

BREEDING POLICIES AND PROGRESS IN RELATION TO WOOL AND MEAT PRODUCTION IN THE REPUBLIC OF SOUTH AFRICA

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Summary

A changing environment has governed breeding policies in respect of wool and beef production through the 323 years of white rule in South Africa. The indigenous sheep and cattle, which sufficed to meet the needs of the original tiny settlement and the **rigours** of expanding frontiers, followed by stock and breeding fashions from abroad are today giving way to locally produced breeds and policies with, adaptability geared to efficiency of production as the keynote. Modern science and technology involving performance testing, progeny testing, A. I. and the exact evaluation of breeding merit are the tools in use with increasing emphasis on augmentation of food supplies.

I. INTRODUCTION

An invitation to present a paper on a topic of this nature sets a rather challenging task in many ways. Firstly, the term "**breeding policy**" has rather wide connotations in practice. Some appear to regard it purely as a kind of **breeders'** gimmick or cliché while in more technical circles it is assumed to imply a well-defined and organised breeding programme, based on systematic selection for clearly specified and measurable traits. For purposes of this discussion a compromise is convenient and the term will carry a wider meaning than the technical one. Secondly, those familiar with the complexity and deversity of the livestock industry of South Africa with its unique and wide range of indigenous and exotic breeds and types will appreciate the necessity of defining also wool and meat for the purposes of this paper. Wool will refer to white, unpigmented and unmedullated fibres with a diameter of less than 30 micron thereby excluding many of the fibres unfamiliar to most **Australians** such as **Karakul-wool** or wool of **certain** very coarse crossbred carpet wool types. Meat shall **mean** only beef and veal. Mutton, pork and flesh from poultry, rabbits and game will not be considered.

Historically, several important factors contributed to past and present animal breeding policies and production trends in South Africa. Some of these were incidental while others arose from rather unusual circumstances. Firstly, in contrast to other countries of the Southern hemisphere, indigenous sheep and cattle were present when the first European settlers arrived on the sub-continent of Africa in 1652. The original object of the settlement was to establish a small **victualling** station for ships of the Dutch East India Company (D. E. I. C.) passing the Cape. Secondly, the **colonisation** of the isolated and inhospitable hinterland ("**out-back**") was left to pioneer **stockmen** as was also the case in Australia. Thirdly, the presence and ravaging effects of several serious endemic animal diseases, particularly in the higher rainfall and potentially better livestock regions of the country confined the sheep and beef cattle industries

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largely to the environmentally less favourable and semi-arid regions of the country. Furthermore, marauding native tribes, unsettled civil conditions, wars (particularly the Anglo-Boer War) as well as the disastrous effects of prolonged droughts, floods, etc. caused serious disruptions at times of efforts to increase and improve livestock production. Consistency of government policy was also not exactly a conspicuous feature of the earlier regimes.

The numerical status of sheep and cattle and production statistics for wool and meat are given in the following table -

Cattle and Sheep Numbers, * Beef** and Wool Production*** (1974/75)

Cattle (m)	Beef & Veal (m kg)	Wooled Sheep (m)	Wool (m kg)
8,7 ¹ (13,2) ²	360,1	22,1 ³ (34,0) ⁴	95,1 (101,4)

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1 White-owned cattle including 1,2 dairy cattle.

2 Includes all cattle in the R. S. A.

3 White-owned merino and merino type. (Merinos constitute 85%).

4 Includes all sheep in the R. S. A.

II. BREEDING POLICIES AND WOOL PRODUCTION

Past and present breeding policies associated with wool production can be grouped as follows: .

- (a) The first phase was purely a quantitative expansion of the sheep population by early settlers. The original indigenous sheep (and cattle) were owned and kept in small flocks (and herds) by tribes of primitive, nomadic Hottentots inhabiting the south and south-western coastal regions of the continent. Soon after the first settlement was established indigenous animals were obtained through bartering (Theal, 1910). These native sheep were of a hardy, fat-tailed type with poor mutton conformation, being leggy with flat flanks and a shallow barrel. They were furthermore characterised by a hairy covering consisting of a coarse glossy outer coat and an inner coat of fine wool fibres. Hardiness and availability were the prime factors in their favour. They soon proved popular and served the purpose for which they were acquired.
- (b) The second phase was associated with the importation of sheep and development of South Africa as a producer of fine wool. The first recorded importation of sheep occurred in 1657 (Thorn, 1936) when the D. E. I. C. introduced woolled sheep from Holland. This importation was soon (1658) followed by a small shipment of coarse-wooled sheep from India. Apart

from their historic interest, it is safe to conclude that the most important impact of these early importations on the sheep industry was the fact that they created a long lasting prejudice against **wooled** sheep among early settlers, who claimed inter alia that they were more susceptible to disease and stress **conditions** and therefore inferior to the indigenous sheep. The foundations of the wool industry were laid in 1789, when Col. Gordon, military commander of the D. E. I. C. at the Cape, obtained the first Spanish merinos (two rams and four ewes) from the Dutch government (Thorn, 1936). A few local sheep farmers acquired three rams and two ewes from Col. Gordon before his death and dispersal sale in 1795 and it seems that these merinos were used mainly to upgrade indigenous sheep. Through the initiative of some local farmers subsequent importations of **wooled** sheep soon followed – Spanish merinos from England, Saxony merinos from Germany and Rambouillets from France. The earliest importation from Australia dates back to 1827, when a Swan River colonist settled in South Africa with his Australian sheep. **This** was followed later by intermittent importations of varying numbers particularly of the Saxony type, nearly all coming from leading studs in New South Wales (Thorn, 1936). The Saxony type imported from Germany was a small-bodied sheep with very fine wool. Although sought after they proved less adapted to local conditions than the Saxony merinos imported in increasing numbers from Australia.

Owing to the fact that wool was bought on a **unscoured** or greasy weight basis, a sector of the industry started **breeding** sheep with heavy fleeces during the second half of the last century. This development encouraged the importation of Rambouillets during the 1870–80's and finally culminated in the popularity of the excessively overdeveloped (wrinkly) and greasy Vermont strain of the U. S.A. Sayette wools produced by these strains were in demand at the time but it is doubtful whether breeding **policies** were then (or ever) much influenced by the textile trade. The Vermont strain had a tremendous impact on all levels of the local sheep industry. Realisation of how breeding policies can alter the make-up of the sheep population was profound and when the unsuitability of the strain, on account of its susceptibility to blowfly strike, led to its eclipse no message could be clearer – unless such policies are proven near-national disaster can ensue. The Vermont era was followed by growing importations from Australia, mainly from the **Peppin-merino** strain, which continued until the Australian Government placed an embargo on the exportation of merinos in 1929.

- (e) The third phase led to the development of local strains within the merino or within crosses of other **wooled** sheep breeds, among themselves and with the merino. There can be no denying the fact that up to and for several **years** after the Australian embargo the general breeding **policies** followed in South Africa remained strongly influenced by those of Australian breeders, more particularly by those of the **Peppin-merino (Wanganella)** studs. The few truly closed studs date back to the time of the embargo and it **is only in recent** years that local strains have gradually emerged from within the industry. The Grassveld merino and two polled strains, the Letelle and **Kaffrarian**, are the best known. In

contrast to the standard merino the emphasis is put on duality of purpose. The Walrich merino, is another dual purpose merino type, developed through crossbreeding of the merino **Précoce** (originating from indigenous French sheep and Leicester x Rambouillet crosses) and plain-bodied merino ewes. This development of different strains and new breeds is evidence of the local divergent views on the breeding of merino sheep, Australian merinos (in passing) show interesting differences in respect of better belly coverings, drier wool (less yolk) and more difference between strains in body size and wool type.

- (d) It is important to recognise the influence of promotional bodies on breeding policies. The "**Society for the Promotion of Merino Sheep Breeding**", founded in 1831, was an example of such a body. Several stock companies have since been engaged in promoting stud breeding particularly by encouraging importation of sheep. Flock histories published in the first volumes of the South African Stud Book indicate that several studs were established early in the 19th century but it was not before the advent of individual recording of the parentage of stud sheep by members of the Merino **Breeders' Association** through the South African Stud Book Association (S.A. S. B. A.) established in 1905, that merino stud breeding began to assume a formal shape. Individual recording, however, fell into disuse during the **early** twenties and a system of flock registration was introduced.

The Merino Association has since developed into a strong organisation with more than 800 members, 200 000 stud ewes (average of \pm 250 per stud), selling approximately 62 000 rams annually and dictating to a large extent the current views and breeding policy to the majority of merino studs. In recent years five top or master studs dominate the merino stud industry to the extent that they supply directly or indirectly through daughter studs, approximately 80 percent of the breeding material (Merino Breeders' Association of South Africa – personal communication, Oct. 1975). The relatively 'small size (300 – 400 ewes) of at least three of these studs as well as the traditional popularity of inbreeding, makes it reasonable to assume that significant levels of inbreeding have already been reached. However, with developments, such as the introduction of objective measurement in the wool trade, the acceptance in principle of performance testing as an aid to selection by the Merino Breeders' Association as well as its recent application to renew its affiliation to the S.A. S. B.A. (which elapsed many years ago), etc. , important changes may be expected which could have far-reaching effects on traditional merino breeding policies. Support for this contention also emanates from a growing interest in co-operative breeding schemes and an active group of merino breeders **operating** under the banner of Performance Tested Merino Breeders who encourage and propagate modern breeding methods and selection techniques.

- (e) State involvement in general sheep production has always been important. **It's** impact on breeding policies, however, is not always easy to assess. The **importation** of sheep and establishment of State breeding farms early in the 18th and 19th centuries (e.g. Groenkloof and Groote Post) and later

at different agricultural colleges and institutions, ensured active engagement in breeding over a long period of time and therefore also an influence on breeding policies of sheep farmers in general. The importation of the German Merino (now named the Mutton Merino) by the State in 1932 was not only an important contribution to the sheep industry but also to the concept of dual purposeness in the local merino world. The quality of the wool of the Mutton Merino has been improved to the stage that this breed and its crosses today rank second to the merino. Through crossbreeding research efforts by the State two new breeds have been developed from the merino viz. the Dohne Merino (Mutton Merino x merino) - a dual purpose wool/mutton breed for the Eastern Grassland regions; and the Dormer (Dorset Horn x Mutton Merino) - a dual purpose fat lamb/wool breed for the intensive region of the Western Cape. Results from research work, particularly that of **Bosman** during the thirties and forties, had an important and far-reaching influence on breeding policies. Although the controversy over plain-bodied versus developed (wrinkly) sheep has been kept alive in **breeders'** circles ever since the Vermont era, the results of 'investigations by **Bosman** (1937, 1941a, 1941b) on these two types led to a selection experiment by the State in 1941 in which two closed flocks of sheep were involved - one plain-bodied and one with body folds. The result, proving the superiority of the former, no doubt also encouraged the development of the Grassveld Merino in the Eastern Transvaal. **Bosman's** work on wool initiated the first efforts to provide wool and fleece testing services in South Africa (**Bosman**, 1936) in 1934 but he was too much ahead of his time. Because of a lack of supporting field staff and the interruption caused by the war very few breeders availed themselves of the service. Thirty years later the Department of Agricultural Technical Services introduced a reorganised and more comprehensive testing service as well as a Fleece Testing Scheme for stud breeders of **wooled** sheep breeds. While the support of the present scheme (65 active members) and the wool testing service (12 000 samples per year) is still disappointing (admittedly it was launched during a depression in the wool industry), the fleece testing laboratory has certainly served a valuable purpose in various ways, not least in assisting to prepare the industry in time for the acceptance of objective measurements of wool as a criterion of certain quality characteristics.

The indications quite clearly suggest that sheep production, both wool and mutton/lamb will have to be intensified in certain regions of South Africa, in some instances through the replacement of existing breeds and types by more efficient wool and mutton/lamb producers. Furthermore, it is **quite** incomprehensible why merino breeders in South Africa have ignored the mutton qualities of their sheep when lamb and mutton prices have consistently been higher than that of any other meat. With this in view the State is at present engaged on two large scale projects involving eight **white-wooled** mutton breeds. The first project investigates the suitability of crosses and combinations with the merino in comparison with a group of pure merinos selected for growth rate (weaning live weight) and wool yield, while the second seeks to develop a **white-wooled** male line for crossbreeding with merino females in the arid zones. The undesirability of contaminating merino fleeces with hairy fibres is constantly in mind.

It is possible that the results of this work may contribute in a meaningful way to guide future breeding policies particularly in important production regions in South Africa.

III. BREEDING POLICIES AND MEAT PRODUCTION

The indigenous cattle obtained by the early settlers were of Zebu origin. The Africander breed which is still the backbone of the beef industry was developed from these cattle while another "indigenous" breed, the **Drakensberger**, arose through crossbreeding with early imported Dutch cattle ("Vaderlandse vee"). The date of the first importation of Dutch or exotic cattle remains uncertain but there is reason to believe that it occurred before the end of the 17th century (Theal, 1910). The Dutch cattle were the predecessors of the present **Friesian** cattle and their initial popularity and use at the Cape was to grade up and thereby greatly improve the general conformation, milk production and temperament (let-down of milk) of indigenous cattle. The first British (Teeswater) cattle, three bulls, arrived in 1792 and after the second occupation of the Cape (1806) by the British and the subsequent arrival (1820) of the first British settlers came introductions of most of the British breeds (Nel, 1937), but were not invariably unmixed blessings for **stockmen** in the interior soon discovered that the hardy indigenous stock were better suited to their circumstances and requirements (draught oxen) than the imported stock and their crosses.

The beef industry in South Africa has, at least until very recently, been an extensive, low capital investment, slow turn-over, **pastoral** enterprise. It was in most cases a traditional way of life with no real incentives to change or upset the general **pattern**. Until the end of the 19th century beef **cattle** farms were comparatively large and mostly stocked with indigenous and nondescript crossbred herds, numbers being more important than breed or type. However, many of the early stud herds of British beef breeds were established during this period while improvement of herds such as the indigenous Africander gathered impetus.

After the destructive Anglo-Boer War (1899-02) large scale importations from various countries were made in an effort to replenish the national herd. In 1903-04 no less than 215 617 imported animals were inspected at the ports and only 1902 were turned down (Bonsma, 1971). Many State herds of various breeds were established during this period to provide a source of breeding material to the industry. The ruling official breeding policy at the time was to up-grade the "inferior" indigenous livestock with "superior" exotic breeds. Needless to add, the presence of so many different breeds encouraged a variety of unconventional crossbreeding practices of which some still persist up to this day and it is not improbable that the imported pedigree animals contributed towards the establishment of the S.A. S. B.A. in 1905. This body by virtue of the Registration of Pedigree Livestock Act 22 of 1920, became a statutory body in 1921 and has since had a tremendous influence on animal breeding in general, rendering both service and status to the local stud breeding industry. As the mother body of the various affiliated breed societies charged with the primary responsibility of registering livestock pedigrees, the S. A.S.B.A not only assisted in the maintenance of ****pure-bred**** herds but it also encouraged

and ensured the preservation and improvement of indigenous breeds such as eg. the Africander and Drakensberger. Through the Livestock and Meat Industries Act 48 of 1934, provision was made for a system of bull licensing whereby the State attempted to curb indiscriminate crossbreeding through elimination from cattle improvement areas of **all** bulls other than phenotypically acceptable sires, pure-bred or the F₁ crossbred sons of registered parents. Regrettably, in spite of the fact that such areas were established only on application by the cattle farmers of such areas (at least 25), this part of the Act proved ineffective being found to be incapable of implementation.

Research work by **Schutte** (1935) followed by that of **Bonsma** and co-workers at the Messina and **Mara** research stations were the first serious efforts undertaken to study the performance and comparative merits of beef cattle breeds and types under extensive ranching conditions in South Africa. **Bonsma's** work, based on his observations that the indigenous Africander, though adaptable, is an unsatisfactory producer while the more productive exotic breeds degenerate in the arid tropical regions, culminated in the development of the **Bonsmara**, now on the point of being recognised as a breed by the S.A. S. B. A. As a complementary Africander/Hereford/Shorthorn cross-bred type combining adaptability and productivity, it proved the answer to a local problem that cattlemen had in fact been seeking to solve in a similar though rather less systematic and discriminating way. Managerial practices (pasture management systems, better fencing, water supplies, disease control, etc.), have, however, since been improved to such an extent that exotic breeds are now being kept very successfully at the same localities where the early research was conducted. The breed comparison and evaluation work in progress at Omatjenne, South West Africa has also had a great impact on the choice of beef breeds in certain ranching areas of Southern Africa (**Mostert**, 1972). Similar research is being continued and expanded at other research stations and the Department of Agricultural Technical Services itself is engaged in a large breed evaluation project involving the **assessment** of the potential of several continental breeds for crossbreeding **programmes**.

Information on breeds and breed performance also accrues from the data collected through the State-controlled National Beef Cattle Performance and Progeny Testing Scheme which, introduced in 1958, has proved a tremendous boon to beef cattle breeding and production. At present more than a 1 000 members take part. Four central testing stations with a fifth due to be erected soon and facilities to test 1 200 bulls per annum are in operation while a similar number of bulls are being tested on farms. The general acceptance of performance testing in recent years by stud breeders of beef breeds has been one of the most **encouraging developments** in the industry and current prices of performance tested bulls suggest that the commercial producer is also prepared to pay appreciably more for performance than for pedigree only.

Breeding policy in beef cattle production has **crystallised** and based in future on performance and progeny testing some breeds **will** clearly lose their competitive position in the industry.

IV. CONCLUSIONS – A GLIMPSE INTO THE FUTURE

The future holds a tremendous challenge. The growing pressure on world food supplies requires constant assessment by responsible authorities of all livestock production efforts in order to ensure that resources are not wasted. The general inefficiency of animal production renders the industry particularly vulnerable and careful strategic planning of breeding policies at all levels is of the essence.

In South Africa the S.A.S.B.A. must be given the credit for taking the lead in emphasizing the need for a complete reorganization of the livestock industry and now after several years of deliberation and consultation between all the bodies concerned the necessary legislation has been prepared. The proposed Livestock Improvement Act when promulgated will repeal, revise and consolidate the existing Acts concerned with animal production. The main innovation will lie in the creation of a supreme body – the Advisory Council for Animal Production – which will determine not only the place of the industry in the national economy – in relation to all other industries – but also the relative importance of the different facets of the industry itself. The enabling power to put breeding policies into effect will be provided by the Act.

National livestock improvement programmes designed to base breeding and selection objectives and policies on sophisticated techniques for the real evaluation of breeding stock are the order of the day. The State must provide the facilities to collect and process the vital biological statistics arising from changing patterns in production systems, genetic changes (gain or loss), new market requirements and perforce, at individual or national level, breeding policies must be trimmed in accordance with the results of such processing.

South African breeders of woolled sheep and cattle have in the past been most averse to changes of breeding policy particularly where these have been scientifically inspired – the delatory acceptance of fleece testing has already been referred to – but attitudes are changing and must change. A survey, for instance, has disclosed that South African merino wool has become seriously **under-crimped**, possibly as result of over-emphasis on soft handling – with resultant distorted **crimp:fibre** diameter ratios, loss of compactness, open backs and weathering of the fibres. A decrease in fineness is apparent from the fact that ten years ago $\frac{2}{3}$ of the clip had a spinning count of 64's or less. Today that is the case for 93% of the clip. Objective measurements of this kind are the foundations on which meaningful breeding policies must be based.

What is more serious, however, is that the whole future of the South African merino industry may be at the cross-roads. Increasing production costs (especially in respect of labour), the erosion of currency, and general inflation foreshadows a situation in which equitable wool prices appear to be most improbable. It will be a responsibility of the Advisory Council for Animal Production, after consulting the industry, to decide whether, in view of the growing meat shortage and the favourable prices for mutton and lamb, the time is not ripe for a change in the breeding policy,

The beef cattle farmer on the other hand has at last had an innings in

respect of the demand for his product. Judging by his participation in the National Beef Performance Testing Scheme he no longer needs convincing of the benefits of the scheme - its educative value as well as the invaluable information arising from the assessment of the potential of various breeds and types of beef animals. The heart burning is yet to come with the increasing use of A. I. and the realisation that it is in the national interest, indeed imperative, to make the fullest use of proven bulls. It is that stage, when decisions in respect of the curtailing of breeds and the closing down of unprofitable enterprises will have to be taken that the new legislation and the Advisory Council must play the part for which they were brought into being.

Breeding policies in South Africa have come a long way from the haphazard whim of the pioneer farmer to the sophisticated State-guided technologically and scientifically sound zone that it is today.

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