

SMALL STOCK MANAGEMENT

FARMERS' SUPPORT PROJECT
(FSP)

SMALL STOCK MANAGEMENT



Photograph by Bertus Kruger

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PUBLISHED BY:
 Joint Presidency Committee (NAU and the NNFU)
 Private Bag 13255, Windhoek, Namibia

First published 2008
 Second edition 2010
 Third edition 2011

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PRINTED BY:
 Solitaire Press (Pty.) Ltd., Windhoek

DEVELOPED BY:
 Namibia Agricultural Union (NAU)
 Namibia National Farmers' Union (NNFU)



SPONSORED BY:
 Agribank of Namibia
 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
 GmbH on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ)
 First National Bank of Namibia
 Namibia Nature Foundation
 United States Agency for International Development
 The European Union



ISBN: 978-99916-848-2-6

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Acknowledgements

Acknowledgement is hereby given to the following persons and institutions who made the publication of this manual possible:

The generous financial support of
Agribank of Namibia;
First National Bank of Namibia;
GTZ (*Deutsche Gesellschaft für Technische Zusammenarbeit*);
Namibia Nature Foundation;
United States Agency for Industrial Development; and
the European Union.

The Namibia Agricultural Union and the Namibia National Farmers' Union, for their combined inputs of coordinating the compilation, printing and editing of this manual as part of the Emerging Commercial Farmers' Support Programme (ECFSP).

Mr Arne Gressmann for addressing the reader of this manual with a well-formulated and very informative foreword.

Mr Danie de Lange for his invaluable inputs in the writing of this manual.

All members of the ECFSP Manual Production Sub-Committee (MPSC) for their support and inputs with the processing of this manual.

Bertus Kruger and Elaine Smith for final proofreading and coordination.

Ingo Jacobi
(Project consultant)

Preface

It is with great pleasure, gratitude and pride that the JPC presents this production manual.

After years of deliberation, careful planning, and a lot of dedication the NAMIBIA AGRICULTURAL UNION and the NAMIBIA NATIONAL FARMERS' UNION jointly embarked on the EMERGING COMMERCIAL FARMERS' SUPPORT PROGRAMME. This programme resulted from the realisation that the new group of emerging commercial farmers who, having been previously disadvantaged and mostly coming from the background of communal farming, were in dire need of basic (sophisticated) skills training to manage modern farming techniques. The planning phase entailed, amongst others, a need assessment way back in 2004/5, which clearly identified the areas of assistance required. After having analysed all the relevant data, the two unions set about structuring a two-year programme which would address the challenges faced by new farmers so that ultimately they would be able to deal with the daunting task of becoming successful commercial farmers. Besides a dedicated programme of lectures, training courses, study tours and mentoring, it was decided to also produce and publish a set of eight PRODUCTION MANUALS which would serve as valuable training guides with technical details, but would also be a source of reference for future everyday practical farming in Namibia.

It is with gratitude that we acknowledge the unrelenting support of many individuals, too numerous to name, and certain institutions which supported and still support the whole Emerging Commercial Farmers' Support Programme.

We sincerely hope that this initiative will make a lasting contribution to sustainable agricultural land utilisation and to the goals of land reform in Namibia.

On behalf of the JPC,

Raimar Von Hase
(President, Namibia Agricultural Union)

Pintile Davids
(President, Namibia National Farmers' Union)

Windhoek, December 2007

Foreword

Agriculture as the backbone of Namibia's economy has a major role to play in achieving Vision 2030. However, to be able to make a significant contribution towards the growth of the economy and thus wealth creation, agricultural production/output has to increase manifold. For the realisation of such an increase the following crucial issues have to be addressed. Subsistence farming should become commercialised, e.g. landownership in some form or other should be allocated to individuals, underutilised areas should be developed and put into production and the problem of bush encroachment should be addressed and solved at national level.

Food production at competitive and affordable prices for the consumer is the biggest challenge that farmers worldwide have to face. With input costs increasing at a higher rate than the increase in prices realised for produce from the farm, it is clear that productivity and the production capacity on farms have to improve continuously. This also applies to Namibia's agricultural sector.

Furthermore, if we want to participate in international trade with our export commodities, currently being beef, mutton, Karakul pelts and grapes, we have to be able to compete worldwide against all the countries exporting the same commodities. Apart from being price competitive we also have to be competitive in satisfying the needs of the sophisticated consumer in terms of quality, health issues, traceability, animal welfare and other ethical production norms, e.g. personnel management, conservation of biodiversity/ecology (fauna, flora and water resources), etc.

Agricultural production is no longer just a matter of producing whatever the farmer is able and willing to produce and then expecting to achieve good prices for the product.

Farmers have to become more involved in the value chain, and should become much more market orientated by being sensitive to the needs and preferences of the consumer whom they want to serve. In addition they have to adhere to international trading rules and regulations as prescribed by the World Trade Organisation (WTO), and also comply with the Sanitary and Phytosanitary (SPS) requirements of the various countries with which they want to trade. Norway, for instance, has zero tolerance for salmonella in beef/mutton, which is imported into that country, thus making it very difficult to serve this lucrative market.

*It is obvious that survival and growth in the agricultural sector can only be achieved if the farmer in future pays **greater attention** to the world around him, as has been the case in the past.*

Skills development and training of farmers and their employees are becoming imperative, and are of national interest.

Being a farmer and thus the owner of agricultural land in Namibia should be regarded as a privilege. Not every citizen in Namibia, as in countries all over the world, can own agricultural land. There is just not enough land available. Therefore every farmer has the responsibility to use his piece of land in a productive but also sustainable way. Productive means exploiting the full production potential of the farm, furthermore contributing towards job creation in the primary and secondary sector, towards food production on national and international level and towards revenue for Government in terms of taxes paid. Sustainable means preserving and even improving the production potential, so that the generations to come can still make a living from that land. It should be the aim of every landowner to leave behind a farm that is in a better condition than the one he started off with, including production capacity, infrastructure and natural resources, e.g. underground water, fauna (game) and flora (plants).

Commercial farmers in general are often perceived as being wealthy, which, however is not the case. Becoming a successful farmer in Namibia may take years and even generations, and requires love for and dedication towards farming, hard work, good management skills, financial discipline, persistency and a positive attitude.

Climate (rainfall) and other external unforeseen events can have a major influence on the progress made on the farm, and can ruin achievements made over years within a matter of time.

To get an indication of the current gross/net income on a cattle farm, the following indicators could serve as a guideline.

The average stocking rate on cattle farms in Namibia is ± 25 kg biomass (live mass) per ha. In old terms this means ± 14 ha for every animal on the farm. In a cow/ox production system the production of beef (live mass) should be about 35 % of the stocking rate.

This means that if no herd building takes place, the farmer has $25 \text{ kg} \times 35 \% = 8,75$ kg live mass/ha available for sale every year.

At an average selling price (cows, oxen, heifers combined) of N\$9.00/kg live mass he/she would be able to generate a gross income of $\text{N}\$9.00 \times 8,75 \text{ kg} = \text{N}\$78.75/\text{ha}$ ($\pm \text{N}\$80.00$).

The operational costs will be at least around 50 % of the gross income, which leaves a net income of $\text{N}\$80.00 \times 50 \% = \text{N}\$40.00/\text{ha}$.

On a 5 000 ha cattle farm the gross income will thus be $\pm \text{N}\$400\,000.00$ and the net income, if operational expenditure is well managed, $\pm \text{N}\$200\,000.00$. This amount is available for interest and capital repayments (Agribank), new improvements/replacements on the farm and private expenditures.

These indicators clearly show that a 5 000 ha cattle farm will not enable a farmer to become wealthy overnight. To the contrary, for those farmers to survive, they often either create additional income with employment elsewhere, or they venture into diversification on the farm, e.g. guest farms, hunting, farming, crop, hay, olive and charcoal production, etc.

It is advisable not to diversify as long as the main production line is not well managed and exploited to its full potential.

Although the commercial farmer functions in isolation on his property and to a great extent depends on himself concerning the day-to-day activities and progress on the farm, it is still important to establish and maintain good relationships with the neighbours. The control of stock theft and illegal hunting, predator control and the maintenance of border fences, etc. require good and open communication with, and trust in the neighbours.

In conclusion, farming should be a constant process of learning. Even farmers with formal agricultural qualifications still have to keep in touch with the latest developments concerning farming practices, market requirements, consumer preferences, etc. It is advisable to make use of every opportunity to improve own knowledge and skills to be able to adjust and therefore survive and prosper in an ever-changing world. Farmers' days, study groups and established successful farmers can be a good source of knowledge and new ideas and are often a stimulation to creative thinking.

INTRODUCTION

In all small stock farming operations, the primary product is meat or mutton, except in the case of Karakul farming. The farmer produces meat for the local market in Namibia (butchers, abattoirs) as well as for export markets like South Africa and overseas. The western and southern parts of Namibia are the traditional small stock farming areas due to a much lower rainfall.

The customer or consumer demands high-quality meat, which is meat from younger animals, tender or soft, tasty and with not too much fat. This is an important factor to keep in mind when deciding on a breed or breeds for the farm. Dorpers and Dorper crossbreeds generally produce better carcasses for the market. The problem with some of the pure fat-tailed types is localisation of fat in the tail. The distribution of fat over the rest of the body is not very good and the conformation of these breeds is not the ideal set for slaughter lambs. It must, however, be mentioned that fat-tailed breeds are, in many cases, more adapted to the very harsh sheep farming areas of southern Namibia. They can be herded easily and are less aggressive grazers than Dorper sheep.

Goats are mainly kept for meat production and as such they have played an important role in the meat trade. Currently most goats are exported on the hoof to South Africa.

It is possible to improve most of the traits (fertility, meat conformation, breed characteristics) of animals by keeping only the best ewe lambs from every season and selling the rest, and then buying good quality rams for breeding (and getting rid of weaker rams).

The following benchmarks or performance traits should be achieved with successful small stock farming:

1. Lambing percentage of at least 120 %.
2. One lamb weaned from each ewe per year.
3. Lamb losses due to predators lower than 5 %.
4. Lamb losses due to disease lower than 10 %.
5. Losses among adult sheep lower than 2 %.

Every farmer should constantly aim to improve his management, knowledge and observations for better results regarding these benchmarks.

The small stock industry in Namibia can be divided into the following types:

- **Pelt sheep** – Karakul
- **Mutton sheep**
 - Non-fat-tailed sheep – Dorper and Dorper crossbreeds
 - Fat-tailed sheep – Blackhead Persian, Damara, Van Rooy and Afrikaner
- **Goats** – Indigenous goats and improved Boer goats

Other important challenges for new farmers include the following:

- **A mind change from subsistence to commercial farming**
 - High income instead of high stock numbers, selling surplus animals, improving quality of animals, buying quality rams.

- **Running the farm as a business**
Financial planning, saving money to repay loans, increasing own net income, contributing to economy, job and wealth creation in Namibia.
- **Willingness to learn**
Do not be afraid to ask neighbours for advice.
- **Participating in organised agriculture**
Study groups and farmers' associations are good sources of new thinking and fresh ideas.
- **Teaching other farmers to do the same**



A flock of sheep in southern Namibia
(Photograph by Kiep Lepen)

CHAPTER 1

Herd Management of Extensively Kept Herds

The various small stock breeds with which people farm in Namibia are determined by the rainfall, pastures and management conditions. Production systems do not only differ for the different breeds, but also for an individual breed depending on the grazing potential of the veld, farming conditions, predators (jackal and lynx) and the marketing possibilities which are most suitable. In general the aim is to maintain the maximum number of breeding ewes without exceeding the carrying capacity.

The objective is to improve and maintain higher lambing percentages and higher income through sound management. The following information will assist the farmer in improving production, but a keen eye, dedication and a love for animals are also prerequisites for successful farming.

Remember this old saying: *Look after your animals and they will look after you!*

1. Management from mating to lambing

1.1 Breeding seasons

The farmer can determine when the ewes must lamb by the introduction or withdrawal of breeding rams from the flock. The fertility of all small stock breeds is the highest from February to July. This is also referred to as the natural mating season and will result in the highest conception rate as well as a high occurrence of multiple births (twins and triplets).

This lambing season coincides with the drier months in Namibia, i.e. July to December. The milk production of ewes and thus lamb growth are negatively affected. It is crucial to enhance/improve production with supplementary feeding during this period. (See supplementary feeding or licks Chapter 6, page 41.)

It is possible to introduce rams into the flocks from August onwards. The conception rate will be lower than the abovementioned, but ewes will lamb shortly before or in the rainy season. The advantage is fast-growing lambs that can be marketed at an early age. With good grazing conditions a high percentage of ewes will conceive again and lamb for a second time that year.



Rams are separated during the "off season"
(Photograph by Danie de Lange)

The advantages of breeding seasons include the following:

- The owner can determine **when** ewes must start lambing.
- The small difference in age between lambs makes proper marketing possible.
- Groups of lambs can be treated as animals of the same age regarding selection, vaccination, castration, marketing, etc.
- Vaccinations and supplementary feeding/licks for late pregnant ewes as a group are possible.

The disadvantages or problems of breeding seasons:

- Separate facilities to keep rams from ewes in the off season, is not always available.
- Ewes that do not conceive in one season will remain dry until the next breeding season.

The same applies for Karakul farming, where there are only two pelt auctions per annum. The Karakul farmer must try his utmost to have as many pelts as possible ready for marketing twice a year (April and September).

It is also important to deliver pelts to the nearest Cooperative as soon as possible, in order to prevent pelts from being damaged on the farm.

The advantages of Autumn mating (April to May):

- Sexual activity of the ewes is high and a high lambing percentage can be expected.
- They have a higher ovulation rate than in spring and thus more twins can be expected. (Experimental results showed 40 % against 6 % twins for autumn and spring respectively.)
- A shorter mating season is needed, which gives rise to a shorter lambing period and the management is easier.
- Ewes are mated on **good** veld and this can have a beneficial effect on the lambing percentage.
- In the summer rainfall regions the lambs are weaned on good veld.
- The important tooth cutting (12 to 15 months of age) will be from November/December onwards when small fodder shrubs tend to shoot and provide a source of good fodder.
- Mating of young ewes at 18 months of age again takes place in autumn during optimum sexual activity.

The disadvantages of Autumn mating (April to May):

- Parasite infestation, especially in the grass veld areas, can cause poor lamb growth (remedies against internal parasites cancel this problem to a great extent).
- High temperatures retard the growth of lambs (provision of ample shade is very important).
- Ewes lamb on poor veld (September/October).

The advantages of spring mating (September to October):

- Ewes lamb from February onwards on good veld. High milk production stimulates rapid growth of lambs.

The disadvantages of spring mating (September to October):

- Ewes are mated at a low level of sexual activity and the result is often a low lambing percentage. (With correct management, good results can be obtained.)

- Veld conditions are often poor and depresses sexual activity even more.
- Lambs are weaned on poor veld.
- The important tooth cutting stage occurs in winter when feed is scarce.
- Mating of young ewes (18 months of age) takes place in spring when sexual activity is low.

Mating period

A mating period of 34 to 52 days is sufficient and no purpose is served by increasing the period. The average oestrus cycle of ewes is completed every 17 days and thus two cycles are provided for in a mating period of 34 days.

Instead of one breeding season, the possibility of two can be considered. In the case of large farming enterprises such a system may ease the management during mating and lambing, while labour and facilities can be better utilised and the cost of rams can be decreased, because only half the number of rams should be necessary, or better rams may be purchased at the same expenditure. Ewes that are not fertilised in one mating season can be transferred to the next one within six months. This is especially important in the case of young ewes that are mated for the first time in spring (low percentage fertilised). With only one breeding and mating season their first chance to be mated will be at the age of two and a half years with the result that they will lamb for the first time at three years of age.

The biggest disadvantage of this system is maintaining two different age group animals, which makes management more difficult.

It must be stressed that the most beneficial mating season will differ from region to region. The ideal must be to obtain the highest possible number of lambs in a short period.

1.2 Percentage of rams

Both the percentage and the age of breeding rams influence the conception rate of ewes. A good guideline is at least three rams, with a minimum age of 12 months, for every 100 ewes. This is applicable to all small stock breeds, sheep and goats. With fewer rams the risk of inbreeding also increases, with all the negative effects on reproduction.

1.3 Lambing and assistance/care during lambing

One of the most important stages in the pregnant ewe's life is the last six weeks before the birth of a lamb. More than 75 % of the development and growth of the foetus occurs during this period and the nutritional requirements of the ewe increase proportionally.



The level of nutrition, the season of birth and the health status of ewes have a huge effect on lamb losses. Late pregnant ewes should have access to the best grazing and should not be kept kraaled too long or too late. Vaccinations that must be considered during late pregnancy include tetanus and pasteurellosis for all breeds.

Figure 1: Normal birth position of a lamb
(© Battaglia, R.A., Mayrose, V.B. 1981)

In the case of goats enzootic abortion and blackquarter are also very important. Ewes, vaccinated during the last 8 weeks of their pregnancy, transfer some of their immunity to the newborn lambs, thus protecting lambs against these diseases for a few weeks after birth. Pregnant ewes should not be vaccinated against bluetongue; it may cause abortions.

Good feeding during the last six weeks of pregnancy will result in the following advantages:

- Heavier lambs at birth – fewer lamb losses due to the higher survival rate.
- Better colostrum (bies) and milk production by ewe.
- Higher growth rate of lambs.
- Marketing of lambs at a younger age.
- Less pressure on grazing.
- More time and a better chance for the ewe to recover for the next pregnancy.

Lamb losses can be kept low by improved management. The ideal would be for the ewes to lamb close to the farmstead.

There is a definite relation between birth mass and lamb deaths: the lighter the newborn lamb the lower the chance of survival.

Deaths among twins are usually higher than among single lambs, as twins have a lower birth mass and are therefore weaker. Remember that a lambing season from July onwards will result in more twins and special care should be taken.

Where triplets occur, it must be established whether the ewe has sufficient milk to rear them. If not, the strongest lamb should be given to a ewe with only one lamb or a ewe whose lamb died. Lambs must drink colostrum (*bies*) as soon as possible after birth. Ewes should only be assisted with lambing if it is absolutely necessary.

Starving/malnutrition of lambs, diseases and small or weak lambs are the cause of 90 % of all lamb deaths within the first week after birth. This emphasises the importance of basic facilities, attention, nutrition and care of ewes during lambing.

Inspect the udders and teats of ewes twice a year; keep teats free of ticks and cull ewes with too thick teats. Thick teats make it difficult for newborn lambs to suckle, which increases the risk of lamb losses. Sometimes weaker lambs must be helped to drink once only.

Ewes that refuse to take their lambs because they are poor mothers must be marked for culling and marketed at the first opportunity. After identifying ewes that abandon their lambs, the following can be applied:

- tie the ewe at a secluded place and leave her lamb with her to suckle; or
- place the ewe and her lamb in a small pen and let the lamb suckle at least four times a day.

Ewes with little or no milk and damaged teats or udders, must be culled.

Use paint to identify all ewes with twins. A simple numbering system can be used to make it easier to identify twins and triplets and ensure that all of them get the opportunity to suckle. This is of utmost importance shortly after lambing and for the next few days. Once again good nutrition and the correct lick six weeks before lambing ensure a heavy lamb, a strong ewe with good mothering abilities and good milk production for the first

eight weeks of the lamb's life.

Clean the kraals at least two times a year by removing all the dung. It might also be necessary to move a kraal to a new spot after a year or two. During the lambing season all afterbirths must be removed from the kraal. All this is done to reduce the build-up of diseases and prevent lamb losses.

Provide shelter, shade, clean water and feed pellets to lambs kept in kraals during the day. Until three weeks of age lambs depend entirely on milk. High-quality feed from three weeks of age will help the development of the lamb into a full-fledged ruminant. All young animals make efficient use of food and grow rapidly during the first 90 days. Full advantage should therefore be taken of this ability to enable the lamb to develop satisfactorily.

The development and growth of young ewe lambs during the first two months of their lives have a great influence on their lifelong milk production and reproduction.

2. Management after lambing

2.1 Identification

Each farmer has his own unique earmarking system to identify his animals. According to the Stock Brand Act of Namibia each producer must apply for his own stock brand, which also serves as individual identification. For sheep and goats, farmers may choose to use either approved metal ear tags or tattoos. Animals must be marked with ear tags or tattoos at either three months of age or when they are moved from their farm of birth, whichever comes first.

More information regarding year of birth, one of a twin, etc. can be put on the same tag. This tag with the farmer's stock brand must be attached to the left ear of the animal.

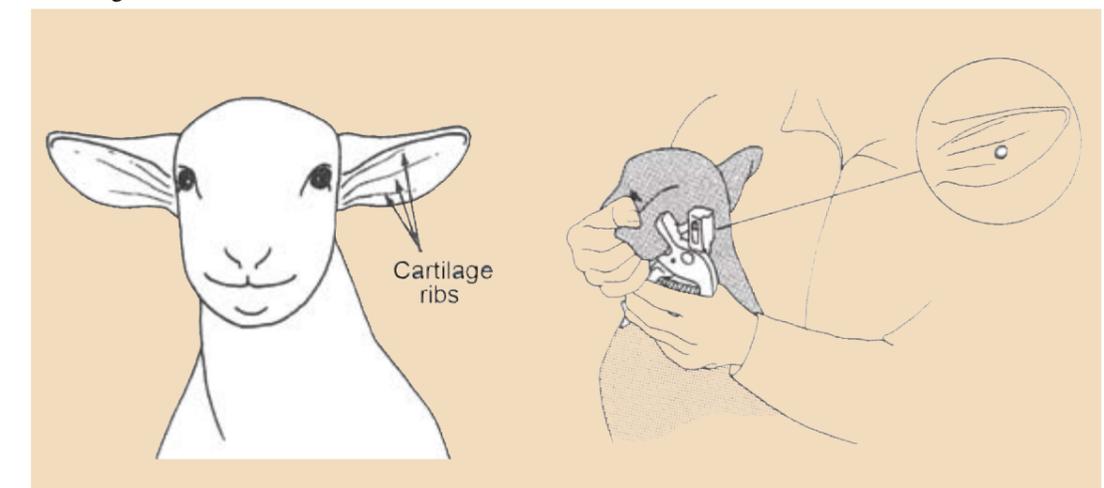


Figure 2: Applying ear tags
(© Battaglia, R.A., Mayrose, V.B. 1981)

Ear tags

- Use clean, dry tags and applicator.
- Tags are best placed in the middle of the LEFT ear.
- Coloured tags are also useful to easily identify culled animals or distinguish between different age groups or lambs from different rams. Coloured tags are normally a temporary mark. They can easily be removed when necessary and are reusable.



Figure 3: Applying metal ear tags
(© Battaglia, R.A., Mayrose, V.B. 1981)

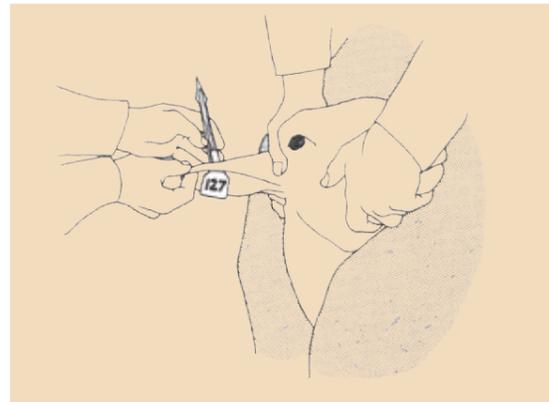


Figure 4: Applying plastic ear tags
(© Battaglia, R.A., Mayrose, V.B. 1981)

Tattooing

- Use black ink on white ears and green ink on dark ears.
- First clean ears with alcohol.
- Apply tattoo pliers between “ribs” of ear and then rub ink into tattoo.
- Clean tattoo pliers between animals.

2.2 Castration

Lambs can be castrated as soon as both testicles are felt in the scrotum, that is, between the ages of two and four weeks. Lambs confined to kraals must be vaccinated against tetanus before castration to prevent deaths.

The most effective way of improving the quality of the breeding flock is through castration before the age of three months to prevent inferior ram lambs from mating with the ewes.

Bloodless castration of lambs

A rubber ring is put around the scrotum with special pliers (elastor). The scrotum and testes dry out and drop off after a few weeks.

Using the burdizzo

A burdizzo is a special pair of pliers that castrates without an open wound. The scrotum and testes also dry out and drop off after a few weeks.

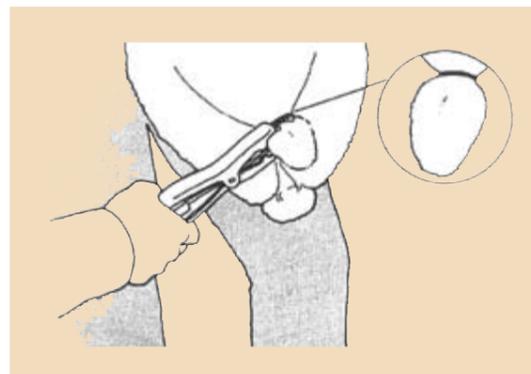


Figure 5: Using the rubber ring method (elastor)
(© Battaglia, R.A., Mayrose, V.B. 1981)

2.3 Docking of tails (detailing)

Docking is only recommended, but not compulsory for Dorper ewe lambs selected for breeding. This must be done as soon as the ewes can be judged for meat conformation, but before the tail becomes too thick, before the age of two months.

Docking is done by putting a rubber ring around the tail. Leave the tail too long rather than too short (two fingers from the lamb's body). Check lambs for blowfly attacks, especially during summer, and treat with spray-on remedies that kill the flies and their larvae.

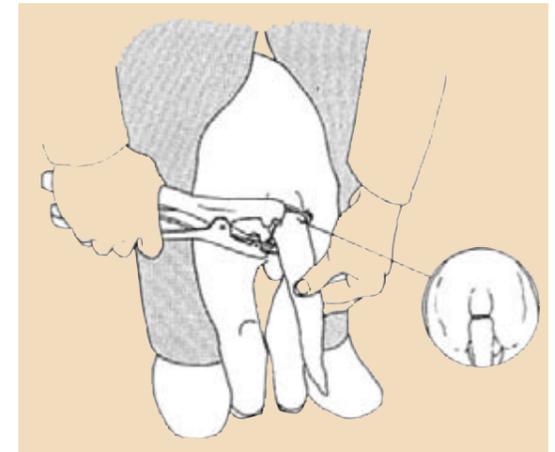


Figure 6: Docking
(© Battaglia, R.A., Mayrose, V.B. 1981)

3. Weaning

Weaning is only possible if separate camps are available. Due to the high nutritional requirements and fast growth rate of young lambs, they must be kept on the best grazing and receive an appropriate lick.

In the case of mutton breeds, weaning is normally the stage at which certain lambs are sold and varies between four and eight months of age. This is also the stage at which the final selection is done for young replacement ewes. These ewes must reach the desired body mass for mating as soon as possible to start their roles as lamb producers.

In the management of young sheep after weaning, the aim is to raise healthy and functional animals at the lowest possible cost. The slow growth rate of young animals after weaning is mostly due to inadequate feed supply and the effect of internal parasites. Keep this in mind when planning mating seasons.

In short, castrate all ram lambs and sell them together with ewe lambs that do not meet certain selection criteria. Depending on market trends and demand weaning and marketing mass may vary between breeds from 25 kg to 35 kg live mass.

3.1 Daily handling of small stock

Free-roaming (camp) system versus herded animals

In most cases free-roaming animals perform better than herded animals. The reason is that animals have 24 hours access to grazing, 24 hours to meet their nutritional needs. To maintain high production and reproduction levels, animals must have the opportunity to graze daily as long as possible.

Due to predators some farmers have to herd their small stock and keep them kraaled every night.

DO NOT KEEP ANIMALS KRAALED UNTIL NINE O' CLOCK IN THE MORNING!

The advantages of the kraal system is that daily checks can easily be performed on animals and correct amounts of licks or other feed can be given.

Animals sleeping in a kraal every night must be dosed and vaccinated more frequently to maintain good health and production.

Clean the kraals at least twice a year by removing all the dung. It is strongly recommended to move a kraal to a new spot each year. During the lambing season all afterbirths must be removed from the kraal. All this is done to reduce the build-up of diseases and prevent lamb losses.

Milking goats for own consumption

Only milk goats with one lamb or a ewe that has lost her lamb. This is to ensure that enough milk is left for the lamb to grow to its full potential.

It is absolutely necessary to feed these ewes daily with 500 g pellets high in protein and energy to maintain milk production, but also to be ready for mating as soon as possible.



A flock of selected young Boer goat rams
(Photograph by Danie de Lange)

CHAPTER 2 Handling Facilities for Small Stock

Good facilities contribute to better management and will lead to higher income. Unnecessary handling and herding over long distances should be avoided. Regular dosing, inoculation or vaccination, selection of animals and the marking of lambs necessitate a suitable set of pens. If kraals are considered in the veld, they should be situated so that they can serve as many camps as possible.

1. Camps

Proper camps are one of the essential requirements for successful small stock management. Fencing is very expensive and careful planning is crucial. Before a farmer embarks on this, he should get practical advice after a farm visit.

There is no standard recommendation regarding the number and size of camps. At least one watering point per camp is important, because the watering point influences the grazing pattern and determines the distance animals have to walk daily. **RATHER OPT FOR BIGGER CAMPS (500 ha) WITH ONE OR EVEN TWO WATERING POINTS THAN TOO SMALL CAMPS.**

Fences must be in very good condition to prevent sheep and goats from learning to crawl through fences. Once animals have learned this, fences are of no use. Even the kraal where lambs are kept for the first few weeks must be “goat proof”.

2. Kraals

A system of convenient pens is essential on every sheep farm. Kraals prevent the unnecessary handling of animals during dosing, vaccination and selection.

The size of the farming enterprise and whether animals are kraaled every night, will determine the layout of a permanent set of pens. Existing kraals can be extended with movable pens according to the needs.

In the case of herder systems and where grazing is far from water, movable kraals can be used to keep the sheep away from the water points in the veld



Handling facilities like these are good to have
but surely not a “must have”!
(Photograph by Danie de Lange)

overnight. Every day the herder takes his herd to the water and brings them back to the distant kraal late in the afternoon. For the herder himself, a movable house or caravan is used and water for his personal use is brought to his outpost in movable tanks or drums. Temporary outposts have the advantage that they do not destroy the vegetation around the water points. Furthermore, parasite infestation and build-up of diseases are much less of a risk.

If animals are kraaled every night, provide 1,5 m² per animal (10 m x 15 m for 100 sheep).

3. Water supply

Water is the most important nutrient for animals. Without daily access to clean, fresh water animals cannot perform to their full potential.

Clean water troughs at least every second week. Prevent or repair leakages, which contribute to the spreading of internal parasites.

For all small stock breeds except Karakul, 3-metre water troughs are normally sufficient for one herd. Due to their very strong herd instinct, the whole herd of Karakul can storm the water trough and trampling may cause injuries and even deaths. Longer troughs are recommended for them.



(Photograph by Danie de Lange)

4. Handling and crush pens

Examples of small stock fences:

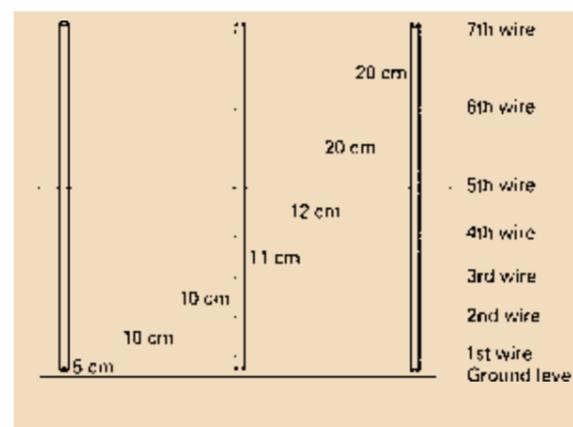


Figure 7: A fence approximately 90 cm high

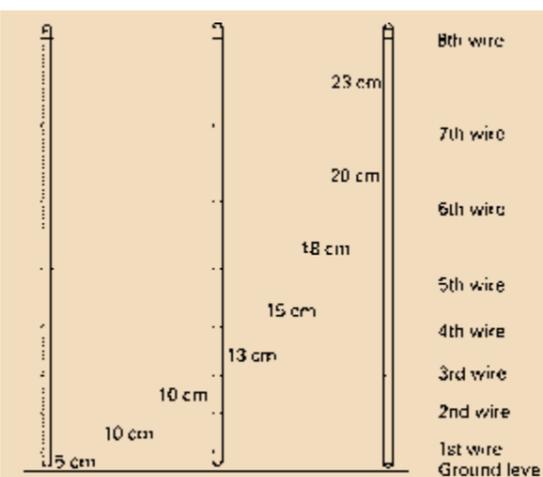


Figure 8: A fence approximately 120 cm high

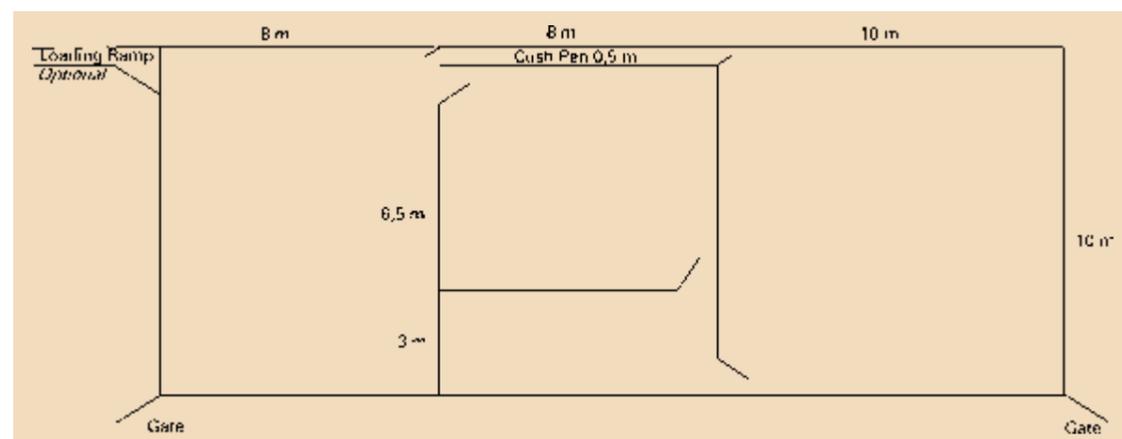


Figure 9: A simple kraal accommodating 200 ewes

5. Scales

A mutton farmer without a scale is like a soldier going to war without a weapon.

Weighing lambs after weaning, before marketing and even ewes before mating gives an indication of growth and production efficiency.



6. Lick and feeding troughs



The most widely used lick troughs are second-hand tyres and oil or petrol drums. Cut off the top and bottom third, smooth the edges and use for licks troughs.

Allow three troughs for every 100 sheep.

Long feeding troughs are better for feeding pellets to small stock. Allow 10 to 15 cm feeding space per animal when feeding from both sides. Goats are more aggressive and more space should be allowed; at least 20 cm per animal.



A self-feeder or automatic feeder is not part of small stock farming because they prefer fresh food or pellets every day.

(All photographs and illustrations on this page by Danie de Lange)

CHAPTER 3

Reproduction and Fertility

A high lambing percentage is directly correlated with higher income per small stock unit, higher culling percentage and thus more animals available for marketing and income generation.

The level of feeding and management determines the lambing and weaning percentages of a flock.

1. Economic importance of herd fertility

The aim of any farmer should be to obtain the highest production from a given number of ewes which can be **managed well**. This principle is more important than aiming at the maximum number of breeding ewes that overutilises the available grazing.

It is possible to produce more meat from fewer ewes through good quality, highly fertile ewes and rams and good management.

Every farmer should aim for and improve the following targets:

Sheep – wean at least 100 lambs from every 100 ewes
Goats – wean at least 130 lambs from every 100 ewes

2. Age at first mating

Young replacement ewes are still in a growing phase until well over the age of 12 months. The development and reproduction of young ewes are very negatively influenced if they are mated too early.

Two guidelines are to be used to determine whether young ewes are ready for mating:

- At least 12 months of age for all breeds
- Minimum mass – 40 kg to 45 kg for Dorper and Boer goat ewes
– 35 kg for the ewes of other breeds

3. Criteria to express herd fertility

3.1 Lambing percentage

An indication of the **conception rate** of ewes (not the number of lambs born):

$$\text{Lambing \%} = \frac{\text{Number of ewes lambed}}{\text{Number of ewes mated}} \times 100$$

If this figure is lower than 80 %, it is an indication that the conception rate was not good enough and the farmer has to identify possible causes to prevent this from happening again (only 80 of the 100 ewes have lambed).

An indication of the **percentage** of lambs born alive will be:

$$\% \text{ lambs born} = \frac{\text{Number of lambs born}}{\text{Number of ewes mated}} \times 100$$

3.2 Fecundity

An indication of the number of twins and triplets are:

$$\text{Fecundity} = \frac{\text{Total number of lambs born}}{\text{Number of ewes lambed}}$$

3.3 Weaning percentage

This is an indication of how many lambs were born alive and survived until weaning age.

It is the most important indicator, because the number of lambs determines how many lambs are available for marketing.

If there is a big difference between the lambing and weaning percentages, it means that lambs were lost due to diseases, ewes with too little milk or predators.

$$\text{Weaning \%} = \frac{\text{Number of lambs weaned}}{\text{Number of ewes lambed}} \times 100$$

4. Diagnosis of low herd fertility

It was already mentioned that fertility has the biggest influence on the profitability of the farming enterprise. In order to monitor or measure any of the abovementioned indicators of fertility, the following figures are necessary:

- Number of ewes mated [from ... (date) to ... (date)].
- Number of ewes lambed [from ... (date) to ... (date)].
- Number of lambs born alive.
- Number of single lambs.
- Number of twins/triplets.
- Number of ewes aborted.
- Number of lambs died within two weeks after birth.

With this information the calculations can be done, either once a year or after each lambing season.

If the conception rate is very low (below 50 % for example), look at the following:

Rams

- Only one ram that is very old or ill (pasteurelloses or epididymites/*ramsiek*).
- Enough rams, but with epididymitis.
- Rams received bluetongue vaccine shortly before mating season.
- Too many rams can lead to constant fighting.
- Rams in very poor condition due to malnutrition or internal parasites.

Ewes

Malnutrition – Ewes raising lambs under very poor veld conditions without lick.

– Crucial phosphate shortage.

– Ewes are kept kraaled until 09h00 daily; not enough time for grazing.

Heavy infestation with internal parasites.

Lactation anoestrus – Ewes do not come on heat sooner than 45 days after giving birth.

Diseases – Enzootic abortion, blackquarter (*baarmoedersponssiekte*) especially in goats.

5. How to improve flock fertility

5.1 Nutrition

Nutrition is the factor with the biggest effect on fertility. Even the best-looking animals cannot reproduce optimally if their feeding requirements aren't met. The nutritional requirements of the breeding ewe are the highest from six weeks prior to lambing until ten weeks after lambing. Good care and nutrition will increase production and reproduction dramatically.

The fertility of small stock can be improved with a system called flushing. Flushing is done by improving the feeding condition of ewes and rams for a short period of time with extra feed pellets, a lick with high energy or by putting ewes in a new camp with the best grazing. Give 100 g to 200 g pellets or lick per animal per day for two weeks, introduce the rams to the flock and continue with the extra feed for another four weeks. After these six weeks a normal protein lick will be good enough.



(Photograph by Danie de Lange)

Flushing is necessary for the mating season September/October to increase the conception rate of ewes. Rams must also receive flushing during this season. Never buy rams that are extremely fat; they cannot mate with ewes.

Select replacement ewes only from lambs born from February to April.

Mating from February to April results in highest lambing percentage.

5.2 Season/Climate

The natural mating season of small stock is from February to July and will result in the best conception rate, highest lambing percentage and highest number of twins.

5.3 Diseases

Pasteurellosis is very common, even under extensive farming conditions. This disease is triggered by any stress condition like long walking distances and crowded kraal conditions. It affects production and reproduction, lambs, ewes and rams of all breeds. *Multivax P* is a good vaccination to limit this disease. Buy only rams that have been vaccinated with *REV 1*.

Test or have the rams tested for fertility prior to each mating season. A semen test is not 100 % reliable with regard to fertility, but may serve as an indicator.

A manual examination of the testicles is a practical method which can be applied. Make sure that both testicles have descended into the scrotum, are of normal size and feel elastic but not spongy or soft. A hardening of the tip of the testicle (actually the epididymus) is often an indication of an infection of the epididymus (epididymitis) which can result in total sterility or decreased fertility. This is caused by the organism *Brucella ovis*. Thus, when rams are purchased, insist on rams vaccinated as lambs with *REV 1* against brucellosis. Adult rams that were not vaccinated as lambs must be vaccinated immediately. The vaccine prevents the disease, but it is not a cure for infected animals. It is important to take note that the vaccination against *Brucella ovis* in small stock and *Brucella abortis* in cattle are two totally different vaccinations and the one may under no circumstances be used instead of the other.

The sex drive (libido) and the service potential of a ram under veld conditions are of the utmost importance. It bears no relationship to fertility, because a highly fertile and healthy ram may be of no value on account of a lack of libido. The farmer can, however, determine the libido of the rams by using a marker. At least all the young rams bought annually should be subjected to this test.

Day temperatures exceeding 35 °C can make rams temporarily infertile. This phenomenon is known as summer sterility. Mating during the very hot months should thus be avoided, while providing shade remains a very important requirement. A better lambing percentage is obtained by placing the rams with the ewes during the night only.

Divide the rams into two groups. Feed one group while the other is with the ewes. Change over on a weekly basis.

Complete all vaccinations and dosing at least six to eight weeks prior to mating.

The most common diseases in goats are **enzootic abortion** and **blackquarter**. Effective vaccines for both of these are available.

Although **internal parasites** are not a disease, heavy infestation can reduce fertility.

Effective dosing remedies are available for the treatment of lambs, ewes and rams.

Noseworm is easily detectable and animals must be dosed in February and October.



Top from left to right: dosing gun; ear tag applicator; elastrator pliers.

Bottom: single use injection syringe; vaccination syringe for multiple use.

(Photograph by Danie de Lange)

5.4 Age, mating ability and libido of rams

Between the ages one to seven, the reproduction rate of ewes is high enough to keep them in the herd for breeding.

Although rams can also be kept longer than two years for breeding, it is strongly recommended to replace rams more frequently. With only one ram in the herd, replace it every year. With more rams in bigger herds, replace 25 % of the rams annually. The replacement of rams is very important to prevent inbreeding. Inbreeding has a very negative impact on fertility, growth rate, milk production and lamb survival.

With small stock we seldom experience problems regarding mating ability and libido, except in cases where extremely fat rams were bought at auctions or shows.

Rams bought at stud auctions should gradually be adapted to the new farm. Keep these rams kraaled or near the house for the first two weeks. After the ewes have left the house, rams can also graze nearby. It is important to give two kilogram pellets per ram per day for the first five days. Give only one kilogram pellets per ram per day from day six to day ten. Decrease the amount of pellets per ram to only 500 g pellets per ram per day from day 11 to day 15.

If rams were bought during the rainy season (green veld), it is not necessary to continue with pellets after the two weeks. In the drier months of the year it is good to continue with 200 to 250 g pellets per ram per day because it will lead to higher lambing percentages.

Pellets suitable for this include *Sheep Finisher*, *Breker Pellets* and *RamLambEwe Pellets*.

CHAPTER 4 Breeding Small Stock in Namibia

The aim is to keep improving the quality of a flock. Quality animals utilise the veld more effectively, grow faster, maintain a higher level of reproduction and generate a higher income for the farmer. It is possible to generate more income from fewer high-quality animals than from a huge number of low-quality animals.

1. Selection of breeding stock

Selection is an ongoing process, during which the farmer only keeps the best animals in his flock for breeding purposes. In doing so the overall quality of the flock is improved.

Culling, on the other hand, is where inferior animals are identified, marked and marketed as soon as possible. The idea is to prevent them from breeding on the farm.

The breeding progress that a farmer can achieve is determined by his ability to identify and utilise animals with excellent breeding value.

One of the best-known and most generally accepted selection methods is individual selection, where the appearance or performance of the animal itself serves as a measure for selection.

When the heredity of a trait is as high as 100 %, this means that the outer appearance of the animal (phenotype) corresponds fully with the genetic, inherent qualities (genotype) of the animal, and that no other aids are required. If the heredity values of a trait are high or very high, any other method besides individual selection will hamper breeding progress.

The phenotypic merits (the looks or measurable traits) of an individual are estimated by comparing the individual's phenotype with the average phenotypic value of an equivalent group of more or less the same age, which has also been treated in the same way.

A ram lamb should only be considered for breeding if it was born during the first 21 days of the breeding season, was one of a multiple birth and was bred from a ewe with good maternal and lactation traits, which lambed regularly.

Apart from that, such a ram lamb must have good meat and breed characteristics and be free from deficiencies such as faulty jaws, leg faults, back faults and abnormalities of the testicles, and should also not display prolapse of the rectum and the sheath. Such an excellent ram lamb should also be subjected to a post-weaning growth test.

If sound selection and breeding principles are combined with good nutrition, management and farming methods, the productivity and gross yields of most small-stock herds will increase considerably.

1.1 Selection of ewes

For selection to be effective, even female animals must be selected for certain traits. Good mother ewes should not be too big or too small, possess good maternal and milk traits, reproduce regularly and be reasonably resistant to prevailing diseases and unfavourable climatic conditions. A good ewe is a ewe that will survive better under veld conditions and produce more and faster growing, fleshier lambs without serious conformation defects.

Crossbred ewes are very good breeding stock and should not be discriminated against. They have good mothering abilities, milk production and constitutions.

Visual judgement for physical correctness

Meat conformation:

- Good length, width and depth of body (good framework for meat production).
- Good legs, hocks and pasterns (ability to walk and fetch food).

Udder and teats: It is important for the ewe to produce enough milk.

- Too thick teats make it difficult for newborn lambs to suckle and contribute to more lamb losses.
- Only one teat makes it impossible to raise twins.

Femininity:

- A ewe must not have any traits of a ram; she must look like a ewe (head, horns, neck and body).
- It is possible for a ewe to be too big.

Fertility:

- It is possible to judge fertility in adult ewes by looking at the size of reproductive organs, udder/teats, conformation and condition.
- Ewes that are always fat or in a very good condition might be an indication of low fertility.

Selection of replacement ewes from own stock

Use the same criteria as for physical correctness above.

- Be careful not to discriminate against one of twins, which are usually smaller than single lambs.
- Do selection when lambs are four to six months of age.
- The culls must be clearly marked and marketed before they are mated.

Purchasing ewes

The same criteria as for physical correctness above.

- When buying ewes beware of infertile ewes; remember the signs mentioned.
- It is a good option to buy pregnant ewes, but they are seldom available.
- Older ewes must be able to raise at least two lambs before they are culled.

1.2 Selection of a breeding ram

The most effective way to improve the quality of animals is using high-quality purebred rams.

Every time a ram is replaced in the flock, the new ram must at least be of the same quality as or better than the previous ram. When buying or selecting breeding rams only the best purebreds are good enough.

Never use crossbred rams for breeding.

Seeing that a ram contributes 80 % to breeding progress in the flock, these animals must be screened very closely. Apart from that, such ram lambs must have good meat and breed characteristics and be free from deficiencies such as faulty jaws, leg faults, back faults and abnormalities of the testicles. Such excellent ram lambs should also be subjected to a post-weaning growth test.



(Photograph by Danie de Lange)

For effective and successful meat production, well-fleshed, fast-growing rams that are fertile and capable of serving well are required. Moreover, such rams must produce lambs that can effectively convert veld grazing and feedlot feed into meat.

During veld ram tests at the Kalahari Research Station it was found that there were big differences within the same breed with regard to the growth rate of ram lambs.

In other similar tests of Dorper rams some rams required 55 kg grazing to acquire 1 kg increase in mass, while on the same veld some rams required 16 kg of veld grazing to increase 1 kg in mass. Had the grazing been of a better quality, the efficiency of feed consumption might have been better. During the same test some ram lambs increased in mass by 141 g per day, and others by only 34 g per day. Some ram lambs did not even show an increase in mass over a period of five months on natural grazing.

Selection criteria for rams

Breed characteristics:

It is very important that rams conform to the breed characteristics of the respective breeds.

Meat conformation: This means –

- good length, width and depth of body (good framework for meat production),
- good legs, hocks and pasterns (ability to walk, fetch food, keep up with ewes for mating).

Masculinity:

- They must have the traits of a sire and not look like ewes (head, horns, neck and body).
- It is also possible for a ram to be too big.

Fertility:

It is possible to judge fertility by looking at size and symmetry of testicles.

- Testicles must be the same size and a good size for its age.
- Rams bought at an auction must have well-developed testicles.
- Preferably no split in scrotum; maximum of 2 cm can be allowed.

Pigmentation:

- Dark pigmentation is important on all hair-free areas directly exposed to the sun.

2. Culling

2.1 Culling age of old ewes

Old ewes must be culled at the age of seven years. From this age the fertility, milk production and the ability to retain body condition or speedy recovery after raising a lamb, decrease rapidly.

Without proper records or colour-coded ear tags it is impossible to be accurate in determining the age of old ewes.

Use the condition of the teeth, body, overall appearance and the possibility to raise another lamb, when judging whether to cull or not.

2.2 Culling age of rams

Although rams can be kept longer than two years for breeding, it is strongly recommended to replace them more frequently. With only one ram in the herd, replacement of the ram should be done annually.

With more rams in bigger herds, replace 25 % rams annually.

The replacement of rams is very important to prevent inbreeding. Inbreeding has a very negative impact on fertility, milk production and growth.

If the farmer is not satisfied with the lambs of a newly bought ram, the best thing to do is to cull or replace the ram and to sell all the lambs of that ram. This is much cheaper than getting more inferior lambs from the same ram.

CHAPTER 5

Purpose and Advantages of Different Small Stock Breeds in Namibia

The main purpose of all small stock breeds (except for Karakul) is to produce mutton. The market requires good quality meat from young animals.

The aim of every farmer should therefore be to produce the best quality meat from the veld. Farmers are penalised for meat from older animals as well as for over fat meat. Produce lambs that can also be slaughtered at local abattoirs. The producer gets the best prices for carcasses of animals younger than twelve months of age, weighing at least 14 kg and with the right amount of fat covering. The live weight of lambs sent to abattoirs should range between 33 and 36 kg with the correct fat condition scoring.

Breeding stock should be very well adapted to the farming area, system and grazing. Fertility, lamb losses and the growth rate of animals are good indicators of adaptation.

1. Mutton breeds

According to the summary below, all the breeds meet the basic requirements for economic meat production in Namibia. Management and available grazing have a huge influence on reproduction, milk production and the growth rate.

| Breed | Fertility | Lamb losses | Growth rate | Carcass quality | Herd instinct |
|--------------|------------|-------------|-------------|-----------------|---------------|
| Dorper | Acceptable | Medium | Very good | Very good | Poor |
| B.H. Persian | Good | Low | Good | Poor | Good |
| Van Rooy | Good | Low | Good | Acceptable | Good |
| Damara | Good | Low | Good | Acceptable | Good |
| Goat | Very good | Medium-high | Good | Acceptable | Good |

The general recommendation is to continue breeding with available ewes in the flock, but to start introducing purebred rams of your choice.

If animals must be herded every day, pure Dorper is not the ideal breed due to its poor herd instinct and high feeding requirements.

Black Head Persian, Damara and Van Rooy ewes are very good for crossbreeding. Persian rams are not recommended due to their very fat carcasses.

Breed animals that are acceptable for the market. For effective and successful meat production, well-fleshed, fast-growing lambs are required. Moreover, lambs must be able to effectively convert veld grazing and feedlot feed into meat.

2. Karakul pelt production breeds

The advantage of the Karakul is that all the lambs can be slaughtered within 24 hours after birth if there is a prevailing drought. The fact that ewes do not have to raise lambs increases their chance of survival or even production under very dry conditions.

Due to their strong herd instinct the Karakul is also suitable for daily herding.

Currently there is a huge shortage of Karakul breeding stock, but numbers can be increased through upgrading. Upgrading is a breeding process where good quality Karakul rams are used continuously on Black Head Persian ewes and on the selected offspring. After three to four generations more than 90 % of the animals will look like Karakul.

The Black Head Persian is the only suitable breed for upgrading.



A flock of Karakul sheep grazing
(Photograph by Danie de Lange)

CHAPTER 6

Nutrition of Small Stock

Nutrition has the biggest influence on the production as well as the reproduction of animals. It is very important not to overgraze the veld. Surplus animals should be marketed as soon as possible. The feeding requirements of lambs, dry, pregnant and lactating ewes differ considerably, with lambs and lactating ewes having the highest requirements.

1. Basic nutrients

Protein is one of the main building blocks of the body. Without protein the animal cannot function or grow. Animals get protein from the grass and leaves that they eat. Other sources are lucerne, feed pellets and protein licks.

Energy is the fuel for the body; it is necessary for all the body functions as well as for movement.

Both protein and energy are important for animals to grow, produce milk and reproduce.

Water is also an important nutrient for ruminants. Sheep grazing dry pastures and lactating ewes have a greater water requirement and must have daily access to clean drinking water. Where water is in short supply there is a drop in the amount of feed intake, which affects growth and reproduction negatively. The **daily** water need for small stock **varies between 3 and 6 litres per day**.

2. The digestive tract of ruminants

Ruminants (four stomachs/*herkouers*) include sheep, goat, cattle and most game species. They differ from horses, pigs and chickens which are monogastric (single stomach).

Ruminants are plant and grass eaters and have the unique ability to convert plant material into useful nutrients like meat and milk for human consumption. Part of the digestive tract of ruminants consists of the rumen (*grootpens*), reticulum (*ruitjiespens*), omasum (*blaarpens*) and abomasums (*melkpens*). This is where plant material is digested. These four compartments develop from the single stomach from three weeks after birth. Shortly after birth the rumen is only half the size of the abomasums, but in the adult animal the rumen is more than 80 % of the total stomach. The content of the adult rumen varies between 4 and 10 litres for sheep and goats and between 100 and 300 litres for cattle.

*In the newborn lamb or calf this rumen cannot digest any grass until the age of three weeks.
The abomasum mainly digests milk.*

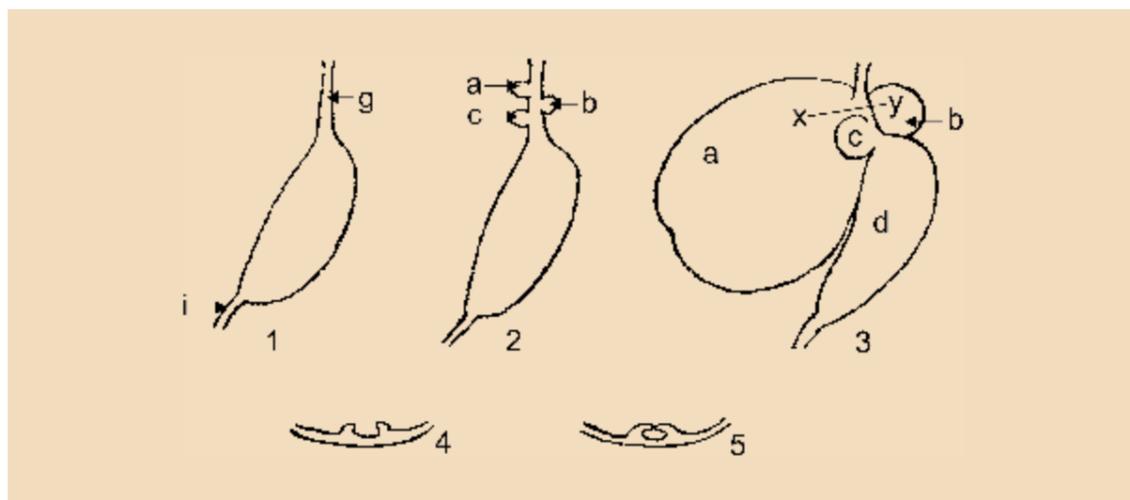


Figure 10: The digestive tract of single stomach animals and ruminants

1. Single stomach: g = gullet; i = intestine.
2. Fore-stomachs (a, b and c) arising as outgrowths from gullet.
3. Stomach of ruminant: a = rumen; b = reticulum; c = omasum; d = abomasums.
4. Cross section x-y through 3 with oesophageal grooves open.
5. Cross section x-y through 3 with oesophageal grooves closed.

The actual fermentation or digestion of plant material is done by microorganisms (small living animals) in the rumen. These organisms are responsible for the conversion of plants to feedstuffs that can be utilised by the animal. At birth none of these organisms are present in the rumen. Shortly after birth these organisms are established in the rumen through contact with the mother. The intake of roughage from three weeks of age also stimulates the development of the rumen, so that the lamb gradually develops into a true ruminant (four stomachs).

After collecting enough food through grazing, ruminants will lie down to ruminate. The main purpose is to further break down the coarse plant material by chewing it again and again. The drier and coarser the grass, the longer animals will ruminate.

3. Nutritional needs of small stock

The nutritional requirements of sheep and goats can be divided into two components. Firstly, there is the maintenance need, i.e. purely the maintenance of vitally essential functions. Only after this need for nutrients has been satisfied, can any excess nutrients be appropriated for production and reproduction.

The level of animal production thus depends to a large extent on the relative size of the maintenance need in relation to the total digestible nutrient intake. The bigger the animal, the higher the maintenance need and the fewer the nutrients left for production.

The daily roughage (dry grass and leaves) intake for small stock is on average 2 to 3 % of their body mass. A ewe weighing 50 kg needs at least 1 kg of dry grass to maintain her body weight and fertility.

3.1 The infant lamb

In relation to their body mass, young lambs have the highest nutritional needs. The younger the lamb, the greater its need for particularly high-quality protein.

The young lamb is still in the process of developing into a full-fledged ruminant.

Lambs start their lives as typical monogastric (single stomach) animals adjusted to the digestion and utilisation of a milk diet only. The nutrients in milk are highly digestible by the young lamb's digestive tract.

The intake of roughage from three weeks of age stimulates the development of the rumen, so that the lamb gradually develops into a ruminant (four stomachs). Thus, food given to lambs must be of good quality. They have a much better feed conversion than more adult ruminants. *RamLambEwe Pellets* are especially formulated to meet the needs of lambs older than three weeks of age.

Urea must not be given to lambs younger than two months of age. These young animals cannot yet utilise urea effectively and they may die.

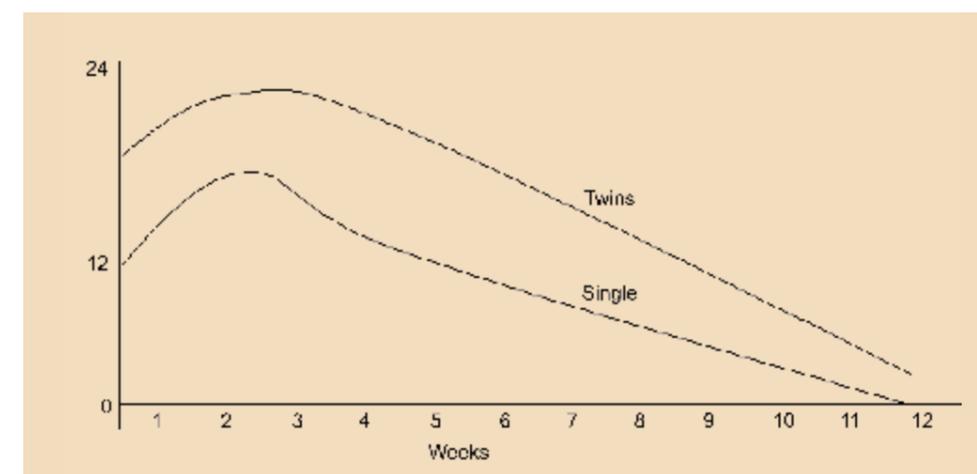


Figure 11: Lactation curve of ewes (© Neudamm Agricultural College Notes)

3.2 Growing sheep and goats

Weaning shock can retard growth in lambs by up to one month and should thus be reduced to a minimum. The following management measures can be applied to reduce weaning shock:

- Make an early start with creep feeding to get the lambs accustomed to the feed. If the practice is indeed applied, creep feeding must be commenced at the age of about three weeks, but not later than three weeks before weaning.
- Wean the ewes, not the lambs. Keep the lambs in the kraal or paddock (environment) to which they are accustomed.
- Wean gradually over five to ten days, in other words, one hour on day one, two hours on day two, three hours on day three, etc. until the lambs have been weaned completely.
- Switch over gradually from creep feeding to the finishing ration.
- Place the ewes out of earshot from the lambs.
- Place one old ewe for each 15 lambs among the lambs. The old ewe calms down the lambs and they learn to eat more quickly.

3.3 The pregnant ewe

The level of nutrition can greatly influence the productivity of the ewe flock and in certain seasons of the year or certain periods in the ewe's production cycle her needs for nutrients are very high.

It is important that the level of feeding should not be decreased during the first four weeks of pregnancy, because on average 20 % foetal losses can occur within the first 30 days of pregnancy. The pregnant ewe must not have any physical stress from the 5th to 20th day after conception.

A rising level of nutrition during late pregnancy is essential. Undernutrition during the last six to eight weeks of pregnancy greatly affects the weight and vitality of the newborn lamb and has an even more severe effect on the milk supply of the ewe, especially in early lactation. Strong, heavy lambs can be produced by feeding the ewes well, particularly during the last six weeks of pregnancy.

During the last six weeks of pregnancy however, 75 % of the growth of the foetus occurs and the nutritional requirements of the ewe increase proportionally. For the growth of the unborn lamb proteins and minerals such as calcium and phosphate are particularly necessary. Special provision should therefore be made for these.

Since pregnant ewes should always be allowed to graze on the best veld in order to ensure a good milk flow, it is essential to separate pregnant and non-pregnant ewes so that the veld can be used to its best advantage.

Good feeding during the last 60 days of pregnancy results in the following advantages:

- Greater mass gains of ewes during pregnancy; more reserves.
- Heavier and stronger lambs at birth resulting in fewer lamb losses.
- Young ewes with enough milk do not leave lambs after birth.
- Heavier lambs at weaning at three to four months of age.
- Marketing of lambs at younger ages and at higher prices.

3.4 The lactating ewe

Many trials have shown that a lamb is very dependent on the ewe's milk throughout the first four weeks of its life. Milk production in ewes is therefore of the utmost importance and for this reason special selection should be practised. Since growth plays such an important part in the production of animals and the milk production of the ewe is so closely linked with the growth rate of the lamb, the importance of good milk production cannot be overemphasised. Feeding, however, also plays an important role in milk production and adequate nutrition is necessary during lactation.

In a certain trial, ewes that were fed a high level of nutrition during late pregnancy and lactation, gave 80 % more milk than ewes that were fed a low level of nutrition during these periods.

Under grazing conditions, the lactating ewe may often be in the position where her nutritional requirements are considerably higher than those that she obtains from the pasture. Usually, a whole series of factors, amongst others availability and quality of grazing and the capacity of the digestive tract, play a role in this regard. As a result of her selective grazing habits the ewe spends even more time per day selecting certain acceptable parts of plants. This results in a decrease in the mass of voluntary feed intake

per unit of time. In such cases, the ewe then mobilises body reserves in order to comply with the production stimulus, resulting in a loss of body mass.

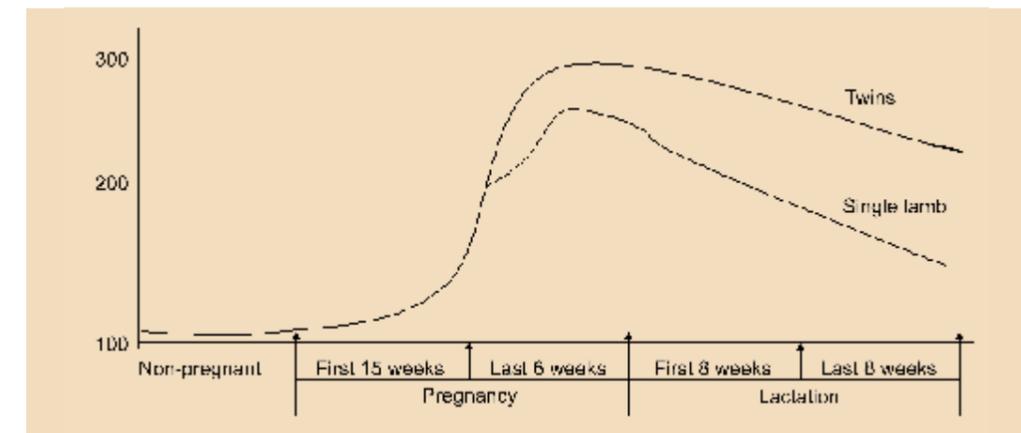


Figure 12: Nutritional needs as percentage of dry ewes
(© Faber, M. and Dove, H. 2002)

In figure 12 above we see how the nutritional requirements of a 50 kg ewe increases according to her physiological status, from dry to lactating ewe.

During early pregnancy, there is only a slight increase in the nutritional requirements compared to those of a dry ewe. During the last six weeks of pregnancy, the ewe experiences a sharp increase in nutritional requirements as a result of the growth and development of the foetus. In the case of a young pregnant replacement ewe that is probably still growing herself, the nutritional requirements are comparatively much greater.

During lactation, the ewe experiences a further increase in nutritional requirements. The increase is of course closely connected to the ewe's level of milk production (single lamb or twin).

The influence on the nutritional requirements of the ewe as a result of one or two lambs being suckled is also evident from the table. It is further interesting to note that a ewe suckling two lambs does not necessarily produce twice as much milk as the ewe suckling only one lamb.

Pregnant ewes and ewes with weak lambs must be disturbed as little as possible. Ewes soon become accustomed to one person and for that reason a particular person should as far as possible be detailed to visit pregnant ewes regularly once or twice a day to render assistance where possible.

Ewes that refuse to take their lambs because they are poor mothers must be marked for subsequent culling since this characteristic is apparently inheritable.

3.5 Breeding ram

The young ram which is still actively growing and developing, has a much higher nutritional requirement than the more adult ram. This important fact should be borne in mind when rams are utilised for mating at a relatively early age.

It is also important to note that the nutritional requirements of rams are at all times much higher than those of a dry ewe of comparable body mass.

4. Feed intake

Trials clearly illustrated the bigger maintenance need of the heavier animal. A 50 kg animal needs 1,0 kg of dry matter per day while a heavier 70 kg animal requires 1,2 kg. This need is only an indication of mere maintenance of the body, without any change in body mass or the formation of new animal products. The difference in maintenance needs between the lighter and the heavier type of sheep is particularly important when determining the stocking rate for a specific farm.

It is essential to note the factors that have a further influence on the nutritional requirements of sheep while grazing on pasture.

The first factor is the loss of energy as a result of muscular movement. Research results indicate that the energy requirements of a grazing animal are 10–20 % higher than those of kraaled animals. The energy loss largely depends on the availability of grazing and thus on the ease with which an animal necessarily has to walk. Walking long distances each day contributes towards bigger energy losses.

A second set of factors that play an important role under grazing conditions are prevailing climatic conditions such as temperature, rain and wind. A combination of the latter two factors in particular, together with low temperatures, can result in a drastic increase in the energy requirements of sheep. In Namibia high temperatures are probably a greater factor to be reckoned with than low temperatures.

It would however, be unrealistic to accept this increased nutritional need as a constant, since it may vary considerably according to the factors involved at a given moment. What is important, however, is that sheep kept in the veld have a considerably higher nutritional requirement than those kept in kraals.

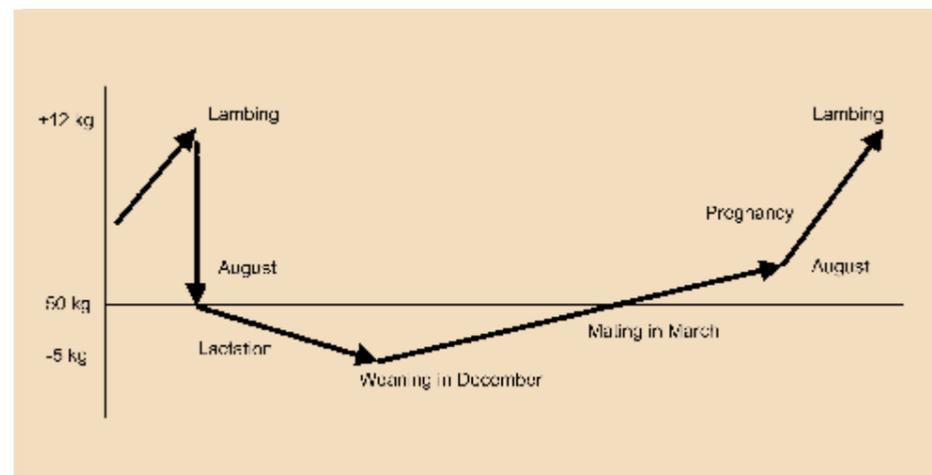


Figure 13: The expected change in mass of a 50 kg ewe raising twins
(© Neudamm Agricultural College Notes)

The weight loss of a reproducing ewe is normal. Grazing conditions and management will determine how soon the ewe can recover for the next breeding cycle. Under poor grazing conditions without licks, the ewe will lose even more weight and take longer to get pregnant again.

5. The nutritive value of Namibian veld

The nutritive value and digestibility of pastures decrease drastically in winter. Analyses of different plant species in the south of Namibia confirm these facts.

| | Protein Value (%) | Digestibility (%) | Energy Value (MJ/kg) |
|---|-------------------|-------------------|----------------------|
| Silky Bushman/ <i>Blinkaargras</i> | 6,44 | 48 | 5,96 |
| Small Bushman/ <i>Kortbeenboesmangras</i> | 4,48 | 56 | 7,17 |
| Tall Bushman/ <i>Langbeenboesmangras</i> | 3,12 | 47 | 6,04 |
| <i>Brosdoringbos</i> | 6,21 | 44 | 6,33 |
| <i>Gabbabos</i> | 7,52 | 64 | 9,68 |

These protein values are not good enough to maintain animal production from August to the next rainy season. During this period most ewes are busy raising lambs. The nutritional requirements of a ewe are considerably higher than what she can obtain from the natural grazing available.

The low digestibility of the plant material also makes it very difficult for ruminants to fully utilise nutrients from the plants. The result is lower production and animals losing weight. During the green season (mostly from February to July) the nutritional value is good enough to support high growth rates, good conceptions and the fattening of animals.

6. Supplementary feeding

Supplementary feeding includes a range of licks and complete rations like pellets. The aim of supplementary feeding is to improve animal production through extra protein, energy, roughage and minerals only during times of shortages.

6.1 Supplementation of shortages

The only supplement to consider in summer from February to June is a balanced **phosphate lick**. Phosphate is a crucial mineral for reproduction, development of bone structure, growth and milk production.

Mix 50 kg P 12 with an equal amount of coarse salt to get a balanced phosphate lick, called P 6. It is suitable for both small and large stock as well as for horses and donkeys.

By replacing rock salt with a phosphate lick, farmers will increase production. This lick does not contain any urea and is therefore non-toxic when getting wet from the rain.

During and after the winter (July to December) the farmer must switch to **protein licks** to maintain good animal production. By supplementing animals with protein licks, they are stimulated to increase their intake of this low digestible grass. Protein licks also improve digestibility resulting in better growth, milk production and fertility.

One of the ingredients of protein licks is urea. Protect these licks from rain or remove it immediately after rain to prevent animals from dying. Urea is highly soluble in water and animals that drink such a solution will be poisoned. Vinegar is an effective remedy against urea poisoning. Mix with an equal amount of water and give 400 ml per large sheep or calf and 1,5 to 3 litres per head of cattle. Before feeding an urea-containing lick, feed an ordinary salt/phosphate lick for at least 7 days.

6.2 Finishing animals for the market

This group of animals consists of either younger or older animals with different feed requirements and growth rates.

Finishing can be done in the kraal within 35 days or on veld for not longer than 50 days.

Finishing kraaled lambs (feedlot system)

Provide 150 mm feeding space per lamb. Use *Sheep Finishing Pellets* from the second day.

Vaccination against pulpy kidney is compulsory.



(Photograph by Danie de Lange)

The success is mainly determined by the first seven days through introducing the new feed gradually to the lambs.

Look at the following example of 20 Dorper lambs with an average mass of 25 kg and fed to be slaughtered at an abattoir:

| | |
|------------|--|
| Day 1: | Feed grass or lucerne only |
| Day 2–5: | 250 g pellets/lamb in the morning Grass or lucerne at midday 250 g pellets/lamb in the afternoon |
| Day 6–8: | 300 g pellets/lamb in the morning Grass or lucerne at midday 300 g pellets/lamb in the afternoon |
| Day 9–12: | 400 g pellets/lamb in the morning Start reducing grass or lucerne at midday 400 g pellets/lamb in the afternoon |
| Day 13–17: | 300 g pellets/lamb in the morning 300 g pellets/lamb at midday 350 g pellets/lamb in the afternoon No grass necessary from day 18 |
| Day 18–21: | 400 g pellets/lamb in the morning 400 g pellets/lamb at midday 400 g pellets/lamb in the afternoon |
| Day 22–35: | 400 g pellets/lamb in the morning 400 g pellets/lamb at midday 500 g pellets/lamb in the afternoon |

The average body mass should be at least 33 kg after the feeding period which may result in carcasses of 14 kg, depending on the quality of the lambs.

Although this system is labour-intensive, it will give the best results.

Old or culled ewes can be fed in the same way, although the daily amount of pellets will be more. Wean the lambs before finishing the ewes.

Never feed ewes and lambs together in the same kraal, because the daily intake differs and bigger animals always dominate younger ones at the feeding troughs.

Finishing ewes on the veld for auctions

This option is applicable as long as good quality dry grazing is available.

The aim is just to improve the condition of ewes to such an extent that they fetch a better price at the auction.

It can be done with *Veld Finishing Pellets*, which are not the same as *Sheep Finishing Pellets*. This is a cheaper method although it takes up to 50 days to prepare the animals.



(Photograph by Danie de Lange)

• Recommendations

Feed animals once a day in troughs.

Supply only 400–600 g pellets per ewe per day.

Feeding space for goats must be increased to 25 cm per ewe due to their horns.

This product can also be used for flushing both rams and ewes from August to October.

• Drought feeding

The golden rule is to get rid of all excess animals like the oldest ewes and rams, slaughter lambs and wethers.

Animals that need the best care include late pregnant and lactating ewes, young replacement ewes and only the best rams.

The aim is to maintain body weight or, under more severe conditions, to feed for survival only.

To reduce the nutritional needs of lactating ewes, lambs should be weaned at the age of eight weeks. It is more cost-effective to feed lambs than lactating ewes.

Keep on with protein licks as long as dry grass is available. In the absence of grass, change to any kind of roughage like lucerne, wheat, straw, etc. and stop providing licks.

This is also the time to confine animals to small camps or kraals to limit movement and thus save energy.

During long drought periods it is necessary to dose animals with vitamin A.

Other products to be considered during droughts include *Breker Pellets*, *Sheep Finishing Pellets* and *Veld Finishing Pellets*. Between 100–250 g per animal per day will help maintain their body condition.

CHAPTER 7 Record-keeping

Proper records serve as an indicator for the owner of the progress of the farming operation. They also serve as an early warning system if management fails with something. With record-keeping it is possible to identify or trace the problem and correct it and prevent it from happening again.

Records to be kept

We all tend to make record-keeping very complicated. Keep it simple and start with the basics like the following:

- Number of ewes.
- Expected date when ewes can start lambing.
- Number of lambs born.
- Lambing percentage.
- Income and expenditure.
- Average mass at which animals are sold.
- Income per animal.
- Dates of dosing and vaccinations.

The challenge is to use the information to increase income. This is seldom possible without spending money on farming necessities like a good ram, animal health products, supplementary feeding and a good set of handling facilities.



Record vaccinations
(Photograph by Arnold Gaseb)

CHAPTER 8 Marketing of Small Stock

Selling animals is not marketing. Good quality, well-bred animals always fetch the best prices. Marketing of slaughter lambs and ewes should be planned well in advance.

1. The Meat Board

This is the regulatory body of the red meat industry in Namibia. The Meat Board is responsible for all the legislation regarding the meat industry, varying from issuing stock brands to export permits and the promotion and advertising of red meat. The Meat Board is also responsible for the FAN Meat scheme.

Every red meat producer must apply for a stock brand and also register at the Meat Board. According to the *Stock Brand Act of the Government of Namibia*, each farmer must apply for the registration of a brand. It is done on *Form BR 1* which is available at all State Veterinary Offices.

The application for registration as a producer of a controlled product or meat is done on *Form C* of the Meat Board. Once this has been done and sent to The Manager, Meat Board, PO Box 38, Windhoek, the Meat Board sends a form for renewal to each farmer annually.

The small stock farmer uses special metal ear tags prescribed by the Meat Board to identify his animals. The ear tags with your stock brand are compulsory, but the farmer can also use his own earmarking system on the farm.

The Meat Board also administers the current quota scheme for exporting animals to South Africa. The producer can only export sheep to South Africa after slaughtering a certain number of sheep at local abattoirs. The current ratio is 6:1, meaning that for every six sheep slaughtered locally, he can export one sheep. The idea is to add value to sheep by slaughtering it locally, thus creating jobs as well.

This regulation is not yet applicable for goats.



(Photograph by Pieter Hugo)

2. Marketing to formal abattoirs, local butchers and South Africa

In these markets the producer receives good prices for top quality lambs. They prefer lamb carcasses from 14 to 18 kg with the correct fat distribution. It means that Dorper or Dorper crossbred lambs must weigh between 33 and 36 kg on the hoof. **Fat distribution is judged and measured in the abattoir on the carcass and must not be thicker than 7 mm on the back of the carcass.**

It is vital for every farmer to acquire the skill to select slaughter lambs on the hoof by determining or judging the fat thickness. Animals that do not conform to these guidelines may also be sent to these markets, but the owner will get a lower price per kilogram.

Namco Windhoek, Brukarros Meat Processors and Farmers' Meat Mariental are accredited to slaughter and export small stock. Each of these abattoirs has livestock agents in the regions. Goats cannot be slaughtered at these abattoirs.

The livestock agent is the link between the farmer and the abattoir. Usually he is one of the local farmers who knows all the other farmers. He is the person to contact for weekly meat prices and other relevant information regarding marketing.

Transportation or moving of livestock without a valid permit and the correct identification is illegal. Veterinary Offices of which there is one at almost every town, issue the permits.

3. Marketing at auctions

For most farmers this was the traditional way of selling their animals. But the small stock industry is changing. More and more farmers send their slaughter lambs to the abattoirs.

Animals not suitable for the abattoirs, too fat or with localised fat, are still sold at auctions depending on the price.

Auctions still remain the main marketing channel for goats.

Once again **the livestock agent** must recruit animals by informing farmers about expected prices and type of animals needed, and also inform interested buyers about the quality on sale. More interested buyers lead to higher prices, especially if the animals on auction are of good quality, not necessarily fat.

4. Stud auctions

It is one of the places where the commercial farmer looks for good quality breeding rams. These rams always comply with the minimum breed standards because they were judged by representatives of that **Breeders' Society**.

In the small stock industry there are regular auctions where rams and ewes from different breeds as well as from different breeders are on sale. Here you have the opportunity to compare animals of different breeders with each other.

5. Out-of-hand sales

It is very convenient for the owner to sell his animals on the farm, but be sure about the current prices and the credibility of the buyer. Never take a cheque on the farm from someone you do not know very well.

The livestock agent can be of great value by doing the business on behalf of the owner. It means that he organises the deal and ensures that the owner gets his money.

CHAPTER 9

Karakul Production

The Karakul is famous for its pelt all over the world. Karakul pelts are used with other textiles for creating garments. These jackets fetch very high prices and are very durable. Well-prepared, clean pelts of good quality will last up to 30 years.

The pelt characteristics include short, glossy hair, unique patterns formed by the arrangement of individual hairs on the pelt, good texture and a thin light pelt. These characteristics are most prominent on the newborn lamb and disappear within 72 hours after birth.

1. Preparation of Karakul pelts

1.1 Slaughter lambs for pelt production

To ensure that a product is acceptable for the international market and will fetch the best prices, **lambs must be slaughtered within 48 hours after birth**. In general lambs are slaughtered within 24 hours after birth, which results in the most acceptable product for the market.

Do not slaughter more than five lambs at a time. Wash, clean and spread the pelts on the pelt frames before continuing with the next five.



(Both photographs by Kirsten Schreiber)

Remember that the skin itself starts rotting/deteriorating soon after the lamb has been killed. Keep lambs and the pelts in the shade at all times.

The **skinning procedure** differs slightly from the traditional skinning of sheep. The aim is to retain or keep as much of the pelt as possible. It is easier to skin the lamb while the body is still warm.



Stillborn lambs are not always suitable for slaughtering. If the hair is easily removed from the pelt, it is better not to slaughter it due to poor quality. Pelts losing their hair are not acceptable in the international market. The agents doing the sorting of pelts in Windhoek will easily identify these types of pelts and send them back to the farmer.

The cutting lines along the front legs and the hind legs must be the same in order to end up with a symmetrical pelt, the left and right sides must look the same.

1.2 Treatment of pelts immediately after skinning

Immediately after skinning the pelt should be placed in **clean, cold water**. It is not necessary to add any soap for this first wash. The container should be big enough for all the pelts to be completely covered by water. After finishing the skinning of five lambs, clean the pelts before slaughtering continues.

Take the pelts one by one and use sheep scissors to carefully remove the excess loose skin and fat on the skin side of the pelt. After this procedure the pelts must be placed in another container filled with clean tap water and soap.

Add 20 ml of Byprox soap to 20 litres of water for the **washing**. Byprox is a light soap suitable for washing pelts and is available at all cooperatives. Do not use any other soap. By lightly squeezing the pelts, most debris will loosen up. **Never** dry out pelts like a towel to get rid of the water. This leads to small cracks in the pelt and will eventually lower quality and price.

Pelts should not be left in water for longer than a few hours. Long periods in water also contribute to lower quality and durability.

The farmer needs **pelt frames** to dry pelts. You need a frame for every pelt. A frame can last several years. It is important to have enough frames before the beginning of the lambing season. The frame is made of a 10 mm round bar and is covered by a single layer of hessian. The size of the frame should be 60 cm x 100 cm.



(Photograph by Kirsten Schreiber)

The washed, wet pelt is **stretched** on the pelt frame with the hairless side on the frame. The pelt is then pulled open to get the left and right sides of the pelt the same size and shape. A pelt on the frame should be slightly longer than its width. All excess pieces of skin must be cut off.

The wet stretched pelts can be put at a slight angle against a wall for the excess water to run off, but once again in the shade. After an hour the frames can be hanged in the shade to dry. Pelts will dry in three to four days and can then be removed from the frame. Never remove pelts from the frame if they are not completely dry, because it will lead to creased pelts and this will influence the durability.

When removing pelts from the frames they should be stacked on a flat surface. Put another heavy flat object on top to prevent the pelts from curling.

1.3 Storage of pelts on the farm

A specific moth and its larvae are the biggest threat, which may cause damaged pelts. **Do not** keep pelts on the farm too long before marketing them. Store pelts in a suitable bag and inspect them for moths every week.



(Photograph by Kirsten Schreiber)

The use of any kind of insecticide including naphthalene (motbolletjies) is prohibited.

1.4 Marketing of pelts

Each farmer must identify his pelts before marketing. Each Karakul farmer gets a producer number from the Pelt Sorting Centre in Windhoek. This number is applied on the backside of the pelt by the owner.

Pelts can be delivered to any branch of Agra. There are two deadlines for handing in pelts at Agra or directly at the Pelt Sorting Centre, one in April and the other in July.

After grading and sorting, all the pelts are sent overseas to be auctioned. There are only two auctions per annum. A few days after the auction the farmer gets a statement on which the number of pelts and prices fetched are specified. Within a month the farmer receives his money.

It is important to plan the mating seasons according to the two cut-off dates for handing in pelts. Remember not to keep pelts on the farm too long.

2. Karakul wool production

The Karakul is a wool breed and must be sheared to remove the wool. Karakul wool has a very thick fibre. Black wool is the most common colour and therefore does not fetch high prices. White and brown wool is in high demand from the carpet weavers and is more expensive.

2.1 Shearing Karakul sheep

Very long wool may result in lower conception rates and has a negative effect on the growth of animals. When dry ewes are sheared they come on heat more easily. The reason is that they have more nutrients available for reproduction; they do not need it for wool production any more.

Karakul must be sheared twice a year, in February and August.

Recently sheared Karakul sheep are very susceptible to cold, rainy conditions. These weather conditions are possible in the far southern parts of Namibia from June to August.

Shearing is done either by hand, using shearing scissors or with electric scissors. Electric scissors are very expensive, therefore farmers make use of hand shearing. In the southern regions of Namibia shearing teams move from farm to farm to do the shearing and are paid per animal.

Shearing is a very technical job and training as well as experience is very important. When shearing ewes it is important to take care not to cut the teats of a ewe.

2.2 Sorting and packing of Karakul wool

Karakul wool is sorted according to type, length, colour and contamination. When sorting the wool, start to remove the short pieces mainly from the belly, wool contaminated with urine, faeces and grass seeds. The remainder of the wool is sorted according to colour and length. It is also important to keep wool from lambs separate from that of older animals.

Black wool from lambs is much darker and finer than that of older animals and fetches higher prices. Black Karakul changes from pitch black as lambs to different shades of grey with an increase in age.

New or second-hand standard wool bags must be used to pack wool.

2.3 Marketing of Karakul wool

Properly packed and marked wool can be delivered to the nearest Agra branch. Agra issues a receipt and the farmer gets his money after the wool has been sold. The demand for Karakul wool is not very high in Namibia except for a few weavers who require high-quality wool of different colours. They normally pay reasonable prices for the product, but can unfortunately only accommodate relatively small quantities compared to the total Namibian production. If the wool has to be sent to the RSA by Agra, the farmer waits a few months before getting his money.

Enquiries

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References

Suggested further reading

Battaglia, R.A. and Mayrose, V.B. 1981. *Handbook on Livestock Management Techniques*. Burgess Publishing Company, Minneapolis.

De Wet, J. and Bath, G. 1994. *Kleinveesiektes*. Tafelberg Uitgewers Beperk.

Lasley, J.F. 1978. *Genetics of Livestock Improvement*.
Third edition Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

McDonald, P., Edwards, R.A. and Greenhalgh, J.F.D. 1981. *Animal Nutrition*.
Third edition. Longman London and New York.

Schutte, A.P., Van Tonder, E.M., Van der Westhuizen, J.M., Herbst, I.A. and Steyn, J.J. 1986. *Reproduksie, Kunsmatige Inseminasie en Bedryfsleiding by Kleinvee*. Perskor Printers Johannesburg.

Van der Merwe, F.J. 1983. *Dierevoeding*. Kosmo Uitgewery Edms. Bpk., Stellenbosch.

References

Agriforum, AgriPublishers, Eros.

De Wet, J. and Bath, G. 1994. *Kleinveesiektes*. Tafelberg Uitgewers Beperk.

Faber, M. and Dove, H. 2002 (eds.) *Sheep Nutrition*. CSIRO and CART Publishing.

Neudamm Agricultural College Notes.

APPENDIX 1

General Small Stock Management Programme

General information

Pregnancy period of ewes \pm 148 days.
Dry ewes come on heat every 17 days for 36 hours, especially from February to August.
Milk production of ewe peaks between 4 and 8 weeks after lambing.
It is impossible for a ewe to conceive within 40 days after the birth of a lamb.
Twins are more common in ewes lambing from August onwards.
Do not keep animals kraaled later than 07h00; allow maximum feeding time.

Guidelines to improve animal production

JANUARY

Remaining lambs of previous season must be marketed as soon as possible.
Vaccinate rams for breeding season with *Multivax P*.
The testicles of all rams must be palpated to diagnose epididymitis.
Remove and slaughter rams diagnosed with epididymitis to prevent the spreading of the disease.

FEBRUARY

Dose all sheep, goats and rams against **Nose worm**.
If the veld is green switch to phosphate lick (50 kg P 12 + 50 kg salt).
Vaccinate only the **late pregnant ewes six weeks before lambing** with *Multivax P* which includes pulpy kidney, pasteurellosis, tetanus, blackquarter and malignant oedema.
Vaccinate goat ewes with *Enzootic abortion* 4 to 6 weeks before the mating season starts.

MARCH

Spot treatment of animals against ticks.
Some of the ewes will start lambing.
Repair kraals/pens and water troughs and remove dung.

APRIL

Ewes may still be lambing – provide shade and clean water to lambs kept in pens.
Also provide lambs older than three weeks of age with *RamLambEwe Pellets*.
Treat animals against ticks.

MAY

Dose only lambs older than six weeks against **Tapeworm** and castrate ram lambs.
Vaccinate non-pregnant goat ewes against enzootic abortion.
Inspect goat lambs for blue ticks and treat if necessary.
Repair kraals/pens, water troughs and remove dung.

JUNE

Treat lambs against blue ticks if necessary.
Dose rest of lambs against **Tapeworm**.
Vaccinate **only the late pregnant ewes six weeks before lambing** with *Multivax P*.

JULY

The testicles of all rams must be palpated to diagnose epididymites.
Some ewes may start lambing soon in the absence of breeding seasons.
Cull ewes with udder and teat defects as soon as lambs are three months of age.
Switch to a protein lick like ready-mixed *Eco-Dryveld lick* or *Dorper lick* suitable for all small stock breeds.

AUGUST

Ewes may still be lambing – provide shade and clean water for lambs kept in pens.
Also provide lambs older than three weeks of age with *RamLambEwe Pellets*.
Dose only lambs older than six weeks against **Tapeworm** and castrate ram lambs.
Buy replacement rams for mating in September/October and keep these rams kraaled for the first two weeks for adaptation. Feed them *Lucerne Pellets*.
Vaccinate goat ewes against enzootic abortion 4 to 6 weeks before the mating season starts.

SEPTEMBER

Castrate all ram lambs before the age of three months.
Assist lactating ewes with 150 g *Sheepfinisher Pellets* or *Lucerne Pellets* per ewe per day.
Ewes raising twins get 400 g pellets per ewe per day.
Lambs must have daily access to *RamLambEwe Pellets*.
Rams can be flushed with 250 g pellets per day for four weeks.
Dose all small stock with a broad-spectrum remedy, which includes **Noseworm**.
Repair kraals/pens, water troughs and remove dung.

OCTOBER

Consider a stronger lick if ewes find it hard to raise lambs.
Plan the marketing of lambs and culls for November/December.
Identify all dry ewes, wethers and old rams for marketing or selling.
Treat animals against ticks.

NOVEMBER/DECEMBER

Marketing Season

- confirm auction dates, ear tags, permits.
- make sure of current selling prices.
- compare your lambs' quality with that of others on auction.

Once a day separate goat lambs from ewes and give 200 g *RamLambEwe Pellets* per lamb for 4 to 6 weeks (the idea is not to finish off the lambs, just to increase mass and get the coat of goats smooth and glossy for auctions).
Try to sell all surplus animals before the end of December due to higher prices.
Repair kraals/pens, water troughs and remove dung.

APPENDIX 2

Determining the Age of Small Stock

| | | |
|---|---|------------------|
| Younger than 15 months: 0 permanent teeth |  | Lambs |
| 12 to 24 months of age: 1 or 2 permanent teeth |  | Two tooth |
| 24 to 33 months of age: 3 or 4 permanent teeth |  | Four tooth |
| 33 to 42 months of age: 5 or 6 permanent teeth |  | Six tooth |
| 42 months of age: 7 or 8 permanent teeth |  | Full mouth |
| Older than 7 years |  | Should be culled |

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ISBN 978-99916-848-2-6

