CODE

OF BEST PRACTICE

REVISED 2023

RPO

RPO and NERPO

CODE OF BEST PRACTICE

FOR

SUSTAINABLE AND PROFITABLE RED MEAT PRODUCTION

2023

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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 reflects 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. *Biosecurity: 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 (e.g. cattle, sheep, goats) 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 genetic information, the entire genetic complement, and all 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 browsable 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 (CO_2), methane (CH_4) and nitrous oxide (N_2O) 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. *Range (veld) condition: Condition of the rangeland in relation to some functional characteristics, normally optimal forage production, rainwater retention and resistance to soil erosion.*

19. *Range (veld) type: Unit of vegetation whose range of variation is small enough to permit the whole of it to have the same farming potential.*

20. *Regenerative agriculture: Is a conservation and rehabilitation approach to food and farming systems (e.g. grazing management), which focuses on topsoil regeneration, increasing biodiversity, improving the water cycle, enhancing ecosystem services, supporting bio-sequestration, increasing resilience to climate change, and strengthening the health and vitality of farm soil.*

21. *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 browsable period of the year.*

22. *Transgenesis: A transgenic plant or animal has had genes from another plant or animal put into its genome through recombinant DNA techniques. Alternatively: 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.*

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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 responsibility to care for resources and those that share or are affected by the activities of the farming enterprise. Modern day farming has evolved from a largely techno-economic 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.

In the broader context of the RSA, it is also about co-responsibility to support economic growth, inclusivity and employment through a social compact approach with government and other role players, as has been expressed in the Presidential Jobs Summit (2018), the South African Economic Reconstruction and Recovery Plan (2021) (ERRP) and various sectoral master plans. The social compact approach for agriculture is guided by the Agriculture and Agro-processing Master Plan (2022) which should be seen as both a source of vitality for the sector and an important pillar of the country's overall economic recovery and reconstruction program. Therefore, from the red meat sector's perspective, the operational functions of the Red Meat Producers Organization (RPO) and the National Emerging Red Meat Producers Organization (NERPO) should be aligned with the social compact approach, and the Code of Best Practice must commit the industry and farmers thereto.

In the Code the following issues in relation to the above are discussed in some detail:

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

Where appropriate, guidelines and SOPs are also provided

2. VISION AND OBJECTIVES OF THE AGRICULTURE AND AGRO-PROCESSING MASTER PLAN (2022) (AAMP):

The vision of the AAMP is to: *build a growing, equitable, inclusive, competitive, job-creating, low-carbon and sustainable agriculture and agro-processing sector, thereby striving towards a globally competitive agriculture and agro processing sector, support market-oriented and inclusive production to develop rural economies, ensure food security and create decent and inclusive employment and entrepreneurship opportunities for all participants in agriculture and agro-processing value chains*. More specific, the objectives are to:

- Increase food security in South Africa;
- Promote and accelerate sustainable transformation in the agriculture and agro-processing sectors;
- Improve access to local and export markets, which will require constant upgrades in the quality of supply to bolster South Africa's competitiveness;
- Enhance competitiveness and entrepreneurship opportunities through technological innovation, innovative financing models for black farmers, infrastructure construction and digitalization;
- Create an effective farmer support system and agro-processing incentives;
- Create decent, growing and inclusive employment, in addition to improving working conditions and fair wages in the sector;
- Improve the safety of the farming community and reduce stock and crop theft, and farm attacks;
- Create a capable state and enabling policy environment; and
- Enhance resilience to the effects of climate change and promote sustainable management of natural resources.

3. OBLIGATIONS OF RPO AND NERPO MEMBERS AND FUNCTIONARIES

In terms of the Code of Best Practice, members and functionaries of RPO and NERPO should commit to meeting the imperatives of the ERRP and AAMP; the latter as it pertains to the Livestock Value-Chain Cluster.

The opportunities and commitments with respect to the Livestock Value-Chain Cluster are driven by the non-profit company Red Meat Industry Services (RMIS). In relation to the Code the following is pertinent:

- **Policy issues:** Have implementation plans aligned with the AAMP imperatives.
- Liaise regularly with the DALRRD and associative government structures to review such plans and monitor progress. Where applicable, assist with development of a common position on agricultural policies as they affect the red meat industry. *Specifically in a public-private partnership (PPP) arrangement, support government in resolving policy ambiguities and creating an investment-friendly environment.*
- **Creating an investment-friendly environment:** Judiciously protect and utilize the diverse and healthy gene pools of the South African red meat species in support of maintaining biodiversity, biosecurity, competitiveness and profitability (See Sections 6.1 and 7). *Specific goals together with government are: implementation of the 2016-2026 South African Veterinary Strategy; implementation of the Livestock Identification and Traceability System (LITS) as part of the PPP to improve management of health and livestock movement; development and enforcement of strict biosecurity control measures and protocols; and use of practical traceability measures to track movement and origin of products. To that effect, evaluate opportunities to group producers and use holding stations with traceability, thus incorporating them into distinguishing compartments.*
- In support of biosecurity, *private laboratories must be accredited to facilitate testing and improve efficiency in the state laboratories. This is also critical for the efficient control of disease, especially controlled diseases.*
- Emphasize and implement humane and environment compatible husbandry practices (See Sections 4, 6 & 7).
- Encourage commercial and emerging farmers to join the RPO and NERPO to benefit from the information and knowledge base provided, as well as the mentorship, common interest and collective bargaining potential which they have through the RMIS.
- To ensure domestic and global competitiveness, 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 in support.
- To increase market share have committed plans to understand and satisfy the needs of consumers through surveys, promotion, innovation and R & D input, and invest in such efforts (See Section 11).
- **Creating enabling infrastructure:** In support of the emerging sector: *invest in rural animal production infrastructure such as dipping tanks, handling facilities including kraals, head clamps and fences; and, assist with training, mentorship and demonstration*. As a more advanced responsibility, support formation of co-operative structures with shareholding, and with participation in and representation of black entrepreneurs in agri-business.
- **Provide comprehensive farmer assistance through the PPP:** *Funds from government must be allocated appropriately; use the PPP model to improve animal health, infrastructure and trading support services; employ a holistic approach to animal health since farmers lack the capacity and funds to cover themselves; promote a genetic improvement program for livestock of emerging farmers and align with traceability, management and sustainability extension and training; support the increased participation of the emerging sector in the meat value chain; and, support the goal of increasing weaner calf intake from this sector to 250 000 by 2030.*
- **Support food security and increased production in the emerging sector:** *Enhance livestock statistic methodology to improve statistics of animals; support methods, training and extension to prevent and recover land degradation; interact and support training of farmers in the emerging sector to understand livestock feed requirements, requirements of infrastructure and rules to allow animals into the market, as well as food safety measures, labelling legislation and public health.*
- **Facilitation of market expansion and trade:** *Communicate health status (e.g. Foot and Mouth Disease – FMD); develop and implement an accredited Meat Grading System; develop export certification standards and increase inspection capacity of facilities; support government in trade agreements, tariff and non-tariff measures, and SPS protocols for both exports and imports.*

4. ENVIRONMENTAL INFLUENCES

4.1 Climate change

In accordance with increased greenhouse gas (GHG) emission theory and observations, climate change projections agree 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) and later updated versions.

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 20km.

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 the western Northern Cape, eastern Namibia and western Botswana. The corresponding rainfall projections are less certain since these are substantially influenced by the El Niño/La Niña cycles in the Pacific Ocean. Nevertheless, it confirms earlier predictions of a generally drier southern African region, except for the eastern interior where a slightly wetter rainfall future may occur. The most significant rainfall reductions compared to the present are predicted for the eastern parts of Limpopo and Mpumalanga, the south-western Cape and the south-eastern coast. Regarding 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 also be reduced in these regions, resulting in less water availability for livestock requirements and irrigation of winter pastures. Improved water storage and management will therefore be required. This also applies to the interior and some parts of the Eastern Cape where the higher rainfall may result in heavy downpours and higher run-off, with increased erosion as a secondary negative result.

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. Results at Vaalharts have shown that even in well managed beef herds calving rate can decline to 60% in warm and dry years compared to normal years.

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 requires about 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 10kg of dry feed per day and therefore requires 10 × 4kg = 40 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 25 000 to 30 000 liter of water per day.

4.2 Greenhouse gas emissions

Livestock contributes significantly to global warming. The contribution primarily is associated with comparatively high methane (CH_4) emissions and a smaller contribution of nitrous oxide (N_2O). Although recently disputed, it is still accepted by the International Panel for Climate Change (IPCC) that CH_4 has a warming potential of about 28 times that of carbon dioxide (CO_2). The danger of CH_4 is its impact on the formation of black carbon. 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 CO_2. Apart from global warming, N_2O is the most important destroyer of the ozone layer in the atmosphere.

Livestock ruminants' total enteric (resulting from rumen fermentation) and manure CH_4 emissions in South Africa is about 1300 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 N_2O 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 N_2O emissions are more substantial and of concern. Overall, livestock account for 60 to 65% of total agricultural CO_2 emissions and agriculture 8.5 to 9% of all sector CO_2 emissions in the country.

Greenhouse gas emissions are mostly expressed in kg CO_2 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 CO_2 e per kg. In comparison, emissions from beef production in commercial systems in South Africa are 20 to 30 and from milk production 1.2 to 1.4 kg CO_2 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,*** also as it is expected that the CO_2 e per kg product will be higher in the non-commercial sector**. *In fact, the directive from the IPCC is for every sector to reduce its GHG emissions by about 20% by 2025.***

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

- Improved production efficiency (see also Section 5), which has the greatest potential of all direct methods.
- Limiting cultivation of crop lands by introducing minimum or no till methods. The potential is good because minimum carbon is released and less fertilizer (N_2O) 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 CH_4 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 CH_4 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, probiotics and ionophores such as monensin in feeds. They reduce CH_4 production during rumen fermentation, but the potential is modest, and with respect to ionophores, they are regarded as antibiotics and are progressively disfavored in formulations.
- 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 CH_4 per kg product produced. Selection programs are also beginning to identify individuals (bulls for example) that produce less CH_4 than others.

Indirectly, GHG in the atmosphere can be reduced by carbon sequestration (storage) into plants and especially soils; the potential which is 2-3 times more than emission reduction as described above. The sequestration results from the biogenic carbon pathway: CH_4 in the atmosphere is primarily oxidized by hydroxyl-oxidation to CO_2 within 10 years following entry, and together with other CO_2 returned to the earth by photosynthesis into plants. Here it is stored in carbon compounds in the leaves and through the root system transferred to the soil. Whereas grazing animals obtain their energy requirements by eating the plants, the microbes and small organisms such as earthworms obtain their requirements from below-ground carbon compounds.

The potential for carbon sequestration is high in forests, but even more in pure and savanna grasslands, which are the primary grazing land in the country. It is maximized in high biomass rangeland which is grazed. Livestock farmers can manipulate their grazing management systems (see Section 6.2) to do so, thereby reducing both the carbon footprint of their farms, but also contributing to reducing the carbon footprint of the country as a whole. **RPO and NERPO farmers should commit to this responsibility in their own and the country's interest.**

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. 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, benchmarks 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 recently estimated 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 of more than 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 benchmark. The potential is then that South Africa can become a significant 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 CH_4 emissions will be substantial. A simplified calculation of the outcome for one year in a 100-cow unit shows that CH_4 emissions per kg meat produced can be reduced by more than 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 CH_4 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 several 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 several 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 several 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 they produce more CH_4, and because reproductive rate per year is lower, off-take is lower, which will increase CH_4 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 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
- Animal Improvement Act, No 62 of 1998
- Sustainable Utilization of Agricultural Resources Bill of 2003, and primarily in the National Environmental Management: Biodiversity Act, No 10 of 2004 (NEMBA).

Supportive reading is in the National Water Act, No 36 of 1998, 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"). 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 landowners to maintain biodiversity, to prevent the loss of threatened habitat and species and to protect ecosystem functioning.***
- Focusing 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 by commercial farmers and the emerging and communal sectors.

Clearly, here is a responsibility for all RPO and NERPO members, and the RMIS as the primary functionary of initiatives.

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 market for South African farmers of such breeds and composites. The demand should 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 seedstock 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, RMIS), 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 RMIS 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.

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 economic 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 is required 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 through the RMIS must be committed to this responsibility.***

Guidelines are provided by the Conservation of Agricultural Resources Act, No 43 of 1983, The Sustainable Utilization of Agricultural Resources Bill of 2003 and the LandCare Program. 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, it prevents soil erosion and water run-off, and it maximizes carbon sequestration (see Section 4.2). 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. 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 stocking rates aligned with regularly monitored grazing capacity.
- Prevent soil erosion and recover eroded areas through natural and mechanical means.

Of all measures, stocking rate has the highest correlation with the biological output of livestock products, economic return and the long-term condition of the rangeland, and although the rangeland management system employed is roughly a function of both grazing capacity and stocking rate, the efficacy of the stocking rate employed is mainly determined by whether the management system allows for alternating comparatively short grazing cycles and long resting periods. This is crucial. Thus, if the biomass allows high stocking rates and the infrastructure allows quick rotations and long resting periods to recover, such stocking rates have shown high correlation with restoration, carbon sequestration, and as a result, improved soil carbon and biology. The concept of regenerative grazing management is therefore often correlated with high to ultra-high stocking rates. When the farm has a crop-livestock mixed production system the number of livestock managed with high stocking density can be supplemented with crop residues and cover crops, allowing a much higher grazing capacity and product output than what would have been expected from the long-term grazing capacity. However, before farmers embark on this journey they should consult experienced expertise and regularly analyze soil and plant status.

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 considered 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 grazing capacity and stocking rate estimates should 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: "*Veld Management in South Africa" (1999),* or *"Veld and Pasture Management*" (2017), by the MPO Institute for Dairy Technology, which was specifically compiled for RPO training needs.

6.3 **Fodder supply**

Where the potential of vegetation resources is 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. Within regenerative crop production practices cover crops are established in inter-cropping, and the cover crop itself is a high quality fodder which can be grazed in support as well. ***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 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 or following regenerative management practices. 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, an example being the textbook edited by N.M. Tainton (2000): "Pasture Management in South Africa".

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 increase in woody species, but primarily it results because of long term overgrazing and erosion. 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. In addition, alien species reduce habitat and water availability for indigenous species and increase the risk and intensity of wildfires, thereby putting biodiversity at risk. The annual water loss is estimated at 1.44 billion m^3.

Landowners should be committed to controlling the invasion of woody species by fire, or mechanical and chemical means, depending on advice of rangeland management experts. Biological control methods are also available. In the case of alien species landowners are under legal obligation to control the invasion. In the Conservation of Agricultural Resources Act 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, and 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, and 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, and 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, rip-gut brome, and rat's tall fescue). Burning or hand clearing are not effective methods of control since they stimulate alien grass growth. The judicious use of pre-emergent, systemic herbicides are usually effective. There are useful alien species clearing contacts such as the LandCare Program of the DALRRD or the Working for Water Program of the Department of Water Affairs and Forestry. For a more comprehensive list of invaders NEMBA (National Environmental Management: Biodiversity Act, No 10 of 2004) can be consulted.

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 non-irrigated crop production use only so-called green water, which is rainwater 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 to produce 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 with low certainty 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 some parts in 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 as in regenerative grazing methodology, 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, and even more so if cover crops are used.

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 region, the trend will apply to some extend 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 on 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-depended 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.

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 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 landowner 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, the National Environmental Management: Waste Act, No 59 of 2008 and the National Environmental

Management: Air Quality Act, No 39 of 2004. The following guidelines may assist farmers in managing **solid waste** 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 harbor 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 after consultation with the relevant health authorities, and 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.

7. ANIMAL HEALTH AND WELL-BEING

As with others, this section is guided by several Acts and pieces of legislation. The following is relevant here:

- Animal Diseases Act, No 35 of 1984
- Animal Health Act, No 7 of 2002 (not promulgated yet)
- Animal Identification Act, No 6 of 2002
- Animal Improvement Act, No 62 of 1998
- Animal Protection Act, 1962, No 71 of 1962
- Environmental Conservation Act, No 73 of 1989
- Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947
- Foodstuffs, Cosmetics and Disinfectant Act, No 54 of 1972
- Hazardous Substances Act, No 15 of 1973
- Meat Safety Act, No 40 of 2000
- Medicines and related Substances Control Act, No 101 of 1965
- National Environmental Management Act, No 107 of 1998
- Pharmacy Act, No 53 of 1974
- Veterinary and Para-Veterinary Professions Act. No 19 of 1982

In addition, Codes of Practice with relevance to RPO and NERPO were developed by the Livestock Welfare Coordinating Committee (LWCC) 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. 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 behavior).
- The use of animals carries with it a duty to ensure the welfare of such animals to the greatest extent practical.
- 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 about 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 [the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act].

If self-mixing is considered, the document "Good Manufacturing Practice for Self Mixing of Feed for the Livestock Industry", compiled by the SABS 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. 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 track 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 about 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 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 diarrhea and tuberculosis.
- Fences and gates should be intact to secure biosecurity. If possible, consider jackal and warthog proof fences.
- A list of government controlled and notifiable diseases is on the website of the DALRRD. 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 for 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 7). 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 **Biosecurity and disease control:**

Biosecurity, from a disease control perspective, relates to proactive steps and measures that need to be taken on a permanent or temporary basis 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 disease management areas, 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 several 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 immunization 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, should be tested immediately and those that die should receive a post-mortem timeously 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 neighbor 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 biosecurity 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 neighbors, 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 SOPs 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.

Coordination of predation management has been established under Predation Management SA (PMSA) on which all role players are represented. The PMSA provides a platform to commodity organizations, aimed at reducing losses incurred because of predation by

means of ecologically and ethically acceptable methods which protect the biodiversity of the country. Strategic drivers identified by the PMSA have been 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 deal with predation management effectively and responsibly in support of economical livestock production. A predation management best practice manual has been developed and other functions include training, identifying credible predation management agents, and promoting the use of only internationally approved predation management instruments.
- Establish a mutually committed partnership at senior government level to drive 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 their Code of Best Practice.

These strategic drivers have since become actions of Predation Management South Africa (PMSA). For further reading, their website and regular Newsletter should be consulted.

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
- Criminal Procedure Act, No 51 of 1977
- Animal Identification Act, No 6 of 2002
- Fencing Act, No 31 of 1963

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:

- Labor Relations Act, No 66 of 1995
- Employment Equity Act, No 55 of 1998
- Basic Conditions of Employment Act, No 75 of 1997
- Skills Development Act, No 97 of 1998

- Compensation for Occupational Injuries and Diseases Act, No 130 of 1993
- Land Reform (Labor Tenants) Act, No 3 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 Labor 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 labor 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 labor 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 labor-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 potentially dangerous equipment and those on the periphery of where the work is conducted. Finally, The Land Reform (Labor Tenants) Act was introduced to provide for security of tenure of labor tenants and people occupying or using land because of their association with labor tenants. The Act also deals with the acquisition of land and the rights to land by labor tenants.

RPO and NERPO members should commit to the following:

- Comply with the conditions legislated for fair labor 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 labor 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 labor 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 AAMP, 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. 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 (e.g. 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 ***biosecurity 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 SOPs for effective general management on cattle farms (as example) are provided in Addendum 4.

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ADDENDUMS

RPO

ADDENDUM 1

PRECAUTIONARY MEASURES TO SUPPORT BIO-SECURITY

Precautionary measures are required to protect the herd against diseases acquired because of external contact. The following categories are of concern.

1. DIRECT LIVESTOCK PURCHASES (and own animals returning)

The following should be ***verified*** before importing new animals into the herd :

- How long animals have resided at the purchase or previous location
- Whether there have been any recent disease outbreaks in the location
- Do brand marks clearly confirm ownership
- Was a vaccination program followed (need paper or veterinarian proof)
- What are the local prevalent external parasites and the routinely implemented control program
- Is a veterinary supported control program against transmittable diseases followed
- Dates and sufficient number of tests for reproductive diseases of both male and female
- Dates and tests for zoonotic diseases

The above should also be verified with the purchaser's own veterinarian.

2. PURCHASES FROM SALES OR SPECULATORS

- Purchase only in areas which are not in close proximity to scheduled areas
- Visually inspect the animals before purchasing for:
  * brand marks
  * parasite infestation

3. TRANSPORT TO THE FARM

- Use only reputable transporters
- Has the truck been cleaned and disinfected
- Truck to follow the shortest uninterrupted route
- Truck to take the shortest route to the handling facilities
- Do not allow the truck personnel to get in contact with the farm herd

4 ARRIVAL ON THE FARM

- Off-load the livestock to limit stress and to be visually evaluated for any unnatural conditions
- Isolate them from the farm herd and shared facilities for at least 21 days (quarantine)
- Re(test) for diseases of concern if needed, before mixing with the rest of the herd
- Process new arrivals within 24 hrs after arrival (unique ID tag brand, dip, dose, vaccinate)
- Inspect regularly

5. FEED PURCHASES

- Ensure bales of hay are sourced from areas that are not bordering scheduled areas
- Purchase feed only from reputable dealers
- Avoid buying feed in second hand bags
- Ensure feed trucks are also disinfected and cleaned, especially if also used to transport animals to abattoirs

6. VISITORS

- Do not allow strangers or their vehicles amongst the livestock
- Ensure fences are well maintained and preferably jackal and warthog proof

7. EMPLOYEES

- Do not allow the employees to eat in feed stores
- Supply employees with sufficient ablution facilities
- Regularly arrange to let employees be medicated for tape worm and have health check-ups
- Keep record of all employee livestock on the property
- Treat employee livestock with separate but dedicated health programs
- Ensure employees understand the reason behind the implemented bio-security measures to help ensure compliance.

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ADDENDUM 2

PREDATION MANAGEMENT

A basic principle is that it is always the responsibility of the farmer to safe guard his/her stock from predators, diseases and any other situation that may cause harm.

Predators play an important role in controlling animal numbers and maintaining balance in ecosystems. They remove old and sick animals whereas some are excellent scavengers by devouring carcasses which otherwise could have posed a thread of disease. Predators are territorial and the social behaviour of each species play an important role in the demarcation of their territories. The injudicious removal of predators from a system results in a vacuum that may result in a continuous inflow of foreign animals into the area. Such large numbers of foreign animals in a new habitat, desperately in need to control their own territories, will inevitably feed on easy prey such as smallstock.

Attempts to randomly kill predators in the protection of livestock do not provide a long-term solution. A balanced approach to improve the status and composition of their normal prey, a sound knowledge of the predator population on farms (especially of the dominant territorial animals), protection of the livestock in partnership with neighbouring farms and participating in a co-ordinated predator control initiative, in time will result in less stock losses.

It is important to control predators with a co-ordinated approach by using a combination of best practices (lethal as well as non-lethal methods). Hunters must be cautious not to kill a predator unless they have strong evidence that they are dealing with the real culprit.

IMPLEMENTATION METHODS TO CONTROL PROBLEM CAUSING PREDATORS

Hunters and stock owners who manage predators should be accredited by a conservation authority (usually a nature conservation body). Accreditation is obtained through experience and attending specific accredited courses. Farmers should consider the following:

- Preferably use non-lethal methods such as natural shepherds (dogs, donkeys, Alpacas), pens, predator proof fences and livestock protection collars.
- The control measures must be legal (e.g. non-poisonous).
- Ensure that the control method for the target predator is used correctly.
- All information regarding the relevant control methods that will be implemented should be well-researched before implementation. Training of handlers are crucial .
- Target only the culprits, not the species in general.
- Always collect and keep statistics of both livestock losses and predators killed. Also record the predator's age, sex and stomach contents.
- Liaise and exchange data with the conservation authority that coordinates predator management.

CRITERIA TO MEASURE CONTROL METHODS

- Control methods must be cost effective and correlated with livestock losses.
- Must be effective by using only qualified hunters.
- Must be quick and humane to limit suffering.
- Must be selective and targeting only the damage causing predators.
- Must have the minimum effect on the species and the environment.

Successful management of predators require the development of a natural habitat plan where the producer can observe the different predators, their totals as well as their behaviour.

A typical integrated plan consists of the following:

- A map, indicating water holes, lairs and territory of predators.
- Information on the mating season and offspring of the flock or herd.
- Notes on numbers, cost of methods, control management statistics, information on species, sex, age and stomach contents of killed predators.
- Contact details of Nature Conservation officials involved with control and management of predators.
- The integrated management plan emphasizes non-lethal methods such as:
  - **Clock- and smell collars:** These collars are cheap, low maintenance, easy to use and attainable. It was developed by farmers for local conditions. If used too frequently, it may give away the locality of the stock.
  - **Ranger ("veldwagter") collars:** This technology consists of a censor that picks up movement. It will assist the farmer to act on a possible stock theft or predator attack. The disadvantage is that these collars only function in a cell phone area.
  - **Fences :** This is the only method which protects 365 days of the year. It is a long term and durable solution in smaller areas and farms. However, some predators can dig holes under the fences, therefore the basis of the fence should be well-established in the soil. Electrification of fences may be considered but it is expensive.
  - **Deterrents :** This may include lights or alarms that will unnerve the predator.
  - **Guardian animals:** There is a new interest in more effective, traditional ways such as with guardian animals e.g. Anatolian dogs, Alpacas and donkeys. Anatolian dogs are only effective when selected and trained correctly. The dogs when still puppies should be put in the camp or paddock to bond with the flock. Donkeys are also effective watchdogs. A single donkey, especially a mare, will adopt the flock as her own and therefore guard them. Alpacas are usually effective due to there curious and fearless behaviour.
  - **King collars:** This is a wide, adjustable PVC collar that is fitted around the neck of each animal in the herd. It is difficult, if not impossible for a predator to bite the animal in the neck.
  - **Dead stop collars:** This is a more stout collar than the King collar which will guard the flock against caracal attacks. However, both the dead stop and King collar does not prevent the prey to be attacked from behind.

It is important that farmers and workers receive the necessary training on predators, the resources available to control their numbers and in managing the abovementioned methods efficiently.

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ADDENDUM 3

COMBATTING STOCK THEFT

Stock theft has become a lucrative business in South Africa. It is impacting on the viability of both large and small stock farming and it affects both commercial and emergent/communal farmers. Of concern is that almost everybody in the value chain unintentionally can be implicated as feedlots, farmers, speculators, stock auctions and abattoirs at some stage could be recipients of stolen stock and can thereby be found guilty of an offence. Therefore it is crucial that farmers and others in the value chain understand the implications and what is required. To that effect the Animal Identification Act 6 of 2002 and the Stock theft Act 57 of 1959 as amended to Act 28 of 1990 are in place to assist the industry and SAPD to reduce stock theft.

Various structures have been established with varying levels of success. ***The question is how can the livestock industry contribute to further reducing stock theft. It appears that a major percentage of livestock trading is not compliant with the legislation and this should surely be the point of departure to reducing stock theft.***

The following in the applicable Acts are of importance.

1. ANIMAL IDENTIFICATION ACT 6 OF 2002

1.1 Each owner of animals must:-

- Apply for registration of an identification mark
- Mark the animals in the prescribed manner
- Mark the animals clearly

1.2 Age of animals at the time of marking:

Cattle

- **must** be marked by the age of **six months**
- **can** be tattooed from the age of **one month**; or
- **can** be branded at the age of **six months**; and
- **must** be branded by the age of the first pair of permanent incisors (**two-tooth stage**)

Small stock

- **must** be tattooed at the age of **one month**

Pigs

- **can** be tattooed at the age of **one month**

Horses

- **can** be tattooed at the age of **six months**; and
- **can** be branded by the age of **twelve months**.

1.3 Parts on which animals must be identified and the positions in which successive identification marks must be applied in relation to each other.

Cattle

- The identification mark by means of tattooing must be applied in the left or right ear, and

- the identification mark by means of branding must be applied on any clearly visible part, with the exception of the neck.

Small stock

- The identification mark must be applied by means of tattooing in the left or right ear.

Pigs

- The identification mark must be applied by means of tattooing in the left or right ear.

Horses

- The identification mark by means of tattooing must be applied on either the upper jaw, lower lip, left or right ear.
- The identification mark by means of branding must be applied on any clearly visible part, with the exception of the neck.

1.4 No person may:-

- Within 14 days of the date on which he/she becomes the owner of an animal with an identification mark, sell, barter, give away or in any other manner dispose of that animal to another person, unless he/she furnishes a document of identification to the person who acquires the animal; or
- after 14 days of the date on which he/she becomes the owner of an animal, sell, barter, give away or in any other manner dispose of that animal unless:-
  - such animal has been marked in the prescribed manner with the identification mark of the owner disposing of that animal; and
  - he/she furnishes the person acquiring that animal with a document of identification.
- Any person (including any auctioneer, agent or market master) who sells, barters, gives or in any other manner disposes of any stock to any other person shall, at the time of the delivery to such other person of the stock so sold, bartered, given or disposed of, furnish such other person with a document of identification,

  Stating

  - his/her full name and address and, if the stock was sold, bartered, given or disposed of on behalf of some other person, also the name and address of such other person;
  - such particulars in regard to such stock may be required to be stated therein in terms of any regulation made under section 16;
  - the full name and address of the person to whom the stock was sold, bartered, given or disposed of;
  - the date on which the stock was sold, bartered, given or disposed of

  Certifying

  - that such stock is his/her property or that he/she is duly authorized by the owner thereof to deal with or dispose of;
  - a person acquiring an animal must retain the document of identification obtained from the seller for a period of one year.

2. STOCK THEFT AMENDED ACT 28 OF 1990

2.1 Absence of reasonable cause for believing stock or produce was properly acquired:-

Any person who in any manner, otherwise than at a public sale, acquires or receives into his/her possession from any other person stolen stock or stolen produce without having reasonable cause, proof of which shall be on such first mentioned person, for believing, at the time of such acquisition or receipt, that such stock or produce is the property of the person from whom he/she acquires or receives it or that such person has been duly authorized by the owner thereof to deal with it or dispose of it shall be guilty of an offence.

2.2 Document of identification to be furnished by the person who disposes of the stock:-

Any person (including any auctioneer, agent or market master) who sells, barters, gives or in any other manner disposes of any stock to any other shall at the time of delivery to such other person of the stock so sold, bartered, given or disposed of, furnish such other person with a document called a document of identification.

Stating

- His/her full name and address and, if the stock was sold, bartered, given or disposed of on behalf of some other person, also the name and address of such other person.
- Such particulars in regard to such stock as may be required to be stated therein in terms of any regulation made under section sixteen (16);
- The full name and address of the person to whom the stock was sold, bartered, given or disposed of;
- The date on which the stock was sold, bartered, given or disposed of.

Certifying

That such stock is his/her property or that he/she is duly authorized by the owner thereof to deal with or dispose of it.

No person to whom any stock has been sold, bartered, given or otherwise disposed of and to whom a document of identification is required to be furnished in terms of subsection (1) shall take delivery of such stock without obtaining such document at the time of delivery.

Any person to whom a document of identification has been furnished in terms of subsection (1) shall retain it in his/her possession for a period of at least one year.

Any person may within the period referred to in subsection (3) demand an inspection of such document, and upon such demand the person having possession of such document shall produce it for inspection to the person making the demand.

Any person who:-

- Contravenes or fails to comply with any provisions of this section;
- Fails to comply with any demand made under subsection (4); or
- willfully makes any false statements in a document of identification;

shall be guilty of an offence.

2.3 Any person who delivers any stock to an auctioneer, agent or market master for the purpose of sale or disposal in any other manner, shall, for the purpose of this section, be deemed to have disposed of such stock to such auctioneer, agent or market master.

2.4 Acquisition of stock or produce from persons whose places of residence are unknown:-

Any person who in any manner (otherwise than at a public sale) acquires or receives into his/her possession, or any auctioneer, agent or market master who receives into his/her possession for the purpose of sale, from any person who

has no known place or residence, any stock or produce without obtaining at the time of delivery of such stock or produce to him/her a certificate, issued not more than thirty days before the delivery, from:-

- The employer, chief, headman or subheadman of the person concerned or a deputy of such chief or an "official witness" as defined in Chapter 1 of the Code of Zulu Law, as referred to in section 24 of the Black Administration Act 38 of 1927;
- A justice of the peace;
- A policeman of or above the rank of sergeant;
- A dipping foreman
- A stock inspector;
- Two residents of substantial means of the neighbourhood in which the transaction takes place; or
- the person from whom such person purchased or acquired such stock or produce;

Giving a description of the stock or produce and certifying that to the best of his/her or their knowledge and belief such person is entitled to dispose of or deal with such stock or produce, shall be guilty of an offence.

Any person who has obtained such a certificate shall retain it in his/her possession for a period of at least one year.

Any person may within the period referred to in subsection (2) demand an inspection of such certificate, and upon such a demand the person having possession of such certificate shall produce it for inspection to the person making the demand.

Any person who fails to comply with the provisions of subsection (2) or any demand made under subsection (3) or who willfully makes any false statement in a certificate referred to in subsection (1) shall be guilty of an offence.

2.5 Stock or produce driven, conveyed or transported on or along public roads:-

No person shall drive, convey or transport any stock or produce of which he/she is not the owner on or along any public road unless he/she has in his/her possession a certificate called a removal certificate issued to him/her by the owner of such stock or produce or the duly authorized agent of such owner, in which is stated:

- The name and address of the person who issued the certificate;
- The name and address of the owner of such stock or produce;
- Such particulars in regard to such stock or produce as may be required to be stated therein in terms of any regulation made under section sixteen (16);
- The place from which and the place to which such stock or produce is being driven, conveyed or transported;
- The name of the driver, conveyer or transporter;
- The date of issue thereof; and
- if applicable, the registration number, model and make of the vehicle with which the stock or produce is being conveyed or transported:

Provided that the provisions of this subsection shall not apply in respect of any stock or produce which is being driven, conveyed or transported, with the consent of the owner thereof or his/her duly authorized agent, on or along such portion of any public road as traverses land which belongs to or is occupied by such owner or agent.

No person shall cause or permit any stock or produce of which he/she is the owner to be driven, conveyed or transported by any other person on or along any public road without furnishing him/her with a removal certificate which he/she is required to have in terms of subsection (1).

Any justice of the peace, policeman, or owner, lessee or occupier of land may demand from any person who is required in terms of subsection (1) to have in his/her possession a removal certificate, an inspection of such certificate, and upon such demand the person having possession of such certificate shall produce it for inspection to the person making the demand.

No person who is or was employed by an owner or occupier of any land shall remove any stock or produce owned by him/her or under his/her control from any land owned or occupied by such owner or occupier unless he/she is in possession of a document furnished by such owner or occupier, the agent of such owner or occupier, or a policeman on a date not more than seven days before the removal, which date shall be stated in the document, giving a description of such stock or produce and certifying that he/she was to the best knowledge and believe of the person furnishing the document entitled to remove such stock or produce on the said date.

Any owner or occupier of land, or any agent of such owner or occupier, shall, when requested to do so by any person who is or was in the employ of such owner or occupier and who is in possession on land owned or occupied by such owner or occupier of any stock or produce which he/she desires to remove therefrom, forthwith furnish him/her with any document which he/she may require in terms of subsection (4).

Any person who has obtained such a document as is referred to in subsection (4) shall retain it in his/her possession for a period of at least one year.

Any justice of the peace, policeman, or owner, lessee or occupier of land may within the period referred to in subsection (6), demand an inspection of such document, and upon such demand the person having possession of such certificate shall produce it for inspection to the person making the demand.

Any person who:-

- Contravenes or fails to comply with any provisions of this section;
- Fails to comply with any demand made under subsection (3) or (7);
- Willfully makes any false statement in a removal certificate or a document furnished in terms of subsection (5); or
- falsely declares that he/she is the owner of stock or produce which is being driven, conveyed or transported by him/her on or along any public road,

shall be guilty of an offence.

For the purposes of subsections (1), (2) and (8) (d) “owner” shall include any person who obtained stock or produce by virtue of an agreement of sale in terms of which any such person does not become the owner of such stock or produce merely by virtue of the delivery to him/her of such stock or produce.

It is proposed that all farmers and other role players in the supply chain should support the following:

- All owners of livestock should register a unique brand mark.
- Apply the registered brand mark according to the Animal Identification Act 6 of 2002 on all relevant livestock.
- Complete and supply a Document of Identification and a Certificate of Removal with all transactions.
- All buyers or traders of livestock should verify ownership and refuse to accept livestock that are not branded or are without completed Documents of identification and Certificates of Removal.
- All farmers, auctioneers, feedlots and abattoirs should only accept branded livestock with Documents of Identification.
- Documents of Identification should be kept on record for 12 months.

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ADDENDUM 4

GOOD MANAGEMENT PRACTICES AND SOP'S FOR CATTLE FARMERS.

Explanation of bullet items: First part of item provides the reason or explanation for the action, whereas the second part is a test for the farmer to establish whether he/she adheres to the practice.

1. GENERAL AND REPRODUCTION MANAGEMENT

- Record keeping: All animals are individually identified and recorded.
- To prove ownership: All animals are marked with the registered brand mark according to the Animal Identification Act, No 6 of 2002.
- A defined breeding season is the basis of effective management: The breeding season coincides with the rainy season, i.e. the period when nutritive value of the pasture is at its best.
- Sufficient energy reserves in the herd as measured by condition scoring are vital, especially for effective breeding, and when inadequate the herd is supplemented in consultation with a nutritionist: Condition scoring of bulls and cows are regularly done, particularly at the onset of the breeding season and supplemented if necessary.
- Bull - cow ratios are maintained: A ratio of 1 to 25 is maintained in every separate herd.
- Fertility of breeding bulls: All breeding bulls are tested for mating ability and semen quality before the breeding season.
- Sexually transferable diseases: Sheath washes or scrapes on bulls are performed annually.
- Diseases that can cause poor conception, abortion or weak calves: Cows are vaccinated against such diseases in consultation with the veterinarian.
- Breeding success monitored by a veterinarian: Rectal pregnancy or scan diagnosis is done by the veterinarian 8 weeks after the breeding season.
- Twenty percent of cows or more not pregnant: Further tests are done to determine cause of low pregnancy rate.
- Culling of non-pregnant cows: Non-pregnant cows are removed from the herd and considered a necessary bonus to supporting herd income.

2. HERD HEALTH AND BIO-SECURITY

- Maintenance of herd health is key to a successful enterprise: A veterinarian should visit the farm bi-annually at least.
- Calf mortality before 3 months of age is an important reason for poor weaning percentage: Good management practices are applied to limit early calf deaths.
- Some diseases and parasites (internal and external) are more often encountered in specific areas: Annual vaccinations and a parasite control program should be applied according to regional requirements and in liaison with the veterinarian.
- Farmers selling weaned calves to feedlots may want to have a market advantage compared to others: A specific vaccination program is applied before weaning for that purpose.

- Herds may be at risk of being exposed to CA and TB: The herd is tested annually for CA and all heifers are vaccinated against CA between 4 and 8 months of age with an efficient, approved remedy. The herd is tested at least every 5 years for TB (also consult Section 7.3 of the Code).
- Precautionary measures are required to prevent diseases being imported into the herd: A quarantine program to keep incoming animals separate is followed. All incoming animals have a suitable certificate of negative test results or are of a certified clean, closed herd.
- Stock remedies and medicines should be registered, correctly stored and used before transpire date: All medicines and stock remedies are registered, stored and applied according to prescription.
- Prescribed medicines with a specific application are under the control of the veterinarian profession: All prescription medicines are obtained and applied under prescription from a veterinarian.

3. ANIMAL WELFARE

- Specific management and predator control practices cause unnecessary stress, pain and discomfort and should be avoided, and all animals treated humanely: Only animal welfare compatible practices are followed, including those followed during emergency slaughtering (also consult Section 7 of the Code).
- Well-designed infrastructure and correct application of prescribed procedures of animal handling equipment will go a long way in ensuring minimum stress and the general wellbeing of animals: Only correct treatment and handling equipment (e.g. crush, clamp, branding, demobilizer, calf puller etc) and loading and transport procedures are used.

4. FEEDING AND PASTURE MANAGEMENT

- Correct nutrition of the herd because of cost and when animals can be marketed largely determine the success of the enterprise: Feeds and supplements for specific herd components, animal requirements and seasons are formulated under the control of a nutritionist.
- The condition of the pasture (rangeland) should receive constant attention with the goal of continuous improvement through dedicated management: A recognized pasture grazing and resting program (e.g. rotational program) according to stocking rates proposed for the area is followed (also consult Section 6.2 and 6.5 of the Code).
- Bush encroachment and invasion of alien species pose a threat to pasture condition, ecosystem resilience and water conservation: A dedicated bush encroachment and alien species clearing program is used (also consult Section 6.4 of the Code).
- Water sources should be protected and enhanced quantitatively and qualitatively as measures to support pasture condition, sustainability, drought management and protection against pollution: A dedicated program is implemented to maximise water use and conservation to reach these goals (also consult Section 6.5 of the Code).
- Prevention of soil erosion and reclamation of eroded areas will become obligatory rather than optional according to the NDP: Dedicated programs of maintaining rangeland condition to prevent soil erosion and reclamation of eroded areas by natural and mechanical means are followed.

5. REPLACEMENT HEIFER PROGRAM

- Replacement heifers receive priority treatment, including pasture access, and are managed separately until the breeding season: A dedicated program is applied.
- Replacement heifers require specific vaccinations to allow long term immunity: A dedicated vaccination program is implemented.

6. ENVIRONMENTAL AND CONSUMER PROTECTION

- A knowledgeable and dedicated person must control the storage and usage of agro-chemicals, stock remedies and drugs on the farm: All agro-chemicals, stock remedies and drugs are correctly stored and used and when expired, whether containers are empty or not, safely removed and disposed off according to prescription.
- Dead animals can be a health hazard to humans, animals and the environment: An accepted procedure of burning, burying or feeding to carnivores is followed. Animals suspected of anthrax infection should not be burned as this can release spores into the environment.
- It is unlawful to feed ruminant by-products and declared prohibited ingredients to cattle: No animal waste, prohibited ingredients and by-products of animal origin are included in any formulated feed or supplement.
- Potential hazardous waste can pollute the environment, water sources and food chain: Potential hazardous waste is meticulously disposed of according to Act regulations or prescription (also consult Sections 6.5 and 6.6 of the Code).

7. LABOUR PRACTICES

- A number of labour associated laws direct labour rights and management (consult Section 10 of the Code): Employee contracts, minimum wages, working hours, child care, recreation facilities, codes and miscellaneous procedures adhere to labour associated laws.
- Employees are entitled to basic needs in their living and work environment: Housing, water, electricity, sanitation and protective clothing and equipment are provided.

8. LEGAL COMPLIANCE

Any occurrence of a controlled or notifiable disease must be reported to the local state veterinarian immediately.

Ensure compliance to at least the following Acts and Regulations:

- Animal Protection Act, No 71 of 1962
- Animal Disease Act, No 35 of 1984 (including the Animal Disease Regulations, R.2026 of 1986)
- Animal Improvement Act, No 62 of 1998
- Animal Identification Act, No 6 of 2002
- Fertilizer, Farm Feeds and Stock Remedies Act, No 36 of 1946
- Stock Theft Act, No 57 of 1959
- National Water Act, No of 1998
- Environmental Management and Protection Act of 2002
- Labour and Basic Conditions of Employment Act of 2002
- Meat Safety Act, No 40 of 2000
- Occupational Health and Safety Act, No 181 of 1993
- Road Transport Regulations
- Codes

- SANS 1488 Humane Transport of Livestock by Road
- SANS 1469 Humane Handling and Facility for the Protection of Livestock at Shows, Auction Sales, Vending Sites and Pounds

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