

VELD AND PASTURES IN ANIMAL PRODUCTION SYSTEMS IN THE WESTERN CAPE AND SOUTH WEST AFRICA / NAMIBIA

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Western Cape

The Western Cape represents the Winter Rainfall Area of South Africa (Fig. 1) and covers an area of 12 124 800 hectares. It is divided for agricultural purposes into 5 subregions viz. North West, Swartland, Boland, South Coast and Little Karroo. Agronomy, Horticulture and Viticulture are all important facets of agriculture in the Western Cape, but are mainly restricted to specific areas. Stock farming, however, occurs throughout the Region.

The following 3 production patterns exist. The first 2 are restricted to specific ecological regions.

- (i) Animal production in extensive rangelands (Karrooid veld types and coastal plateaux)

These extensive areas are, in spite of a low rainfall, important for animal production as can be appreciated when looking at Table 1. They include the North West, Little Karroo and parts of the Boland Subregion (Ceres Karroo). Some of the animals are kept on irrigated pastures.

Mutton types of sheep are used mainly in the arid areas with dual purpose breeds and pure wool breeds in the relatively higher potential areas.

The use of urea and molasses is recommended as a lick during the dry summer months for animals grazing on the veld (range).

Supplementary pastures are being used more and more, especially during the dry summers. Perennial drought tolerant crops like *Atriplex nummularia*, (Old Man Salt Bush) *A. Canescens*, *A. semibacata* and *Chrysanthemoides monilifera* are suitable for inclusion in the production system and should play a major role in the future. *Medicago arborea* (Lucerne Bush) is included in experimental plantings and is being evaluated at present. Annual drought evasive *Medicago* spp. and *Trifolium* spp. hold much promise and are used albeit on a limited scale at this stage. These legumes have a very short growing season, develop rapidly after rain and produce very valuable pods that are available for the sheep to pick up and utilize during the long dry summer spells. Annual *Lolium* spp. (rye grass) can be sown in the dry areas and used as a pasture with the legumes.

Drought tolerant and drought evasive cultivated pastures are becoming important factors in animal production in the low rainfall areas and will in future play an ever increasing role with further intensification of pastures.

Table 1

Stock numbers of the different subregions of the Winter Rainfall Area (Anonymous, 1979)

Subregion	Stock numbers			
	Cattle	Wool sheep	Mutton sheep	Goats
* North West	18 770	223 244	577 016	163 470
* Little Karroo	39 503	68 457	52 909	94 727
Boland	50 983	197 277	47 313	10 495
Swartland	105 917	591 489	6 965	6 139
South Coast (Rûens)	146 966	1 311 764	55 336	20 117

* Karrooid veld types

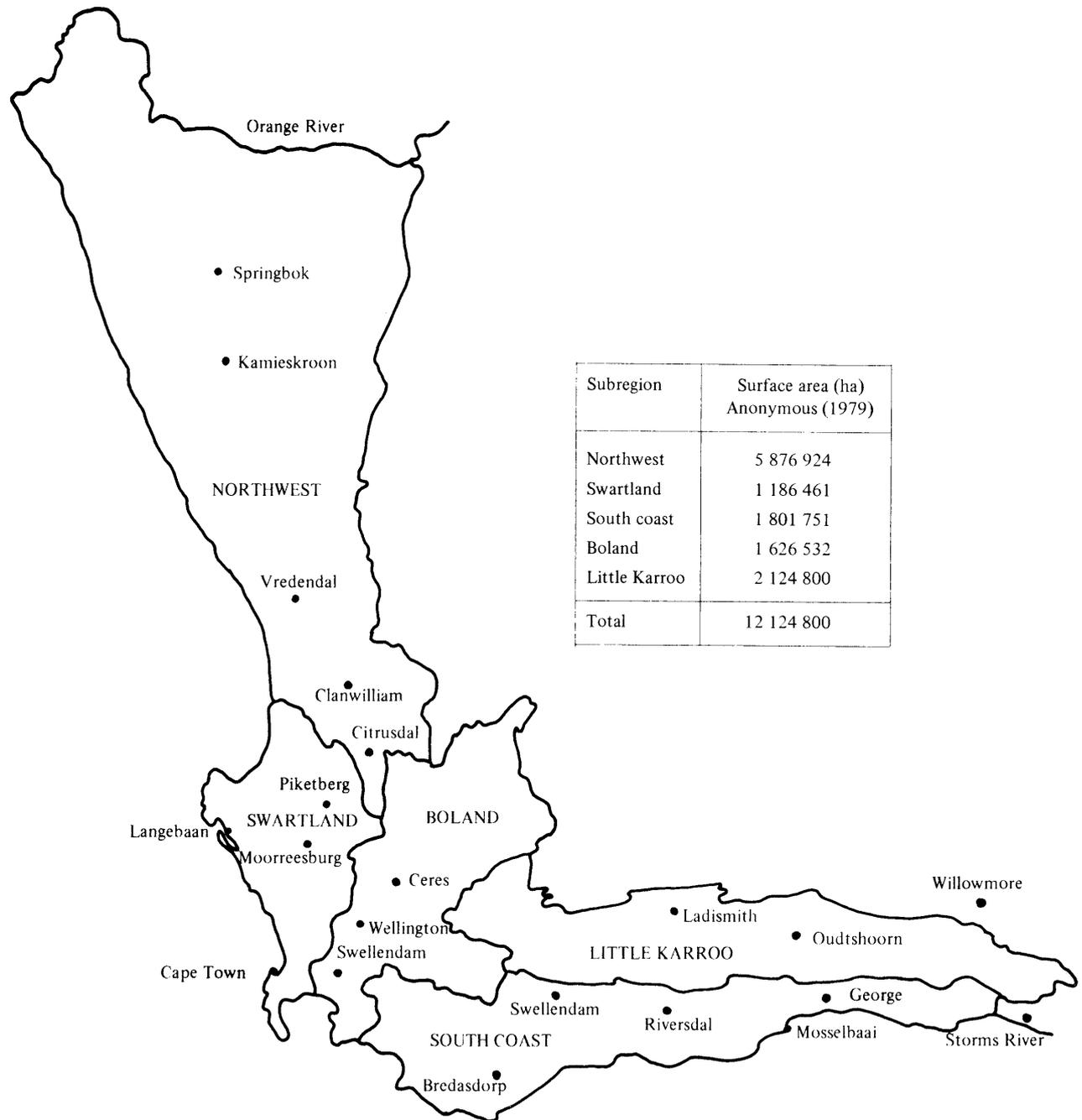


Fig. 1 Subregions of the Winter Rainfall Region

Only a small percentage of the farmers in the Karroid veld types and coastal plateaux apply judicious systems of management on their natural veld. One of the most significant results of poor range management is the decrease in percentage cover of palatable plants and an increase of non-palatable species. The average cover of palatable species in the Robertson Karroo is 19,5 per cent and that of the non palatable species 49,4 per cent. There are 344 different species of which only 133 are palatable (Joubert, 1970). The number of species and the frequency of the Compositae (Karoo bush) decrease is a result of selective overgrazing, but those of the *Aizoaceae* and *Crassulaceae* (vygies) increase (Van Rensburg, 1962). Where grazing systems are applied, the most common one is a three-camp rotational rest system.

There is much room for an increase in production by means of veld improvement. In its present condition the inherent capacity of much of the Little Karroo veld to improve is, however, unfortunately very poor. In an experiment in the Montagu district Joubert (1966) obtained a disappointingly poor reaction in terms of increased cover of the palatable veld components to rest and grazing during all the possible combinations of the seasons. The percentage basal cover of the experimental camps was determined during the spring of 1961 and again during the spring of 1964. The species were grouped together for comparative purposes into the following groups viz. vygies (mesems), edible karroobush, inedible plants (karroobush and others) and the rest of the species (grass, geophytes and annuals).

In general it appeared that the reaction of the veld to grazing treatments and rest was disappointingly slow. Certain interesting changes did, however, occur.

There was a significant increase in percentage basal cover of the vygies in the treatment incorporating no grazing (complete protection). As regards the other groups of species, the position remained virtually static and it is disappointing that there was no increase in edible karroobush. Due to the increase in vygies the mean total basal cover of the camps increased significantly.

The treatment "autumn grazing" had a most interesting effect on the veld composition. There was no change in the basal cover of the vygies, but a nearly significant improvement in that of the edible karroo bushes. The inedible plants (mainly karroo bushes, but others as well) showed a strong tendency to increase. As a result of the increase in edible and non-edible karroo bushes and other non-edible plants the total percentage basal cover also increased nearly significantly.

There was no change in veld composition in the 3 years in any of the other treatments, except for an insignificant increase in the vygie group in nearly all instances where the veld had growing season rest. The vygies have limited

value as pasture plants and compare unfavourably with the karroo bushes. They reacted as pioneer plants in this experiment which dealt with overgrazed pioneer veld.

The virtually significant increase in edible and non-edible karroo bushes in the camps that had intensive autumn grazing, was probably the result of the chipping of the hard soil crust by the sharp hooves of the sheep just before the winter-spring growing season. The chipped soil surface allowed better moisture penetration and created an improved seed bed for karroo bush seedlings to establish.

The natural recovery of much of the damaged karroid veld is impractically slow. It is therefore imperative to apply radical veld improvement methods to speed up recovery and production. As a result of a dominance of non-edible species the seedlings of edible species encounter very strong competition from the mature non-edible plants. Joubert & van Breda (1971), however, reported the successful reintroduction of palatable, drought resistant species like *Osteospermum sinuatum* in the veld by means of resowing coupled with a certain amount of soil cultivation.

(ii) Animal production in the dryland cereal growing areas (Swartland and Rûens)

Cereal production is a very prominent farming activity in the Swartland and Rûens. Animal production is, however, also very important as can be seen when examining the statistics in Table 1. Stock farming is practised on grass-clover pastures, stubble lands and on volunteer pasture plants in fallow lands and old lands. Stock (mainly sheep) graze rationally on those lands withdrawn from cultivation.

The carrying capacity of the pastures was previously boosted by *Lupinus* spp. (lupins). The fungus, powdery mildew (*Oidium* sp.), however, appeared on the scene some years ago and made it impossible to grow lupins economically. Subsequently *Lolium* spp (rye grass) *Medicago* spp. (medics) and *Trifolium* spp. (mainly subterranean clovers) have replaced the lupins to a large extent mainly in the South Coast (Rûens), but also to a lesser degree in the Swartland. *Medicago sativa* (lucerne) is often used in the pastures of the South Coast area. Sheep numbers increased in the South Coast, but decreased by 27 per cent in the Swartland from 824 752 in 1968/69 (Agricultural Census and Statistics, 1969) to 598 454 in 1978/79 (Anonymous, 1979). The disappearance of lupins has left a very large vacuum in the Swartland. As a result of the introduction of more grass-clover pastures cattle have become prominent in the South Coast Area (Table 1).

Some of the stock in the dryland cereal growing areas make use of irrigated pastures.

(iii) Animal production on irrigated areas (Not confined to regions)

Many different types of farming such as viticulture, pomology, etc. are practised under irrigation. The surplus water is mainly used for grass-clover pastures for the production of milk, wool and meat.

A number of perennial grasses such as perennial rye grass (*Lolium* spp), Kentucky 31 fescue (*Festuca* spp), *Phalaris tuberosa*, cocksfoot (*Dactylis glomerata*), Kikuyu (*Pennisetum clandestinum*) and others are used in pasture mixtures. Well known perennial legumes in the perennial irrigated pastures are lucerne (*Medicago sativa*), white clover, red clover and Palestine strawberry clover.

Quick rotation systems of grazing are applied to the irrigated pastures. At the Welgevallen Experiment Farm of the University of Stellenbosch between 7 and 14 Friesland cows graze permanently on a 1,2 hectare irrigated grass-clover pasture. A quick rotation strip grazing system is followed. An electric fence is used to restrict the cows to the grazing area. The pastures supplies the bulk of the ration, but supplementary feeding is also supplied.

It is not known precisely how many animals are being kept on irrigated pastures in the Winter Rainfall Region, but there is no doubt as to the importance of this form of animal production. It is obviously making an important contribution to the stock numbers of the different subregions.

South West Africa/Namibia

The rainfall of South West Africa/Namibia ranges from less than 100 mm annually in the West to 600 mm in the North East. It occurs from September to April (Weather Bureau, Windhoek).

Apart from the high rainfall areas in parts of Ovambo, Okavango and Caprivi, the precipitation in the rest of the territory is generally insufficient and too inconsistent for intensive farming systems.

In some areas the total rainfall is sufficient for the cultivation of crops such as mealies and sorghums, but because of its irregularity the cultivation of these crops as the sole or even main production system becomes a big gamble.

Extensive farming in the form of animal production from the veld is, therefore, the main production system.

The Keet Commission (1949) divided the veld types of South Africa into Savannah in the North and Steppe in the South. The Savannah in turn is subdivided into:

- a) The Northerly Subtropical Savannah.
- b) The Karstveld.
- c) The Damaraland Thorn Tree Savannah.
- d) The Kalahari Thorn Tree Savannah.

Cattle farming is the main production system in the Savannahs to the North. Some goats are also kept. Apart from the cattle and goats karakul sheep have become very important in the Central- and South-Eastern Savannahs. Karakul sheep farming is the most important facet of the production system in the Southern Steppes.

The biggest threat to a high and stable animal production in South West Africa/Namibia is veld deterioration over the whole Region and bush encroachment in the Savannahs which adversely affects the production capacity of the veld (Joubert, 1966).

Research has shown that the veld reacts very favourably to judicious veld management and improves readily from a poor condition, with a low vegetation cover and poor composition consisting of inferior pasture species, to a good condition with a high perennial cover of superior high quality pasture species.

Advanced Savannah deterioration and bush encroachment necessitates bush eradication, either by mechanical means, chemical spraying or fire (Joubert, 1966). Browsers like boer goats can also be used to control bush.

The latest most effective systems of veld management are based on the principles of high production grazing whereby controlled selective grazing of superior plants is practised with the object of increased production of high quality feed and increased production per animal. Relatively smaller stock numbers are used as compared to the greater numbers used when applying the high utilization grazing technique. The object of the latter is to limit selective grazing to the minimum, thereby increasing the percentage utilization of the veld and making it possible to increase the stocking rate and production per hectare.

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