Growers in the Mahanene area of Omusati Region.

In general, there is a shortage of quality, locally adapted millet seed and this leads to low yields.

Seed is the main input in the communal sector, followed by fertilizer, which is used by few farmers. Pesticides are little used in cereal production.

The main millet varieties are Okashana II and Kangara. Okashana II is deficient as regards storability and straw strength and there is a need for quality short-term varieties that have good storage characteristics. Many farmers reported that they are going back to using traditional varieties which have lower yields but which provide good storability and straw strength for use in fencing and other purposes. This will have adverse effects on crop production and needs to be countered by introducing new cultivars and testing them for suitability for the local environment. Further details on seed production are provided in Annex 3.

3.2.2 Land preparation: lack of animal draught power

The mechanisation unit in the Ministry of Agriculture, Water and Forestry has been privatized and private tractor owners are subsidized to carry out ploughing/disc harrowing for farmers, with oversight being provided by the Extension Service.

Shortages of privately owned tractors in some regions, notably in Kavango, where in one constituency not a single tractor was available for work, reduced the amount of land prepared in this way. The Draught Animal Power Projects I and II have provided training in harness making, ox-ploughing and other skills to up to 10 000 farmers and this has had substantial beneficial effects. Many fields in Namibia are not suitable for tractor cultivation due to the presence of stumps and other obstacles and these fields are much better managed using animal draught power.

The use of the planting basin method of Conservation Agriculture in Caprivi Region over the last three years has demonstrated that neither tractors nor animal draught are required in order to obtain high crop yields. Under this system, land preparation is done at harvest time, when soils are still soft and this greatly facilitates

early planting and hence increased crop yields. This is the main method of Conservation Agriculture in use in Zambia.

3.2.3 Compaction from tractors and disc harrows

While the area of land ploughed by tractor is estimated at no more than 5 percent of the total cropped area, much of this work in the current season was done when the soils were wet. This resulted in compaction and water-logging of fields, leading to poor root development and longer term damage to soil structure. Many fields are reported to have a hard pan which restricts root growth and the use of tractor drawn rippers to break this hard pan is common in the first year where Conservation Agriculture is implemented. Subsequently, ox or donkey drawn rippers are used to keep the rip-lines open.

3.2.4 Late planting

One result of the shortage of draught power is that crops are planted later than the recommended time in November/December. This year, crops in several regions were planted as late as February, leaving little chance of reaching maturity. The fear of seed eating birds, *Quelea quelea*, which can devastate millet and sorghum crops, often causes farmers to delay planting until all farmers in the neighbourhood are planting and this again leads to lower yields.

Another result of late planting is that the crop does not receive sufficient rain to reach maturity and little or no yield results, especially in seasons which end earlier than usual. Further, early rains make nutrients available and if the crop is planted some weeks later, much of this nutrition is leached away or becomes unavailable before it can be used by crop plants.

3.2.5 Exhausted soils

Little manure or chemical fertilizers are used in communal agriculture in Namibia. Manure stocks are normally far away from the fields at cattle camps and the cost of transport is high, even where roads are passable. One farmer noted that the floods had prevented him from using cattle dung as fuel, an indicator of the declining availability of fuel wood. Recognizing the decline in fertilizer use, the MAWF has implemented a subsidy scheme for fertilizers, but because of the steep rise in fertilizer prices in 2008, the cost to some farmers still proved too high, despite the subsidy. Also, reports were received of late delivery of fertilizers, after the planting season had begun. Stocks of Mono-Ammonium Phosphate (MAP) remained unsold in various regions, due to perceived high prices.

The MAWF has a modern date soils laboratory in Windhoek but few if any soil samples are sent to it by Extension staff in communal areas. The service is provided free of charge and it needs to be utilized more in order to achieve a better match between soil nutrient requirements and applied fertilizers.

Conservation Agriculture has been piloted in Omusati (ripper method) and Caprivi Regions (planting basin method) for the past three years. It is also being tested successfully in the commercial sector by some farmers. It offers one of the most effective means of improving soil fertility and combating climate change, while also protecting the soil and providing much better food security through higher yields. It can be implemented by farmers of all sizes, from the use of the hand –hoe through animal draught to the use of the largest tractors. Further details are provided in Annex 2.

3.2.6 Poor weeding

The heavy rains throughout the season hampered weeding and this left increased weed competition for scarce nutrients. Late planted crops were particularly affected. Improved weeding is one of the reasons why conservation agriculture is so successful in raising crop yields. Under CA, most fields are weeded four times, compared to 1 -2 times in conventionally tilled fields. Labour shortages for weeding are recognized by the Government and youth groups are organized to carry out weeding in some regions.

3.2.7 Rainfall

As shown in Figure 1, the monthly rainfall in Katima Mulilo and Rundu was well up to or above normal levels and similar patterns were seen in Oshana, Omusati, Oshikoto and Ohangwena. This assisted early planting. Apart from a dry spell lasting about three weeks in December/January, the rainfall was sustained throughout the growing season and was generally favourable for crops on higher ground, though it may have been

somewhat excessive for millet crops, which are adapted to drier climates. However, in the oshanas, the rainfall was excessive and exacerbated the flooding coming from Angola. Millet is a crop which has adapted to dry climatic conditions and it does not react favourably to high and sustained rainfall that occurred in February and March, 2009, especially in the North Central Regions.

3.2.8 Pests and diseases

Unlike the previous season, Army Worm infestation was not a problem in the 2008/09 season. Slight locust attacks were brought under control quickly in Caprivi without causing damage. However, the conditions are favourable for the build up of locusts in the flood plains of Caprivi and constant surveillance is recommended.

Quelea quelea birds caused serious damage to crops in eastern Kavango and western Caprivi and also in Omusati. No control measures were instituted.

Elephants caused considerable damage to sorghum crops in Caprivi and also to millet in Caprivi and Kavango. This is because farmers' land is in the migration corridors of the wildlife.

The use of "chilli bombs" as an elephant repellent was tried in the Ngoma area of Caprivi with encouraging results. Chillies of lower grade are used for this purpose. They are mixed with either waste oil or with elephant dung, set alight and allowed to smoulder on the boundaries of fields.

The possibility of damage to crops by elephants, hippos and other wildlife including baboons discourages farmers from increasing crop production in parts of Caprivi and Kavango and severe damage is often caused to sorghum plots in particular, as elephants are partial to the sweet stems of sorghum.

3.3 Agricultural production in 2008/09

3.3.1 Cereal production

A. Communal:

The Namibia Early Warning Unit carried out a mid-term crop assessment in February, 2009 in four of the regions in the communal areas and crop prospects then were exceptionally good. However, heavy rains which began in the second week of February and continued up to mid-March, together with flooding in the main rivers, the Kunene, Zambezi and Kavango inundated large areas of flood plains in which crops were growing. The most affected areas were Omusati and Oshana, western areas of Ohangwena and Oshikoto and the eastern areas of Caprivi, including the Lake Liambezi area.

Flood damage in Kavango was confined to areas immediately beside the Kavango River. The level of the Zambezi rose by 9 metres this year, compared to 7.5 metres in 2004, the last major flooding event. Water levels are continuing to rise in the Linyanti and Lake Liambezi area and farmers are worried that the lake levels will not decline in time to plant crops for the 2009/10 agricultural season.

Production of millet, sorghum and maize in the communal sector for the 2008/09 season is estimated at 63 324 tonnes, 6 758 tonnes and 7 357 tonnes, respectively (Table 2). The comparable figures for the 2007/08 season were as follows: Millet 35 512 tonnes, sorghum 4 386 tonnes and maize 7 613 tonnes.

There was a considerable increase in planted area in the communal lands in 2008/09 compared to the previous season, which tended to compensate for the damage caused by flooding. Area planted to millet in the communal areas increased from 186 197 ha in 2007/08 to 258 981 ha in 2008/09, an increase of 39 percent. Sorghum area almost doubled from 10 917 ha in 2007/08 to 21 762 ha this year. The area under maize in Kavango and Caprivi declined slightly compared to the previous year from 14 826 ha to 14 445 ha.

Table 2. Namibia: Estimated cereal area planted ('000 ha), production ('000 t) and yield (t/ha) during the 2008/09 cropping season

Region	Millet			Sorghum			Maize			Wheat			Total		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Caprivi	2.4	1.2	0.5	2.6	1.2	0.5	11.8	5.9	0.5	-	-	-	16.8	8.2	0.5
Kavango	14.5	6.5	0.5	2.0	0.8	0.4	2.7	1.5	0.6	-	-	-	19.2	8.8	0.5
Omusati	75.9	15.6	0.2	4.0	1.2	0.3	-	-	-	-	-	-	79.9	16.8	0.2
Ohangwena	75.1	16.5	0.2	8.3	2.2	0.3	-	-	-	-	-	-	83.4	18.7	0.2
Oshana	34.1	7.2	0.2	1.8	0.5	0.3	-	-	-	-	-	-	35.9	7.7	0.2
Oshikoto	57.1	16.4	0.3	3.0	0.9	0.3	-	-	-	-	-	-	60.1	17.3	0.3
Commercial Sector	-	-	-	-	-	-	12.7	49.2	3.9	2.4	12.2	5.1	15.1	61.4	4.1
Total	259.0	63.3	0.2	21.8	6.8	0.3	27.2	56.6	2.1	2.4	12.2	5.1	310.3	138.8	0.4

Source: Mission estimates based on area figures from the Namibia Ministry of Agriculture, Water and Forestry, Directorate of Planning: *Early Warning Unit*.

B. Commercial:

Commercial farms were not in the main flooding zones and were not affected. Production shows an increase of 5.5 percent over the previous year's harvest and 11.6 percent above the average production for the previous five years (Annex 4). This was due to better distributed rainfall during the season. In Grootfontein, rainfall during the current season was 42 percent above normal. Millet has not been grown by the commercial sector since the 2005/06 season and then only on 207 hectares.

National historical cereal production along with area planted and yields is shown in Annex 4.

3.3.2 Other crops

Apart from millet, maize and sorghum, the other main crops produced include cowpeas, Bambara nuts, small amounts of sweet potatoes, groundnuts, cassava, pumpkins, watermelons and fruit crops. Sweet potato planting material is distributed by Extension staff in North Central regions. Cowpeas are intercropped with maize, sorghum and millet and sometimes grown as a mono-crop. The heavy rains this season resulted in poor yields in cowpea fields. High yields of pumpkins were achieved in most areas that were not affected by flooding, but the quality was reported to be poor, due to higher than average moisture content.

4. LIVESTOCK SITUATION

4.1 General

This Mission was undertaken following heavy rainfall and severe flooding in northern Namibia in which people's lives and livestock farming were severely disrupted. Some communities were left with no place to stay as their homes were flooded and they had to be evacuated to high grounds. Many livestock died due to drowning, cold and starvation as pasture remained flooded for close to a month and this was followed by massive internal parasitism and a severe outbreak of Lumpy Skin Disease (LSD) that devastated the cattle herd in the Northern Communal Areas (NCAs). Following the floods and heavy rains, the Namibian Government launched an international appeal for assistance in assessing the impact of the floods on various sectors and what would be required for recovery in the immediate, medium and long term. FAO responded to the government call by fielding a Mission whose terms of reference included an assessment of the impact of floods on livestock with particular attention to animal diseases.

Agriculture accounts for about 5.6 percent of the Gross Domestic Product of which 90 percent is from livestock. The main products for export are live animals which go to South Africa and meat which is exported both to South Africa and the European Union (EU). According to the 2006 livestock census, Namibia has about 2.4 million cattle of which 1.2 million are found in the Northern Communal Areas (Table 3) and the rest are south of the Veterinary Cordon Fence (VCF) which constitutes the World Organization for Animal Health (OIE) recognized Foot and Mouth Disease Free zone. The census figures in the NCAS should however be taken with caution since they are based on CBPP vaccination returns and all the cattle are not brought for vaccinations due to some transhumance practices in the areas. For other livestock, numbers are purely estimates since they are not brought to the crush-pens and farmers are only interviewed on their numbers. Other livestock found in Namibia are sheep (2.7 million), goats (2.1 million), horses (46 000), donkeys (160 000), and pigs (52 000). There are other livestock such as chickens and farmed ostriches in smaller numbers in the country.

Table 3. Summary of Livestock Census, December 2006^{a/}

District/Region	Cattle	Sheep	Goats	Horses	Donkeys	Pigs
East Caprivi	156 379	762	92 000	19	28	524
Oshana	107 959	5 083	69 459	217	10 606	6 792
Omusati	246 674	15 993	240 853	1 016	37 504	17 605
Ohangwena	183 488	83	151 052	575	18 150	7 957
Oshikoto	218 882	2 502	176 696	1 761	37 948	1 761
Rundu	125 927	1 472	44 135	524	1 555	1 778
Opuwo	217 879	43 751	201 557	314	8 384	0
Otavi	70 535	20 072	29 225	664	795	606
Grootfontein	117 727	31 576	25 623	976	1 257	485
Okahandja	132 219	21 246	30 648	2 474	1 573	559
Outjo	91 714	54 807	161 700	2 987	6 558	304
Otjiwarongo	124 569	37 713	66 818	3 076	3 801	95
Otjinene	70 787	7 643	11 245	365	684	10
Gobabis	264 059	270 443	143 997	11 516	9 248	392
Omaruru	59 746	75 887	161 244	1 976	8 023	89
Walvisbay	429	352	3 191	92	235	837
Windhoek	114 978	119 343	35 522	3 823	2 060	1 020
Mariental	43 536	956 745	182 123	5 884	5 941	10 771
Keetmanshoop	36 473	994 779	234 315	5 947	5 598	900
TOTAL	2 383 960	2 660 252	2 061 403	46 209	159 948	51 972

^{a/} Census Figures Provided by the Department of Veterinary Services-Namibia

4.2 Livestock farming in Northern Communal Areas (NCAs)

As indicated above the NCAs contain 1.2 million cattle under subsistence farming in mostly unfenced communal grazing system with off-take as low as 5-8 percent. Home slaughter and bush abattoirs also account for a considerable percentage of the above off-take in the region. It is common to see meat hung on tree for bartering and cash sales to raise the money in times of need. In some regions such as Kunene North some form of transhumance is practiced with seasonal migration between Namibia and southern Angola in search of grazing. This movement is facilitated by a bilateral agreement between the two countries which allows legal livestock movement between these countries within a distance of 30km into each other's territory. Such trans-frontier movement has serious animal health implications since the two countries have different animal disease status and management, and do not regularly meet to share experiences.

In the NCAs cattle have multiple roles which include draught power, store of wealth, wedding payments, enhancement of social status and occasional sales only for critical needs. Except for the eastern Caprivi which is classified as a Foot and Mouth Disease (FMD) infected zone with a cattle population of about 156 000, the rest of the NCAs form the FMD buffer zone with traditional beef export to South Africa and small amounts to Angola. The beef export to South Africa is currently suspended following an FMD outbreak in Kavango in November 2007. Although the Meatco abattoir at Oshakati remains open for slaughter, it is struggling to get sufficient numbers to justify its operations because of the emerging Angolan market for slaughter and breeding cattle and goats.

4.3 The emerging Angolan livestock market

For more than 17 years Meatco has been the predominant player in livestock marketing in the NCAs through its slaughter-houses in Oshakati and Caprivi. In good years Meatco used to slaughter close to 600 cattle per week at Oshakati, the majority of them coming from Kunene North. The situation has now changed with the coming of the Angolan livestock and meat traders in the North and Meatco is now struggling to slaughter about 260 cattle per week which is not economic considering the abattoir capacity. Farmers cite marketing problems to get cattle to the Meatco abattoir such as the prolonged quarantining period which results in loss of weight and sometimes deaths.

As of last year Angolan livestock and meat traders aggressively entered the market in NCAs driving Meatco to a marginal player. The advantage of the Angolan market is that it eliminates most of the constraints which farmers in the areas have been facing such as quarantining, documentation and grading and is based on direct negotiations. The prevailing price of NNAD 12 000-15 000 per ox and NNAD 4 000-6 000 per weaner heifer is also very attractive to farmers, including those in the south of the VCF who have also started sending cattle there. Once bought, livestock get a veterinary health permit and are driven across to Angola taking advantage of the grazing agreement between the two countries. They are also able to evade the 30 percent levy charged on export of slaughter animals.

4.4 Flood situation

In 2008/09 rainy season NCAs of Namibia received above normal rains in all the 7 regions. The rains started early and continued to early April with only brief spells of sunshine. The previous rainy season also had excessive rains followed by floods brought by major rivers in southern Angola and western Zambia. The average rainfall for the season ranged from above 500 mm in the North Central regions of Omusati and Oshana to more than 1 000 mm in the eastern Caprivi. Omusati, Oshana and some parts of western Oshikoto and Ohangwena are dominated by “*oshanas*” which are complex shallow ephemeral river course systems that form a *cuvelai* plain. The oshana drainage spill-way has not been active for more than 50 years and more than 75 percent of subsistence farming in Omusati and Oshana is in the Oshana flood plains. Livestock kraals and many other infrastructures were flooded. People and livestock had to be evacuated to high grounds and homesteads, livestock kraals and ploughing fields could only be accessed by boats and canoes. A similar situation of flooding was experienced in eastern Caprivi where the flooding is still continuing. In the North Central regions, the floods had subsided at the time of the visit and many families had returned to their homesteads.

Heavy rains and flooding affected livestock in the NCAs in many different ways. There were both direct and indirect effects on livestock. The direct effects of heavy rains and flooding included animals drowning, dying of cold after prolonged exposure to water, and dying of starvation as grazing land was covered with water. The actual number of livestock that died of drowning remains largely unknown but can qualitatively be described as many because residents were too preoccupied with their flooded homesteads and other urgent survival needs before they could attend to the livestock.

Official figures from Omusati and Oshana Regional Councils show that 250 cattle, 1 350 goats, 113 donkeys, and 90 sheep died of drowning. Farmers interviewed present a figure much higher than that officially given, especially goats which they said were just eaten when they died. The farmers' version of the story is supported by many skins which were found in the homesteads during field visits. In eastern Caprivi some 6 000 cattle remain trapped in some islands in the Kabbe Constituency in eastern parts of the flood plains following the unprecedented flooding of the Zambezi and the Chobe River system that has also reduced the marginal grazing land in the plain. Nine cattle drowned while they were being evacuated from the flooded islands, and crocodiles are said to be preying on the trapped cattle on daily basis. In the Kavango region, 300 pigs and fish from a fish farm were swept away by the floods. For the trapped cattle, the situation is desperate and the floods may not subside very soon as water is still building up. An appeal has been made to the Ministry of Agriculture, Water and Forestry for assistance through the office of the Regional Governor and response is awaited.

4.5 Animal health situation in the flood-affected areas

Following prolonged heavy rains and flooding many livestock went into poor nutritional condition, making them very susceptible to diseases and parasites. The most common flood related animal diseases reported as occurring at above expected incidences in eastern Caprivi and North Central regions were Lumpy Skin Disease (LSD), Contagious Pustular Dermatitis (Orf), African Swine Fever (ASF), and Internal Parasites in small stock and donkeys.

Other transboundary animal diseases did not show any flood related increases and the normal control measures for their management remain in place. For Contagious Bovine Pleuropneumonia (CBPP), the control measures in the NCAs involve annual vaccinations in all regions using the T144 vaccine produced at the Botswana Vaccine Institute. For Foot and Mouth Disease, biannual vaccinations are done in eastern Caprivi, Mukwe and Ndiyona Constituencies of the Kavango region and no outbreaks have been observed since last year. FMD movement restrictions are also in place in eastern Caprivi and the Kavango region, but some of these restrictions may soon be relaxed following successful control. Only CBPP and FMD attract free vaccinations in Namibia; for other diseases such as LSD, brucellosis, botulism, anthrax and blackleg it is

the responsibility of farmers to vaccinate their stock. It is mandatory to vaccinate against anthrax in Namibia, but farmers especially in the NCAs are ignoring this requirement.

The diseases which showed flood related increases are described below.

4.5.1 Lumpy Skin Disease (LSD)

Because Namibia is a dry country with conditions which do not favour vector multiplication, the incidences of LSD are relatively low, especially in the south of the VCF where preventive vaccinations are commonly practiced. The normal epi-centre of LSD is in eastern Caprivi where on average 200 cases are reported annually. This year there has been a massive outbreak of LSD in the North Central region with an epi-centre in the Kunene North region that devastated the national herd in the NCAs (see Table 4).

Table 4. LSD Outbreaks in the NCAs from 2004 up to April 2009

Region/District	No. Foci	No. Cases	No. Dead
2004			
North Central	9	19	0
Katima Mulilo	39	413	29
Total	48	432	29
2005			
North Central	4	7	0
Katima Mulilo	25	207	13
Total	29	214	13
2006			
North Central	8	40	1
Katima Mulilo	7	50	1
Total	15	90	2
2007			
North Central	5	15	0
Katima Mulilo	16	161	0
Total	21	176	0
2008			
North Central	43	165	19
Katima Mulilo	8	54	6
Total	51	219	25
2009 (up to April)			
North Central	71	6 876	37
Katima Mulilo	1	7	1
Total	72	6 883	38

As mentioned above, on average, Namibia registers about 200 cases of LSD annually which occur in Eastern Caprivi with only sporadic cases in the south of the VCF. This year from January to April, 6 883 cases were reported in the North Central regions and the disease is reported to have been very virulent with high mortalities in calves and young cattle. During field visits clear healing lesions of LSD could be seen in many herds. Because of the LSD epidemic and overwhelming outcry from the farmers for assistance, the Government of Namibia took a decision to intervene by purchasing 200 000 doses of LSD vaccine which was sold to farmers at a subsidized price as it was apparent that the disease was out of control, and the farmers could not afford the price of the vaccine. Government also provided prophylactic and curative services to reduce the impact of the disease on the animals.

Although this was a well considered decision and farmers highly appreciated it, the vaccine came too late when the disease had already run its course and cases had started going down because of the onset of the cold weather. In Opuwo in Kunene North, the vaccine arrived on 7 May while at Omusati farmers received the vaccine on the 29 April which was too late and many animals were already infected. Many farmers who were interviewed expressed great concern that the disease is likely to come again with the onset of high temperatures and heavy rains in November and December. Their fear is that if the disease comes with the

magnitude of early this year, they will lose more animals and draught power as they mostly use cattle for ploughing in the region. Most cases of LSD were not reported since there is severe shortage of technicians in all the regions in the northern areas and the few in post have serious transport problems. Furthermore, most cattle posts were not accessible due to flooding. The chances of another serious outbreak of LSD in the North Central and Caprivi regions is very high and it would be prudent to take pre-emptive action by vaccinating all the cattle in the NCAs before the onset of the coming rainy season. This would be a well considered investment to protect the national herd. A proactive action would be better and more cost effective than a reactive action as was the case the last outbreak. Currently LSD has died off with only a few cases reported.

Another LSD outbreak would mean a continued loss of production due to deaths in calves and young cattle as well as productivity loss. The loss of draught power would prolong the impact of the floods on the communities in the NCAs. Market access will also be restricted as LSD affected herds will not be given permit to slaughter facilities and this will interfere with the current lucrative Angolan market enjoyed by NCAs farmers.

4.5.2 African Swine Fever (ASF)

A serious outbreak of ASF was reported for the first time in Omusati and Oshana regions in villages bordering southern Angola. Estimates show that close to 3 000 pigs might have died although official records put the deaths at 1 500 pigs. The actual number is not known but farmers interviewed talked of massive deaths in some villages. Farmers had not been reporting deaths until the onset of the Swine Flu in the USA and Mexico when they then associated the deaths of the pigs with Swine Flu. This outbreak is thought to have originated from Angola and then introduced through cross border pig trade. The disease was confirmed as the West African virus strain. Pig deaths have since stopped but this problem remains unresolved until active surveillance in Oshana and Omusati is done and the epidemiology of the disease documented to facilitate future planning. FAO can help by providing an expert on ASF to work with both Namibia and Angola on this disease.

Since pigs are mostly reared by women in these areas with occasional slaughter when children go to school, the situation needs to be resolved fast for them to make decisions on restocking to normalise their lives. Most of the pigs in the area are not kept in-doors and are left to scavenge around, a management practice that may have facilitated the spread of the disease. Warhogs and soft ticks are not known to occur in these regions.

4.5.3 Internal Parasitism (Verminosis)

Heavy loads of internal parasites were reported as the primary cause of deaths in small stock following heavy rains and flooding. As small stock were severely immuno-compromised after prolonged starvation and wet conditions, they were highly susceptible to worm infestation and massive numbers of them are reported to have perished and are continuing to die as they are still in very unthrifty conditions. Farmers who were interviewed in almost all the regions talked of massive deaths and their reports were supported by many skins seen hung on homesteads during field visits. Farmers described their goats as having died of diarrhoea and excessive water in the visceral cavity, signs typical of severe worm infestation. Normally the annual reports from the Director of Veterinary Services do not show cases of Internal Parasitism, but this year from January to April a total of 19 829 clinical cases of Internal Parasitism were attended to with 2 621 deaths reported. Again this is just the tip of an iceberg as the problem is more severe as reported by farmers and observed in the field. Farmers are concerned that there will be species '*cleansing*' if the rains come and find these animals in this poor condition. Urgent action in the form of farmer education and if possible curative program in the flood affected areas to prevent possible massive deaths in the coming rainy season is recommended. In all the regions visited, farmers reported internal parasitism as a serious problem where they need government assistance in addition to LSD.

4.5.4 Other flood-associated animal diseases reported

Reports from the Directorate of Veterinary Services also show that there was an increase in cases of foot-rot and Contagious Pustular Dermatitis (Orf) following the floods. With regard to foot-rot, Government intervened by availing antibiotics for its treatment. Such a situation is expected as many small stock kraals were flooded for an extended period and also the grazing was too water-logged. Cases of Orf also increased but the incidences were not extreme to warrant any intervention beside antibiotic application just like with foot-rot.

4.6 Range situation

Range in the NCAs for 2009 is fair to good in many regions except those areas that are along the oshana flood plains which are very poor as a result of prolonged flooding. The hope is however, that the farmers will move their cattle to cattle-posts on higher grounds where grazing is good. Some farmers will even move their cattle to Angola for grazing as this kind of movement is legal and is common along the Namibia/Angola border villages in the North Central villages of Ohangwena, Omusati and Oshana as well as Kunene North.

As for Kavango, grazing is poor because most of the livestock is confined along the riverine areas because of shortage of water in-land. The situation is worsened by the fact that most of the riverine areas were flooded for an extended period. Sinking boreholes further away from the rivers could ease the problem. For eastern Caprivi flooding has been the biggest problem that reduced the already small grazing areas. Livestock deaths in this region are likely to be high.

Overstocking is a major problem in all the communal areas of Namibia and it is leading to overgrazing with attendant soil erosion and, if continued, will result in desertification. The carrying capacity of the land in communal areas of Namibia is being exceeded, with resulting over-grazing by cattle, donkeys and goats. This overgrazing in turn leads to soil erosion and declining carrying capacity. An increase in the numbers of unpalatable and poisonous plants was reported to the Mission, a clear symptom of overgrazing. The number of donkeys in Omusati is especially high and increasing, putting heavy pressure on grazing resources.

Severe livestock losses were incurred in communal areas recent years due to starvation and unless numbers are controlled, this is bound to happen again. Few farmers conserve crop residues, but more needs to be done in this area, including the growing of forage crops.

4.7 General observations on animal health delivery systems in NCAs

The VCF is the greatest physical land mark that divides Namibia livestock farming into two distinct epidemiological zones, the OIE accredited southern zones and the NCAs buffer zones. There is a smaller zone in Caprivi classified as an infected zone because of the presence of buffalo in the region. In the NCAs there is free annual vaccination for CBPP and FMD in selected regions. Otherwise farmers have to pay for the treatment of their animals and vaccinations. The primary strategy for animal disease surveillance is based on the principle of early detection, early response, animal movement control and strategic vaccinations in high risk areas. Early detection and early response strategy is underpinned by routine active surveillance activities such as farm inspections, community visits, ante- and post-mortem inspections, supervision of livestock auctions and the issuance of various movements permits.

Livestock farming in the NCAs are primarily subsistence with some form of transhumance that involves movement between Namibia and Angola. Establishments are not always permanent and change with season depending on grazing situation. One observation that was noted is that the actual number of cattle in the NCAs is not known and the current census figures are based on vaccination coverage. This method of estimating stock numbers in a communal farming system results in gross under estimation and false vaccination figures, especially for more serious transboundary animal diseases like CBPP. Most regions are too big to be covered by one state veterinarian with limited technician support. For instance, at Omusati region with 12 constituencies, there are only 6 in-post out of the 12 in the establishment. In fact, the ideal number of technicians for Omusati is 39. In Oshana, 3 technicians cover 10 constituencies. One thing which became apparent during the LSD outbreak is that there is a serious shortage of veterinary staff to adequately undertake effective disease surveillance in the NCAs. That coupled with severe transport shortage and the vastness of areas to cover resulted in many activities such as community visits and disease investigations not being done. Movement permits were also issued by unqualified staff because of the shortage of technicians. The cross border grazing system between northern Namibia and southern Angola poses a serious animal disease problem as the two countries have different disease status. Infrastructure such as crush pens is not enough and too far spaced. The Government is however aware as some of these problems are being addressed, e.g. increasing crush pens and creation of new posts for technicians, but the process has to be speeded up before it is too late.

In addition to the above efforts made by government, the United States Agency for International Development (USAID), through its Millennium Challenge Account Compact Program has some projects addressing some of the above mentioned deficiencies and their activities include the introduction of a traceability system in the NCAs with tagging of all cattle (about 1.2 million) and a similar number of small

stock. They will also be strengthening livestock extension services through training veterinary technicians and farmers. Infrastructural development such as quarantines and marketing pens will be improved.

Considering that farmers in the NCAs still need to be persuaded to embrace good farming practices as prevailing in the south of the VCF areas, the current level of extension delivery in the NCAs is grossly inadequate to bring any noticeable change in the near future. There is an urgent need to strengthen the human resource base to make extension agents more visible for both disease surveillance and farmer education.

Having concluded that the heavy rains and flooding experienced in the Northern Communal Areas early this year did not result in increased transboundary animal diseases except Lumpy Skin Disease and African Swine Fever and further noting that, floods and heavy rains were associated with massive infestation of internal parasites, especially in small stock and donkeys and the inherent weaknesses within the Department of Veterinary Services to adequately deliver effective extension service in the NCAs, several recommendations are made in Section 7 of this report.

5. CEREAL SUPPLY/DEMAND SITUATION

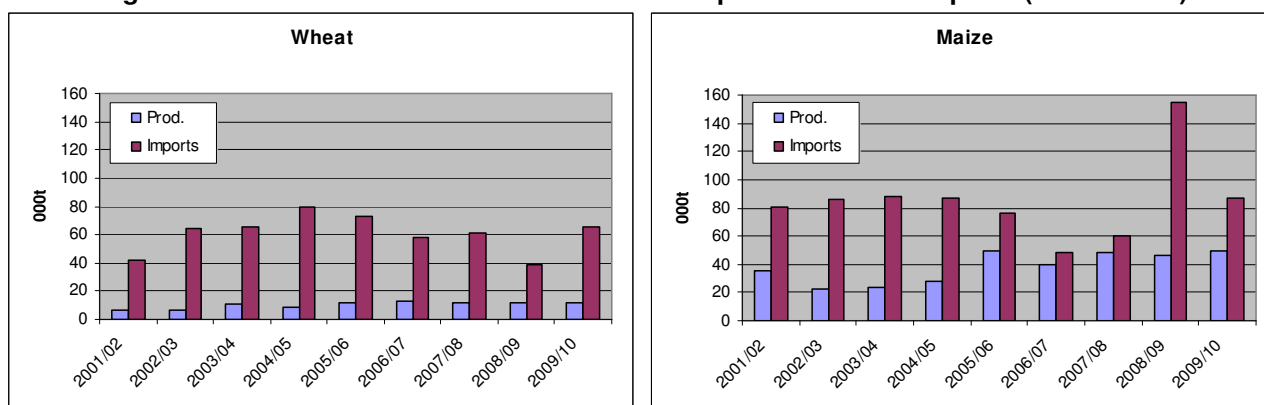
5.1 Current market situation

In 2008, grain prices in Namibia were considerably higher than in 2007, particularly in the second half of the year. For maize grain, prices, collected by the Ministry of Agriculture, Water and Forestry, Statistics Unit, rose sharply in October reaching a peak of NNAD 4.5 per kg, an increase of 80 percent over the same month the previous year. Prices eased back but according to the latest figures they were still 67 percent higher in May 2009 compared to May 2007. Rundu is located in a maize producing area in the north east. It should be noted, however, that very small quantity of maize, about 1 percent, is sold as grain. Most of the maize is sold as milled, prices of which have shown a steady upward trend since November 2007. These are discussed below in Section 6.2.2 – Food Access.

For mahangu (pearl millet) grain, prices rose in July 2008 and remained around 40 percent higher than 2007 until January 2009. They started rising again and by May they were a further 36 percent above January. Mahangu is the most widely grown and preferred grain staple for the majority of Namibians, especially those who reside in or originate from the populous northern regions. Oshakati is located in Oshana region which, together with Omusati, Ohangwena and Oshikoto, has suffered three consecutive poor harvests due to drought (2006/07) and floods and army worms (2007/08) and floods (2008/09). As a result, large numbers of families in these regions are highly food insecure.

Namibia is a net food importing developing country (NFIDC). As indicated in Figure 2, it imports most of its basic food staple, maize, with imports running at between 50-90 percent of its consumption requirements, with the exception of 2008/09 when more maize imports were recorded from South Africa, possibly to compensate for lower millet production and to account for some re-exports. However, it is evident that maize import substitution is gradually increasing, mainly due to irrigation expansion. Virtually all the maize imported originates from South Africa and is entirely commercial.

Figure 2. Namibia: Wheat and maize commercial production and imports ('000 tonnes)



Note: Production refers to the first year shown; imports for marketing year

Source: 2001/02 to 2007/08 Namibia Agronomic Board; 2008/09 FAO/GIEWS; 2009/10 Mission estimates.

Local wheat production, entirely irrigated as the crop is grown during the winter months, averages only about 10 tonnes annually, or some 15 percent of national consumption requirement. Wheat importation is undertaken by millers, mainly Namib Mills which supplies over 80 percent of the market. Main sources include Argentina, USA, Canada, France and Germany.

Government policy is to promote domestic production of maize and wheat as much as possible. For this reason, millers are not permitted to import these grains until local production has been completely bought up. This is enforced by closing borders at harvest time and then opening them again a few months later. Producer prices for these food grains are negotiated annually between millers and producers using a rather complex formula. Broadly, a floor producer price is based on a SAFEX (South African Futures Exchange) five-year average (adjusted for inflation) plus a transport differential from South Africa to Windhoek and, for wheat, an element reflecting the exchange rate for the Rand.

Mahangu was recently added to the list of controlled crops in a drive to expand its production and the floor producer price is negotiated at par with that of white maize grain.

Rice is obtained by millers from importers based in Durban, South Africa, and simply packaged for distribution. Namib Mills handles most of this business.

5.2 Cereal supply/demand balance 2009/10 (May/April)

The forecast cereal supply/demand balance for Namibia for marketing year 2009/10 (May/April) is based on the following assumptions, parameters and Mission direct observations and findings.

- The total population of Namibia at the beginning of 2009 was estimated at 2.1 million, growing at 1.1 percent per annum. At 2009/10 mid-marketing year (October 2009), it is projected at 2 111 550.
- Disaggregated annual per capita cereal consumption estimates were not available in Namibia. The National Early Warning Unit (NEWU) has an aggregate figure of 124 kg/year for all cereals. On the other hand, FAO's database contains disaggregated figures for Namibia. It has been decided to use the FAO figures to give a more detailed picture. On this basis, annual per capita consumption figures used are as follows: maize 66 kg, wheat 36, and millet/sorghum 28 kg, with a total of about 130 kg. Per capita consumption of rice is negligible. Thus, main cereals provide, on average, about 1 200 kilocalories in a daily Namibian diet, the rest of the energy coming from livestock products and other food commodities.
- Maize and wheat stocks are held by millers, who are required by the government to maintain a minimum of two weeks' supply in the case of maize. However, senior management of the biggest milling company, Namib Mills, believes that this requirement is unnecessary since maize can be imported from South Africa in a matter of days. Wheat has no minimum requirement but millers maintain a three months' supply. On-farm stocks (mahangu/sorghum) have been depleted over the last three years because of drought (2006/07) and floods (2007/08 and 2008/09).
- Post-harvest loss rates applied by NEWU and adopted here are 5 percent for maize and wheat, and 15 percent for millet/sorghum.
- The cereals under consideration (i.e. white maize, wheat and millet/sorghum – mainly mahangu) are not used to feed livestock. Only yellow maize, which is almost wholly imported by Feedmaster factory in Windhoek, is used.
- With regard to seed use, large-scale commercial farmers who produce maize and wheat purchase seed annually and therefore do not save seed from their production. On the other hand, small-scale maize producers who are mainly concentrated in Caprivi and Kavango, use a combination of own and purchased seed. Most mahangu/sorghum subsistence producers use their own saved seed. Seed requirements to be used in 2009/10 balance sheet are calculated with the assumption that the area to be planted is similar to that planted in 2008/09 and the following average seed rates: millet and sorghum 2 kg/ha, maize 10 kg/ha on communal farms and 25 kg on commercial farms, and wheat 120 kg. The seeding rate for wheat depends on the specific weight of the seed and ranges from 110 to 130 kg/ha. Seed rates were checked with the Ministry of Agriculture, Water and Forestry staff and are indeed far lower than those used in the region. This is probably due to the lower

expected rainfall, and commercial farmers sow maize in rows about 1.5 m apart in rainfed fields by using per ha seed rates. Further details of seed requirement are presented in Annex 3.

Table 5. Namibia: Cereal supply/demand balance 2009/10 (May/April) in '000 tonnes

	Maize	Wheat	Millet/ sorghum	Total
Domestic availability	57	12	70	139
Production	57	12	70	139
Possible stock drawdown	0	0	0	0
Utilization	143	77	70	290
Food use	140	76	59	275
Seed use	0.5	0.3	0.7	1.5
Feed use	0	0	0	0
Losses	3	0.6	10	13
Possible stock buildup	0	0	0	0
Import requirement	87	65	0	151
of which commercial	87	65	0	151
Deficit/surplus	0	0	0	0

Note: Totals computed from unrounded data.

The balance sheet, summarized in Table 5, shows that the country will need to import about 151 000 tonnes of grain during the current marketing year. Millers should have no difficulty bringing in this amount as they have done in the past. The country has adequate import capacity to handle it. However, food assistance will be required for the vulnerable population as explained in the following sections on the household food security situation in the country.

6. HOUSEHOLD FOOD SECURITY

6.1 Chronic food insecurity

Food security assessments³ conducted by WFP and the Government of Namibia in 2008 revealed high levels of chronic food insecurity in the flooded area, mainly in Caprivi, Ohangwena, Omusati, Oshana, and Oshikoto. The chronic food insecurity, understood as a long-term and persistent inability to meet minimum food requirements, was found to be linked to HIV and AIDS, structural poverty, and impact of recurrent natural disasters. The assessments revealed that an estimated 33 percent of households in Caprivi and 16 percent of households in the Northern Central regions were food insecure⁴.

The food insecure population has poor or borderline food consumption⁵ defined as as poor dietary diversity and low food consumption frequency during a seven day period. Households with poor food consumption in the region eat little more than staple grains and oil, raising concerns for micronutrient deficiencies as well as protein and energy malnutrition. Households with borderline consumption eat cereals and vegetables on a daily basis plus pulses and oils about 4 times per week and occasionally meat and fish. Households with acceptable consumption manage to regularly consume fish, and occasionally meat, nuts, vegetables, and milk.

³ Directorate of Emergency Management. Emergency Food Security Assessment Directorate of Emergency Management (May-June 2008). An assessment of the impact of the flood and other natural disasters on food security of rural households in areas of Northern Namibia May-June 2008.

Ministry of Gender Equality and Child Welfare and the UN World Food Programme (December 2007). Namibia Community and Household Surveillance (CHS): Round 2 An Impact Assessment of the Ministry of Gender Equality and Child Welfare/UN World Food Programme Food Support Programme for Orphans and Vulnerable Children (OVC) in Northern Namibia.

⁴ The food consumption indicator and the food access indicator were combined to create a consolidated food security indicator; a measurement both of the quality of household food consumption at present and the ability of the household to continue to maintain that level of food consumption in the future.

⁵ Using a 7-day recall period, information was collected on the variety and frequency of different foods and food groups to calculate a weighted food consumption score. Weights were based on the nutritional density of the foods. Households were then classified as having either 'poor', 'borderline' or 'acceptable' consumption based on the analysis of the data.

The food insecure households have an inadequate ability to purchase and produce food for its members. They have low expenditure per capita, and own few livestock. On average, they spend NAD 51 per capita on food and non food monthly expenses - this amount is only sufficient to purchase maize meal for the household members for one month.

The food insecure households in the area have following characteristics: mostly female headed households (around 67 percent), disproportionately widowed (around 40 percent), low education level, poor access to potable water (pond or stream water), live in mud thatch hut (83 percent) and/or concrete/tin house (12 percent), no formal income sources (less than 10 percent depend on formal salary/wages), and poor food consumption (adults and children 6-18 eating 2 meals per day, and children 0-5 eating 3).

While a relatively large proportion of the population in the Northern Central regions had acceptable food consumption, 50 percent of the households in these areas depend on food crop production as their first or second most important livelihood source, obtaining 34 percent of their food from own production.

6.2 Transitory food insecurity

6.2.1 Food availability

For people living in rural communal areas of northern Namibia, subsistence agriculture remains the main means of livelihood. However, the irregular rainfall and the unsuitable terrain pose serious threats to food security and to livelihoods. In the Northern Central and Kavango rural areas most people are involved in subsistence farming, with pearl millet (75 percent) and sorghum (25 percent) as main crops. In the Caprivi region, the staple crop cultivated is predominantly maize, with some millet in the drier western regions. The communal land tenure system limits access to credit. Poor soil quality and dependency on good climatic conditions characterize subsistence agriculture. On average, subsistence farmers are net-buyers and yet have very little additional income sources. An important source of income and food for them is the gathering and the sale of tree products and other natural resources.

The 2009 floods have exacerbated the impact of the 2007 drought and the 2008 floods on subsistence farmers, causing a deterioration of their chronic food insecurity situation and resulting in acute transitory food insecurity, particularly in the Northern and Eastern Central regions. While households are relatively resilient in the Caprivi region, and Kavango region, households in Oshana, Oshana, and Oshikoto regions have lower coping ability. In addition to the damage on standing crops, the floods washed away the stocks of sorghum and pearl millet stored from the recent harvests. Household food stocks are unlikely to last beyond September. With little additional income sources and the erosion of coping capacities, food consumption can be expected to worsen in the coming months unless affected households are provided with food assistance.

6.2.2 Food access

The rural population often retain close links with the urban population. Remittances from family and relatives in urban areas contribute to rural household income. Similarly, production from rural areas contributes to the food economy of people living in urban settings. The pearl millet, is largely exchanged in a barter or gift economy, with many poor urban dwellers depending on their rural relatives for their staple food.

In addition to remittances the Government subsidies are the main source of income for many vulnerable households that cover food and basic needs. Due to deepening poverty, the households in rural areas are highly vulnerable to the fluctuation of staple food prices.

The general increase of food and fuel prices during 2008 has added pressure on the most vulnerable segments of the population in the flooded areas. In order to mitigate the effect of the price increases, a Task Force under the Office of the Prime Minister was created in 2008. The 15 percent VAT was lifted off from some basic food commodities, such as beans, bread, cake flour, cooking oil and fat, and more recently also for milk and sugar.

A seasonal increase of food prices by 37 percent, exacerbated by the floods and higher transportation costs due to the damage on roads and bridges and the increased cost of fuel has further diminished the purchasing power of the affected households. Although the prices of processed basic food commodities (e.g. maize meal), vegetable oil, and pulses have dropped to the pre – flood levels, further fluctuation in the prices can be expected depending on the cross-border trade situation.

6.2.3 Nutritional status

The latest nutritional measurements in the flooded area in 2008 show that around 11 percent of women (aged 15 to 49 years) had a Body Mass Index (BMI) under 18.5 kg/m² indicating underweight or malnutrition. In addition, an estimated 21.3 percent of women had a BMI near the underweight cut-offs (22 in a range from 16 to 40), being vulnerable to shift to the lower BMI category during a period of low food intake. The measurements for children aged 6 to 59 months indicated also high rates that need to be closely monitored:

- Global acute malnutrition (GAM) rate (z-score) was estimated at 7.6 percent with NCHS 1977 standards and at 8.3 percent with WHO 2005 standards;
- Severe acute malnutrition was found in 1.2 percent (NCHS 1977) and 3.7 percent (WHO 2005) of children.

While no significant health outbreaks have been reported as a consequence of the 2009 floods, a deterioration of the health status could occur affecting the most vulnerable population groups, namely: children under five, pregnant and lactating mothers, elderly and HIV AIDS patients.

6.3 Household resilience and coping strategies

The coping capacity of households has been affected by the three consecutive climatic disasters - the 2007 drought and 2008 and 2009 floods. The affected households are employing a variety of coping strategies to obtain food and/or income after the floods. The following coping strategies have been reported in the flooded area:

- Changes in the food consumption patterns – reduction on purchases of non staple food as cooking oil, sugar or meat;
- Changes in household expenditure patterns - diverting the use of the grants received under the Namibian Social Policy to purchase food instead of covering other household expenses as school fees;
- Seeking support from relatives and neighbours – receiving food in kind and cash to buy food was reported to be coping strategy broadly used in the area. Along with it, “begging for food” was also reported as a practice in place⁶;
- Borrowing cash – from relatives or neighbours to purchase food;
- Reliance on the market – households are obtaining staple food traditionally obtained by own production through purchases in the market.
- Migrating to cities to work - Increased internal migration by some household members, predominantly to the capital Windhoek, and to farms.
- Fishing - reported to be a coping strategy mainly for women and young adults during the floods, providing additional food and cash temporarily during the time of the flooding.
- Dependency on food relief⁷ - reported to be main coping strategy, with the affected population expecting to receive food assistance to cope with the food shortages.
- Reduction in the food intake – reduction on the number on the size of the meals and / or the number of meals per day for some family members;

6.4 Food assistance requirements and recent actions to address food security

As a consequence of the 2009 floods, some 163 000 people are estimated to be in immediate need of assistance to cover their basic food needs in the regions of Caprivi, Kavango, Omusati, Ohangwena, Oshana and Oshikoto from August – September to the next main harvest in April. This estimate is based on the data compiled during the field work and the data from assessment undertaken by the Emergency Food Security Assessment Directorate of Emergency Management.

The Government of Namibia has responded to the food insecurity situation by distributing food assistance through the Emergency Management Coordination Office and the Directorate of Emergency Management (DEM) office. Upon the request of the Government of Namibia to WFP to provide technical assistance for the distribution of the food assistance, authorities at the local, regional and central levels have received guidance on warehouse management, secondary transportation of food commodities, commodity tracking, and planning of food distributions. Additionally, training on methods for beneficiary targeting was provided to staff

⁶ As “begging” is a taboo in the local culture, the fact that it is already a coping strategy in place should be considered as a sign of alarm of the food security situation in some households

⁷ Considering food assistance as a coping strategy is a sign of high vulnerability and dependency on external actors.

at central, regional and local levels and also to community leaders, with special attention on awareness rising on beneficiaries' profile.

However, while the Government of Namibia has the budgetary capacity to address the food assistance needs, its implementation is facing some challenges that need to be addressed in order to assist the population in need.

For example, the logistics chain in place to distribute food assistance is experiencing bottlenecks that are impeding the transportation of food to the affected population. Therefore, measures aimed to improve secondary transport, management of food distributions and warehouse management are needed for the smooth implementation of the food assistance.

Special arrangements need to be made by the Government (some are already ongoing) to provide food assistance to flood-affected and other vulnerable groups. In doing so, great care needs to be exercised to target and reach all those in critical need. In particular, special attention needs to be given to households headed by adult young women (young widows or young married women whose husbands are away looking for work), who have harvested little or no crops due to excessive rains and floods and have no alternative means of survival and are currently not registered in Government transfer for example the government monthly pension because they are under 60 years of age. The Mission encountered many such desperate cases. Thus beneficiary targeting remains a challenge that needs to be addressed in order households experiencing acute transitory food insecurity in the flood affected areas. The Government has defined a broad targeting criteria based on the following: pregnant and lactating mothers, children under five years old, elderly (more than 60 years), and people living with disability. The Traditional Authorities and local leaders are also expected to identify vulnerable households for general food distribution. There is a high potential bias due to the lack of objective criteria.

A standard food ration is allocated per household independent of the number of household members and is based on an average of 4.3 household members. However, this ration is insufficient to cover the needs of many household particularly those with more than eight family members.

7. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

7.1 Recommendations related to crop production

- **Promote seed production:** Having good quality seed of crop varieties that are suitable for the local farming environment is the easiest and cheapest way to increase agricultural production. It is recommended that the production of breeder's and foundation seed be accelerated at Research Stations in Omahanene and Mannheim and farmers, both in the commercial and communal areas, be trained to multiply adequate supplies of high quality certified seed each year and that they be paid a substantial premium over and above the price of grain for doing so. Seed production should be decentralized to other regions to avoid natural disasters which affected seed production in Omahanene and Caprivi this season.
- **Expand and Support Conservation Agriculture:** Conservation Agriculture is achieving very good results every year in Caprivi, Kavango and Omusati and in commercial areas and it should be expanded to all areas as soon as possible. This will facilitate early planting, increase yields and improve food security while protecting the soil from erosion and fertility loss. Such expansion will require fencing of cropland. Also, the high cost of wire fencing and the non-availability of wood for fencing make it necessary to consider the use of live fences for conservation agriculture plots. Suitable species of live fencing should be tested and introduced so as to protect CA farms from livestock. In addition, new ox-drawn ripper/planters and millet planters have been developed by local inventors and can be manufactured in Namibia. Their use would ensure line planting, improve precision of planting, reduce the need for thinning and cut labour needs and costs.
- **Use GPS instruments to measure land areas:** Currently, land areas are estimated by extension staff by eye and this leads to inaccuracies. Given the irregular shapes of most fields in the communal areas, the most accurate and efficient means of measuring these land areas is by using suitable GPS instruments which should be issued to Extension staff.

- **Manage soil erosion and fertility:** It is recommended that a long-term study be undertaken with the purpose of ascertaining the extent of annual soil loss in both commercial and communal areas. This will improve knowledge and help farmers to concentrate on protecting their soils through Conservation Agriculture and other appropriate means. It is also recommended that extension staff should collect soil samples and forward them to the national soils laboratory to ensure that they have accurate soil test information on the farms in their respective areas. More accurate fertilizer recommendations can then be made. Fertilizer use is very low and this has been exacerbated this year by high prices in recent years. Yields will continue to decline unless nutrients removed by crops are replaced, either by organic manures or by commercial fertilizers.

7.2 Recommendations related to livestock sector

- Urgent proactive vaccination against LSD in the NCAs is recommended to prevent another massive outbreak of LSD before the next rainy season. This should be done with full recognition that cattle are extensively used to provide draught power and any outbreak before the ploughing season will prolong the impact of the floods on communities in the NC areas.
- There is urgent need to undertake African Swine Fever surveillance to determine the extent of the problem in Omusati and Oshana regions, as well as in southern Angola to document the epidemiology of this outbreak. FAO can facilitate this study by providing an ASF expert to work with the two countries. This should be done as soon as possible.
- In the medium term, government should come up with an elaborate program targeting internal parasite control in the NCAs as it was observed in this Mission that internal parasites are a major cause of deaths and loss of production in small stock.
- Finally, it is recommended that the Government of Namibia strengthen delivery of veterinary extension services and disease surveillance in the NC areas by building strong teams which are well resourced to meet the increasing demand on livestock service delivery.

7.3 Recommendations related to food security

- Establish a monitoring system for the implementation of the food relief programme in order to evaluate the efficiency and efficacy of the food distribution and do the necessary adjustments.
- Introduce an improved targeting mechanism to identify the groups in need of assistance reducing inclusion and exclusion errors. It is recommended that new criteria be defined for beneficiary targeting and that a registration of beneficiaries done accordingly. The proposed new criteria are: a) Households affected by shocks and having low resilience: Households that have lost their stocks of staple cereals and harvest due to the floods and do not have livestock, and b) Are below the poverty line,⁸ and c) Present high dependency ratio: Households with vulnerable family members as pregnant and lactating mothers, children under five years old, elderly (more than 60 years), people living with disability that are not receiving government grants and do not receive remittances from relatives.
- Conduct a nutrition survey at national level in order to get an updated picture of the malnutrition levels and the nutritional status of vulnerable population groups after the last shocks.
- Monitoring of the food security situation is needed in the medium term in the flood affected areas to understand trends and identify possible signs of deterioration on the situation of the most vulnerable population groups so that assistance can be provided quickly and effectively to the affected population.

⁸ Poverty lines as defined by the by the Central Bureau of Statistics in the National Planning Commission in the Office of the President are as follows: 'severely poor' are living on less than NAD 184.5 (USD 19) a month, 'poor' are living on less than NAD 262.5 (USD 27) a month. Central Bureau of Statistics, National Planning Commission, 2008, a review of Poverty and Inequality in Namibia.

Annex 1

Agricultural situation by Region

Caprivi

Large areas of Caprivi Region are flood plains of the Zambezi or the Chobe-Linyanti river basins. As such, they are subject to occasional flooding and this was more widespread in 2008/09 than in any year since 1969. It is estimated that between 60-70 percent of the cropped area lies on flood plains. The main crop is maize, followed by millet and sorghum. There are an estimated 16 000 farming households in Caprivi, though some sources put the number as high as 18 000, each farming about 3 ha. There are some large farms in the Lake Liambezi area, in Katima Rural, Sibbinda and Linyanti constituencies extending to 100 ha or more. By March some crops were ready for harvesting but the floods prevented harvesting operations. Lack of rafts or canoes made it impossible to harvest crops separated by flood waters.

There were shortages of quality millet seed, as it is not readily available from input suppliers and shops. Little fertilizer was used, despite the 50 percent subsidy and fertilizers were reported to have arrived too late for the planting season in Sibbinda.

There are two cropping seasons, the main season from November to May and the second season, with crops grown in receding water, from August to November. Eastern constituencies such as Katima Rural and Kabbe were worst affected by the flooding.

In higher ground in western areas of Caprivi, crops received generally good, well distributed rainfall and if planted early, produced good crops. Certain areas, such as Lusese, reported poorly distributed rainfall, with a three-week dry spell in December and early January.

The area planted to maize, millet and sorghum declined by an estimated 9 percent compared to the previous year to 16 771 ha, due to late planting, lack of funds for inputs and other causes. The total estimated cereal production is 8 195 tonnes, a decrease of 8.3 percent from the previous year's harvest of 8 933 tonnes.

The Mission was informed that despite the flood damage, one miller was accepting up to 70 tonnes of maize per day, compared to 42 tonnes per day at the same time last season.

The floods resulted in some losses of home-stored grain. No stored products chemicals are used to protect the stored grain from weevils and losses in storage were reported to be as high as 30 percent. To capture "surplus" production and to broaden the market for grain, the Government constructed four silos of 1 500 tonnes each in Katima Mulilo Town. However, the silos were reported to be leaking and would need substantial repairs before they can be fully utilized.

Kavango

According to the 2001 census, Kavango had a population of 202 694 people, made up of 30 467 households, of which an estimated 18 000 are farmer households. The average family size is 6.5 people per household and 72 percent of the population live in the rural areas. The population growth rate is estimated at 5.8 percent per annum, indicating large scale immigration into Kavango.

Farmers in Kavango are not solely dependent on agriculture but obtain income from many sources, including livestock, pensions, wages and remittances, engaging in piece-work on farms such as clearing land, making and selling local beer, fishing and selling thatching grass.

The Regional Council reported that a total of 7 976 people were directly affected by flooding in Kavango Region, with 27 camps established in the affected areas along the Kavango River. The number of farm households affected was 775, or 4.3 percent of an estimated 18 000 farm households in the region. The total area of crops lost was estimated by MAWF at 362 ha, or 1.9 percent of an estimated 19 194 ha of millet, sorghum and maize crops planted in the region this season.

Planted area to the three main crops of millet, sorghum and maize, respectively, rose by 31.3 percent to 19 194 ha compared to the previous year's total of 14 623 ha. Rainfall was generally well distributed, but late planted crops suffered from heavy rains which also made weeding difficult.

The Mission estimates production of millet at 6 513 tonnes, an increase of 115 percent over last season's poor result of 3 030 tonnes. Sorghum production is estimated at 814 tonnes compared to 480 tonnes last season and maize production is estimated at 1 478 tonnes, an increase of 14.8 percent above last year's harvest of 1 287 tonnes.

Yields are low, varying from 350-450 kgs/ha but where Conservation Agriculture is used, the yield was reported to rise to 750 kgs/ha or higher. Early rains facilitated early planting. Some households planted late due to late availability of draft power. Excessive rains resulted in poor ploughing and planting conditions in the fields, nutrient leaching and had a negative impact on weeding.

Prices in Namibian dollars (NAD) at Agrivet in Rundu are very high, as follows:

○ 10 kg Sahara maize seed	NAD	128
○ 50 kg bag of maize seed	NAD	500
○ 1 kg Urea	NAD	13.67
○ 50 kg Urea	NAD	682.78
○ 1 kg Ammonium Nitrate	NAD	11.50
○ 50 kg Ammonium Nitrate	NAD	574.06
○ 20 kg KAN/LAN fertilizer	NAD	405.57
○ 5 kg Bonemeal fertilizer	NAD	76.84

Omusati

The Mission estimates millet production in Omusati this season at 16 552 tonnes and sorghum production at 1 201 tonnes. This compares to millet and sorghum production in the previous season of 8 570 tonnes and 416 tonnes, respectively.

Omusati Region has suffered two consecutive years of flooding. In 2007/08, crop production was estimated at 8 986 tonnes, compared to a five-year average of 19 002 tonnes. Flooding and Army Worm were the main causes of this poor result.

In this season, after a very promising start, severe flooding began in February caused by high rainfall and by water flowing through the low-lying oshanas from Angola. For many years the Oshana flood plains have not been inundated by annual floods and as a result homesteads and fields were established in these flood plains this year. Elderly people in the region have not seen floods such as those in 2009 for over 50 years.

Seven of the twelve constituencies are situated in the flood plains with fields less than 3 hectares, while the remaining five constituencies are on the higher ground with fields more than 5 hectares. Average yields of millet and sorghum are estimated at 0.205 t/ha and 0.4t/ha, respectively. Yields in higher ground were as high as 0.5t/ha and sometimes higher, especially on land prepared using Conservation Agriculture methods.

The main problem to cropping in 2009 was continuous rain in January/February followed by flooding. Late cropping or planting was not done because of continuous rains, the fields were water-logged, farmers could not weed and fields were not accessible

Oshana

Oshana Region has an area of 5 921 square kilometres and a population of 161 916, of which 73.2 percent are rural dwellers. The Oshana Regional Council reported that 6 900 ha of crop fields had been destroyed in the floods this year, of a total planted area of 35 900 ha, or about 20 percent of total area. Rainfall in Ondangwa for this season was 842.3 mm, an increase of 88 percent above the normal annual total and this, together with floods from Angola caused much crop damage.

The Mission estimates that millet production in Oshana for this season will be 7 158 tonnes. Sorghum production is estimated at 493 tonnes. Production of millet and sorghum in the previous season amounted to 4 816 tonnes and 641 tonnes, respectively. In 2008/2009 season, land preparation began much earlier than usual in November and floods had the most serious impact on late-sown crops planted in January and February. The previous season's crops had been devastated by flooding and an outbreak of Army Worm, while the 2006/07 season had also been poor, resulting in a harvest 35 percent below the five-year average. This year the flooding started in February/March and lasted to the beginning of April. The livelihood of most

of the population is based on mixed farming livestock/crops subsistence farming for home consumption and bartering, while pensions and remittances from family members are also major income sources.

Ohangwena

According to MAWF figures, the area planted to the main crop of millet increased in 2008/09 season from 47 628 ha to 7 5075 ha, an increase of 57.6 percent. For sorghum the area planted increased from 2 292 ha to 8 342 ha, or 264 percent.

The Mission estimates that millet production in Ohangwena for this season will be 15 390 tonnes, an increase of 65 percent over last year's harvest of 9 355 tonnes. Sorghum production is estimated at 2 186 tonnes, an increase of 112 percent compared to production of 1 032 tonnes last season.

The western areas of Ohangwena, which are low-lying oshanas or flood plains were most affected by this season's floods. In eastern Ohangwena, where crops were on higher ground and fields were larger at an estimated 8 ha, the harvest is expected to be better than last year by a considerable margin. Eastern areas did well, with production at least 20 percent up on 2008, with some farmers having a bumper harvest. Due to high population density in the west of the region, field sizes are on average about 3 ha.

Yields in western constituencies in 2009 are estimated at 50-100 kg/ha compared to normal harvest yields of 150-200 kg/ha. Over 24 000 ha of crops were completely lost in 2009, or approximately 29 percent of the total planted area, but this was compensated by the increases in planted area. Beans and cowpeas were badly affected by floods and aphid attacks.

Oshikoto

The area planted to millet increased from 43 890 ha in 2007/08 to 57 057 ha or 30 percent this year and the area planted to sorghum increased from 1 155 to 3 003 ha or 160 percent. Four constituencies bordering Oshana region were the worst affected by flooding, as they are generally lower in elevation than the eastern constituencies.

The Mission estimates that millet production in Oshikoto for this season at 16 432 tonnes, while sorghum production is estimated at 901 tonnes. This compares to production of 8 281 tonnes of millet and 580 tonnes of sorghum in the previous season.

The total population of the affected constituencies is 64 575 and of this, the total number of people affected by flooding was 26 335 or 41 percent. The number affected, according to the Regional Council, amounts to 16 percent of the total population of Oshikoto Region. In affected farms, crops were submerged by floods and died, whereas on upland areas the season was generally better than that of the previous year. No major pests or diseases were reported on crops. Poor soil fertility is the major constraint to agriculture, as few farmers use manure effectively or use any fertilizers. All crop residues are eaten by livestock, with little organic matter being returned to the soil.

Annex 2

Conservation Agriculture in Caprivi and Omusati

“Conservation Agriculture (CA) is a concept for resource saving agricultural crop production that strives to achieve acceptable profits together with high and sustained productivity levels while concurrently conserving the environment” (FAO,2007). The first of three key principles in CA is practicing minimum mechanical soil disturbance which is essential to maintaining minerals within the soil, stopping erosion, and preventing water loss from occurring within the soil. The second principle is concerned with managing the top soil to create a permanent organic soil cover that can allow for growth of organisms within the soil structure. This growth will break down the mulch that is left on the soil surface. The third principle is the practice of crop rotation with more than two crop species.

Crop yields are very low in the communal sector, but the introduction of Conservation Agriculture has shown over the past three years that yields can be increased by a factor of two or more without large scale investment or increases in labour. Conservation Agriculture can also reduce the level of soil erosion that is happening in Namibia due to deforestation and overgrazing by livestock numbers that are far in excess of the carrying capacity of the land.⁹

Caprivi

Where Conservation Agriculture is implemented, as it has been with 1 500 farmers in Caprivi in recent years by two NGOs, CLUSA and Namibia Nature Partners, maize yields were reported as follows:

Year	Maize under CA (t/ha)	Cowpea under CA (t/ha)	Maize under Conventional Tillage (t/ha)
1	1.5	0.8	0.6
2	2.5	1.6	0.8
3	4.5	2.1	0.8

Source: M. Simfukwe, personal communication

No mineral fertilizers were used but manure was used in these fields. The basin method of CA was applied, with basins 15 cm wide, 35 cm long and 15 cm deep being dug with a hoe. Hence the need for expensive machinery is minimized, though this can be used. The end result of CA is that soil fertility gradually improves over time due to the build-up of soil organic matter which underpins better water and nutrient holding capacity.

Omusati

The Namibian Agronomic Board and Conctill, a local NGO, with support from the EU and from SIDA, Sweden, have pioneered a method of CA in Omusati using a specially modified ripper that can be towed by a tractor for first year CA farmers and an animal drawn machine for use in subsequent years. In November 2008, Contill reported yields of 1 664 kg/ha from ripper/furrower tilled land compared to yields of 522 kg/ha from conventionally ploughed land. This technology has been field-tested over the past three years. A total of 153 farmers are currently cooperating with this project.

The need for fencing

For Conservation Agriculture to work properly, most crop residues must be returned to the soil. This is currently impossible, due to lack of fences on most field crops to protect the residues from grazing livestock. Dialogue will be needed to convince traditional authorities and livestock owners that crop residues on all farms are needed to maintain soil fertility and are no longer available and that alternative means of forage production will need to be found. Planting of suitable live fencing species offer the most economic way to protect crops.

⁹ Mendelsohn, John, 2008. Communal land in Namibia: A free for all. Customary and legislative aspects of land registration and management on communal land in Namibia (RAISON – Research & Information Services of Namibia). Report prepared for the Ministry of Lands and Resettlement and Rehabilitation, and the Rural Poverty Reduction Programme of the European Union.

Annex 3

Seed production situation at Agricultural Research Station-Omahenene

This Research Station is responsible for production of breeders' and basic seed for multiplication by local seed producing farmers.

The national seed requirements for millet are estimated in Table below. The Station has 50 tonnes available with the other 30 tonnes expected from seed producing farmers. There are 142 registered seed growers in the Omahanene area, with 130 known to be active. Unfortunately, due to lack of foundation seed in the Research Station, only 82 of these seed producing farmers could obtain seed for multiplication this year. Of these 14 farmers lost their crops, with just 68 producing a crop for inspection and possible sale.

Okashana 2 and Kangara are the pearl millet varieties being multiplied. The sorghum variety, Macia and Red Sorghum and cowpea varieties Nakale and Shindimba were also being multiplied. The seed inspection service noted that all fields of Macia sorghum were affected by Smut Disease, a seed borne pathogen, indicating that no seed dressings were applied. The floods and aphid attacks caused the destruction of most cowpea fields. It is recommended that seed producers be selected from the east of the region and from other regions also to ensure continuity of supply in flood or drought years.

There is therefore a deficit of approximately 40 tonnes of certified millet seed for the coming cropping season. The Ministry of Agriculture, Water and Forestry is confident it can produce this amount under irrigation during the dry season provided it receives financial support from Government to do so. Decisions need to be made urgently so that Omahanene and other seed production centres can start land preparation early enough to have sufficient certified millet seed ready for the next season in November 2009.

Namibia: Estimated national seed requirements for the 2009/10 cropping season (tonnes)*

	Millet @ 2kg/ha	Sorghum @ 2kg/ha	Maize @ 10kg/ha for communal & 25 kg for commercial	Wheat @ 120kg/ha
Caprivi	5	5	118	-
Kavango	29	4	27	-
Oshana	150	17		
Omusati	152	8		
Oshana	68	4		
Oshikoto	114	6		
Commercial			318	284
Total	518	44	462	284

*The seed requirements were calculated based on the assumption that the area to be planted is similar to that planted in 2008/09.

Note: The seeding rate for wheat depends on the specific weight of the seed and ranges from 110 to 130 kg/ha.

Annex 4

Namibia: Estimated planted area, yield and production for major cereals

Area ('000 ha)									
		CAPR	KAVA	OHAN	OMUS	OSHA	OSHI	Commercial	TOTAL
Millet	2003/2004	2.7	14.4	76.7	74.2	24.7	59.6		252.2
	2004/2005	2.4	8.7	75.1	71.9	23.2	56.6		237.9
	2005/2006	4.1	12.0	79.6	65.4	29.8	52.0		242.9
	2006/2007	4.2	9.6	56.0	58.4	22.2	44.3		194.8
	2007/2008	2.7	11.4	47.6	48.0	32.7	43.9		186.2
	5 YR MEAN	3.2	11.2	67.0	63.6	26.5	51.3		222.8
	2008/2009*	2.4	14.5	75.1	75.9	34.1	57.1		259.0
Sorghum	2003/2004	3.0	2.3	8.5	4.0	1.7	4.1		23.5
	2004/2005	1.5	1.4	8.3	3.8	1.9	4.0		20.8
	2005/2006	4.2	1.0	7.7	3.5	2.0	4.5		22.9
	2006/2007	4.3	0.9	3.8	2.8	1.5	3.6		16.9
	2007/2008	2.8	1.4	2.3	2.1	1.2	1.2		10.9
	5 YR MEAN	3.2	1.4	6.1	3.2	1.7	3.5		19.0
	2008/2009*	2.6	2.0	8.3	4.0	1.8	3.0		21.8
Maize**	2003/2004	9.5	3.0					13.5	26.0
	2004/2005	9.9	3.0					12.1	25.0
	2005/2006	11.4	2.8					12.8	26.9
	2006/2007	13.0	1.6					10.9	25.5
	2007/2008	12.9	1.9					12.7	27.6
	5 YR MEAN	11.3	2.5					12.4	26.2
	2008/2009*	11.8	2.7					12.7	27.2
Wheat	2003/2004							1.5	1.5
	2004/2005							2.1	2.1
	2005/2006							2.4	2.4
	2006/2007							2.1	2.1
	2007/2008							2.4	2.4
	5 YR MEAN							2.1	2.1
	2008/2009*							2.4	2.4
Total Cereals	2003/2004	15.2	19.7	85.1	78.1	26.4	63.7	15.0	303.2
	2004/2005	13.8	13.0	83.4	75.8	25.1	60.6	14.2	285.9
	2005/2006	19.6	15.9	87.3	68.9	31.8	56.5	15.2	295.2
	2006/2007	21.5	12.2	59.7	61.2	23.7	47.9	13.0	239.3
	2007/2008	18.4	14.6	49.9	50.0	33.9	45.0	15.1	227.0
	5 YR MEAN	17.7	15.1	73.1	66.8	28.2	54.7	14.5	270.1
	2008/2009*	16.8	19.2	83.4	79.9	35.9	60.1	15.1	310.3

* Mission estimates; ** Maize grown on commercial farms is white maize.

Annex 4 (continued)

		Yield (t/ha)						Commercial	TOTAL
		CAPR	KAVA	OHAN	OMUS	OSHA	OSHI		
Millet	2003/2004	0.4	0.5	0.3	0.3	0.4	0.4	-	0.3
	2004/2005	0.4	0.8	0.2	0.3	0.3	0.3	-	0.3
	2005/2006	0.5	0.6	0.4	0.4	0.4	0.5	-	0.4
	2006/2007	0.3	0.3	0.2	0.2	0.2	0.2	-	0.2
	2007/2008	0.5	0.3	0.2	0.2	0.1	0.2	-	0.2
	5 YR MEAN	0.4	0.5	0.3	0.3	0.3	0.3	-	0.3
	2008/2009*	0.5	0.5	0.2	0.2	0.2	0.3	-	0.2
Sorghum	2003/2004	0.4	0.3	0.3	0.5	0.4	0.3	-	0.3
	2004/2005	0.7	0.3	0.2	0.4	0.3	0.3	-	0.3
	2005/2006	0.5	0.5	0.4	0.6	0.4	0.4	-	0.4
	2006/2007	0.2	0.5	0.3	0.2	0.1	0.2	-	0.2
	2007/2008	0.4	0.4	0.5	0.2	0.5	0.5	-	0.4
	5 YR MEAN	0.4	0.4	0.3	0.4	0.3	0.3	-	0.3
	2008/2009*	0.5	0.4	0.3	0.3	0.3	0.3	-	0.3
Maize**	2003/2004	0.8	0.7	-	-	-	-	2.1	1.5
	2004/2005	0.7	0.7	-	-	-	-	4.6	2.6
	2005/2006	0.8	0.7	-	-	-	-	3.1	1.9
	2006/2007	0.5	0.7	-	-	-	-	4.5	2.2
	2007/2008	0.5	0.7	-	-	-	-	3.6	1.9
	5 YR MEAN	0.6	0.7	-	-	-	-	3.5	2.0
	2008/2009*	0.5	0.6	-	-	-	-	3.9	2.1
Wheat	2003/2004							5.6	5.6
	2004/2005							5.3	5.3
	2005/2006							5.3	5.3
	2006/2007							5.8	5.8
	2007/2008							5.1	5.1
	5 YR MEAN							5.4	5.4
	2008/2009*							5.1	5.1

* Mission estimates; ** Maize grown on commercial farms is white maize.

Annex 4 (continued)

Production ('000 tonnes)									
		CAPR	KAVA	OHAN	OMUS	OSHA	OSHI	Commercial	TOTAL
Millet	2003/2004	1.0	6.7	24.1	20.8	8.9	21.9		83.4
	2004/2005	1.0	6.8	17.4	20.0	7.8	19.4		72.4
	2005/2006	1.9	7.1	35.0	25.9	12.1	23.5		105.6
	2006/2007	1.3	2.6	12.6	13.2	5.5	9.4		44.5
	2007/2008	1.5	3.0	9.4	8.6	4.8	8.3		35.5
	5YR MEAN	1.3	5.2	19.7	17.7	7.8	16.5		68.3
	2008/2009*	1.2	6.5	15.4	16.6	7.2	16.4		63.2
Sorghum	2003/2004	1.1	0.6	2.3	1.8	0.7	1.2		7.6
	2004/2005	1.0	0.4	1.3	1.7	0.5	1.2		6.1
	2005/2006	2.1	0.6	3.2	2.1	0.8	1.6		10.3
	2006/2007	1.1	0.4	1.1	0.6	0.2	0.6		4.0
	2007/2008	1.2	0.5	1.0	0.4	0.6	0.6		4.4
	5YR MEAN	1.3	0.5	1.8	1.3	0.6	1.0		6.5
	2008/2009*	1.2	0.8	2.2	1.2	0.5	0.9		6.8
Maize**	2003/2004	7.6	2.2					28.3	38.1
	2004/2005	7.0	2.0					55.6	64.6
	2005/2006	8.6	2.1					39.2	49.9
	2006/2007	5.9	1.1					48.6	55.6
	2007/2008	6.3	1.3					46.0	53.6
	5YR MEAN	7.1	1.7					43.5	52.4
	2008/2009*	5.9	1.5					49.2	56.6
Wheat	2003/2004							8.3	8.3
	2004/2005							11.3	11.3
	2005/2006							13.0	13.0
	2006/2007							12.3	12.3
	2007/2008							12.2	12.2
	5YR MEAN							11.4	11.4
	2008/2009*							12.2	12.2
Total Cereals	2003/2004	9.7	9.5	26.5	22.6	9.6	23.1	36.5	137.4
	2004/2005	9.0	9.2	18.7	21.7	8.3	20.5	66.9	154.4
	2005/2006	12.6	9.8	38.2	28.0	12.9	25.1	52.2	178.8
	2006/2007	8.2	4.1	13.6	13.8	5.7	10.1	60.9	116.4
	2007/2008	9.0	4.8	10.4	9.0	5.5	8.9	58.2	105.7
	5YR MEAN	9.7	7.5	21.5	19.0	8.4	17.5	54.9	138.5
	2008/2009*	8.2	8.8	17.6	17.8	7.7	17.3	61.4	138.7

* Mission estimates; ** Maize grown on commercial farms is white maize.