

MERINO: History, Culture and Landscape

Chapter 10

MERINOS IN SOUTH AFRICA

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BACKGROUND AND BEGINNINGS

There is archaeological evidence that domestic animals, including sheep, reached southern Africa between 1500 and 2000 years ago, as a result of the gradual southward migration of baNtu peoples from central and eastern Africa. These sheep were of the fat-tailed, hair type like those found in south-western Asia, and are presumed to have descended from these Asian ancestors. Nearly two millennia of natural selection had resulted in sheep that were well adapted to conditions in the region. These were the Cape sheep encountered by Portuguese mariner explorers in southern Africa at the end of the fifteenth century, and as the trade routes to India and beyond were developed, ships would exchange goods for livestock with the local coastal inhabitants. Being the first Europeans in the area, the Portuguese founded their trading and revictualling enclaves on the best natural harbours on the west coast of Africa (Angola today) and east coast (presently Mozambique). Naval powers that came later had to use less favoured anchorage sites, including Table Bay near the southern Cape of Good Hope. They were led by the pre-eminent European nations who were trading with the East in the 16th Century, in particular the Dutch with their East Indies Company. By the mid-17th Century, the Dutch had made the momentous decision to establish a permanent station at Table Bay to serve as a half-way refreshment, re-supply and recovery base for their ships and sailors. And so in 1652 they began their 150-year occupation that resulted in the Cape Colony, with its headquarters in what was to become Cape Town.

The original intention was to grow cereals, vegetables and fruits and to obtain livestock by barter from the local Khoekhoen pastoralists. The rate of exchange for a sheep was a 'plug' of tobacco, a quantity of glass beads or a piece of copper wire the length of the animal. However, the system broke down every winter because the Khoekhoen practiced a form of transhumance and would trek inland with their stock, leaving no livestock available for the passing ships for several months until they returned. As a consequence, the first European

sheep were introduced in 1657, and because of theft and predators, were initially confined to the off-shore islands, where they failed to thrive.

After 1695 the Company officials were allowed to become independent and to farm for their own account, and for the next century their trade was mainly with passing ships in the form of meat. The colony slowly expanded as livestock farmers found that their surrounding veld was becoming depleted by continuous and excessive grazing and the quality of the pastures was reduced, forcing them to gradually drift away from Cape Town in search of new pastures and thus become pastoralists, always searching for better grazing further inland. Already by the 1750s, soil erosion and pasture deterioration were noted as concerns by the authorities.

These farmers came to rely on their own resources and their sheep formed their staple food; the skins were used for clothing and bedding, and the abundant fat for cooking, for making candles, a form of butter and soap. Although the Dutch Governors tried to introduce woolled sheep into the colony, these early efforts were unsuccessful due to resistance from the farmers who had firmly established these uses and who found it difficult to shear, transport and market any wool they produced.

Events in Europe changed this pattern toward the end of the eighteenth century. Monarchs were accustomed to giving and receiving expensive, rare gifts. The Spanish wool sheep, also known as the Merino, was famed for its superior, abundant fine wool, and the Spanish kings who had the monopoly of these sheep, even on pain of death for illegal exports, started giving away small numbers to fellow monarchs. Eventually the sheep came to be found in many countries in Europe, including Austria, Britain, Denmark, France, Holland, Italy, Prussia, Saxony and Sweden. Gifts of Merino sheep from the Spanish King Charles IV to the Dutch Stadholder Prince William V of Orange-Nassau were to have far-reaching consequences for the Cape, since the Merinos sent to the Netherlands fared badly in the cold wet climate.

The military commander of the Dutch garrison at the Cape at that time was Colonel Robert Jacob Gordon, of Scottish descent but very loyal to the Dutch Royal House of Orange. Gordon was a man of exceptional talents who saw the potential for these Spanish sheep at

the Cape and before 1778 suggested that they be tried at the Cape. The “Hollandsche Maatschappij tot Nut van het Algemeen” (the ‘Dutch Company for the Common Good’) agreed to this experiment and sent a few ‘Spaansche schapen’ to Gordon, who wisely kept them on Robben Island to protect them from predators and to prevent any interbreeding with the local fat-tailed hairy Cape sheep. This was the beginning of the saga of Merinos in southern Africa. These Merinos were also the first of the breed to be found outside Europe. On 10 March 1780 Gordon wrote to Hendrik Fagel, the Griffier (equivalent to the position of Chief Minister) of the Netherlands Estates General, that the ‘small number’ of Spanish sheep that Fagel had sent to the Cape had already increased to 13 and that the quality of their wool was still ‘as fine as that of the originals’. And in another letter to Fagel dated 14 April 1783, Gordon wrote that the number had increased to 40 and that their wool continued to do well.

References to this first flock have not been found again in historical records but in 1789 the Dutch authorities sent another consignment of 2 rams and 4 ewes to Colonel Gordon. These Merinos had come from the famous Spanish Royal Escorial stud. The sheep were kept on the Groenekloof Company farm, fifty kilometres north of Cape Town, the site of the current Mamre Mission Station, where they flourished and multiplied. However, two years later in 1791 the Dutch seem to have decided that this valuable gift from the Spanish King should never have been sent to the Cape and Colonel Gordon was ordered to return the Merinos. He complied, sending back 2 rams and 4 ewes, but since the order may have been vague, he omitted to send any of the progeny born in the Cape. In the next few years Gordon sold some of the Spanish rams to progressive Cape farmers, among them the Van Reenen, Van Breda and Reitz families who became prominent in the early development of the breed, either as purebred Merinos or by repeatedly back-crossing with the indigenous Cape sheep.

Then events in Europe again influenced matters at the Cape: the rise of Napoleon Bonaparte in France resulted in the invasion of the Low Countries and the Stadtholder, Prince William of Orange fled to Britain; this aroused alarm in England about the potential of French naval domination on the lucrative and strategic sea route to India should the French gain possession of the Cape, then still under Dutch jurisdiction. The British decided in 1795 to send a military expedition to take possession of the Cape, and on arrival announced that

Prince William had authorised the surrender of the Dutch garrison. In good faith, Colonel Gordon agreed to the surrender but then came under severe criticism and even accusations of treachery from the Cape Dutch community that eventually drove him to suicide. His embittered widow Susanna Nicolett decided in 1797 to move to England and to sell most of his Spanish sheep, and 29 animals were sold to the captains of ships on their way to Australia. These were Captains Henry Waterhouse of the *Reliance*, and John Kent of the *Supply*. On arrival in Australia, the surviving sheep were sold, some going to Captain John Macarthur who kept them pure and thus laid the foundation of the Merino in Australia. The descendants of these sheep can still be seen at the Elizabeth Macarthur Agricultural Institute at Camden, Paramatta, near Sydney. This flock is closed so the sheep give a good idea of the appearance and characteristics of the Spanish Merinos of the early 1800s. In time these sheep contributed to the development of the Australian Merino.

In South Africa, the breed was initially slow to become popular and the new British Governors took steps to encourage their adoption as a preferred livestock option by waiving the duties and taxes on Spanish sheep and their wool in the Colony.

SPREAD AND GROWTH

Even so, it took some time for the large-scale adoption of wool farming to occur since the Cape farmers preferred to farm sheep for their meat and skins, and they prized the abundant fat for cooking, making candles and soap and a form of butter. In addition, they lacked the skills, labour and facilities to shear and scour wool, or the systems to pack and transport the wool to far-away markets in ox wagons along bad roads. However, the burgeoning market for quality wool seemed insatiable in Europe and entrepreneurs began to demonstrate that there were good, reliable profits to be made from wool sheep, far greater than from the indigenous fat-tailed Cape sheep. This resulted in a surge in the conversion to wool sheep in the form of the Spanish Merino, and a significant increase in sheep numbers at the expense of horses and cattle. The increase was also accelerated by horse sickness and lung disease in cattle. From just 1.5 million sheep recorded in the Cape Colony in 1806, producing a negligible wool clip, numbers and production grew rapidly. The Merinos spread from the western part of the Cape Colony to the east where conditions were highly favourable for them. This movement was hastened by the arrival of the British

settlers of 1820 in the eastern regions, many of them with a gentleman-farmer background and appreciation of the Merino, and by 1840 wool was recorded as the major export of the Colony by value and has remained a major livestock agricultural export of South Africa ever since. Sheep numbers in the Cape Colony, dominated by the Merino and its close derivatives, illustrate this increase: by 1855 there were 5 million sheep producing 12 million pounds of wool; by 1875, 10 million Merinos produced 28 million pounds; and in 1891, 13.5 million sheep produced 45 million pounds of wool.

By 1840, farmers with their livestock had spread north and east, opening up new regions, some of which were suitable for Merino sheep, and boosting numbers further in the unified South Africa after 1910. By 1920, the Cape Province had 15 million sheep producing 58 million pounds of wool, and in 1930, 20 million sheep produced 110 million pounds. Growth in Merino numbers in South Africa reached unsustainable levels of just short of 50 million sheep, with peaks in the 1930s and 1950s. Numbers were reduced to sustainable levels thereafter when the effects on the veld of over-stocking became obvious. Livestock theft and predation also contributed to falling livestock numbers, particularly sheep and goats. Today, some farmers have been driven to sell out all their livestock, and many farms have been converted to wildlife farming. Nevertheless, Merino farming continues to be a major and profitable enterprise in areas where conditions are suited to the requirements of the breed.

Currently in 2020 there are around 22-25 million sheep in South Africa of which 15 million are wool sheep. Most of the wool sheep are Merinos, producing about 45 million kilogrammes of wool annually, worth about 5 billion South African Rands. The value of meat from wool sheep, however, is estimated at twice that figure, since sheep meat is prized in the country and sells at a consistent premium. Merinos today are expected to yield lambing percentages over 100% and to shear 4.5 kg or more greasy fleece yield per sheep, with an average fibre diameter of 19-21 micron. This should be contrasted with just 1 kg per sheep in the 1850s, and 3 kg in the 1930s. The modern Merino in South Africa is a much more efficient and productive animal than its predecessors, and together with its ancillary economic effects continues to be an important factor in the national economy. The mountain Kingdom of Lesotho, completely surrounded by South Africa, is the only other

country in southern Africa with a significant wool sheep industry. Most sales are conducted via South Africa. The Merino sheep in Lesotho continues to improve and constitutes a major source of income for small scale, communal farmers.

BREEDING, BREEDS AND GENETICS

Wool sheep continue to predominate as the major breeds group in South Africa and the Spanish Merino is the most prominent of these breeds. There are several derivative breeds that have their origins in the Merino, augmented over the years by many importations including the Spanish Escurial, Negretti and Paula strains, the French Rambouillet strain, the Saxony Merino and the Vermont types, and later major importations from Australia of mainly Peppin and Wanganella types from Tasmania, South Australia, Victoria and New South Wales. The German Merino (the product of Merino Precoce, Leicester and Mele crossings) became the SA Mutton Merino, and a cross between this breed and the Dorset became the Dormer. Major variations of the Merino include the Döhne Merino (which originated as a crossing of Mutton Merinos and the Merino), Grassveld and Polled Merinos, Geelbek and Letelle sheep, as well as Afrinos and several other minor breeds. Each is suited to specific environments or situations. Breed societies and breeders' associations exist for the major breeds, the oldest being that for the Merino, known as the Ram Breeders' Association, which was established in 1937 and has continued under different names to the present. The majority may allow breed judging and competition at Agricultural Shows, which often leads to evaluations being based on looks rather than performance. Döhne Merino breeders, however, do not allow judging of sheep at shows and do not have breed Standards that encourage breeding for characteristics that do not support sustainable, profitable farming.

In the earlier days, stud farming was the accepted practice, based on subjective evaluation, prizes at shows and ancestral lineages in the form of stud books. While this may have had some advantages, breeding on ancestry and shows had decided disadvantages of proliferating the genes of maladapted sheep that were ill-suited to their environment and did not contribute sufficiently to the productivity and profits of commercial farmers. There was a growing realisation that selection and breeding must be based on objective, measurable performance under practical circumstances, in proportion with the relative

financial value and contribution to sustainable, profitable farming of each measured item. Visual and manual appraisal may continue to play a minor role after objective measurements have been made and animals ranked accordingly but the 'hand and eye' method of appraisal is no longer given much value and objective analysis and measurement continues to receive more emphasis. The measurements are refined into formulae that are based on the economic value of each of the criteria used, combined into an index of breeding value known as Estimated Breeding Value. The more criteria that are included, the slower the genetic progress will be. However, by concentrating on the biggest drivers of profitability, real progress can be made. In South Africa, because of the crucial role of meat in financial viability and of genetic variability to selection and genetic progress, the fecundity and mothering abilities of the ewe flock are of paramount importance. Financial realities have resulted in an increasing awareness amongst all breeders that this approach represents the best way to optimise genetic selection and culling.

Success is clearly demonstrated in the national supply of sheep meat increasing almost two-fold over the period 1994-2018, despite a constant or falling number of sheep nationally. Wool production per sheep as well as quality has continued to improve. Although these changes can also be attributed to improved nutrition and management, genetic improvement has played an important role. Because selection relies on genetic variation, large numbers of breeding animals are required for significant genetic progress to be made. Most farms do not carry enough sheep for this purpose to be optimal and this has led to the formation of very large Group Breeding Schemes that comprise the combined genetics from many farms, with agreed breeding objectives. A tier system allows crosses between elite ewes and rams that thereafter become available for purchase by Group Scheme members.

The role of hardiness must also be considered. Sheep that produce well only in pampered conditions with excellent nutrition are highly unlikely to do well in commercial, often unfavourable conditions. Therefore, the practice of measuring ram and ewe performance under practical conditions with minimal supplementation has become a popular way of evaluating the genetic suitability of breeding stock. The groups doing this are known as Veld Ram Clubs, where young rams of similar age from different breeders are run together on natural pasture for several months and then evaluated on a common set of criteria based on

relative economic values and anonymously indexed before being offered for sale. The index may include resistance against certain diseases, or these values may be made available separately. Increasingly, more specific direct genetic identification is being used by pioneer farmers as advised by geneticists. Best Linear Unbiased Prediction and the implementation of genomics has led to estimates of direct genomic value and breeding value indices for greater precision in the evaluation of genetic worth, and thus which animals to prefer for breeding. Estimated breeding values are increasingly available along with relative economic values and indices for rams offered for sale. Over the years, the South African Merino has been bred to suit local conditions and to provide a balanced, dual-purpose sheep for farmers.

ORGANISATION, STRUCTURES AND LAWS

The first known organisation that was formed to promote agriculture in general in South Africa dates back to the 1790s, then in the 1820s in sheep country at Graaff-Reinet, followed by many more elsewhere, so that by the 1830s there were several farmer-led societies and associations promoting agriculture, including livestock. Proclamations and laws issued by Dutch and then British Governors sought to regulate livestock-related matters including sales, movement and disease control. Several attempts were made to promote Merino farming and stud breeding and the colonial Governors lent support on many occasions. In 1906, a Woolgrowers' Association was created in Port Elizabeth, the major wool exporting harbour city, but it had little effect. Local wool sheep associations were formed in many districts, culminating in a decision to amalgamate these into a single national body in 1926. This led to the formation of the National Wool Growers' Association (NWGA) in 1929, as the voice of wool farmers nationwide. In 1930, an advisory Wool Council was formed which subsequently led to the establishment of the statutory South African Wool Board in 1946. These two bodies continued to deliver complementary services to the wool industry until 1998 when the dissolution of the Wool Board led to the formation of Cape Wools, the Wool Trust and the Wool Forum to fulfil some of the Board's functions. The NWGA continues to provide dynamic leadership and unique services to its membership that includes over 2 700 commercial and 30 000 small-scale communal wool farmers. These services include production advice, training in aspects of sheep health, breeding, shearing, classing and packing wool, marketing, and predation management.

Concurrently there was the creation and development of breed societies to promote breeds, the Merino Breeders Association being formed in 1937. Marketing of wool was done through a variety of brokers, some small and others very large. There was a compulsory wool levy to finance operations between 1929 and 1998. South Africa joined other countries in the formation of the International Wool Secretariat in 1937 but withdrew in the 1990s. Other support for farmers was provided by the establishment between 1898 and 1911 of several Agricultural Institutes in various regions of South Africa. These still serve to train aspirant farmers, provide extension services to the farming communities, and undertake research appropriate and needed in their area of service. Additionally, there are agricultural departments at several universities that provide education for technologists and scientists, and one national veterinary faculty.

Legislation relating to sheep dates back to the Dutch era (1652-1795), regulating the movement, taxation and disease control of livestock. In the British era (1795-1910), this legislation included animal welfare, starting in 1856. The range of legislation has continued to expand, covering aspects that affect animal diseases, breeding, identification, movement, welfare, theft, predator control, remedies, feeds, slaughter and soil conservation.

Parliamentary Acts are supported by Regulations in many cases. There are also official Standards relating to the transportation of livestock and conduct of sales yards. Sectoral organisations like the NWGA and Cape Wools have drawn up Codes of Best Practice that set out the expectations of purchasers and consumers that must be met by compliant farmers and that also serve as a legal basis for evaluation of performance. These codes have recently been replaced with standards like the Sustainable Cape Wool Standard, Responsible Wool Standard, ZQ and Abelsoni, recognised and supported by leading international brands.

FARMING PROBLEMS AND SHEEP DISEASES

Degradation of the natural indigenous vegetation (veld), followed by reduced carrying capacity for productive livestock and by soil erosion has been an enduring problem for over 300 years. The causes were hotly debated for many years because changes might be slow and not easily seen, and not correctly attributed to the underlying causes. The original system of transhumance most closely resembled the natural grazing system of wildlife

grazers and browsers, based on movement from nutritionally exhausted to fresh, rested pastures. Overstocking (too many livestock in a given area) certainly seems to have played a role but the consensus of evidence available from research conducted by pasture scientists for over a century now is that the most important determinant of veld condition and change is how the grazing of the veld is managed, to resemble the natural system in place before domestic animals were introduced. Droughts, floods and fires certainly have an influence, but these are natural realities that have to be accepted and managed. Single-species grazing is another factor that militates against optimal utilisation of complex pastures like natural veld, since each species has its own preferences and utilisation patterns.

Veld management on individual farms requires the separation of pastures into paddocks (or 'camps') and this requires effective fencing which is expensive especially in arid areas with large camps, and only began when the requirements that arose from predator control, stock theft and disease management made the erection of perimeter fences necessary. Without internal fencing, that in turn necessitates separate water supplies and other facilities, no management is possible, so the central question became the number of camps needed and how they were to be managed. Many competing veld management systems have been suggested, tried, applied and advocated, and farmers can be confused by these different approaches. However, it appears that the underlying most successful management systems must apply short duration, high intensity grazing followed by an effective growing season rest period. Multispecies grazing is advantageous, while judicious and planned veld burning may be applied, and farmers must be ready to change stocking rates in time, depending on rainfall and veld condition, which in turn needs systematic assessment of its species' composition, dominant plants, seedlings and erosion. Farmers who apply these principles see their veld improve over the years and this leads to higher carrying capacities and sustainable higher profitability.

Predation has been a problem facing livestock owners from the time that domestic animals were introduced. Originally the solutions used were to kraal (corral) livestock overnight and keep them under the close protection of herders during the day. The remains of the stone-walled nightly enclosures are still visible throughout the country, attached to tiny huts where herders would have been available to protect the stock from predators. The

availability of firearms after 1652 led to the progressive decimation of large predators and eventually resulted in their elimination from most areas of livestock farming. This however did not end the problem, it merely transferred it to their smaller carnivore successors, particularly the black-backed Jackal and the Caracal. These problem animals proved much more wily, adaptive and resilient, and they have survived decades of predator-proof fencing, traps, hunting dogs, poisoning and shooting. Some farmers have adopted non-lethal predator management measures that preserve the balance of ecology, including predation. The more successful have been guard animals such as dogs, alpacas and donkeys. Kraaling, electric fencing and adjusted lambing seasons can also be of benefit. Non-lethal management is in harmony with consumer expectations and promotes the 'green' image of wool and other sheep products.

Theft is another intractable problem of livestock farming since the earliest times. Currently, besides legislation and stock theft police units, farmers are encouraged to report all cases, permanently identify their animals as required by law, take extra precautions and invest in stock movement sensors on some of their animals so that untoward activity that may indicate theft can be detected at any time. Drones are also being used as a way of detecting suspicious activity and stock theft. In some circumstances, farmers have been forced to return to nightly kraaling and daily shepherds.

The marketing of wool can be problematic, especially when embargoes are imposed on wool imports as a result of disease outbreaks, even when wool poses no disease threat to the importing country. Another potential trading obstacle is the perception amongst consumers of unsatisfactory sheep welfare practices. This is counteracted by strict guidelines set out by Cape Wools in their Sustainable Cape Wool Standard, and by mandatory Mules-free Certification that farmers are expected to support and adhere to. There are a large number of sheep diseases in South Africa, including most that are encountered elsewhere in the world. In addition, there are important diseases and problems that are largely or totally confined to Africa, including an array of toxic plants. In the majority of cases, these plants become a problem as a direct or indirect result of faulty grazing management practices. Degradation of veld can encourage less palatable, toxic plants to become dominant and sheep have no option but to consume dangerous amounts.

In other cases, pioneer plants have greater scope for growth, proliferation and availability to sheep as a result of pasture denudation. Some toxic plants are only a problem at certain times of the year, so the best strategy is to avoid grazing those areas where they are prominent at the times of greatest danger. Good veld management in most cases is the key to limiting losses from toxic plants.

Apart from the globally widespread problem of sheep scab, which has not been eradicated in South Africa despite efforts going back 300 years, there are several tick species that cause health problems that include direct damage, disease transmission and toxicity. These are best controlled by the use of holistic integrated programmes and not by the exclusive reliance on ecto-parasiticides. Blowfly strikes constitute a major challenge to wool sheep farming but breeding for plain-bodied animals (that have very little skin pleating) and that are not susceptible to strike has allowed South Africa to discontinue and prohibit the controversial Mules Operation that is used to prevent strike elsewhere. Of internal parasites in wool sheep, the *Haemonchus contortus* parasite is by far the most dangerous. Overuse and misuse of anthelmintics has resulted in severe and widespread drug resistance. The situation has been counter-balanced by implementing integrated management that includes correct pasture management, breeding sheep for worm resistance and resilience, effective monitoring of worm infection, and limited treatment of flocks based on necessity, via targeted selective treatment. There are also other endo-parasites of a more limited impact on Merino farming.

Three infectious diseases that are not found or have limited prevalence on other wool-farming continents are serious problems in South Africa. By far the most important is Blue Tongue; it can cause severe losses. The availability of a tri-valent vaccine containing the most virulent and important strains renders Blue Tongue a minor problem, provided the vaccine is used correctly. Additional measures include avoiding low-lying areas where the vector midges breed in summer, or only releasing the sheep from sheds after the midges have become inactive or applying insecticides at times of greatest risk.

Rift Valley Fever only becomes a widespread and severe problem during years of higher rainfall suited to the proliferation of the vector, mosquitoes. Since these years are

irregularly and unpredictably spaced, farmers tend to forget the bad years and fail to vaccinate, resulting in a fully susceptible population and another outbreak. The vaccine is very effective if used correctly.

Heartwater affects cattle and goats as well as sheep. This complicates control measures that may include the control of the vector tick as well as vaccination. A promising new vaccine is under development but is not yet available for commercial use, while the existing 'vaccine' has many limitations. This vaccine must be kept frozen on dry ice until use when, after thawing, it must be administered intravenously without delay. Livestock must then be monitored daily for a fever reaction for 3 weeks or more, when they have to be treated or they are likely to die. The geographic distribution of this disease has in part determined where wool sheep can successfully be farmed in South Africa.

WOOL SHEEP FARMING SYSTEMS

A tiny number of sheep farms are based on intensive artificial pastures and whole mixed rations or supplements, but the great majority of wool sheep are either part of mixed farming that may include crops and cattle or based almost exclusively on natural pastures. Where crops can be grown, integration with livestock is usually financially beneficial. The residues available after harvesting the crop can be utilised by cattle or sheep as cheap fodder when other roughage may be scarce or of low value. Sheep will find and consume virtually all residual grains and seeds, thus cleaning the land before the next rotational crop is sown. Combining crop and livestock farming lowers risk and improves cash flow. In winter rainfall areas the crops are mainly wheat, barley and oats, alternating with lupins, clovers or other crops. In summer rainfall areas the main crops are maize, sorghum, sunflowers and soya beans in rotation. In both areas grazing is supplemented by sown pastures that also can either be dried for hay or preserved as silage, to be used to bridge periods of deficient grazing or to be kept as an emergency reserve for droughts or fires. Any natural grazing is also utilised at times when it is most nutritious.

Since over 65% of South Africa can be regarded as arid or semi-arid, and 85% unsuited to arable farming due to aridity, mountains and rocky soil, these areas are best suited to utilisation by ruminants. Natural grazing has to be utilised according to local conditions and

the complexity involved. A balance must be found between profitable animal performance and veld conservation using controlled grazing systems that are based on high intensity, short duration grazing and effective resting in the growing season. Occasional controlled veld burning may be needed in some circumstances, and frequent evaluation of veld condition is essential to establish whether the condition is improving or deteriorating. Good management is accompanied by sustainable, ecologically sound use of natural grazing and thus acceptable, reliable profitability.

The conversion of the indigenous fat-tailed non-wool-bearing Afrikaner sheep to Merinos led to profound changes in the character of farming in South Africa. It created stable incomes and started a commercial farming economy that led to a wool boom between 1840 and 1870, and again in the 1950s. The wool exports were a turning point in South Africa's economic history, influencing the growth of trade and the development of harbours and railways. The importance of the Merino wool was only overshadowed later by diamonds and gold. Wool sheep farming based on the Spanish Merino continues to form a cornerstone of the livestock industry in South African agriculture.

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