

## Production systems in Kunene North subregion

### Livestock farming in north-western part of Namibia

Extensive cattle farming in the eastern part with the western part more suitable for goats and sheep

### Geography of the system

? Much of the area is mountainous, with the Kunene River valley marking the northern border of the region, and sandy plains to the Omusati region making up the eastern part (East of the Kamanjab-Ruacana road). The western coastal strip comprises the northern part of the Namib desert (Vigne (2005)). This sub-region stretches southward to just north of Sesfontein ( $\pm 19^\circ$  latitude).

### Climate

#### *Rainfall and temperature*

From January to March 70.8% of the long-term average rainfall occur. At Opuwa the average rainfall over 57 years is 334mm with a mean of 316 mm. The coefficient of variation is 44. The annual rainfall is ranging from almost zero along the coast to 340mm on the east. (Du Pisani pers. comm.) The number of rainy days per annum vary from zero to 10 to 25 days. Summer temperatures and hence evapo-transpiration rates are high. Therefore the climate could be described as harsh and erratic with climatic zones classified as hyper-arid, arid and semi-arid.

INSERT GROWING ZONE MAP FOR KUNENE NORTH.

The average growing periods for Kunene north run along with the rainfall isohyets (North-south) and vary from a zero growing period to 41 to 60 days at Opuwa. East of Opuwa until the Omusati region boundary the average growing period is 61 to 90 days (Coetzee & Verheye 1999).

### Topography

This region is divided into the interior highlands and the western pro-Namib plains. Six main land types and therefore six agro-ecological zones are distinguished namely the mountainous areas, plateaus, riverine, lacustrine and karst areas, plateaus, coastal desert and Etosha region.

In general Kunene north is characterised by mopane (*Colophospermum mopane*) savannah and mixed woodlands (with several species of *Acacia*, *Commiphora* and *Terminalia*), with good seasonal grazing (especially bushman grass, *Stipagrostis* spp.) and moderate browse capacity in most years.

## Soil types

Soils are generally characterized by a very low organic matter content and a deficit in phosphorous. They are poorly developed and the depth varies from shallow to deep and can predominantly be described as sandy to loamy sand. To the west soils are marginal and consist of a thin layer of soil, strewn with stones and of no arable value.

## Tenure, farm structure and size

The entire Kunene north is communally utilized except of course for the Skeleton Coast. Farmers therefore have open access to water points and grazing. It covers an area of 4,873,268 ha of which roughly 1.6 million hectares to the west comprises the Skeleton Coast Park and therefore not suitable for farming.

Assuming the total number of farm households in the region to be 4,740 (DEES. 2003) and an average household size of 5.3 (Population and Housing Census 2001). Kunene north has 25,122 inhabitants. Various cultural groups can be identified namely the Himba, Herero, Tjimba, Tjimba-Herero, Ndamuranda, ZembaHakaona, Thwa and Ovambo groups.

In the northern parts of the sub-region, the Ovehimba people live mainly as pastoral nomads, with households or parts of households and livestock following the grazing in the dry season. Settlement of part of the household around permanent water points and crop fields appears to be increasing. Ovaherero people, who predominate in the southern areas, and Ovazemba in the north east, are sedentary, with younger men taking livestock in search of grazing in the dry season (Vigne 2005).

## Livestock production systems

The far western area is less suited to live stock farming although it can, to a limited extent, be used for small stock farming.

In general livestock production is limited by climate and the availability of water. About 153 boreholes (Talevera et al. 2000) are present in the areas suitable for farming which comprises an area of approximately 3.3 million ha. These boreholes are supplemented by a limited number of fountains but most of these sources are situated in the central-eastern parts of the region. On average it means  $\pm 21,400$  ha per borehole.

Table 1: Livestock numbers in Kunene north sub-region

Year	2000	2001	2002	2003	2004
Cattle number	173,969	176,215	177,216	183,512	189,052
Sheep	67,431	63,616	64,476	67,068	25,357
Goats	429,567	258790	259601	274459	*93,630
Donkeys	6,180	6605	6817	6857	4,816
Horses	804	1544	1600	1559	4,010

Source: Livestock census (Vet services)

(\*The 2004 figures were ignored in the calculations below since no explanation could be found for the sudden drop in goat numbers)

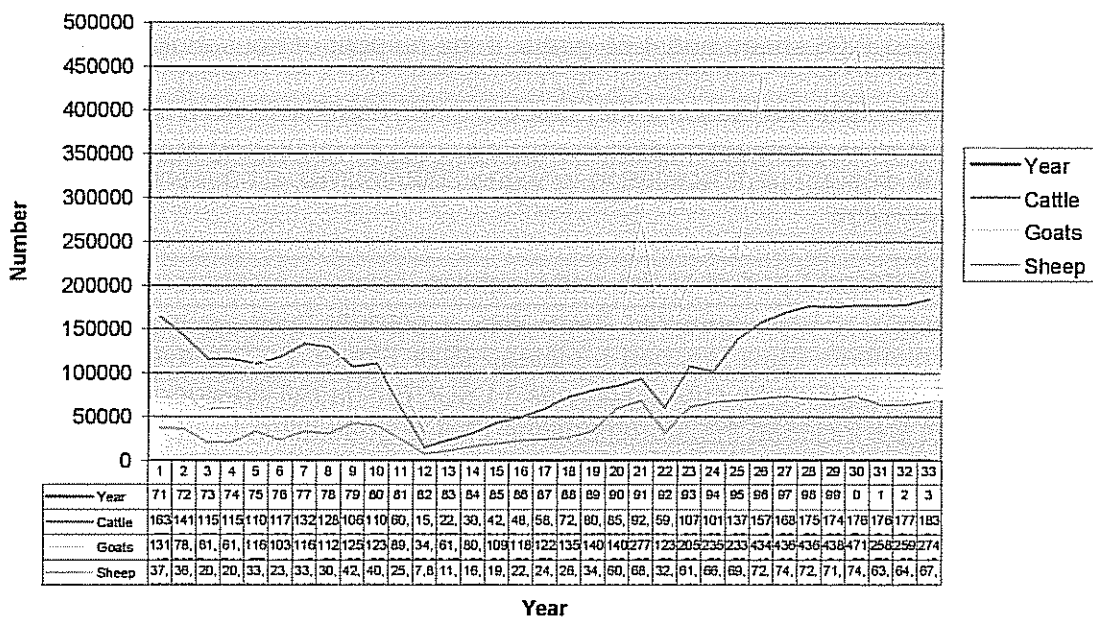
Cattle have important ritual and capitalization functions, but are also consumed, milked, used for traditional socio-cultural purposes, and marketed (Vigne 2005).

The data in Table 1 serves as clear evidence that cattle is the dominant production system in this area and comprises 74.17% of the total number of livestock (Small stock converted to large stock) with sheep 4.56% and goats 21.26%. For every one head of cattle there is 0.06 sheep and 4.65 goats. If the number of households indicated by Vigne (2005) is taken into account each household owns on average 37 cattle, 14 sheep and 64 goats. One can assume that farmers in the east have more animals and, percentage wise, have more cattle than small stock as compared with those who make a living in the western part. According to Vigne 2005 individual household keep 122 small stock on average.

During the drought period of the early eighties livestock numbers reached the lowest level in many years. Thereafter there was a gradual build up to a level where the livestock numbers have reached a plateau (See Figure 1). The average stocking rate from 2000 to 2003 in the sub-region was 1 LSU/13.7 ha (All livestock converted to LSU). If donkeys are included the aforementioned figure goes down to 11.7 ha/LSU which can be regarded as a too high stocking rate for this sub-region. According to Vigne (2005) It is important to take steps to mitigate and to respond to the effects of prolonged disaster drought, so that the disastrous events of the early 1980s are not repeated. It is alarming to note that, should such a drought be repeated, and there is no suggestion that it will not, then there is currently no plan in place to deal with it.

Goat numbers decreased drastically since 2000 and this was caused by a change in the methodology of carrying out surveys (Vigne 2005).

Figure 1: Livestock numbers since 1971 to 2003



Source: Vigne 2005

## Marketing

The herd composition is an indication that farmers market their cattle as mature animals as can be derived from the data in Table 2.

Table 2: Average composition of cattle herds in Kunene north as determined in two independent surveys

Herd composition	(Paskin (1990))	Bollig (1996)
Cows	39%	27.5%
Bulis	1:16 cows	1:20 cows
Calves <1 year	18.1%	18.8%
Calves 1 – 2 years	19.2%	31.8%
Mature oxen	21.7%	19.5%

The majority of cattle marketed at Meatco's Oshakati abattoir derive from Kunene north, and as do a sizeable proportion of animals informally marketed in the main towns of the north central regions (Vigne 2005).

Cattle have an economic value as meat, butter and milk which form the basis of their diets. As much as 50 % of the cows are milked for own consumption – owners and herders.

The off-take rate is defined as the sum total of household consumption, barter sales, sales to Meatco and sales to traders

The average off-take rate for the entire region is 11% and lower while a high mortality rate of between 10 and as much as 25% for the various farming areas contribute to the off-take. A recent survey (Vigne and Associates. 2000) finds average cattle marketing off-take of about 10 per cent in the two survey areas with cattle losses of between 12 and 15%. Given that the institution of sacred cattle limits the pool from which cattle can be utilised such off-take must be considered reasonably efficient. In the case of small stock, off-take rates are likely to be even greater, especially, as already noted, because flock numbers have probably stabilized in the last few years.

In 1999 the off-take from a total herd of 178,313 cattle was 25,330 (14.2%), the sales/barter 13,380 (7.5%) and the mortality 8,976 (5.03%). Oshakati abattoir served as the formal market for Kunene North.

The corresponding figures for goats were 67,850 (15.4%), 7.1% and 6.5% respectively. In the case of sheep the off-take was 7.9%, 2.6% for barter/sales and 10.4% mortality.

While the bulk of cattle are slaughtered at the abattoir in Oshakati cattle are also sold and exchanged at the local market(s). One cattle unit could be exchanged i.e.

1 blanket, 2 bags of maize meal and 2 cases of castello or  
3 boxes of Zorba liquor plus 2 bags of maize meal or  
8 crats of Lion Lager (Talavera et al. 2000)

### **Small Stock Marketing**

Vigne (2005) reported that levels of small stock marketing in the Kunene north regions have in 2002 and 2003 reached unprecedented high levels. During the NSSDP review local farmer organizations representatives asserted that an average of 4-500 small stock were leaving the Kunene north region for the north central markets daily. This would amount to between 145,000 to 182,000 animals annually. This apparently extraordinarily high figure may not be completely far fetched. If we assume small stock number of 580,000, and that 60 per cent of these are productive females, and a kid/lamb weaning rate of about 70% in years in years of average rain as have prevailed in the past few seasons (580,000 x 60% breeding females x 70% weaning rate = 243,600 replacements per year), and if we also recognize that small stock numbers have reached all time highs, which are stretching both natural resources and farmer management resources, and if we recognize that small stock are more readily sold than cattle which tend to be accumulated as traditional capital store, the possibility that farmers are implementing high off-take rates and that large scale sales are now taking place becomes tenable (Vigne 2005).

The main ways that farmers sell small stock are, in probably order of importance, as follows :

- On-farm to mobile collectors or directly to traders
- To rural shops operated by collectors or traders
- At local village or town markets

- In the livestock markets of the north central regions

In the first three cases the entire market chain is usually operated by Oshiwambo speaking traders. Local informants estimated that perhaps only 20 per cent of those involved in the trade were from the region itself. It is costly, inconvenient and sometimes impossible for farmers to take their animals even to the nearest markets of the north central regions, such as at Ruacana, Outapi and Okahao, where prices are much higher. Local market demand is very small. Once traders have purchased a suitable number of animals they are moved in bakkies and small trucks out of the region. Only those coming from the eastern areas are sometimes trekked on foot to the nearby western Omusati markets. Farmers reportedly have little idea of the value of their animals in the north central markets, and are vulnerable to exploitation. The extent to which traders organize themselves to fix prices is not known – there is evidence that buyers do sometimes have their own “patch” where they can operate monopoly buying practices. Small stock auctions are not conducted (Vigne 2005).

Auction facilities have been established in the last decade nearby several of the major settlements. Two of these (at Kaoko Otavi and Okangwati) have capacity to handle small stock.

There are several quarantine farms in the region: Omutambo Omawe (25,000 ha) near the north east corner of the Etosha Park, Khowarib (2,800 ha) south of Sesfontein, Otjakati near Etanga and Ehomba to the north. The extent of the demand for quarantining of small stock prior to their movement to the south, following the introduction of new procedures early in 2004 (see Annex 2) is unknown, though it is reported that the first intakes of small stock under the new regime are quite substantial.

### ***Management practices***

Vigne (2005) states that cattle husbandry is of a relatively high order, with bull cow ratios and castration, for example, mainly practiced as recommended. Health care treatment including vaccination against Botulism and Black Quarter and is slowly being adopted. Opportunistic grazing management leads to the build up of large livestock numbers, which are vulnerable to disaster droughts (see Figure 1. during 1980-82).

Goats are medium framed, with mature rams weighing about 51 kg and mature ewes weighing about 37 kg (Thawana and Visser. 1999). Castrated males (wethers) can reach very large sizes. Sheep are fat-tailed, and are the original breed from which the Damara breed was developed. Boergoats are increasingly common, particularly in the southern areas. Combined flocks commonly range between one to four hundred with some farmers owning more than a thousand small stock managed in different areas. Goats and sheep are sometimes kraaled with cattle, sometimes kraaled in the household compound, and sometimes kraaled separately. Transhumance provides some measure of control of kraal parasites. The main diseases are Pasteurellosis and Pulpy kidney, and the main parasitic conditions are goat mange and sheep scab and wireworm (*Haemonchus* sp.). Treatment of goats is less practiced than that of cattle. Small stock are herded by children separately from cattle, with the young being kept

behind. Goats provide milk, especially when cow milk is in short supply, and meat. Small stock are more readily sold than cattle, as discussed further below.

### ***Constraints***

The most important constraints are the following:

- Foot and mouth disease and the concomitant Cordon Fence, restricting animal movement
- Diseases like contagious bovine pleuropneumonia, botulism, brucellosis, anthrax, rabies, Anaplasmosis and black quarter occur.
- Distance from markets
- Farmers cannot penetrate livestock market chain and do not benefit from intermediary incomes and retailer profits
- Scarcity of transport
- Aridity of the region

### **Crop production (In Talevera et al 2000)**

Small irrigation systems exist along the seasonal rivers and along the Kunene river. (Crandall, 1992) Due to low rainfall, successful cropping can only be carried out under irrigation in the region. It is practiced at different scales and with different crops.

The largest irrigation scheme in the Kunene region is Etunda, which is supported by water from the Kunene river, and which is on the border with Omutsati region. There is a potential to expand the scheme to 1,200 ha from the present 600 ha. The potential for diversifying crops exists if markets could be secured. Practically, the scheme benefits people in Omutsati more than the Kunene. (in "Kunene integrated regional land use plan", 1998)

Along the Haub and Ugab rivers, farmers abstract water from sand and use it to irrigate small gardens producing mainly maize and vegetables for subsistence purposes. The gardens are small due to water limitations. The most well known gardens in the region are in the Seesfontein/Khowarib basin. There are community gardens, a government garden and individual gardens. They all use spring water from a number of fountains in the area (in "Kunene integrated regional land use plan", 1998).

Large dam sites with potential for irrigation have been identified in the region but in some cases there are no potentially irrigable soils nearby. The most promising dam site in terms of water yield is at Purros. This area is not densely settled and those people who are settled there have no cropping tradition despite the fact that they can be trained. Over and above all these, dams are not considered a good proposition in this area due to potential adverse environment effect they may create. Water remains the greatest constraint to cropping (in "Kunene integrated regional land use plan", 1998) This statement is in contradiction with Jacobsohn. Irrigated gardens have been developed at the lower Purros settlement, which consequently has been permanently occupied most of this decade. These gardens, in silt deposit along the river edge, are a major factor contribution to the present cohesiveness of the community. Gardening is done with

furrow irrigation, leading in water from the river, is a co-operative venture although individuals and families, Ovahimba and Herero, tend their own plots (Jacobsohn, 1988)

The controversial Epupa dam, if it should go ahead, will not create any opportunity for irrigation, as there are no potentially soils (in "Kunene irrigated regional land use plan", 1998)

Gardens are always located near a river or stream and also on flood plains. A garden located on a flood plain will receive water even if the rain is falling on the hills and mountains and not directly on the valley floor. If hard rain persists for a quarter of an hour or longer, inevitably the run-off will collect into the river beds and a swift and powerful rush of water will force its way down the river bed and eventually into gardens. Horticulture among the Ovahimba communities is dependent upon rainfall and flooding (Crandall, 1992)

Simple furrow irrigation is practiced where large springs are available (Malan, 1974; Paskin, 1990)

The Damara sheep is indigenous to Namibia and entails an important component of the total sheep in Kunene North. The sheep occurs in northwestern Namibia (Kaokoland) and southern Angola where they were herded relatively free from external influences by the local inhabitants (Himba and Tjimba). The name of the breed was derived from the specific region where the sheep were originally encountered (then known as Gross Damaraland) and should not be linked to a particular ethnic grouping.

Damara sheep can survive in a harsh environment and under poor nutritional conditions. The breed is exceptionally vigorous and can produce and reproduce where water and grazing is fairly restricted. This makes it very suitable for the communal areas of Namibia where extreme conditions are usually the norm rather than the exception. Research has however shown that the breed responds very well to optimum conditions. It is presently gaining popularity at an astonishing rate amongst commercial farmers. A substantial number has also been exported to South Africa and presently there is a strong demand for this genetic material in the USA. The reason for this being the fact that the production potential can be exploited with a very low input. The breed has established itself already as a so-called "no care" breed.

It has a fairly high resistance to most sheep diseases and also good tolerance against internal parasites. The sheep can walk long distances comfortably which of course contributes to its adaptiveness. It will cover greater distances than most small stock breeds to get to watering points, enabling the sheep to utilize grazing far away from the water. It has the ability to tolerate and even flourish under high temperatures.

The meat is very tasty. Intra-muscular fat contributes to juiciness and flavour. Since it is a fat-tailed breed, fat is localized in the tail. The latter can be very large and heavy if the sheep are run under optimum conditions.

The Damara sheep has a diverse diet. It feeds on grass, bush and shrubs and can almost be classified as a browser. Research has indicated that up to 64% of the diet of the Damara sheep can consist of browsing material. This places the Damara in the same feeding category as goats.



The mothering ability of the breed is exceptional. The ewes produce enough milk even to raise twin lambs which will occur in 5 to 10% of the births. They care well for their young and will even fight off predators when attacked by such. Orphan lambs are a rarity in the breed because of the outstanding mothering ability. It is known for example that ewes with small lambs can be transported over long distances without ending up with a single orphaned lamb.

Namibia has a very valuable asset in its Damara sheep. It should however be recognized and special efforts should be made to ensure the conservation and improvement thereof.

Cross-breeding to get bigger sheep will for example not only be detrimental to the Damara, but also to its owners. It will affect the low maintenance requirement of the breed, making it less hardy and adaptive. The integration of other mutton breeds into the traditional Damara sheep areas will also spell disaster since these exotic breeds did not develop in this harsh environment and will most definitely suffer when severe conditions prevail.

## References

- Anon. 1966?. A five year plan for the development of native reserves. Unpublished. Available at N.I.S.E.R Resource Centre, Windhoek.
- Bester, FV, L Ngauyake, ER Reed, CAJ Schoombe, WH Visser & WD von Wielligh. Undated. The Damara Sheep. Manual for extension workers. Ministry of Agriculture, Water and Rural Development, Directorate of Agricultural Research and Training. Windhoek, Namibia.
- Bollig, 1996. Power and trade in pre-colonial and early colonial times in northern Kaokoland, c 1860 to 1950.
- Coetzee, ME. 1998/99. Preliminary Agricultural Ecological Zones. Addendum to the Agricola. Windhoek.
- Crandall, DP. 1992. The strength of the Ovahimba patrilineage. *Cimbebasia*, Vol. 13: pp45-51, Republic of South Africa.
- Du Pisani, L. 2002. Unpublished data. Ministry of Agriculture, Water and Forestry, Namibia.
- Jacobsohn, M. 1988. Preliminary notes on the symbolic role of space and material culture among semi-nomadic Himba. *Cimbebasia*, Vol 10: pp 75-99., Republic of South Africa.
- Kunene integrated regional land use plan" 1998. In: Talevera, P., J Katjemune, A Mbinga, C Vermeulen & G Mouton. 2000. Farming Systems in Kunene North: A resource Book. Ministry of Agriculture, Water and Rural Development: Kunene North Farming Systems Research and Extension Unit.
- Paskin, RD.1990. A review of Agriculture in Kaokoland with special reference to animal husbandry and Veterinary Extension. Directorate of Veterinary Services, Ministry of Agriculture, Water and Rural Development, Windhoek, Namibia.
- RoN. 2001. Population and Housing Census.
- Talevera, P., J Katjemune, A Mbinga, C Vermeulen & G Mouton. 2000. Farming Systems in Kunene North: A resource Book. Ministry of Agriculture, Water and Rural Development: Kunene North Farming Systems Research and Extension Unit.
- Vigne and Associates. 2000.

Vigne, P. 2005. Reconsidering policies to encourage formal livestock marketing in the northern communal areas. Policy analysis & recommendations. NASSP Report No. 007/2005.

Vigne, P. 2005. Towards a National Small Stock Development Plan.