

USA COMMENTS

Terrestrial Animal Health Standards Commission Report

September 2009

DRAFT CHAPTER 7.X.X.

ANIMAL WELFARE AND BEEF CATTLE PRODUCTION SYSTEMS

Article 7.X.1

Definitions

~~The *ad hoc* Group discussed the application of the OIE recommendations and decided that these should be designed with application to commercial beef production.~~ Beef cattle production systems are defined as all commercial cattle production systems where the purpose of the operation includes some or all of the breeding, rearing and finishing of cattle intended for beef consumption

Rationale: Delete the reference to ad hoc Group discussion. Information about what the ad hoc group discussed appears more appropriately placed in minutes or notes of its meetings, rather than in a guidance document. We recommend limiting statements to a description of what is covered by the guideline.

Article 7.X. 2

Scope

The first priority is to address the on farm aspects of the production systems, from birth through to finishing. The areas of emphasis are cow- calf, stockers and finishing beef production.

Article 7.X.3

Commercial beef cattle production systems

Commercial beef cattle production systems include:

1. Intensive (stocker and finishing)

~~Would include cattle that are placed on confinement. Animals are dependent on the daily animal husbandry. Cattle are raised in confinement facilities (e.g., feedlots) and depend on facility management and stockpersons for daily provision of feed, shelter and water.~~

Rationale: Editorial suggestions for clarity.

2. Extensive (all areas types)

~~Would include from a wide range grazing habitat~~ Cattle graze on range.

Rationale: Editorial suggestions for clarity.

3. Semi-Intensive (mixed)

~~Would~~ Includes a combination of intensive and extensive systems

Rationale: Editorial suggestions for clarity.

Article 7.X.4

Criteria or measurables for the welfare of beef cattle

The following outcome (animal) based measurables can be useful indicators of welfare where prevalence of specific abnormalities is known. These measurables are not exclusive to animal welfare. Welfare or management deficiencies may cause abnormal health, but abnormal health indices may more often result from other causes, some of which are unavoidable. Outcome-based measurables useful as potential indicators of beef cattle welfare evaluate the broad categories of animal health, nutrition/water, environment/shelter, human-animal interaction/handling and husbandry procedures. To use these measurables appropriately as accurate useful indicators of welfare, as indicated in each section, it would be important for competent authorities to first have knowledge of the known incidence of abnormalities of the following, and scientifically evaluate a tolerable fluctuation from the known incidence in order to provide an appropriate framework for comparison.

Rationale: Outcome based measurables should give a better indication of animal welfare because they reflect the complex interaction of several variables that are often overlooked when relying on resource-based criteria that focus on the design of the system. However, many animal-based measurables (ex. mortality and weight gain) are not highly specific and are frequently dependent on multiple and often complex factors which interact (ex. weather, environment, disease, management). Therefore, for this document to be valuable to competent authorities, a frame of reference of the more common complex issues that affect the list of potential useful indicators should be included. For example both mortality and morbidity rates could be direct or indirect indicators of animal welfare situations, but to be useful, detecting potential animal welfare problems and ruling out other non-welfare reasons for morbidity or mortality, competent authorities must understand the etiologic of the disease or syndrome. (Blecha, F. 2000. Immune system response to stress. In: Moberg, G.P., Mench, J.A. (Eds.), The Biology of Animal Stress. Basic Principles and Implications for Animal Welfare. CABI Publishing, Wallingford. U.K., pp. 111-121. As well, depending on the production system, estimates of mortality rates can obtained by analyzing the cause of death and the rate and temporal-spatial pattern of mortality. Mortality rates can be evaluated within certain timeframes (daily, monthly, annually) or with reference to key husbandry activities within the production cycle (Waldner, C.L., Kennedy, R.I., Rosengren, L., and Clark, E.G. 2001. A field study of culling and mortality in beef cows from western Canada. Canadian Veterinary Journal 50: 491-499).

1. behaviour patterns considered to indicate compromised state of being;

Rationale: Certain behaviours (normal and abnormal) could be an indicator of animal welfare issues but not all and not at all times. Ones that might indicate welfare problems are depression, anorexia, increased respiratory rate or panting, and the demonstration of stereotypic behaviours. But anorexia, depression and increased respiratory rate or panting can also be caused by a number of conditions or diseases that have

nothing to do with welfare as the etiology (Wiepkema P.R., Broom, D.M., Duncan, E.J.H. and van Putten, G., 1983. Abnormal Behaviors in Farm Animals. Report of CEC, Brussels; Moss, R.1992. Definition of health and welfare; Desire, L., A. Boissy and Veissier, I. 2002 Emotions in farm animals: a new approach to animal welfare in applied ethology. Behavior Process. 60:165-180.; Appleby, M.C., 2006. Animal science in U.S. farming.; Lawrence, A.B. 2008. Applied animal behaviour science: Past, present and future prospects. Applied Animal Behavior Science, 115: (1-2), 1-24.

2. excessive morbidity rates
3. mortality rates/survivability
4. weight gain (growing cattle) ~~and body condition score~~
5. body condition score (mature cattle)
- ~~5~~6. reproductive efficiency rates

Rationale: We recommend that ‘mortality rates’ and ‘survivability’ are linked, and that ‘reproductive efficiency’ may be a more-encompassing and descriptive term for the discrete measures that might be assessed than reproductive rate. Additionally, morbidity rates, mortality rates, weight gain and body condition score, reproductive rates and rate of post-procedures complications without qualifiers are too ambiguous to provide objective guidance to competent authorities evaluating animal welfare. The addition of adjectives that are consistent with conditions that might indicate compromised animal welfare are needed to clarify the intent of these guidelines. This is consistent with the need to understand and define normal rates of disease, conditions and other factors in a region or country or within breeds/species that affect all of the items listed in 1- 10. So that normal, temporary or unavoidable morbidity rates, mortality rates, weight gain, body condition score or reproductive rates etc. will not be confused with poor animal welfare when compromised animal welfare is not present. (Blecha, F. 2000. Immune system response to stress. In: Moberg, G.P., Mench, J.A. (Eds.), The Biology of Animal Stress. Basic Principles and Implications for Animal Welfare. CABI Publishing, Wallingford. U.K., pp. 111-121. Depending on the production system, estimates of mortality rates can be obtained by analyzing the cause of death and the rate and temporo-spatial pattern of mortality. Mortality rates can be evaluated within certain timeframes (daily, monthly, and annually) or with reference to key husbandry activities within the production cycle (Waldner, C.L., Kennedy, R.I., Rosengren, L., and Clark, E.G. 2001. A field study of culling and mortality in beef cows from western Canada. Canadian Veterinary Journal 50: 491-499).

- ~~6~~7. physical appearance - attributes that may indicate compromised animal welfare include excessive or prolonged presence of ectoparasites, coat that is excessively rough or excessively soiled with feces, mud or dirt (notwithstanding link to unavoidable weather events), emaciation or depression”

Rationale: Recommended text changes are provided to clarify the intent of the guideline.

7. handling responses - improper handling can result in fear and distress in cattle manifesting in stereotypical handling responses. Indicators could include chute exit speed, chute behavior score, increased locomotion problems and musculoskeletal injuries when handling cattle, excessive falling, and excessive rate of use of electric prods. Measurable handling responses concerning animal welfare in beef cattle production systems include the following:

-Percentage of animals falling

-Percentage of animals moved with an electric goad

- Percentage of animals striking fences or gates
- Percentage of animals injured during handling, such as broken horns, broken legs, and lacerations
- Percentage of animals vocalizing (bellow or moo) during restraint with ropes, squeeze chutes, headgates, or other devices. (References – Cortzee et al., 2008; Dunn, 1990; Grandin, 1998, 2001; Watts and Stookey, 1998).
- Percentage of animals with visible eye white during handling and restraint. (References – Core et al., 2009; Sandem et al., 2006).

Rationale: A list of the criteria that should be measured for handling responses should be included in the text to clarify the intent of the guideline. Much work has been done on cattle handling methods/challenges. Notwithstanding breed temperament differences and exposure to humans, buildings, equipment, noise (some cattle in many parts of the world or certain production systems are not routinely handled and do not see people/trucks etc, except for rare occasions and these situations need to be taken into account) the added stereotypical handling associated areas are measurables that have had significant scientific evaluation. For example a temperament scale has been developed for cattle to evaluate the extent of response to restraint in a squeeze chute and evaluation has been done regarding chute exit speed (Respectively, Grandin, T. 1998. Review: Reducing handling stress improves both productivity and welfare. Prof. Animal Science 14: 1-10; Burrow, H.M. and Corbet, N.J. 2000. Genetic and environmental factors affecting temperament of zebu and zebu-derived beef cattle grazed at pasture in the tropics. Australian Journal of Agricultural Research, 51: 155-162.).

8. excessive rate of post-procedures complications

Rationale: Listed under item 6.

9. post-mortem pathology may be utilized as an indicator of disease, injuries or other conditions that may rule out or indicate decreased animal welfare

Rationale: Recommended text changes are provided to clarify the intent of the guideline.

10. survivability.

Rationale: Listed under item 6.

11. lameness scoring

Rationale: Lameness scoring is an important measurable as indicator of welfare. Lameness causes pain (References – Rushen et al., 2006; Flowers et al., 2007). Lameness scoring – cattle or calves that walk with an obvious limp, but can still keep up when a group of animals are walking should be classified as lame, along with animals that have more severe lameness.

Article 7.X.5

Recommendations

1. Biosecurity and Animal Health
 - a) Biosecurity and disease prevention

Biosecurity means a set of measures designed to protect a herd from the entry of infectious agents.

Biosecurity programmes should be implemented, commensurate with the risk of disease and in accordance with relevant recommendations found in Terrestrial Code chapters on OIE listed diseases.

These programmes should address the control of the major routes for disease and pathogen transmission:

- Cattle
- Other animals
- People
- Equipment
- Vehicles
- Air
- Water supply
- Feed

Outcome based measurables: growth rate (where applicable), body condition score, morbidity rate, mortality rate, reproductive efficiency (where applicable).

Rationale: The suggested text includes the animal health and disease prevention outcome based measurable aspects of the guideline.

b) Animal health management

Animal health management ~~is a~~ means a system designed to optimise the physical and behavioural health and welfare of the cattle herd. It includes the prevention, treatment and control of diseases and conditions affecting the herd. ~~prevent diseases occurring in cattle herds and also providing treatments for animals when disease occurs.~~

Rationale: The suggested change in the text is provided to clarify the intent of the guideline.

There should be an effective programme for the prevention and treatment of diseases and conditions consistent with the programs established by a qualified veterinarian and/or the Veterinary Services as appropriate.

Rationale: Suggested changes are provided to clarify the intent of the guideline and to include the addition of a qualified veterinarian as an appropriate entity to establish an effective animal health management program for the prevention and treatment of diseases in a beef cattle production system.

Those responsible for the care of cattle should be aware of the signs of ill-health or distress, such as reduced food and water intake, weight gain and body condition, changes in behaviour or abnormal physical appearance.

Rationale: Those responsible for the care of cattle should also be aware of the signs of animal distress as a component of a basic animal health management system.

Cattle with higher risk for disease will require more frequent inspection by ~~animal~~ *animal handlers*. If *animal handlers* are not able to determine the causes of ill-health or distress or to correct these or suspect the presence of a listed reportable disease they should seek advice from those having training and experience, such as bovine veterinarians or other qualified advisers. Medical treatments should be provided by knowledgeable individuals and veterinarians consulted for herd health management and prescription treatments. ~~Veterinary treatments should be prescribed by a qualified veterinarian.~~

Rationale: Syntax change. Additionally, we recommend the rewording of the veterinary oversight to reflect current acceptable practices worldwide, especially in areas of veterinary shortage, which do not make it possible or appropriate to only allow veterinarians to perform all procedures and treatments. In many locations veterinary medical practice acts, laws regulations and accepted standards of procedure allow for technicians, other trained individuals to perform certain aspects of treatment protocols.

Vaccinations and other treatments administered to cattle should be undertaken by people skilled in the procedures and on the basis of veterinary or other expert advice.

Animal handlers should have experience in caring for non-ambulatory downer cattle. They should also have experience in managing chronically ill or injured animals. Euthanasia on non-responding cattle should be done as soon as recovery is deemed not possible.

Rationale: Animal handlers should have experience in caring for non-ambulatory animals, not just downer cattle. The inclusion of the specific term “non-ambulatory” is more inclusive than downer cattle.

Suggestion: Acceptable methods of euthanasia should be outlined for non-responding cattle to prevent unacceptable pain and suffering. (For example blunt trauma would not be acceptable as method of euthanasia for beef cattle).

Outcome based measurables: morbidity rate, mortality rate, reproductive efficiency, behaviour, physical appearance and body condition score.

2. Environment

a) Thermal environment

Although cattle can adapt to a wide range of thermal environments, particularly if appropriate breeds are used for the anticipated conditions, sudden fluctuations in weather can cause heat or cold stress.

Rationale: Syntax change.

i) Heat stress

The Thermal Heat Index (THI) is influenced by air temperature, relative humidity and wind speed. As the THI increases the risk of hyperthermia increases. Also as cattle are fed longer and become fatter are more susceptible to heat stress.

- a. ~~Animal handlers should recognize signs of heat stress in cattle. Animal handlers should~~ and be aware of the critical THI threshold for their animals. When the THI reaches this threshold, daily ~~processes that include cattle movement activities that require moving cattle~~ should cease. As the THI ~~moves into emergency levels the exceeds the critical threshold,~~ animal handlers should institute an emergency action plan to reduce heat stress. Such plans generally ~~that could~~ include providing additional shade, improved access to drinking water, and cooling by the use of ~~sprinkled~~ ing water that penetrates the hair coat.

Rationale: Suggested changes in the text are intended to provide clarification of the intent of the guideline. Additionally, we recommend that a definition for THI be included in this guideline.

b. Panting – Panting scoring

Rationale: Panting scoring should be included as measurable Animals with open mouthed panting are heat stressed and measures should be taken to provide relief (Reference – Mader et al., 2005).

ii) Cold stress

Protection from wind and rain should be provided ~~where possible~~, particularly for young stock outdoors for the first time. This could be provided by natural or man made shelter structures.

Rationale: We recommend that protection from wind rain should be provided, particularly for young stock outdoors for the first time.

Animal handlers should also ensure that cattle have access to adequate feed and liquid water during cold stress. During time of heavy snow fall or blizzard animal handlers should institute an emergency action plan to provide cattle with shelter, feed and water.

Rationale: We suggest the addition of the word liquid be added to the text to clarify that liquid water must be available. Ice is not an acceptable form of water.

Outcome based measurables: Mortality rates, physical appearance (gauntness), normal and abnormal behaviour (hunching, huddling, and listlessness)

Rationale: Refer to Article 7.X.4 - Criteria or measurables for the welfare of beef cattle

b) Lighting

Confined cattle that do not have access to natural light should be provided with sufficient supplementary lighting for their health and welfare, to facilitate natural behaviour patterns and to allow adequate inspection of the animals.

Outcome based measurables: Normal and abnormal Bbehaviours, morbidity, physical appearance,

Rationale: Refer to Article 7.X.4 - Criteria or measurables for the welfare of beef cattle

c) Air quality

Good air quality is ~~an~~ important ~~factor~~ for the health and welfare of cattle in intensive and confined production systems. It is a composite variable of air constituents such as gases, dust and micro-organisms that are strongly influenced by how facilities are managed ~~the management of the beef producer~~. The air composition is influenced by the stocking density, the size of the cattle, flooring, bedding, waste management, building design and ventilation system.

Rationale: We recommend the change in the text to clarify that it is the management of the facility and not the management of the beef producer that affects air quality. Syntax changes also recommended.

Proper ventilation is important for effective heat dissipation in cattle and preventing the build up of CO₂, NH₃ and effluent gases in the confinement unit. Poor air quality and ventilation are risk factors for respiratory discomfort and diseases. The ammonia level in indoor enclosed housing should not exceed 25 ppm.*

Rationale: Poor air quality and poor ventilation are not only risk factors for disease, but can also cause respiratory discomfort in cattle prior to evidence of an actual disease process. This is the occupational safety limit for human exposure to ammonia.*

Outcome based measurables: Morbidity rate, behaviour, mortality rate, weight gain, post-mortem pathologies

d) Acoustic environment

Cattle are adaptable to different acoustics environments. However, exposure of cattle to sudden or loud noises should be minimized ~~where possible~~ to prevent stress and fear reactions (e.g. stampede). Ventilation fans, feeding machinery or other equipment should be constructed, placed, operated and maintained in such a way that they cause the least possible amount of noise.

Rationale: Recommended editorial changes (e.g., ‘where possible’ is implied in ‘minimized’).

Outcome based measurables: Normal and abnormal behaviour.

Rationale: Refer to Article 7.x.4 - Criteria or measurables for the welfare of beef cattle

The following is suggested as new text to article 7.x.5, point 2. e, be inserted immediately following point 2.d (acoustic environment).

Suggested new text: Article 7.x.5.2.e. Visual environment

Cattle are adaptable to different visual environments. However, exposure of cattle to sudden or persistent movement or visual contrasts should be minimized where possible to prevent stress and fear reactions (e.g., stampede). Chutes, trailers and other facilities should be constructed, placed, operated and maintained in such a way that they cause the least possible amount of visual distraction.

Outcome based measurables: normal and abnormal behaviour.

Rationale: Visual environments are important to cattle well being, just as acoustic environments are.

e) Nutrition`

The nutrient requirements of beef cattle have been well defined. Energy, protein, amino acid, mineral and vitamin contents of the diet are major factors determining the growth, feed efficiency, reproductive efficiency, and body composition.

Animal handlers should provide cattle a level of nutrition that meets or exceeds their maintenance requirements from the previously reference materials. It should be noted that cattle in certain climates and production systems may experience short term periods of below maintenance nutrition without compromise their welfare. Animal handlers should have adequate knowledge of appropriate body condition score for their cattle and should not allow body condition score to drop below these critical thresholds. [Animals must maintain a minimum body condition score \(BCS\) of 2 \(on a scale of 1-5\) and a maximum BCS of 4 \(also on a scale of 1-5\). If BCS falls outside of these levels the animal handler should take corrective action.](#) In times of severe drought steps should be taken to avoid starvation of animals ~~wherever possible, including appropriately timed slaughter or euthanasia of animals for which food cannot be provided.~~

Rationale: We agree that the guidelines should encourage the use of BCS as an assessment of cattle health and wellbeing; however it is recommended that a minimum and maximum BCS should be set to clarify the intent of the guideline. We also recommend that producers should always take steps to avoid starvation of animals, including appropriately timed slaughter or euthanasia of animals for which food cannot be provided.

In intensive production systems cattle should have access to adequate feed and water supply to meet their physiological needs. [Cattle should be fed a ration where the largest component if forage- at minimum 60% of ration on a dry matter basis.](#)

Rationale: It is recommended that the physiological needs of cattle cannot be met by feeding so much grain that acidosis, bloat, liver abscesses and laminitis are common occurrences (all of these health issues are listed as possibilities within the guidelines).

Feedstuffs and feed ingredients should be of satisfactory quality to meet nutritional need and under certain circumstances (e.g. drought, frost, and flood), should be tested for the presence of substances (e.g. mycotoxins and nitrates) that can be detrimental to cattle health and welfare,

Cattle in intensive production systems typically consume diets that contain a high proportion of grain(s) (corn, milo, barley, grain by-products) and a smaller proportion of roughages (hay, straw, silage, hulls, etc.). As the proportion of grain increases in the diet, the relative risk of digestive upset in cattle increase. Animal handlers should understand the impact of cattle size, age, weather patterns, diet composition and sudden diet changes in respect to digestive upsets and their sequelae (acidosis, bloat, liver abscess, laminitis). Where appropriate beef producers should consult a nutritionist (private consultant, university or feed company employee) for advice on ration formulation and feeding programs.

Beef producers should become familiar with potential micronutrient deficiencies or excesses for intensive and extensive production systems in their respective geographical areas and use appropriately formulated supplements where necessary.

The water quality and the method of supply can affect welfare. All cattle need adequate supply and access to palatable water that also meets their physiological requirements and free from contaminants potentially hazardous to cattle health.

Outcome based measurables: Mortality rates, morbidity rates, behaviour, weight gain, body condition scoring, reproductive rates.

f) Flooring, bedding, resting surfaces (litter quality)

In all production systems cattle need a dry and comfortable place to rest.

Rationale: Resting places should be kept as dry as possible.

Pen floor management in intensive production systems can have a significant impact on cattle welfare.

Mud depth should not consistently be deeper than the ~~ankles~~ hocks of cattle in pens.

Rationale: We recommend deleting the word ankles and adding the term hocks. Cattle have ankles. We question if the proposed allowable depth of the mud is excessive.

Slopes of pens should be maintained to allow water to run off away from the feed bunks and not pool excessively in the pens.

If slope is not sufficient to allow for proper drainage, a mound should be constructed in each pen to allow cattle to have a dry place to lie down.

Pens should be appropriately maintained to ensure cattle are provided with a clean, dry and comfortable environment and, at a minimum, be thoroughly cleaned after each production cycle ~~as conditions warrant~~.

Rationale: We suggest that pens should be cleaned as conditions warrant and, at a minimum, after each production cycle.

If animals are housed in a slatted floor shed, the slat width should be appropriate to the hoof size of the animals to prevent injuries.

In straw or other bedding systems the bedding should be maintained to allow animals a dry and comfortable place in which to lie.

Suggested new text: Surfaces of concrete alleys should be grooved or appropriately textured to provide adequate footing for cattle.

Rationale: Appropriately textured surfaces assist in preventing slips and falls.

~~Outcome based measurables: Morbidity rates (lameness), behaviour, weight gain, physical appearance.~~

Recommend revision of text: Outcome based measurables: morbidity rates (e.g., lameness, pressure sores), normal and abnormal behavior, weight gain, body condition score, and physical appearance.

Rationale: Pressure sores are frequently associated with the quality of the resting surface so we added this to the list of examples for morbidity measures. Body condition score was added as a potential welfare measure to address more mature cattle and in recognition that increased levels of mud can increase nutritional requirements. The remainder of the revisions are syntax changes.

g) Social environment

Management of cattle in outdoor and indoor intensive production systems methods should take into account the social environment of cattle as it relates to animal welfare. Problem areas include: buller (agonistic) activity, mixing of heifers and steers, feeding cattle of different size and age in the same pens, insufficient space at the feeder, insufficient water access and mixing of bulls.

Rationale: We recommend providing an explanation for the term buller and a syntax change.

In the case of buller animals, they should be identified and removed from the pen immediately. Beef producers should utilize management practices to reintroduce these animals. If reintroduction fails these animals will have to housed separately from the pen mates. Animal handlers should work to feed cattle of the same size and age in the same pens. Depending on feeding systems, health status of the animals and size of the animals beef producer will need to allow adequate feeder space and water access for the cattle.

Adequate fencing should be provided to minimize any animal welfare problems that may be caused by mixing of inappropriate groups of cattle.

Outcome based measurables: normal and animal behaviors, physical appearance, weight gain, morbidity and mortality rate

h) Stocking density

High stocking densities may have an adverse effect on growth rate, feed efficiency, survivability, carcass quality and behaviour (e.g., locomotion, resting, feeding and drinking).

In ~~extensive outdoors~~ all systems stocking density should be managed to ensure an adequate feed and water supply for the cattle.

Stocking density should be managed such that crowding does not adversely ly impact key components of normal behaviour of cattle. These include the ability to lie down freely without the risk of injuries, move freely around the pen and access feed and water. Stocking density should also be managed such that weight gain is not adversely affected by crowding. Excessive tongue rolling can be associated with overcrowding of confined cattle.

Rationale: Stocking density and adequate feed and water should be primary concerns irrespective of the type of facility housing cattle. Suggested editorial changes.

Outcome based measurables: abnormal and normal behaviors, morbidity and mortality rates, weight gain and physical appearance.

Rationale: Syntax changes.

i) Outdoor areas

Not applicable.

Comment: It is not clear why outdoor areas are not applicable in a section on environment.

j) Protection from predators

~~Where practical,~~ Cattle should be protected as much as possible from predators.

Outcome based measurables: mortality rate, normal and abnormal behaviour and physical appearance.

Rationale: Every effort should be made to protect cattle from predators. Other suggestions are syntax changes and to reiterate the need to always assess both normal and abnormal behavior.

3. Management

General comment: This document does not contain guidelines for managing periparturient beef cows, managing and preventing dystocia, care of the neonatal calf, or colostrum management. Since these are significant omissions, we hope the ad hoc group will address these topics in the near future.

a) Genetic selection

Welfare and health considerations, in addition to productivity, should be taken into account when choosing a breed for a particular location or production system. Examples of these include nutritional maintenance requirement, ectoparasite resistance and heat tolerance.

Individual animals within breed can be genetically selected to propagate offspring that exhibit the following traits beneficial to animal health and welfare: ~~M~~maternal ability, fertility, birth weight and calving ease milking ability, ~~body conformation~~ structural soundness and temperament.

Outcome based measurables: Morbidity ~~rate and~~ mortality rates, normal and abnormal behaviour, physical appearance and reproductive efficiency.

Rationale: Body conformation is important to animal welfare as it relates to structural soundness; we therefore suggest the latter as preferred language. We also listed additional traits that can be selected for that are important for cattle health and welfare. Syntax changes provided clarity.

b) Weaning

Weaning for the purposes of this document is the term to describe transfer of the calf to a fibrous diet from nursing the dam or being fed with milk or milk replacer. In beef cattle production systems, weaning can be a stressful time in the calf's life.

Calves should be weaned only when their ruminant digestive systems have developed sufficiently to enable them to maintain growth and welfare.

The practice of creep feeding is sometimes utilised prior to weaning to help the calf more easily adapt to a solid diet.

There are different weaning strategies utilised in the beef cattle production systems. These could include abrupt separation, fence line separation and the use of devices placed in the nose of the calf to discourage suckling.

Special care should be taken if abrupt weaning is immediately followed by transportation off farm as research has shown that calves are at risk of increased morbidity under these circumstances.

Beef cattle producers should seek expert advice on the most appropriate time and method of weaning for their type of cattle and production system.

Outcome based measurables: Morbidity rate, mortality rate, behaviour, physical appearance, weight gain.

c) Painful husbandry procedures

Surgical husbandry practices that have the potential to cause pain are routinely practiced on cattle for reasons of production efficiency, animal health and welfare and human safety. Where possible, these procedures should be performed in such a way as to minimize any pain and stress on the animal. Options to consider including ~~the~~ performing the procedure at as early an age as possible or, where appropriate, ~~the~~ use of analgesia.

Rationale: Editorial change.

Future options for enhancing animal welfare in relation to these procedures include: 1) ceasing the procedure and addressing the current need for the operation through management strategies; 2) breeding animals that do not require the procedure; 3) replacing the current procedure with a non-surgical alternative that has been shown to enhance animal welfare; or 4) performing the procedure in a way that minimises pain.

Example of such interventions include: castration, dehorning, (spaying), tail docking, and identification.

i) Castration

Castration of beef cattle is performed in many production systems to reduce inter-animal aggression, improve human safety, remove the risk of unwanted pregnancies in the herd, and enhance production efficiency by producing beef that better meets market requirements.

Where it is necessary to castrate beef cattle, producers should seek guidance from veterinarians as to the optimum method and timing for their type of cattle and production system.

Methods of castration used in beef cattle include surgical (knife) removal of the testes, ischaemic methods (banding or ringing), and crushing of the spermatic cord (burdizzo operation).

Where practical, cattle should be castrated before the age of 3 months, or at the first available handling opportunity beyond this age.

Producers should seek guidance from veterinarians on the availability and advisability of analgesia/anaesthesia for castration of beef cattle, particularly in older animals.

Operators performing castration of beef cattle should be trained and competent in the procedure used, and be able to recognise the signs of complications.

ii) Dehorning

Beef cattle ~~which~~ that are naturally horned are commonly dehorned ~~in order~~ to reduce animal injuries and hide damage, improve human safety, reduce damage to facilities and facilitate

transport and handling. Where practical and appropriate for the production system, the selection of polled cattle can remove the need for dehorning.

Rationale: Dehorning is sometimes performed to reduce damage to the facilities; therefore, we recommend the text be added to the guideline. The remainder of our revisions are editorial changes.

Where it is necessary to dehorn beef cattle, producers should seek guidance from veterinary advisers as to the optimum method and timing for their type of cattle and production system.

Where practical, cattle should be dehorned while horn development is still at the horn bud stage, or at the first available handling opportunity beyond this age. This is because the procedure involves less tissue trauma when horn development is still at the horn bud stage, and there is no attachment of horn to the skull of the animal.

Methods of dehorning at the horn bud stage include removal of the horn buds with a knife, thermal cautery of the horn buds, or the application of chemical paste to cauterise the horn buds. Methods of dehorning when horn development has commenced involve ~~the~~ removal ~~through of the horn~~ by cutting or sawing at the base of the horn close to the skull.

Rationale: Clarification on the intent of the guideline.

Producers should seek guidance from veterinarians on the availability and advisability of analgesia/anaesthesia for dehorning of beef cattle, particularly in older animals.

Operators performing dehorning of beef cattle should be trained and competent in the procedure used, and be able to recognise the signs of complications.

iii) Spaying (ovariectomy)

Spaying of heifers is sometimes required for international trade or to prevent unwanted pregnancies under extensive rangeland conditions. Surgical spaying should be performed by veterinarians or by highly trained operators. Producers should seek guidance from veterinarians on the availability and advisability of analgesia/anaesthesia for spaying of beef cattle.

iv) Tail docking

Tail docking has been performed in beef cattle to prevent tail tip necrosis in confinement operations. Research shows that increasing space per animal and proper bedding are effective ~~means~~ means in preventing tail tip necrosis. Therefore it is not recommended for producers to dock the tails of beef cattle.

Rationale: Editorial changes.

v) Identification

Ear-tagging, ear-notching, tattooing, freeze branding and radio frequency identification devices (RFID) are preferred methods of permanently identifying beef cattle from an animal welfare standpoint. In some situations however hot iron branding may be required or be the only practical method of permanent identifying beef cattle. If cattle are branded, it should be accomplished quickly, expertly and with the proper equipment. Identification systems should

be established also according to the Chapter 4.1. of the *Terrestrial Code* on General principles on identification and traceability of live animals.

Rationale: Editorial change. Standpoint is one word.

Outcome based measurables: ~~Rate of postprocedural~~ complications rate, morbidity and mortality rates, normal and abnormal behaviour, physical appearance, weight gain, and body condition score.

Rationale: We recommend additional appropriate outcome-based animal welfare measures and made editorial revisions.

d) Handling and inspection

Beef cattle should be inspected at intervals appropriate to the production systems and the risks to the health and welfare of the animals.

Some animals may benefit from more frequent inspection ~~for example: (e.g.,~~ neonatal calves, cows in late gestation, newly weaned calves, ~~and~~ cattle experiencing environmental stress and ~~after those that have undergone~~ painful husbandry or veterinary surgical procedures).

Animal handlers need to be competent in recognising the clinical signs of health, disease and welfare of beef cattle.

Beef cattle identified as sick or injured should be given appropriate treatment at the first available opportunity by competent and trained animal handlers. If animal handlers are unable to provide appropriate treatment, then the service of veterinarians should be enlisted.

If the prognosis ~~of for~~ the animal ~~condition~~ is poor, ~~with little chance of recovery,~~ the animal should be humanely euthanized. ~~sia of the animal should be considered.~~ For a description of methods for the humane killing of beef cattle see Chapter 7.6.5. of the OIE *Terrestrial Code*

Rationale: We recommend that only those who are qualified should administer treatments to ill and injured animals, and animals with poor prognoses should not be allowed to suffer unnecessarily. Euthanasia is, by definition, 'humane' and that adjective is unnecessary. The remaining suggested revisions are editorial.

Recommendations on the handling of cattle are also found in Chapter 7.5. and in Articles 7.5.1. and 7.5.2. of the OIE *Terrestrial Code*.

Where beef cattle are herded into a handling facility from extensive conditions, they should be moved quietly. Weather conditions should be taken into account and cattle should not be herded in excessively hot or cold conditions. Cattle should not be driven to the point of collapse. Properly trained dogs can be effective tools for cattle herding.

Outcome based measurables: Handling response, morbidity ~~rate,~~ and mortality rates, normal and abnormal behaviour, reproductive efficiency, weight gain and body condition score.

Rationale: It is important to assess both normal and abnormal behaviour. Body condition score is another appropriate measure that may be used to assess cattle with respect to these parameters.

Handling response measurables include the following:

-Percentage of animals falling

-Percentage of animals moved with an electric goad

-Percentage of animals striking fences or gates

-Percentage of animals injured during handling, such as broken horns, broken legs, and lacerations

-Percentage of animals vocalizing (bellow or moo) during restraint with ropes, squeeze chutes, headgates, or other devices. (References – Cortzee et al. , 2008; Dunn, 1990; Grandin, 1998, 2001; Watts and Stookey, 1998).

-Percentage of animals with visible eye white during handling and restraint. (References – Core et al., 2009; Sandem et al., 2006).

Rationale: A list of the criteria for measuring handling responses should be included in the text to clarify the intent of the guideline.

e) Personnel training

All people responsible for beef cattle should be competent according to their responsibilities and should understand cattle husbandry, behaviour, biosecurity, general signs of disease, and indicators of poor animal welfare such as stress, pain and discomfort, and their alleviation.

Competence may be gained through formal training and/or practical experience.

Documented evidence of ensuring caretaker competence should precede his/her being permitted to work cattle without supervision.

Rationale: Appropriate personnel training and/or experience are essential regardless of the production system. The procedure of documentation will facilitate ensuring training and/or experience has been adequate and successful in the expected performance of personnel handling/overseeing livestock and will therefore subsequently improve the welfare of the animals under their care.

Outcome based measurables: Handling response, morbidity and mortality rates, normal and abnormal behaviour, reproductive efficiency, weight gain and body score condition.

Rationale: Our experts suggest that virtually every animal welfare measure is impacted by training of personnel.

f) Emergency plans

Beef producers should have contingency plans to cover the failure of power, water and feed supply. These plans may include the provision of fail-safe alarms devices to detect malfunctions, backup generators, access to maintenance providers, ability to store water on the farm, access to water cartage services, adequate on farm storage of feed and alternative feed supply.

Rationale: Editorial changes.

Plans should be in place to minimise and mitigate the effects of natural disasters or extreme climatic conditions e.g. heat stress, drought, blizzard and flooding. Emergency plans should also cover the

management of the farm in the face of an emergency disease outbreak, consistent with national programs and recommendations of *Veterinary Services* as appropriate.

g) Location, construction and equipment of farms

Farms for beef cattle should be situated in an appropriate geographical location for the health, welfare and productivity of the animals while considering environmental sustainability.

All facilities for beef cattle should be constructed, maintained and operated to minimise the risk to the welfare of the animals and maximize human safety.

Rationale: Editorial revision for clarity.

Equipment for handling and restraining beef cattle should only be used in a way that minimises the risk of injury, pain or distress.

Cattle in intensive or extensive production systems must be offered adequate space for comfort, socialization and environmental management.

In intensive production systems the feeder should be sufficiently large so that animals have adequate access to feed and they should be clean and free of spoiled, moldy, sour, packed or unpalatable feed. Also cattle should have access to ~~clean and clear~~ potable water at all times that also meets their physiological requirements and free from contaminants potentially hazardous to cattle health.

Rationale: Editorial suggestion and consistent with the requirement for palatable water etc. in Article 7.X.5.2.e – Nutrition.

Floors in housing facilities should be properly drained, and barns and handling alleys should provide traction to prevent injuries to animals and handlers.

Handling alleys and housing pens must be free of sharp edges and protrusions to prevent injury to animals and handlers.

~~Design and operate~~ Alleys and gates should be designed and operated to avoid impeding cattle movement. ~~Avoid~~ Slippery surfaces should be avoided, especially where cattle enter a single file alley leading to a chute or where they exit the chute. Grooved concrete, metal grating (not sharp), rubber mats or deep sand can be used to minimize slipping and falling. Quiet handling is essential to minimize slipping. When ~~operating~~ gates and catches are operated, ~~reduce~~ excessive noise should be minimized, ~~which because it~~ may cause distress to the animals.

Rationale: Editorial revisions suggested for clarity.

Adjust hydraulic or manual restraining chutes to the appropriate size of cattle to be handled. Hydraulic or pneumatic operated restraining equipment should have pressure limiting devices to prevent injuries.

Rationale: Cattle vocalizations (bellows) that occur immediately after application of a restraining device are indicators of either excessive pressure or the device causing discomfort, pain or stress.

Regular cleaning and maintenance of working parts is imperative to ensure the system functions properly and is safe for the cattle and handlers.

Mechanical and electrical devices used in housing facilities must be safe for animals and humans.

Dipping baths are sometimes used in beef cattle production for ectoparasite control. Where these are used, they should be designed and operated to minimise the risk of crowding, injury or drowning.

The loading of the animals at the farms should be conducting accordingly to Chapter 7.2., 7.3 and 7.4. (Transport of animals by sea, land and air respectively)

Outcome based measurables: Handling response, morbidity rate, and mortality rates, normal and abnormal behaviour, weight gain, body condition score and physical appearance, lameness.

Rationale: Editorial suggestions and incorporation of normal and abnormal behavioural observations.

h) On farm harvesting slaughter

Refer to Section 5.3.3.

Rationale: We recommend the term slaughter replace harvesting, which is consistent with the OIE guideline “Slaughter of Animals” when referring to the killing of animals for human consumption.

i) Humane killing

A prompt diagnosis should be made to determine whether the animal should be humanely killed or receive additional care.

Animal handlers should provide feed and water to non-ambulatory cattle at least once daily.

Non-ambulatory animals should be moved very carefully and dragging non-ambulatory animals is unacceptable.

Likewise, animals should not be lifted with chains onto transportation conveyances. Acceptable methods of transporting non-ambulatory animals include a sled, low-boy trailer or in the bucket of a loader.

When treatment is attempted, cattle that are unable to sit up unaided and refuse to eat or drink should be humanely euthanized as soon as recovery is deemed not possible.

Cattle that are non-ambulatory must not be sent to a livestock market or to a processing facility.

Humane killing should occur without pain or suffering.

The decision to humanely kill an animal and the procedure itself should be undertaken by a competent person.

Reasons for euthanasia may include:

- severe emaciation, weak cattle that are non-ambulatory or at risk of becoming non-ambulatory downers;
- non-ambulatory cattle that will not ~~sit~~ stand up, refuse to eat or drink, have not responded to therapy;

Rationale: Non-ambulatory animals should be euthanized if they do not become ambulatory after therapy.

- rapid deterioration of a medical condition for which therapies have been unsuccessful;
- severe, debilitating pain;
- compound (open) fracture;
- spinal injury;
- central nervous system disease; and
- multiple joint infections with chronic weight loss.

For a description of ~~other~~ methods for the humane killing of beef cattle see Chapter 7.6.5 of the *Terrestrial Code*.

Rationale: Delete the word other. This document does not contain any references to humane killing of beef cattle.
