

RPO / NERPO

CODE OF BEST PRACTICE

AUGUST 2014



RPO and NERPO

CODE OF BEST PRACTICE

FOR

SUSTAINABLE AND PROFITABLE RED MEAT PRODUCTION

PREFACE

Being custodians of the land, farmers have a responsibility to the natural and social environment they live in. They are also increasingly confronted with environmental changes, economic pressures downstream in the value chain, consumer questions and public scrutiny. Although sometimes perceived as negative, these contribute to longer term stability, social and environmental sustainability, and food security with positive consequences to the sustainability and profitability of the enterprise.

This document provides principles, self-assessment measures and standard operating procedures (SOP's) that will guide red meat producers towards continuous improvement and adherence to the Code presented.

Our sincere appreciation goes to everyone that has contributed to the development of the Code.

Signed on this _____ day of _____ 2014 _____

CHAIRMAN : RPO

CHAIRMAN : NERPO

DEFINITIONS OF KEY TERMS

1. *Animal welfare: A reflection of people's concern for the humane treatment of animals.*
2. *Biodiversity: An expression of the variety of species that exists in a community. This is a reflection of the numbers and relative abundances of genes (genetic diversity), species and ecosystems (communities) in a particular area.*
3. *Biome: A grouping of similar plant and animal communities into broad landscape units that occur under similar environmental conditions.*
4. *Bio-security: Preventative procedures and measures that are designed to protect a given population (animals) against harmful biological organisms and products.*
5. *Carrying capacity: Potential of an area to support herbivores through grazing and/or browsing and/or fodder production over an extended period without deterioration to the overall ecosystem. Or: The number of individuals in the livestock population that the resources of a habitat can support.*
6. *Climax species: A plant species that is self-perpetuating in the absence of disturbance, with no evidence of it being replaced by another plant species .*
7. *Clone: A plant or animal derived from another plant or animal with the same genetic make-up.*
8. *Cloning: Production of a cell, plant or animal with the same nuclear genome as another cell, plant or animal. In practice: The technique of producing a genetically identical copy of an animal by replacing the nucleus of an unfertilized ovum with the nucleus of a body cell from that animal.*
9. *Composite (breed): A livestock breed derived from at least two component breeds, designed to retain heterosis and/ or breed*

complementarity in future generations without crossbreeding, and maintained as a purebred.

10. *Ecosystem: Biological system comprising both living organisms and the non-living, basic elements and components of the environment.*
11. *Encroachment: The spread of a plant into an area where previously it did not occur.*
12. *Genome: All of the genetic information, the entire genetic complement, and all of the hereditary material possessed by the plant or animal.*
13. *Genotype: Genetic constitution of a cell, plant or animal; the constitution referring to the entire set of genes.*
14. *Grazing or browsing capacity: The grazeable or browseable portion of an identifiable unit of vegetation, expressed in the context of the area of land required to maintain a single livestock unit over an extended period without impacting negatively on the vegetation or soil*
15. *Greenhouse gases: Gases such as carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) which contribute to global warming.*
16. *Habitat: The environment in which a plant or animal normally lives and is adapted to.*
17. *Key species: Those plant species which have the greatest effect on the condition of the rangeland or pasture and which are responsive to changes and manipulation.*
18. *Stocking rate: Area of land in the system of management which the operator has allotted to each livestock unit in the system, and which is expressed per length of the grazeable and/or browseable period of the year*
19. *Transgenesis: A transgenic plant or animal has had genes from another plant or animal put into its genome through recombinant DNA techniques. Alternative: A plant or animal in which there has been a deliberate modification of its genome; the genome being the genetic*

make-up of a plant or animal which is responsible for the inherited characteristics.

20. Veld (range) condition: Condition of the rangeland in relation to some functional characteristics, normally optimal forage production, rainwater retention and resistance to soil erosion.

21. Veld (range) type: Unit of vegetation whose range of variation is small enough to permit the whole of it to have the same farming potential.

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1. INTRODUCTION

Farming is about sustenance and sustainable profitability. It is also about heritage, as farmers are custodians of land. In their sphere of influence, it is about their responsibility for and care of resources and those that share or are affected by the activities of the farming enterprise. In South Africa these values are guided amongst others by several Acts, the National Development Plan 2030, the National Agricultural Strategy, some principles provided by the *GreenChoice* Alliance, as well as operational functions of farmer support bodies such as the Red Meat Producers Organization (RPO) and the National Emerging Red Meat Producers Organization (NERPO). These values, therefore, become imperatives and require farmer and support structure commitment.

In more practical terms this philosophy translates into the following: Modern day farming has evolved from a largely techno-economical viable enterprise into one that is integrated with natural resources, biodiversity, ecosystems, animal welfare, and social, global and consumer considerations. Sustainability and profitability of production, food preparation and supporting agricultural practices are therefore increasingly dependent on socio-economic and natural system influences. Consequently, a Code of Best Practice must commit the industry and farmers to adherence to principles and imperatives that also address these two major issues. In order to give substance to the resolution , the contents of the Code pay attention to:

- Directives from the “National Development Plan 2030” (www.gov.za/issues/national-development-plan/) and the “Livestock Development Strategy for South Africa 2006-2015” (www.nda.agric.za/docs/GenPub/DevStrat2007.pdf).
- RPO and NERPO obligations and functions.
- Supportive descriptions and arguments in the “The Green Choice Living Farms Reference Version 2009/2010: Generic

principles, criteria and indicators for sustainable farm management in SA”

(awsassets.wwf.org.za/greenchoice_living_farms_reference_2009_2010).

and, expand on the following relevant issues:

- Environmental influences.
- Efficiency of production
- Protection of natural resources.
- Animal health and well-being.
- Damage causing animals (predators).
- Stock theft.
- Livelihood and well-being of employees.
- Safe and high-quality animal products for the consumer.

Where appropriate, guidelines and SOP's are also provided

2. **DIRECTIVES FROM THE NATIONAL DEVELOPMENT PLAN 2030 AND THE LIVESTOCK DEVELOPMENT STRATEGY FOR SOUTH AFRICA 2006-2015**

The National Development Plan 2030 (NDP) provides a vision of economic growth, poverty elimination and inequality reduction for 2030, with specific strategies relevant to agriculture and environmental sustainability. The Livestock Development Strategy for South Africa 2006-2015 (LDS) emanated from the National Agricultural Strategy (Strategic Plan for South African Agriculture of 2002;

(www.nda.agric.za/docs/sectorplan/sectorplanE.htm).

Chapter 5: “Environmental Sustainability and Resilience” and Chapter 6: “Inclusive Rural Economy” of the NDP have bearing on the Code, since the strategies relate to the responsibility of farmers and their support bodies to the natural and socio-economic environment, and food security of the nation. Core strategies/objectives of Chapter 5 are:

- A set of indicators for natural resources, accompanied by publication of annual reports on the health of identified resources to inform policy. ***The objective emphasizes that protection of natural resources will become obligatory rather than optional.***
- Achieve the peak, plateau and decline trajectory for greenhouse gas emissions (GHG), with the peak being reached around 2025. ***Agriculture (livestock farming), as any other sector is required to reduce GHG by some 20% by 2025 to meet this goal.***

Core strategies/objectives of Chapter 6 are:

- An additional 643 000 direct jobs and 326 000 indirect jobs in the agriculture, agro-processing and related sectors by 2030. ***This relates to farmers to employ and prepare workers for the labour market.***
- Maintain a positive trade balance for primary and processed agricultural products. A positive trade balance is mostly achieved by exports exceeding imports. ***As this is not the case in the livestock industry, a positive trade balance should be a primary undertaking and goal in this Code.***
- Agricultural development based on successful land reform, employment creation and strong environmental safeguards. To achieve this, irrigated agriculture and dry-land production should be expanded, with emphasis on smallholder farmers where possible. To this end, established agricultural industries must be enabling partners. ***This points to the responsibility of farmers and their supporting bodies to assist by extension, training, guidance and partnerships.***

- The strategy should ensure access to basic services, food security and the empowerment of farm workers. ***This is an obvious obligation of farmers to their employees and associates.***

The point of departure in the LDS is core and complementary strategies that inform livestock farming for the future. These clearly latch onto the strategies of the NDP and are not further discussed. They, however, form the backbone of all principles and guidelines in the following sections. The strategies are:

Core:

- Enhance equitable access and participation in agriculture.
- Improve global competitiveness and profitability.
- Ensure sustainable resource management.

Complementary:

- Good governance.
- Integrated and sustainable rural development.
- Knowledge and innovation.
- International co-operation.
- Safety and security.

The LDS is of particular significance as it was developed as a co-operative agreement between government, represented by the National Department of Agriculture (now Department of Agriculture, Forestry and Fisheries - DAFF), and the livestock industries. At the time it was accepted that government primarily has the responsibility to provide an enabling environment and the industries the organized and operational framework to, where applicable, support the core and complementary strategies.

3. RPO and NERPO OBLIGATIONS AND FUNCTIONS

RPO and NERPO are autonomous organizations with the highest authority in representing the interests of respectively commercial and emerging red meat farmers. For RPO the umbrella goal is to assist commercial farmers to maintain optimum profitability by coordinating liaison, investigations, submissions and bargaining, thereby serving their collective interests and by providing information that could enhance their enterprises. Goal-supporting functions are communication, Black Economic Empowerment, animal health issues, stock theft, damage causing animals (predators), R & D, monitoring of imports, traceability and several ad hoc services in the interest of members and the industry.

NERPO was established to facilitate commercialization of the emerging red meat sector in order that the members may meaningfully participate in the economy at large. Empowerment in terms of social and economic well-being is facilitated by institutional capacity building, lobbying for supporting legislation, assistance to obtain appropriate technologies, credit and market access and ensuring job opportunities in the supply chain for members, youth and women. To that effect NERPO through its consulting arm provides services to their members in research, project development and training, and through its investment and financial support arm seeks opportunities of investment, shareholding, loans and capital acquisition.

In terms of the Code of Best Practice both members and functionaries of RPO and NERPO should commit themselves to meeting their goals and objectives, as well as the imperatives of the NDP and LDS.

In relation to the Code the following is pertinent:

- RPO and NERPO should have business and implementation plans aligned with the NDP and the LDS.

- RPO and NERPO should liaise regularly with the DAFF and associative government structures to review implementation plans and monitor progress.
- As members of the Red Meat Industry Forum, RPO and NERPO should assist with development of a common position on agricultural policies as they affect the red meat industry.
- RPO and NERPO members should judiciously protect and utilize the diverse gene pools and high health status of the South African red meat species in support of maintaining biodiversity, competitiveness and profitability (See Sections 6.1 and 7).
- RPO and NERPO should emphasize to their members the importance of humane and environment compatible husbandry practices (See Sections 4, 6 & 7).
- RPO and NERPO should encourage commercial and emerging farmers to join the respective organizations to benefit from the information and knowledge base provided by them, as well as the mentorship, common interest and collective bargaining potential of the South African Federation of Red Meat Producers (the “Federation”).
- In support of domestic and global competitiveness RPO and NERPO through the Federation should commission investigations into the reasons for sub-optimal efficiencies in red meat production, develop strategies for research and development (R & D) and non-R & D interventions, and commit funds to these.
- To increase market share RPO and NERPO individually and through the Federation should increase their commitment and focus to understand and satisfy the needs of consumers through surveys, promotion, innovation and R & D input, and invest more in such efforts as in the past (See Section 11).
- In accordance with the NDP and in support of the emerging sector, RPO in liaison with NERPO should assist with training, mentorship

and demonstration. As a more advanced responsibility, RPO should assist with formation of co-operative structures with shareholding, and with participation in and representation of black entrepreneurs in agri-business.

4. ENVIRONMENTAL INFLUENCES

4.1 Climate change

In accordance with increased greenhouse gas (GHG) emission theory and observations, climate change projections are in agreement that southern Africa in general will become drier and warmer. This has also been accepted by government and identified for priority planning in the National Climate Change Response White Paper 2011 (www.pmg.org.za/policy.../national-climate-change-response-white-paper).

At regional level, for example provincial level, climate change responses may differ from the general pattern, requiring projections with acceptable accuracy to advise farmers on temperature and rainfall trends. This is now possible with more accurate regional models that can predict for less than 100km.

Projections on this basis show increases in average temperature of 1.5 to 2°C, towards 2050 ranging from 0.5 at seaboard to 3°C in eastern Namibia and western Botswana. The corresponding rainfall projections confirm earlier work of a generally drier southern African region, except for the central interior regions and the Eastern Cape, where a slightly wetter rainfall future is predicted. The most significant rainfall reductions of more than 40 mm/annum are predicted for the eastern parts of Limpopo and Mpumalanga, the south-western Cape and the Cape south coast. With regard to the south-western Cape, it is expected that water shortages may be more regular in future. Being a winter rainfall area, the cold-wet spells moving north-east on the

seaboard could be reduced towards 2050, resulting in less water availability for livestock requirements and irrigation of winter pastures. Better water storage and management will be required in these regions. This also applies for the interior and the eastern Cape where the higher rainfall is predicted to result in higher run-off.

The higher predicted temperatures will result in heat stress in livestock during times of the day which may not be accommodated by behavioral adaptation, resulting in lower productivity (growth, reproduction and milk), especially in not well-adapted breeds.

Behavioral adaptation means that animals will seek shadow during the hotter times of the day, be less active, drink more water and graze more at night than during the day. Farmers should assist by providing more shadow (e.g. by planting trees at water points) and water. Livestock on rangeland (veld) requires about 3 to 4kg of water per kg of dry feed that they eat when temperatures are comfortable. This may increase by 50% or more in hot weather. To calculate the daily water requirements, it is convenient to use the Large Stock Unit (LSU) used in grazing capacity estimates as point of departure. The LSU eats about 9kg of dry feed per day and therefore requires $9 \times 4\text{kg} = 36\text{kg}$ or liters water per day, which could increase to 50 to 60 liter in hot weather. A farm with 500 LSU's therefore needs to provide 25000 to 30000 liter of water per day.

4.2 Greenhouse gas emissions

Livestock contributes substantially to global warming. The contribution primarily is associated with comparatively high methane (CH₄) emissions and a small, yet significant, contribution of nitrous oxide (N₂O). Methane has a warming potential 21 to 23 times that of carbon dioxide (CO₂) and its impact on the formation of black carbon is particularly significant. Black carbon is an intense heating agent associated with the melting of ice masses and the production of

tropospheric ozone. Nitrous oxide has a warming potential of 298 to 310 times that of CO₂.

Livestock's total enteric (resulting from rumen fermentation) and manure CH₄ emissions in South Africa is about 1330 Gigagram (Gg) per year. Specie contribution to this amount is beef cattle 63%, dairy cattle 10%, sheep 12.5%, goats 3% and farmed game 10.5%, with minor contributions from pigs, poultry and ostriches. Direct nitrous oxide emissions are mainly from manure and sewerage systems in intensive systems of pigs, poultry and cattle, contributing a modest 3 Gg per year. Indirectly through nitrogen fertilization of pastures and crops established for livestock feeding, the N₂O emissions are more substantial. Overall, livestock account for 60 to 65% of total agricultural CO₂ emissions and agriculture 8.5 to 9% of all sector CO₂ emissions in the country.

Greenhouse gas emissions are mostly expressed in kg CO₂ equivalent (e) per kg product. This provides a baseline when applying mitigation options and a comparable means of studying mitigation progress with time, it facilitates comparison of production systems within countries and across the globe and, in addition, it is a measure of efficiency. For developed countries beef is 14 to 32, pork 3.9 to 10, chicken 3.7 to 10, eggs 3.9 to 4.9 and milk 0.84 to 1.4 kg CO₂ e per kg. In comparison, emissions from beef production in commercial systems in South Africa are 25 to 35 and from milk production 1.3 to 1.6 kg CO₂ e per kg. ***This suggests that the GHG emissions from these production systems is at the higher end of the scale of developed countries and efforts of mitigation should be employed***, in particular also as it is expected that the CO₂ e per kg product will be higher in the non-commercial sector. ***In fact, every sector is obliged to reduce its GHG emissions by some 20% by 2025.***

Greenhouse gas emissions (that is the carbon footprint) can be mitigated on-farm by:

- Improved production efficiency (see Section 5), which has the greatest potential of all methods.
- Limiting cultivation of crop lands by introducing minimum or no tillage methods. The potential is good because minimum carbon is released and less fertilizer (N₂O) is used.
- Saving electricity by for example using energy-saving bulbs and solar power for household and water provision.
- Optimizing transport by less driving occasions and ensuring full loads in away and return trips. Also, by using vehicles in good state of operation and with less carbon emission (good fuel efficiency).
- Providing higher quality feeds. Feeds with higher digestibility such as grains, grain by-products, oilseeds, silage and immature pasture result in less CH₄ being produced during rumen fermentation per kg feed than feeds with lower digestibility such as hays, mature pasture and straw. By providing supplements and production licks to feeds with lower digestibility, their digestibility will improve and less CH₄ will be produced per kg feed.
- Using home-grown feeds and by-products from the human food chain such as hominy chop, wheaten bran, defatted maize germ and brewer's grains rather than cultivated feeds such as maize and protein sources such as soybeans to support livestock production. Internationally, maize and soybeans are associated with altered land-use practices (cultivation) and therefore with limited carbon sequestration possibilities.
- Including feed additives such as oils and fats and ionophores such as monensin in feeds. They reduce CH₄ production during rumen fermentation, but the potential is modest.

Giving preference to well-adapted breeds and individuals. They require less feed per kg gain in the environment where they thrive and

therefore produce less CH₄ per kg product produced. Selection programs are also beginning to identify individuals (bulls for example) that produce less CH₄ than others.

5. EFFICIENCY OF PRODUCTION

Efficiency of production should be on par with competitors if the livestock sector is to hold its own in the domestic market and even better if export is envisaged. Secondly, if efficiency is optimal land use and resources are optimized and the carbon and water footprint reduced. In order to improve efficiency all input variables (natural resources, financial arrangements, human resources, inputs, skills and other factors such as social concerns) need to be harnessed in support of biological measures in such a way as to ensure that the end product is the result of efficiency at all levels. Efficiency of production can be measured in various ways, ranging from biological through sustainability of production and financial returns. The challenge is to achieve the potential maximum profit through optimal biological production efficiency whilst maintaining long-term sustainability at the same time. *Biological efficiency is arguably the most critical factor as it is partially under control of the farmer.* Amongst others it can be measured in percentage off-take or slaughter rate.

Off-take in the commercial sector varies from 23 to 33% for beef cattle, 29 to 35% for sheep and 33% for goats. Estimates for the small scale and communal sector range from 8 to 25% for beef cattle, 2.3 to 36% for sheep and 10% for goats. Depending on production systems being less or more intensive, bench marks for beef cattle are 35 to 40%, for small stock producing primarily fiber 30 to 35% and for small stock with multiple birth rates and primarily producing meat, 60 to 70%. On average, percentage off-take, even in the commercial sector, is below par.

Primary reasons for low off-take are average to low reproductive rates, high mortality and wrong herd/flock composition. For example, the national calving percentage in the commercial, small scale and

communal categories was estimated in 2011 as being respectively 62, 48 and 35%, mortality 5.8, 5.5 and 35.4% and percentage adult females in the herd 52, 49 and 25%; figures which are unacceptable if not dismal, even for the commercial category. Study group results of commercial sheep farming indicate that the position in some areas with 75 to 80% lambing percentage and 65 to 70% weaning percentage is probably not much better, although it is recognized that stock theft and predation are significant. The concern is the high variation in reproduction with the stud industry showing calving percentages in excess of 90% and up to 140% weaning rate in sheep under extensive conditions. *These controllable (managerial) factors should become priority for livestock farmers, their supporting bodies and provincial extension.* It is easy to calculate the impact on red meat production if the reasons for low off-take are rectified. For example, if calving percentage in the commercial and small scale sectors can be improved to 70 to 75% (still low compared to international and seed stock figures) and mortalities limited to 3 to 4%, off-take can improve towards the bench mark. The potential is then that South Africa can become a net exporter of beef; this, in addition to the marked effect on farm profitability and sustainability.

Apart from the positive effect on biological production efficiency, and therefore on off-take percentage, the mitigation effect on CH₄ emissions will be substantial. A simplified calculation of the outcome for one year in a 100 cow unit shows that CH₄ emissions per kg meat produced can be reduced in excess of 20%, if the weaning rate is increased from 60 to 80%. The calculation also suggests that for the same output of meat fewer cows can be kept, resulting in a further reduction in CH₄ emissions. *Thus, if beef cattle, sheep and goat farmers on rangeland systems strive to improve reproduction and weaning rate, thereby increasing biological efficiency, they automatically will reduce the carbon footprint.*

The increasing trend of farmers to not employ a distinct calving season but to calve through the year, resulting in some cows not calving every year, is cause for concern for a number of reasons:

- The calving percentage per year is lower.
- The effect on genetic progress in terms of the culling program for fertility and the introduction of replacement heifers with better genetics. With no clear yearly records strict selection programs are difficult, resulting in slower genetic progress.
- Since the nutritional requirements of cows in late gestation and lactation are much higher than cows not in gestation, the calving season is scheduled to coincide with the time of the year (rainy season) when the rangeland can provide the maximum possible nutrients. With no distinct calving season a number of cows will calve at a time when the rangeland cannot provide, which means that supplementary feed will be required which increases input costs, risk to the calf because a number of cows never take supplements, and stress on cow reserves which may increase their susceptibility to disease, osteochondrosis and nutritional imbalances.
- Grazing capacity and stocking rates were designed on the assumption that the requirements of the herd are synchronized with what the rangeland can offer and with the time surplus animals are removed. This is altered with calving through the year which means that pressure may be put on the grazing, resulting in overstocking in the long term.
- In the context of the carbon footprint: more inputs go into parent stock (cows) and because reproductive rate per year is lower, off-take is lower, which will increase CH₄ emissions per kg meat produced.

Farmers, clearly should reconsider this practice.

6. PROTECTION OF NATURAL RESOURCES

6.1 Biodiversity and ecosystems

Maintaining biodiversity of flora and fauna species and the associated ecosystems have become a global concern as the successful functioning, resilience and sustainable utilization of natural resources in future as in the past will depend on sufficient genetic diversity and healthy ecosystems. To support imperatives in this regard and provide directives, several pieces of legislation have been promulgated which partially can be found in Acts such as the:

- Animal Protection Act, No 71 of 1962 (www.rattyrascals.co.za/animalprotectionact.html),
- Animal Improvement Act, No 62 of 1998, (www.gov.za/documents/download.php?f=70720),
- Sustainable Utilization of Agricultural Resources Bill of 2003 (www.nda.agric.za/docs/Bills/sustainable.htm), and primarily in
- National Environmental Management: Biodiversity Act, No 10 of 2004 (NEMBA) (www.nda.agric.za/docs/NPPOZA/NEMBA.pdf).

Supportive reading is in The National Water Act, No 36 of 1998 (www.dwaf.gov.za/Documents?Legislature/nw_actNWA.pdf) and follow-up publications to NEMBA provide further detail: South Africa's National Spatial Biodiversity Assessment (2005) and the National Biodiversity Strategy and Action Plan (2006) (consult the document: "The Green Choice Living Farms Reference Version 2009/2010: Generic principles, criteria and indicators for sustainable farm management in SA"; reference given under Section 1. Introduction). Strategies from these documents with relevance to livestock farmers are:

- Conservation of representative samples of species and habitat.
- Conservation of the ecological and evolutionary processes that allow biodiversity to persist over time and to set biodiversity targets.
- Linking biodiversity and socio-economic development. ***One principle is that co-operation is required between production sectors and private and communal land-owners to maintain biodiversity, to prevent the loss of threatened habitat and species and to protect ecosystem functioning.***

- Focussing emergency action on threatened ecosystems to prevent further loss of ecosystem functioning. Since threatened ecosystems and land degradation are often found in farming and communal areas, minimizing these could be supported by amongst others stewardship between private and communal land-owners.

Clearly, here is a responsibility for all RPO and NERPO members.

In the livestock sector, global concern for the loss of diversity in genetic resources because of injudicious crossbreeding and replacement, together with a growing awareness of the real value of adapted minimum care breeds to the natural vegetation, have boosted maintenance of genetic diversity and created a lucrative market for South African farmers of such breeds and composites. The demand will increase with increased attention to investigations into sequenced genomes and transgenic or cloned animals to exploit favorable genes for increased productivity and quality livestock products. To conserve animal genetic material is more difficult than with plants where seed is easily stored, because semen and ova are expensive to store. ***Therefore, sustainable utilization of existing animals themselves remains the primary option, placing a strong biodiversity perspective on the responsibilities of stud suppliers.*** For that purpose and to ensure that livestock farmers maintain the competitive advantage in the international market, guarantees on lineage and genetic soundness will have to be provided. This will only be successful if breed societies, registering authorities, farmer associations (RPO, NERPO), service providers and traders in genetic material work together to provide the necessary certification on positive identification, pedigrees (by for example regular randomized parentage testing) and performance. ***Also, the Federation together with others involved should work towards establishing the legal framework for animal breeders' rights to the benefit of commercial and emerging farmers.*** Arguments in favor of a legal framework were also advanced in the first report on the State of the World's Animal Genetic Resources for Food and Agriculture (www.fao.org/docrep/010/a1260e/a1260eOO.pdf).

In addition, in support of the discussion above, the following resolutions were adopted:

- Animal genetic resources are a global concern, because they are essential to achieve food security and sustainable livelihoods.
- Domestic animal diversity is essential for future generations to develop breeds adapted to largely unforeseeable ecological and economical scenarios.

The conservation of animal genetic resources must be promoted and much more awareness raised.

In the context of protection of floral biodiversity and ecosystems, degradation of natural vegetation, loss of underlying soils, poor water retention because of wetland drainage or damage, alien plant invasion and bush encroachment is cause for concern, even though there are good examples to the contrary. The situation is also of concern for sustainable livestock production and it becomes alarming when the perceived negative effects of predicted climate change are taken into account. ***To improve or reverse the condition of the floral biodiversity and ecosystem protection, a holistic and inclusive management approach will be required (as envisaged in the NDP) with dedication by government, supporting non-government organizations (NGO's), the agricultural associations and the farmer as the custodian of the land. Functionaries and members of RPO and NERPO must be committed to this responsibility.***

Guidelines are provided by the Conservation of Agricultural Resources Act, No 43 of 1983 (www.nda.agric.za/docs/act43/eng.htm), The Sustainable Utilization of Agricultural Resources Bill of 2003 (www.nda.agric.za/docs/Bills/sustainable.htm) , the LandCare Program (www.daff.gov.za/docs/landcarepage.htm) and the LDS, with supporting reading provided by the Best Practice Reference Manual for Wool Sheep Farming in South Africa ([www.capeaction.org.za/index.php/resources/production - landscape?](http://www.capeaction.org.za/index.php/resources/production-landscape?)) and

the document: “Sustainable Mohair Industry Production Guidelines: Pre-Farm Gate” (biodiversityadvisor.sanbi.org/.../Sustainable-Mohair-Industry-Production). Objectives address issues of maintaining the production potential of the land, restoration and prevention of erosion, preventing the deterioration or destruction of water sources, protection of the natural vegetation and combating invading weeds and alien species.

6.2 Rangeland management

Since rangeland condition largely determines the productivity and well-being of the ecosystem or biome, the healthier the rangeland the more productive and sustainable livestock production will be.

Rangeland in a healthy state limits the variation in seasonal induced fodder supply, it maximizes the return in fodder production per unit rainfall and the number of palatable species, and it prevents soil erosion and water run-off. Therefore, rangeland in a healthy condition is also to an extent an effective antipode to droughts. Contrary, rangeland in a poor state due to overgrazing, bush encroachment, invasion of alien species and soil erosion shifts everything above towards the opposite.

Of all measures, stocking rate has the highest correlation with the biological output of livestock products, the economic return and the long term condition of the rangeland. These are optimized at stocking rates aligned to the grazing capacity (number of hectares per defined livestock unit) of the specific area and whether the rangeland management system allows for alternating comparatively short grazing cycles and long resting periods. Thus, farmer dedication to rangeland protection and restoration (supported by appropriate expertise) should be to:

- Restore the loss of basal cover.
- Restore the loss of key climax and palatable species.

- Address bush encroachment and invasion of alien species.
- Employ conservative stocking rates aligned with regularly monitored grazing capacity.
- Prevent soil erosion and recover eroded areas through natural and mechanical means.

With regard to grazing capacity, stocking rate and rangeland management system the introduction of wildlife warrants a specific comment: Game species on the farm or introduced may support sustainable rangeland management provided their requirements and influence on the resource are taken into account and provided they are endemic to the area. The negatives of overgrazing discussed above have been aggravated with the injudicious introduction and stocking of game species, in addition to exposing susceptible domestic livestock to game non-susceptible diseases. Where applicable, game species introduced should include browsers, selective feeders and bulk (grass) feeders to complement effective rangeland management strategies, but stocking rates should even be more conservative as alternating grazing-resting cycle management programs are not always easily employable.

For further information consult the authoritative textbook edited by N. M. Tainton (1999): “Veld Management in South Africa” ([www.bookdealers.co.za/products/veld-management-in-south africa](http://www.bookdealers.co.za/products/veld-management-in-south-africa)), available from University of KZN Press, Pietermaritzburg or leading book shops.

6.3 Fodder supply

Where the potential of vegetation resources are limited and/or overgrazed the fodder supply should be supported by cultivated species. Drought tolerant crops should be established in areas susceptible to seasonal, annual and longer term droughts. In cash crop areas crop residues provide a valuable supplementary fodder source

whereas various high potential grass and legume species are considerations in high rainfall areas and the south and eastern seaboard. ***The principle is to support livestock productivity when the rangeland fodder supply is limited and/or to support rangeland resting phases through removal of stock.***

A word of caution though: Whereas cultivated pastures offer the opportunity to increase fodder supply and potential overall grazing capacity, if unwisely implemented by increasing livestock numbers this practice can actually increase degradation of the natural vegetation. This will result when the animals are supplemented by the cultivated resource during winter and put to pasture in summer without reducing numbers. The ratio between supplementary fodder sources and fodder supply from the rangeland, therefore, should be assessed carefully and holistically before deciding on the introduction of cultivated fodder support. Farmers should consult expertise and various literature sources for guidance and suitable cultivated species, example the textbook edited by N.M. Tainton (2000): "Pasture Management in South Africa" (www.tandfonline.com/doi/pdf/10.2989/10220110109485758), University of KZN Press, Pietermaritzburg.

6.4 **Bush encroachment and alien species**

Bush encroachment and alien species invasion have in common habitat destruction and the reduction in resilience, productivity and water holding capacity of rangelands, biomes and ecosystems. Bush encroachment under particular circumstances occurs because climatic variation may favor increases in woody species, but primarily it results because of long term overgrazing. Apart from the factors above, the net effect is lower fodder production and therefore a reduction in grazing capacity and the economic viability of the property. Alien species in addition reduce habitat and water availability for indigenous species and increase the risk and intensity of wild fires, thereby putting biodiversity at risk.

Landowners should be committed to control the invasion of woody species by fire, or mechanical and chemical means, depending on advice of rangeland management experts. In the case of alien species they are under legal obligation to control the invasion. In the Conservation of Agricultural Resources Act (reference provided previously) all declared weeds and invader plants are listed, dividing invaders in three categories according to the risk:

- Category 1: These species must be removed and controlled by all land users. They may not be propagated, established or traded with (examples hakea, *Lantana*, nassella, some cactuses, oleander).
- Category 2: These species pose a threat to the environment but nevertheless have commercial value. They are only allowed in demarcated zones. The land user must obtain a water use license as these invaders use large quantities of water (examples black wattle, certain gum trees, horse tail, mesquite).
- Category 3: These species are potential invaders but have ornamental value. Existing plants do not have to be removed but no new plantings are allowed and they may not be sold (examples morning glory, tamarisk, pepper tree wattle, pearl acacia).

Alien grasses are amongst the worst invaders, especially in lowland ecosystems and are sometimes difficult to detect and control (examples wild oats, quacking grass, kikuyu, ripgut brome, rats tall fescue). Burning or hand clearing are not effective methods of control since they stimulate alien grasses. The judicious use of pre-emergent, systemic herbicides are usually effective. Consult the useful alien species clearing contacts: www.daff.gov.za/docs/landcare.htm or Working for Water: www.dwaf.gov.za/wfw or e-mail: weedbuster@dwaf.gov.za.

6.5 Water management

Agriculture consumes about 75% of the rainfall in South Africa. From this, 60% is utilized by the natural vegetation, 12% by dry land crop production and 3% by irrigation. The natural vegetation (rangeland) and dry land crop production use only so-called green water, which is rain water that is stored in the soil after precipitation. It is called “green” water because only green plants growing in the soil utilize it. In terms of food production, green water is used for the production of meat and other animal produce under extensive grazing systems on natural rangeland. Rangelands by and large do not use so-called blue water, which is runoff water to streams, dams and other storage infrastructure, or water stored in underground aquifers and normally recovered from bore holes. Blue water is primarily available for the water requirements of livestock. In terms of management, the objective should be to optimize both green and blue water on the farm.

As mentioned in Section 4.1 model predictions indicate that climate change will result in a somewhat drier country, the worst off being the Western Cape winter rainfall region and the north-eastern parts of Mpumalanga and Limpopo (Low Veld and bordering Limpopo basin). More rain is expected in the central grassland areas (Free State and Drakensberg region) and the Eastern Cape. “Worst” and “more” however are not dramatic as the difference in total rain compared with today is about 40 mm per annum. What is more important from a management point of view is the frequency and intensity of precipitation and the seasonal shift. Thunder activity is expected to increase resulting in short, heavy down pours, which means more water will flow away unutilized and together with higher temperatures more evaporation. The net effect could be less effective rainfall, even if in total more rain than today, if rain-fed water (both green and blue water) is not well-managed. The following measures become crucial:

- Catchment areas on farm should become storage areas using both mechanical means by for example weir construction, and vegetative means by creating wetlands (vlei, marsh or swamp) in catchment areas by planting reeds and tough grasses which are adapted to the specific region.

- Plant cover in rangelands is probably the most important factor. This primarily is determined by grazing capacity and stocking rate; conservative stocking rates and comparatively long resting periods of camps have the most significant effect on plant cover (even more than the variation in rainfall). Conservative stocking rate refers to the farm in total and does not mean that farmers should not have more animals than the calculated stocking rate in the camp that is presently grazed – in fact, intensive grazing under particular environmental conditions can be a good choice as it would assist in breaking the top soil (trampling) and provide more manure which supports moisture penetration, seeding and seed germination. This results because the organic status of the soil is improved. However, the grazing period should be short and the resting period long to ensure recovery and vegetation thickening. A good plant cover in the rangeland both captures rain water that otherwise would have run away and utilizes it effectively for plant growth. This implies that blue water also then becomes green water.
- In mixed farming systems where livestock farmers also produce crops, minimum tillage should become the norm rather than the exception. Minimum tillage ensures more organic matter which leads to better water capture and usage.

Seasonal shift refers to the period when rain is expected to occur. Currently, the summer rainfall may start in October and tapers off in March-April, but there is a shift from somewhat earlier in the north-eastern parts of the country to somewhat later towards the south-western parts. With climate change, this trend is expected to shift and in most regions of the summer rainfall areas to shorten, with major effects to the period of active plant growth. For example, in the Drakensberg and central grassland region precipitation is expected to be heavy from November to January but will then cease already in February - early March, which means less moisture availability for fodder production leading into the winter, and therefore major implications to fodder flow and cost of buy-in feeds. Although the

example is for this particular region, the trend will apply to some extent to other summer rainfall regions as well. The reason is that the winter high pressure system which is a characteristic of the interior of the country will intensify and lengthen, thereby causing shorter and shifting rainfall seasons.

For the winter rainfall region, less rainfall is expected because the interior high pressure system will shift the rain south-east into the sea. This will have major implications to an already pressurized water storage system and water usage for irrigation from mountain sources. Apart from the wine and fruit industries, major influences to the livestock industries of the Swartland, Overberg and Little Karoo which in some areas depend on water for irrigation of fodder sources, is expected. However, the influence will not be limited to the Western Cape as most of the cold fronts move up the coast to provide water through rain and snow to the Eastern Cape. In fact, many of the storage systems and fountains in the Eastern Cape depend on supplementation by the cold front systems. Thus, apart from the water supply to cities and towns, irrigation-dependent livestock production systems of the south-eastern seaboard may be affected, again emphasizing the importance that farmers should take special measures to prevent excessive run-off and make provision for storage.

Apart from quantity, quality of water on farms is important. For human and animal consumption of water quality standards are available from the South African Standard for Drinking Water SANS 241 (http://www.dwaf.gov.za/dir_ws/DWQR?subscr?ViewCi).

Quality of water is often not considered on farms. However, it is important that effective measures should be implemented to ensure that water is free from contaminants. Water tests should be done regularly for microbiological (Regulation R961) and chemical contents to ensure that the water complies with the specifications in SANS 241. All water sources such as borehole, river and canal water should be tested. Where water is chlorinated on site, a routine checking procedure must be implemented. Storage tanks and reservoirs for water must be covered to prevent contamination by birds, rodents,

organic and inorganic matter. Also, the air vents to these tanks and reservoirs must be insect and rodent proof. Where there may be effluent such as from an on-farm feedlot, it must be appropriately managed to ensure effective disposal with no contamination of water sources. If the effluent is applied to pasture, there must be a lapse of at least 21 days between application and grazing or harvesting of the pasture. In addition, if the effluent is collected and spray-irrigated from a storage system, the homestead and vicinity should not be exposed to spray drift.

Storage facilities for oil, silage spray liquors, fertilizers and other polluting substances must be located in a safe place and precautions must be taken to ensure that accidents do not result in the pollution of farm water supplies.

Measures include:

- Avoiding disposal of agricultural or veterinary chemicals where there is potential of them entering the local environment.
- Protecting the environment by only using approved agricultural and veterinary chemicals and medicines according to the directives on the label.
- Ensuring the safe and secure storage of farm chemicals, preferably away from the milk storage areas (where applicable).
- Ensuring the safe disposal of expired and defective chemicals and chemical containers.
- Applying integrated pest management practices where appropriate.
- Applying fertilizers in a manner that minimizes the risks of off-site nutrient impacts.
- Avoiding usage of fertilizers that contain toxins, heavy metals or other contaminants.

Ensuring the safe disposal or reuse of empty fertilizer bags.

6.6 Pollution

Effective waste management, judicious pesticide and fertilizer application methods and control of effluent from intensive operations such as feedlots are essential to protect the environment (particularly wetlands or marshes and other water sources). To that effect, refuse management must comply with legal prescriptions and not create a health hazard; the land owner should use a recycling management program or add value to the waste for commercial application; and, avoid pesticide drift and fertilizer runoff onto natural areas, in particular wetlands and water sources. Legislation and regulations of specific reference can be found in the Conservation of Agricultural Resources Act (reference provided previously), the National Environmental Management: Waste Act, No 59 of 2008 (cer.org.za/virtual/.../national-environmental-management-waste-act-2008) and the National Environmental Management: Air Quality Act, No 39 of 2004 (cer.org.za/.../national-environmental-management-air-quality-act-2004). The following guidelines may assist farmers in managing **solid waste** so as to prevent contamination of products (meat), animals and the environment:

- Animals must be kept away from areas where effluent/manure or waste is stored, to minimize exposure.
- Animals should not be exposed to human waste or any other waste likely to contain pathogens that can pose a risk to human health.
- Special attention and care should be given to pest control in waste collection areas.
- Facilities for the storage of waste should be designed to preclude the entry and harbour of pests and to avoid the contamination of food, potable water, equipment, buildings and roadways on the premises.

- It is advisable to have clearly demarcated and marked waste containers for the disposal of waste. They should be designed in such a way that they cannot be mistaken for food containers. Skips or containers that contain waste material should be covered and emptied at least once a week, or more frequently, to minimize the risk of infestation.
- Combustible waste, if incinerated, must be burned in an area that is located at an adequate distance from the homestead and farm buildings, to avoid a fire hazard, contamination of the air or the environment in general.

Hazardous waste may include pesticides, cleaning chemical containers, medicine containers and needles. Such waste should be disposed of in a manner that humans or animals will not be harmed or the environment contaminated:

- Needles used during vaccination or other injections are often simply discarded. However, the regulation states clearly that needles must be stored in a dedicated and clearly marked container or a strong plastic container with a tight fitting lid and disposed of at a veterinary office or clinic.
- All other hazardous substances must be disposed of in an environmentally appropriate manner and after consultation with the relevant health authorities, and also in accordance with the requirements of the relevant national legislation.

Meat producing farmers should consult the Code of Practice for Milk Producers compiled by the Dairy Standard Agency if they also produce milk and other food products on the farm (<http://dairystandard.co.za/images/stories/documents/legislation/COP-for-Milk-Producers1013.pdf>).

7. ANIMAL HEALTH AND WELL-BEING

As with others, this section is guided by several Acts and pieces of legislation (consult www.daff.gov.za). The following is relevant to RPO and NERPO and their members:

- Animal Diseases Act, No 35 of 1984 (<http://www.daff.gov.za/daffweb3/Branches/Agricultural-Production-Health-Food-Safety/Animal-Health>. Under Animal Health select “information”)
- Animal Identification Act, No 6 of 2002 (www.gov.za/documents/download.php?f=68097)
- Animal Improvement Act, No 62 of 1998 (www.gov.za/documents/download.php?f=70720)
- Animal Protection Act, 1962, No 71 of 1962 (www.rattyrascals.co.za/animalprotectionact.html)
- Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947 (www.nda.agric.za/doaDev/sideMenu/.../Act%2036%20of%201947.pdf)
- Meat Safety Act, No 40 of 2000 (www.nda.agric.za/docDev/sideMenu/APIS/doc/MEATSAFETY.pdf)
- Veterinary and Para-Veterinary Professions Act. No 19 of 1982 (www.nda.agric.za/vetweb/Legislation/VetParaVet_Main.htm).

In addition, Codes of Practice with relevance to RPO and NERPO members were developed by the Livestock Welfare Coordinating Committee (LWCC) of the DAFF

(www.lwcc.org.za/Portals/306/Statements/LWCC%20on%20Mulesing.pdf)

for:

- The Handling and Transport of Animals [e.g. Code: SANS 1488 – Humane Transport of Livestock by Road]
- Feedlots

- The Handling of Livestock at Auctions, Shows and Vending Sites [e.g Code: SANS 1469 – Humane Handling and Facility for the Protection of Livestock at Shows, Auctions, Vending Sites and Pounds]

The Codes of Practice (obtainable from the LWCC or the RPO office or website) should be read in conjunction with the Animal Protection Act, No 71 of 1962 and a supporting document, the “Manual of Animal Care and Use”, which was compiled by the South African Veterinary Foundation (www.savf.org.za). The Manual was developed to consolidate all pieces of legislation on animal care.

7.1 Points of departure in the Codes of Practice and supporting document

Animal welfare can be defined as a reflection of people’s concern for the humane treatment of animals. Internationally, therefore, the humane treatment of animals is guided by a set of principles when it comes to the care and use of animals, such as with livestock on farms, in transit, or at auctions and feedlots. Those with relevance to RPO and NERPO are the following:

- A realization that there is a critical relationship between animal health and animal welfare.
- The recognized “five freedoms” provide valuable guidance in animal welfare management (these are: freedom from hunger, thirst and malnutrition; freedom from fear and distress; freedom from physical and thermal discomfort; freedom from pain, injury and disease; and freedom to express normal patterns of behaviour).
- The use of animals carries with it a duty to ensure the welfare of such animals to the greatest extent practicable.
- Improvements in farm animal (livestock) care can often improve productivity and lead to economic benefits.

The basic principles are not difficult to associate with, in fact they reflect the love of farmers for their livestock and if adhered to can be positive to their balance statements. To that effect there are many confirmation studies, examples are: the animal that does not bruise when in transit because of well-designed transport equipment; quality and shelf life of meat improve with humane handling practices; losses are minimized and efficiencies of production improved if stress and disease are controlled.

RPO and NERPO members should study the Code of Practice of Handling and Transport of Livestock since they are regularly confronted with handling and transport of stock. Although the Code for Feedlots was compiled for commercial operations, some farmers do feed their weaned calves, lambs or kids on farm, which make the guidelines of feedlot construction and procedures handy. The Code of Practice for the Handling of Livestock at Shows, Auctions and Vending Sites was compiled for the responsible staff, but it provides valuable norms and procedures for farmers transporting livestock to and from and housing them at the premises.

7.2 Feed and water

Livestock should be provided with feed compositions which in relation to requirements for specific physiological states such as growth, pregnancy and lactation, are nutritionally adequate and free of contaminants. Their water supply should be clean, also free of contaminants and provided at a level of 3 to 4 liters per kg of dry feed intake. Conditions favorable to heat stress should be avoided through management and housing but if experienced, water supply should be increased by 50% or more.

The nutritional requirements of the livestock should be assessed in relation to the amount, quality and continuity of the feed supply. Total

mixed rations and supplements should be formulated under the guidance of a qualified animal nutritionist to prevent metabolic and other disorders which may lower production and cause unnecessary discomfort or pain to the animal. Feeding and watering during droughts require special attention and put a burden on resources. For further details, RPO and NERPO members should consult Act No 36 of 1947 (reference provided above), the Best Practice Reference Manual for Wool Sheep Farming in South Africa and “Sustainable Mohair Industry Production Guidelines: Pre-Farm Gate”(references provided in Section 6.1).

If self mixing is considered, the document “Good Manufacturing Practice for Self Mixing of Feed for the Livestock Industry”, compiled by the SABS (www.sabs.co.za) provides valuable guidelines. Some specifications may be too stringent and costly to implement for the farmer operator that mixes less than 100 tons per annum (which is the stance taken by RPO and NERPO); nevertheless, feeds and feedstuffs may become contaminated if basic hygiene and sanitation measures are not implemented with negative consequences to human and animal health, and environmental protection. ***Farmers, therefore, should ensure that they keep trace of all feed products, have a dedicated feed mixing and storage facility, control access to the facility, keep it clean, unpolluted and free of vermin and birds, store veterinary additives and medicines as specified, regularly check mixing equipment and train staff properly with regard to safety measures and handling skills.***

7.3 Health and disease

Maintaining health and preventing disease are partly management and partly control driven. For further information RPO and NERPO members should consult the Animal Diseases Act, No 35 of 1984 (including the Animal Disease Regulations, R. 2026 of 1986) and in association the Animal Protection Act, No 71 of 1962. The Animal

Diseases Act amongst others provide for measures to promote animal health and control animal diseases.

Many husbandry and managerial practices are required to prevent production losses, disease and discomfort. Some procedures may result in short term distress, but if not implemented can lead to even greater distress and pain. Principles here are:

- Procedures that cause pain must be minimized and not performed if practical alternatives exist.
- On farm health and disease control management procedures must be done by competent and experienced operators under the guidance or supervision of a registered veterinarian.
- Immunizations against anthrax and bovine brucellosis must be given strictly according to law. Furthermore, farmers should participate in the bovine brucellosis and tuberculosis test schemes in order to promote herd health.
- Every animal must be permanently identified by a registered branding or tattoo mark (Animal Identification Act, No. 6 of 2002) as well as an individual identification tag or mark.
- Movement control measures should be complied with.
- Preventative animal health measures should always be taken.
- Animals brought onto the farm should be quarantined to ensure that infective diseases and resistant parasites are not introduced. Bulls brought onto the farm must be tested for venereal diseases, and all new cattle should be tested for bovine brucellosis, bovine viral diarrhoea and tuberculosis.
- Fences and gates should be intact to secure bio-security. If possible, consider jackal and warthog proof fences.
- A list of government controlled and notifiable diseases is on the website of the DAFF. Such diseases must immediately be reported to the State veterinarian, should they occur on the farm.

- Farmers should be aware of zoonotic diseases such as bovine brucellosis, tuberculosis, rabies, Rift Valley fever, anthrax and they should take the necessary steps to protect their workers and themselves.
- Medicines including parasiticides must be safely stored and empty containers, expired drugs, used needles, syringes and materials discarded according to prescribed procedures.
- Protective clothing should be supplied and worn by employees working with poisonous substances and infective material.
- The necessary training should be given to employees handling animals, vaccines, drugs, materials and instruments.
- Kraals and crush pens should be constructed in such a way that injuries to people and animals are restricted to a minimum.

Owners and managers should ensure that livestock are routinely monitored with respect to overall health and maintaining condition. A sound health program must be developed and implemented to the benefit of the herd and traceability purposes (see Section 11). This should be done in consultation with a veterinarian and the monitoring should include regular inspections of welfare issues such as feed, water, protection against climatic extremes, disease, injury, morbidity and distress. Each farm should be visited at least once a year by the herd veterinarian to assess the relevance of the herd health program and to monitor and certify the correct implementation of the program.

Sick or injured animals must be attended to promptly, treated appropriately or killed humanely in an accepted manner and within specified legal parameters. ***If remedies are required, only lawfully registered drugs should be administered strictly according to the instructions of the manufacturer and adherence to the prescribed withdrawal periods. Where applicable, medicines must be administered according to the prescription of the veterinarian.***

Owners and managers should be aware of the irresponsible use of antibiotics and parasiticides as they can cause potential damage to the environment and user including the development of resistant

organisms and parasites. Therefore, these products must never be administered routinely, but only when required.

7.4 **Bio-security and disease control:**

Bio-security, from a disease control perspective, relates to proactive steps and measures that need to be taken on a permanent or temporary basis in order to limit the spread and effect of contagious disease. This could for example be in the form of routine testing as in the case of TB (Tuberculosis) and CA (Brucellosis) which are ever present, vaccinations as in the case of Anthrax, or movement restrictions as in the case of a Foot and Mouth outbreak in the green zone, where the restrictions are lifted once the threat is considered over. The reader is referred to Addendum 1 (attached) for specific precautionary measures to prevent diseases being imported onto the farm.

In principle the less contact animals have with each other the better the disease (which is continuously eroding the value of the national herd and the productivity of the livestock farmer) can be limited or controlled.

Livestock farmers need to undertake to function within the law with respect to controlled diseases (these are usually diseases that affect human health or diseases that cause damage to the economy) and not do things that put other farmers at risk. ***One example is the farmer should not send animals from a CA positive herd/ farm to an auction, even if the individuals to be sold tested negative, as these animals may be latently infected. Prospective buyers should always be informed of the CA status of the herd/farm if cattle are to be sold. However, it is strongly discouraged to sell animals from positive CA herds if the farm is still under quarantine. Lack of compliance with regards to selling of potentially diseased animals erodes the health of the national herd.***

There are a number of tools that can facilitate implementing effective bio-security measures:

- A healthy working relationship should be developed with the local veterinarian to keep up to date with the changing disease landscape and timely implement the appropriate measures.
- An appropriate vaccination program should be obtained from the local veterinarian and persist with it. Farmers need to understand why they follow the program as it will help with motivation.
- Farmers should routinely test for efficacy of their production parameters and for the presence of diseases that are hard to detect, such as Trichomoniasis, Vibriosis, CA and TB.
- Animals that are affected by unfamiliar diseases, morbidity or that die should be tested immediately in order to respond timely and appropriately to protect the rest of the herd.
- It is ideal to maintain a closed herd. If new genetic material is purchased, it should be from reputable sources and preferably retested while kept in quarantine after arrival.

Boundary fences should be regularly reinforced. Effective fences strengthen neighbour relationships and delay the spread of disease. Furthermore, to have an intact fence and to know the TB and CA status on the farm should be considered a minimum prerequisite, as this will go a long way to protecting those who are dedicated farmers and invest actively in their bio-security measures

8. **DAMAGE CAUSING ANIMALS (PREDATORS)**

Predators such as jackal, leopard and caracal in natural systems or reserves are important in controlling population numbers and removing old and sick animals and decaying carcasses. Unfortunately, on adjacent farms calves and small stock are easy targets resulting in enormous losses per year. Obviously this has major consequences to the agricultural gross domestic product (GDP), export of wool and mohair, and domestic meat supply.

These predators are territorial, which implies that if killed other dominant ones will simply fill the vacuum. A second principle is that not all predators by preference prey on calves and small stock; most will only do so if their natural prey such as small antelope, dassies, hares, birds and lizards become limiting. Thus, a balanced approach to the problem with selective killing (only culprits), collaborating with neighbours, predator experts and adjacent reserves, and restoration of the ecosystem and natural prey on farms, is the only long term solution. If killing is necessary, it must be quick and humane to prevent suffering – preferably by using qualified hunters. Killing is not the only option; farmers can use “natural shepherds” (for example donkeys, alpacas and dogs), pens, predator proof fencing or livestock protecting collars, provided the methods employed have been cleared with the authorities. ***Methods which cause morally indefensible suffering to predators are neither endorsed nor condoned.*** Best practices for predator management and SOP’s are discussed in the RPO Code of the Predator Management Division as Addendum 2. A further document is provided by the Griffon Poison Information Centre (e-mail: nesher@tiscali.co.za.)

Coordination of predation management has been established under the Predation Management Forum (PMF) on which all role players are represented. The PMF provides a platform to commodity organizations, aimed at reducing losses incurred as a result of predation by means of ecologically and ethically acceptable methods which protect the biodiversity of the country. Strategic drivers identified by the PMF are to:

- Expand the scientific knowledge base on predation management and build an institutional memory by promoting R & D and maintaining a database on predation management.
- Create an environment where the producer can be self-empowered to effectively and responsibly deal with predation management in support of economical livestock production. It is envisaged to support training, identify credible predation management agents, develop a predation management best

practice manual and using only internationally approved predation management instruments.

- Establish a mutually committed partnership at senior government level driving a shared strategy in support of predation management through interaction at senior government level and influencing legislation.
- Drive an active communication strategy in support of the mandate by regularly providing information material to producers, consumers and the public at large, and to promote commitment to the Code of Best Practice.

For further reading, consult the website of the PMF: <http://www.pmfsa.co.za/>.

9. **STOCK THEFT**

Crime, including stock theft, has reached unacceptable high levels in the farming and rural communities. A study in the Eastern Cape has shown that the loss due to stock theft amounted to about 20% of the GDP of agriculture in the province. Of particular concern is that emerging/communal farming is as vulnerable as the commercial sector.

Crime has direct bearing on the emotional, economic and social well-being of farming and associated communities, and it also affects the economic viability of towns since their businesses are largely farmer dependent. Effective measures of protecting and eliminating crime are the democratic right of citizens. It is also imperative if inroads are to be made in the goals of reducing poverty, upliftment, empowerment, job creation and sustainable rural development through livestock and other agricultural means. Protection requires effective communication, prevention measures and cooperation between police, the responsible government departments, farmer support bodies, farmers, farm workers and even the community at large. To that effect knowledge implies empowerment. Therefore, it is important for farmers to study

the relevant Acts and to know the information the authorities will require from a reporting statement.

The applicable Acts are the:

- Stock Theft Act, No 57 of 1959
www.justice.gov.za/legislation/acts/1959-053.pdf),
- Criminal Procedure Act, No 51 of 1977
www.justice.gov.za/legislation/acts/1977-051.pdf),
 - Animal Identification Act, No 6 of 2002
www.gov.za/documents/download/.php?f=68097), and
 - Fencing Act, No 31 of 1963
www.plato.org.za/pdf/.../Fencing%20Act%2031%20of%201963.pdf).

The Stock Theft Act deals with persons in possession of animals or animal products that cannot be accounted for or enter animal enclosures without permission. It also deals with the importance of the relevant documentation of proof of ownership when buying, selling or transporting animals. In Section 300 of the Criminal Procedure Act it is explained how livestock owners can claim for damage or loss if someone is found guilty of theft. The Animal Identification Act deals with the importance and benefits of identification, and extensively with the ways and types of marking. In the Fencing Act it is indicated that a person is guilty of an offense if he/she opens a gate, passes through it, or climbs through a fence without permission, or deliberately damages or removes a fence or gate. Prominent regulations of the Animal Identification Act and the Stock Theft Act are provided in Addendum 3, together with identification methods.

10. LIVELIHOOD AND WELL-BEING OF EMPLOYEES

This section is informed by the:

- Labour Relations Act, No 66 of 1995
(www.gov.za/documents/download.php?f=70985)
- Employment Equity Act, No 55 of 1998
(www.labour.gov.za/.../legislation/acts/employment-equity/employment-e)
- Basic Conditions of Employment Act, No 75 of 1997
(www.acts.co.za/basic-conditions-of-employment-act-1997)
- Skills Development Act, No 97 of 1998
(www.gov.za/documents/download.php?f=70755)
- Compensation for Occupational Injuries and Diseases Act, No 130 of 1993
(www.labour.gov.za/.../acts/.../compensation-for-occupational-injuries-and-diseases-act)
- Land Reform (Labour Tenants) Act, No 3 of 1996
(www.polity.org.za/.../land-reform-labour-tenants-act-no3-of-1996).

The overriding principle is that farmers need to ensure that the rights and well-being of farm workers and their families are upheld and that they contribute to the social and economic development of the local community and those on the periphery.

The Labour Relations Act for example deals with rights as contained in the Bill of Rights in the Constitution of South Africa. Those relevant to RPO and NERPO members are: the right of freedom of association of both employer and employee, the protection of employers and those seeking employment, the protection of the rights of employees (Sections 4 and 9), the organizational rights of employees such as access to the workplace by a representative of the trade union, collective bargaining rights, the right of employees to strike and the right of an employer's recourse to lockout (Sections 64-71), unfair

dismissal and unfair labour practices (Sections 185-197), and supporting Codes of Good Practice to deal with fair dismissals, sexual harassment and HIV/AIDS in employment.

The Basic Conditions of Employment Act was promulgated to advance economic development and social justice by giving effect to the right to fair labour practices. It is supported by a Code of Good Practice which deals with fair working hours and the impact of working time on the health, safety and family responsibilities of employees. The Skills Development Act was introduced to develop the skills of the South African workforce, improve their quality of life, their prospects of work and labour-associated mobility, improve the productivity in the workplace and therefore the competitiveness of employers, promote self-employment and improve the employment prospects through training and education. The Compensation for Occupational Injuries and Diseases Act is designed amongst others to provide for the health and safety of people at work, those that use or are exposed to potential dangerous equipment and those on the periphery of where the work is conducted. Finally, The Land Reform (Labour Tenants) Act was introduced to provide for security of tenure of labour tenants and people occupying or using land as a result of their association with labour tenants. The Act also deals with the acquisition of land and the rights to land by labour tenants.

RPO and NERPO members should commit themselves to the following:

- Comply with the conditions legislated for fair labour practices.
- Contribute to employee unemployment benefits.
- Contribute to the skills development of employees.
- Provide for compensation of death or disablement resulting from occupational activities.
- Provide for the safety and health of the persons at work.
- Uphold the rights of labour tenants and farm occupiers to reside on land and to acquire land where appropriate.

- Ensure that land on the farm is available for recreational use.
- Participate in actions towards establishment of a sustainable local economy.

One way of participating in such actions is to adopt a policy of preferential employment of residents from the local community or from labour tenants on the farm. Applicable research results suggest that agricultural growth and efficient management of natural resources are dependent on the political, legal and administrative capabilities of rural communities to determine their own future and to protect their natural resources and other economic interests. Commitments hereto should be read together with obligations discussed in the recommendations of the LDS, and RPO and NERPO goals and objectives. ***The umbrella principle is that farmers are the mainstay of the economy of towns, townships and the surrounding rural environment, and they have the knowledge and skills to support development towards a viable and sustainable local economy.***

11. **SAFE AND HIGH-QUALITY ANIMAL PRODUCTS TO THE CONSUMER**

Access to safe and healthy food is a fundamental human right and endorsed in the Constitution of South Africa. As such, this puts a responsibility and commitment on all concerned in the supply chain (farmers, processors and retailers) to meet these obligations to consumers. The farmer obligation and commitment in this regard really comes down to all principles and measures discussed above: ***It is about everything captured in conservation of ecosystems, protection of the natural resource base, animal welfare measures and training and social development of employees.*** After all, it makes economic sense to follow humane animal management and health guidelines, to graze and supplement livestock closely aligned with the sustainable grazing capacity of the area, to support the water supply by maintaining wetlands, and to train and support farm workers

to become better employees for the combined task of achieving economic stability and sustainability of the enterprise.

The supply of safe and healthy (quality) livestock products is not about an organic versus a conventional farming system, or intensive versus extensive practices, as has been regularly argued in the popular media. Rather it is about **control of risks**; all systems have risks which the farmer needs to be aware of and manage meticulously. For example health and growth promoting products that come on the market have been thoroughly tested, often over periods of years, to comply with human and environmental safety measures before they can be registered. **They do however have storage, usage and withdrawal specifications which must be adhered to.**

Risk control becomes effective when a **traceability and audit system** is implemented. From the perspective of the farmer it assists in controlling health and safety risks before the farm gate, but it also supports communication down the supply chain, because regular interaction with processors and retailers becomes necessary (as an example RPO and NERPO members can consult the Woolworths Code of Practice for Sheep Production, available from the RPO office). Traceability requires identification of all animals by tattooing (Animal Identification Act) and the keeping of records of breeding and husbandry practices, disease and medical treatments, feed sources and compositions, health, safety and contamination (eg. waste, pollution etc.), and important - control of access to the farm or contact with livestock and the work environment, because such contacts can spread disease. Therefore, to comply, farmers are advised to implement **bio-security measures, have a policy on visitors, draw up a written veterinary health plan with time frames, have regular recorded visits and reports from a veterinarian and have recorded assistance from a nutritionist when doing home mixing** (see Section 7). On farm training and skills development should emphasize the reasons and actions for these measures to limit risk and ensure safe products, thereby supporting the socio-economic well-being of both employer and employee. All these measures can be

accommodated and put to practice by implementing an integrated farm management plan. To that effect SOP's for effective general management on cattle farms (as example) are provided in Addendum 4.

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