

C A M E L I D

Animal Welfare (Camelid)

Code of Welfare 2009

A code of Welfare issued under the Animal Welfare Act 1999

Version 2.1 (1 September, 2009)

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1. Introduction, Purpose and Interpretation of Code

1.1 Introduction

The Animal Welfare Act 1999 (the Act) imposes obligations on every person who owns or is in charge of camelids. This code has been issued pursuant to section 75 of the Act and will provide guidance on how to comply with the legislative requirements. However, this code does not provide an exhaustive list of the Act's requirements, and owners and those in charge of camelids should note that they must comply with the minimum standards in this code *and* the general provisions in the Act. A copy of the Act is accessible at: <http://www.legislation.govt.nz>.

1.2 Scope

This code sets out the general principles for the care of New World (South American) camelids. It is intended for all persons responsible for the welfare of camelids, and applies to all camelids kept in New Zealand. Common species of camelids found in New Zealand include *Vicugna pacos*, (alpaca), *Lama guanicoe* (guanaco) and *Lama glama* (llama).

Proper camelid welfare requires an owner to gain good knowledge, understanding and experience of handling camelids, and to observe high standards in order to protect the welfare of the camelids. This code is intended to encourage all those responsible for camelids to adopt as high as possible a standard of husbandry, care and handling, so as to equal or exceed the minimum standards.

Under the Act the "owner" of an animal, and the "person in charge" of an animal, are responsible for meeting the legal obligations for animal welfare. In the case of camelids, the owner of the animals may place the camelids in the care of others for the purposes of breeding, transport, agistment and showing. See section 2, "Legal Obligations of Owners and Persons in Charge of Animals", and section 3, "Stockmanship", of this code, where the crucial role of the owner and the person in charge is explained.

The owner and person in charge of the camelids have overall responsibility for the welfare of the animals. While the persons in charge have responsibilities for the welfare of animals under their immediate care, these responsibilities do not detract from the liability of the owner of the camelids.

Responsibility for meeting minimum standards relating to the provision, design and maintenance of the facilities and equipment, the allocation of operational responsibilities, and the competence and supervision of performance of employees will lie with the owner (and person in charge) of the camelids. Responsibility for meeting minimum standards during the operation of particular tasks will lie with the person responsible for carrying out that particular task.

Advice is given throughout the code and is designed to encourage owners and persons in charge to strive for a high level of welfare. Explanatory material is provided where appropriate.

Other codes of welfare that are relevant, and are either being produced for the first time or are in the process of being reviewed, include codes concerned with the transport of animals, slaughter at licensed and approved premises, emergency slaughter, and the use of animals for scientific purposes. Where relevant, these other codes should be consulted (see Appendix II, "Codes of Welfare", to this code).

1.3 Legal Status of Codes of Welfare

Codes of welfare are deemed to be regulations for the purposes of the Regulations (Disallowance) Act 1989. As such, they are subject to the scrutiny of the Regulations Review Committee of Parliament.

Codes of welfare contain minimum standards and may also contain recommended practice and recommended best practice. In this code, only minimum standards have legal effect and in two possible ways:

- evidence of a failure to meet a relevant minimum standard may be used to support a prosecution for an offence under the Act (see Appendix I, “Strict Liability and Defences”, to this code)
- a person who is charged with an offence against the Act can defend himself/herself by showing that he/she has equalled or exceeded the minimum standards (see Appendix I, “Strict Liability and Defences”, to this code).

Recommendations for best practice under New Zealand conditions set out standards of care and conduct over and above the minimum required to meet the obligations in the Act. They are included for educational and information purposes

Any person or organisation aggrieved at the operation of a code of welfare has the right to make a complaint to the Regulations Review Committee, Parliament Buildings, Wellington.

This is a parliamentary select committee charged with examining regulations against a set of criteria and drawing to the attention of the House of Representatives any regulation that does not meet the criteria. Grounds for reporting to the House include:

- the regulation trespasses unduly on personal rights and freedoms;
- the regulation is not made in accordance with the general objects and intentions of the statute under which it is made; or
- the regulation was not made in compliance with the particular notice and consultation procedures prescribed by statute.

Any person or organisation wishing to make a complaint should refer to the publication *Making a Complaint to the Regulations Review Committee*, which can be obtained from the website: <http://www.clerk.parliament.govt.nz>, or by writing to: Clerk of the Committee, Regulations Review Committee, Parliament Buildings, Wellington.

1.4 Process for Code Development

The Act established the National Animal Welfare Advisory Committee (NAWAC) and provided for the issue of codes of welfare with legal effect. One of the responsibilities of NAWAC is to advise the Minister of Agriculture (the Minister) on the content of codes of welfare following a process of public consultation.

A draft code may be developed by anyone, including NAWAC or the Minister. It is then submitted to NAWAC. Provided the draft meets criteria in the Act for clarity and compliance with the purposes of the Act, and provided representatives of persons likely to be affected by the code have been adequately consulted, NAWAC publicly notifies the code and calls for submissions. NAWAC is then responsible for recommending the form and content of the code to the Minister after having regard to the submissions received, good practice and scientific knowledge, available technology and any other relevant matters.

NAWAC may recommend standards that do not fully meet the obligations in the Act if certain criteria specified in the Act are met.

The Minister issues the code by notice in the *Gazette*.

This code was drafted by representatives from the New Zealand Llama Association, and the Alpaca Association of New Zealand. Keepers of camelids, veterinarians and other interest groups were consulted. NAWAC publicly notified the draft code of welfare on 2/1/2009.

1.5 Contents of this Code

Section 69 of the Act provides that a code of welfare may relate to one or more of the following:

- a species of animal
- animals used for purposes specified in the code
- animal establishments of a kind specified in the code
- types of entertainment specified in the code (being types of entertainment in which animals are used)
- the transport of animals
- the procedures and equipment used in the management, care or killing of animals or in the carrying out of surgical procedures on animals.

In deciding to issue a code of welfare, the Minister must be satisfied as to the following matters set out in section 73(1) of the Act:

- that the proposed standards are the minimum necessary to ensure that the purposes of the Act will be met; and
- that the recommendations for best practice (if any) are appropriate.

Despite the provisions of section 73(1), section 73(3) of the Act allows NAWAC, in exceptional circumstances, to recommend minimum standards and recommendations for best practice that do not fully meet the obligations of:

- section 10 or section 11 – obligations in relation to physical, health and behavioural needs of animals
- section 12(c) – killing an animal
- section 21(1)(b) – restriction on performance of surgical procedures
- section 22(2) – providing comfortable and secure accommodation for the transport of animals
- section 23(1) and (2) – transport of animals
- section 29(a) – ill-treating an animal.

In making a recommendation under section 73(3), section 73(4) requires NAWAC to have regard to:

- the feasibility and practicality of effecting a transition from current practices to new practices and any adverse effects that may result from such a transition
- the requirements of religious practices or cultural practices or both
- the economic effects of any transition from current practices to new practices.

This code provides for the physical, health and behavioural needs (as defined in section 4 of the Act) of camelids. These needs include:

- proper and sufficient food and water
- adequate shelter and shade
- opportunity to display normal patterns of behaviour
- physical handling in a manner which minimises the likelihood of unreasonable or unnecessary pain or distress
- protection from, and rapid diagnosis of, any significant injury or disease,

being a need which, in each case, is appropriate to the species, environment and circumstances of the animal.

This code also takes account of:

- good practice
- scientific knowledge
- available technology.

1.6 Revision of the Code

This code is based on the knowledge and technology available at the time of publication, and may need to be varied in the light of future advances and knowledge. In any event, this code will be reviewed no later than 26 April 2017 (being 10 years from the date on which this code was issued by the Minister).

Comments on this code are always welcome and should be addressed to: The Secretary, National Animal Welfare Advisory Committee, PO Box 2526, Wellington.

Further information can be obtained from the website: <http://www.biosecurity.govt.nz/animal-welfare>.

1.7 Interpretation and Definitions

1.7.1.1 Interpretation

Minimum Standards

Minimum standards are identified in the text by a heading, and use the word “must” or similar. They are highlighted in boxes within the text.

Recommended Best Practice

The Act provides that codes of welfare may contain recommendations for best practice.

The Act does not define “recommended best practice”. NAWAC takes “recommended best practice” to mean the best practice agreed at a particular time, following consideration of scientific information, accumulated experience and public submissions on the code. It is usually a higher standard of practice than the minimum standard, except where the minimum standard is best practice. It is a practice that can be varied as new information comes to light.

Recommendations for best practice will be particularly appropriate where it is desirable to promote or encourage better care for animals than is provided as a minimum standard.

Recommended best practices are identified in the text by a heading, and generally use the word “should”.

Good Practice

The Act does not define “good practice”. NAWAC takes “good practice” to mean a standard of care that has a general level of acceptance among knowledgeable practitioners and experts in the field; is based on good sense and sound judgement; is practical and thorough; has robust experiential or scientific foundations; and prevents unreasonable or unnecessary harm to, or promotes the interests of, the animals to which it is applied. Good practice also takes account of the evolution of attitudes about animals and their care.

Scientific Knowledge

The Act does not define “scientific knowledge”. NAWAC takes “scientific knowledge”, relevant to its areas of responsibility, to mean knowledge within animal-based scientific disciplines, especially those that deal with nutritional, environmental, health, behavioural and cognitive/neural functions, which are relevant to understanding the physical, health and behavioural needs of animals. Such knowledge is not haphazard or anecdotal; it is generated by rigorous and systematic application of the scientific method, and the results are objectively and critically reviewed before acceptance.

Available Technology

The Act does not define “available technology”. NAWAC takes “available technology” to represent, for example, existing chemicals, drugs, instruments, devices and facilities which are used practically to care for and manage animals.

1.7.1.2 Definitions

Act

“Act” means the Animal Welfare Act 1999.

Animal

This code applies to New World (South American) camelids, being animals as defined in section 2 of the Act:

“Animal” –

- (a) Means any live member of the animal kingdom that is –
 - (i) A mammal; or
 - (ii) A bird; or
 - (iii) A reptile; or
 - (iv) An amphibian; or
 - (v) A fish (bony or cartilaginous); or
 - (vi) Any octopus, squid, crab, lobster, or crayfish (including freshwater crayfish); or
 - (vii) Any other member of the animal kingdom which is declared from time to time by the Governor-General, by Order in Council, to be an animal for the purposes of this Act; and
- (b) Includes any mammalian foetus, or any avian or reptilian pre-hatched young, that is in the last half of its period of gestation or development; and

- (c) Includes any marsupial pouch young; but
- (d) Does not include –
 - (i) A human being; or
 - (ii) Except as provided in paragraph (b) or paragraph (c) of this definition, any animal in the pre-natal, pre-hatched, larval, or other such developmental stage.

Ill-treat

As defined in section 2 of the Act, “ill-treat”, in relation to an animal, means causing the animal to suffer, by any act or omission, pain or distress that in its kind or degree, or in its object, or in the circumstances in which it is inflicted, is unreasonable or unnecessary.

Owner

As defined in section 2 of the Act, “owner”, in relation to an animal, includes the parent or guardian of a person under the age of 16 years who –

- (a) Owns the animal; and
- (b) Is a member of the parent’s or guardian’s household living with and dependent on the parent or guardian.

Person in Charge

As defined in section 2 of the Act, “person in charge”, in relation to an animal, includes a person who has the animal in that person’s possession or custody, or under that person’s care, control, or supervision.

1.8 Glossary

See also section 1.7, “Interpretation and Definitions”, of this code.

adult	Any camelid over the age of 2 years.
adverse weather	Unfavourable weather conditions that may pose harm or risk to the animals.
back fencing	A technique in break feeding (see below) whereby previously grazed adjacent areas are closed off to animals using a fence, often electrified, to prevent damage from treading or overgrazing which may result in reduced pasture growth.
baleage	Baled pasture, plastic wrapped and ensiled.
berserk male syndrome	A condition of unpredictable and often highly aggressive behaviour seen in camelids, particularly intact males, that have been hand raised in the absence of other camelids, or have been excessively human-acclimated when very young through inappropriate contact.
BCS	Body Condition Score – a 5-stage scoring system for adult camelids used to classify their body condition, based on the assessed amount of fat and/or muscle covering, particularly over the spine and pelvis. (see Appendix III, “Condition Scoring of Camelids”, to this code).
birthing	Period of time when Hembra camelid are giving birth.

brassic	Fodder crop of the brassica family.
break feeding / strip grazing	Control of a feed supply of pasture or crop (brassica or cereal) using a temporary electric fence or netting, shifted regularly (usually daily) to provide fresh feed.
chuckering	A restraint procedure where a rope is loosely tied around the posterior midsection of a camelid, and the hind feet are looped into the rope to keep a camelid in kush and prevent it from standing. Most commonly used on alpaca in New Zealand .
colostrum	Milk secreted by the Hembra for the first few days following birth (parturition) characterised by high antibody content.
cria	Newborn camelid until weaned.
crude protein	The total nitrogen content of a feed multiplied by 6.25 (used to assess the protein content of a feed source).
diurnal patterns	A pattern of conditions such as temperature or light, which is repeated daily.
DM (dry matter)	A standardised measure of feed quantity, expressed as the percentage of feed remaining following removal of all moisture. While it is commonly used to compare different feed types, it does not reflect feed quality, in particular the energy content of the feed.
dystocia	Birthing difficulties.
feed budget	The process of allocating available feed resources (grazed pasture or crop, and supplementary feeds) to meet the daily requirements of a group of animals. Development of a feed budget ensures that those periods when feed supply may be inadequate are identified, thus allowing contingency planning for allocation, feeding (and purchase) of supplementary feed supplies.
fighting teeth	Machos develop three pairs of fighting teeth, two upper pairs and one lower pair. In the female, the fighting teeth are usually rudimentary.
food/feed	The words "food" and "feed" are used interchangeably.
gelding	Castrated macho llama.
handling facilities	An area set up to handle camelids for routine animal management, health treatments, sorting and drafting (e.g. pens, sheds, yards).
heat stress	Hyperthermia brought on by prolonged high air temperatures, combined with high humidity, causing elevated body temperatures.
hembra	Adult female camelid.
herd	Group of camelids.
holding facilities	An area set up to temporarily hold camelids (e.g. pens, sheds, yards).
huacaya	A type of alpaca characterized by its sheep-like fleece.
husbandry	Care and management practices of camelids farming.
kush	The natural resting position of camelids with all four legs under the body.

keeper	A common term referencing the "person in charge" of a camelid.
lactating female	A female that has given birth, and is producing milk to feed her cria.
lux	SI unit of luminance (light intensity) (not to be confused with watts).
macho	An entire (ungelded) adult male camelid.
ME (metabolisable energy)	A standardised measure of the digestible energy content of a feed that is available for use by the animal for maintenance, growth or lactation, expressed in megajoules (MJ) per unit of dry matter.
mechanical restraints	Devices designed to safely restrain animals for the purpose of administering animal health remedies, handling or reproductive techniques. Commonly referred to as bales, crushes or cradles.
MJ	Megajoules is a measure of the digestible energy of the food provided. MJ units are used to compare the feed quality of different feedstuffs.
pecking order	The social hierarchical order resulting from individuals establishing their dominance within a group of camelids.
persistent bullying	Enduring aggression towards a camelid by one or more other camelids, leading to welfare being compromised.
rotational grazing	A grazing method that utilizes recurring periods of grazing and rest among two or more paddocks in a grazing management unit throughout the period when grazing is allowed.
scouring	Diarrhoea, producing voluminous, soft to fluid, and often vile-smelling faeces.
set-stocking	The practice of allowing a fixed number of animals on a fixed area of land during the time when grazing is allowed.
silage	Pasture which has been preserved by fermentation, which may be made in a pit, stack or in wrapped bales (baleage).
species	In the context of this code, refers to <i>Vicugna pacos</i> , alpaca <i>Lama guanicoe</i> , guanaco <i>Lama glama</i> , llama <i>Vicugna vicugna</i> , vicuña
stock handler	A person who undertakes the immediate day-to-day husbandry tasks associated with management and care of camelids. This person may be either the person in charge or the owner, depending on the circumstance.
stockmanship	Putting into practice the skills, knowledge, experience, attributes and empathy necessary to manage stock.
supplementary feeds	Feeds which are additional to grazed pasture including baleage, hay, silage, crops and cereal-based foods which may be fed in circumstances where grazed pasture is not available, or when pasture growth rates are insufficient to meet the needs of a group of animals. The nature and amount of supplementary feed required is calculated within a feed budget, with consideration to meeting the crude protein and other

nutritional requirements of the animal.

- suri** A type of llama or alpaca characterized by the fleece hanging parallel to the body.
- Tui** A camelid after it has been weaned (typically at 6 months of age) until it reaches approximately 2 years of age.
- weaning** The act of separating one or more cria from their mothers for a period sufficient to stop lactation and feeding behaviour. For camelids this is usually a period of four or more weeks.
- wether** Castrated macho alpaca.

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2. Legal Obligations of Owners and Persons in Charge of Animals

The owner or person in charge of a camelid has overall responsibility for the welfare of the camelid in his or her care. The legal obligations set out below are not an exhaustive list of the obligations in the Act.

- (a) The owner or person in charge of a camelid must:
 - (i) ensure that the physical, health and behavioural needs of the camelids are met in a manner that is in accordance with both good practice (as defined by the Minimum Standards) and scientific knowledge; and
 - (ii) where practicable, ensure that a camelid that is ill or injured receives treatment that will alleviate any unreasonable or unnecessary pain or distress being suffered by the camelid or that it is killed humanely.
- (b) The owner or person in charge of a camelid must not without reasonable excuse:
 - (i) keep a camelid alive when it is in such a condition that it is suffering unreasonable or unnecessary pain or distress;
 - (ii) sell, attempt to sell or offer for sale, a camelid when it is suffering unreasonable or unnecessary pain or distress.
 - (iii) desert a camelid in circumstances in which no provision is made to meet its physical, health and behavioural needs.
- (c) No person may:
 - (i) ill-treat a camelid;
 - (ii) perform any significant surgical procedure on a camelid unless that person is a veterinarian, or a veterinary student under the direct supervision of a veterinarian or, in the case of a controlled surgical procedure, a person approved by a veterinarian;
 - (iii) perform on a camelid a surgical procedure that is not a significant surgical procedure (as defined by the Act) in such a manner that the camelid suffers unreasonable or unnecessary pain or distress; or
 - (iv) kill a camelid in such a manner that the camelid suffers unreasonable or unnecessary pain or distress.

Defences are set out in Appendix I, "Strict Liability and Defences", to this code. The Act contains specific procedural requirements before these defences can be relied on, and these requirements are described in Appendix I, "Strict Liability and Defences", to this code.

3. Stockmanship

Introduction

Owners and persons in charge are required to ensure that their personnel have either the relevant knowledge and training or appropriate supervision to ensure that the health and welfare needs of the camelids in their care are met. Personnel should undergo training by experienced supervisors, either formally or on the job. Any contracted or temporary staff should be trained and competent in the relevant activity or under the supervision of a trained and competent person.

The owner or person in charge may place the camelid in the care of others for the purpose of breeding, transport or other routine management or husbandry practices but this does not absolve them from their responsibility.

Minimum Standard No. 1 – Training

Camelids must be cared for by a sufficient number of personnel, who, collectively, possess the ability, knowledge and competence necessary to maintain the health and welfare of the animals in accordance with this code.

Recommended Best Practice

- (a) Staff should be trained on the job by supervisors who have competence in the husbandry of the animals within the particular locale and circumstances.
- (b) Stock handlers, owners and persons in charge of animals should keep up to date with developments in animal husbandry designed to maintain or improve animal welfare. They should also review existing systems and practices regularly to ensure that they are both necessary (justified) and cannot be improved.
- (c) Accurate records should be kept of the history and treatment of animals.

General Information

The New Zealand Qualifications Authority lists a number of training qualifications for stock handlers. These include the National Certificate in Agriculture. Stock handlers with qualifications in non-camelid stock species must be familiarized with the specific aspects of camelid behaviour and handling.

Information on these qualifications and accredited training providers is available through the NZQA website: <http://www.nzqa.govt.nz/framework/>.

3.1 Stockmanship and Animal Handling

Competent handling of camelids is essential to their husbandry.

Camelids are prey animals and fear motivates them to escape from perceived danger. Fear is a strong stressor and reducing fear by keeping the animal calm means it is easier to handle. Careful and quiet handling will also improve animal welfare and productivity, reduces risk of injury, and results in animals settling down and resuming normal behaviour more quickly.

Camelids are intelligent and curious animals, and can be adapted to dealing with novel situations with a minimal fear response. The first time an animal is handled is important to determine its subsequent responses—quiet and calm procedures reduces the stress caused by fearful experiences, the results of which can be difficult to eliminate. In a novel situation many camelids observe the herd reaction when formulating its own response, putting a new animal in with animals that have been well acclimated to the handling procedures can help significantly reduce the new animal's own fear and stress reactions. Training, adapting, or habituating animals to handling (e.g. walking quietly among livestock, letting them approach novelities), especially if undertaken gradually and in small periods, may reduce fear and improve the efficiency and safety of handling, and tolerance of novel situations.

Camelids have a strong herd instinct, and attempting to separate animals from the herd, and especially mothers from their cria, can induce significant stress. Separating an animal is best done in yards or other handling facilities.

Minimum Standard No. 2 – Animal Handling

- (a) Camelids must be handled at all times in such a way to minimize the risk of pain, injury or distress to the animals.**
- (b) Electric prods must not be used on camelids.**
- (c) Only the minimum force required must be used when moving camelids.**

Recommended Best Practice

- (a) The flow of animals should be monitored and if necessary controlled at gateways, in narrow laneways and corners, or other pressure points to ensure animals, especially young and small animals, are not injured or smothered.
- (b) If the process of yarding is especially stressful, the animals should be given 20-30 minutes to calm down to ensure safer and easier handling and to reduce fear.
- (c) Time spent in the yards should be as short as possible.
- (d) Moving camelids into a smaller area can reduce their flight response. It can be easier and less stressful to catch a camelid in a small pen than in a larger holding yard.
- (e) Care should be taken so as not to induce sudden fear or panic in animals in confined spaces where flight increases the risk of injury.
- (f) Tails should not be lifted or twisted to such an extent that there is injury or the tail is broken.
- (g) Ears should not be twisted to such an extent that it causes injury.
- (h) Camelids should not be dragged or lifted by their wool.
- (i) Vehicles should not be used to push animals physically.
- (j) Dogs are not **generally** recommended when working with camelids, as some camelids may evidence an aggressive response and attack the dogs.

General Information

Human-animal interactions can be enhanced by improving handling procedures and facilities, acclimating them to human contact, and attending to the skill and training of the handlers. **When encouraging animals to move, preference should be given to audio and visual cues as opposed to devices which rely on physical contact.**

Knowledge of the animals flight (safety) zone, and the point of balance (the line through the animal's shoulder which determines if it moves forward or backwards in the presence of a handler) will help with moving animals and in reducing fear. Animals with a large flight zone may become fearful and agitated when that zone is invaded. Handling such fearful camelids can be enhanced by confining the area, as this tends to reduce their flight zone. Likewise keeping the animal with other camelids can help to reduce the flight zone and fear response to handling. The size of the flight zone varies depending on the animals behavioural predispositions (genetics), its previous contact with people, and the quality of that contact.

Some camelids can react aggressively to the presence of dogs. Llamas and alpacas are used as sheep guards in Australia and the United States to protect against foxes and coyotes. Camelids can be acclimated to dogs, but the owner must take account of the circumstance and the personality of the camelids to assess the risk to both camelids and dogs.

Camelids, even if very acclimated to human contact and seemingly very "friendly", should respect their human handlers and their personal space. Inappropriate handling of animals, especially young cria and tui, can cause a loss of respect for human handlers. Animals that initiate body contact, especially rough pushing or neck wrestling, have the potential to become dangerously aggressive.

The New Zealand Llama Association and the Alpaca Association of New Zealand can be contacted for advice on animal handling issues.

3.2 Mustering and Droving

Mustering and droving of camelids is essential for their husbandry. While well-socialized camelids can be induced to move to new areas either through enticement with food or by means of triggering their natural curiosity for exploring new pasture land, in many cases they must be moved by using the animals' fear of humans. The handler's skill lies in understanding the behaviour of the animals and adapting their behaviour in such a way as to facilitate mustering while minimizing stress to the animals. Mustering is usually best done slowly and quietly.

Minimum Standard No. 3 – Mustering and Droving

Camelids being moved on foot must not be forced to proceed at a pace likely to cause exhaustion, heat stress, or injury.

Recommended Best Practice

- (a) The pace of mustering or droving should be aligned to the slowest animals in the mob, with particular attention given to cria, and those with illness or injury.
- (b) Sick, injured or lame animals should only be mustered if that is the only way to treat them and it will not cause undue suffering.

(c) On rough, uneven surfaces and difficult or steep terrain, stock should be moved according to the distance and terrain to be covered, ambient temperature, and the mobility of any lame, sick or young animals. It is preferable to avoid mustering or droving in hot and/or dusty conditions.

(d) After mustering or droving animals should be provided with suitable conditions and time to enable settling down, mothering up or shelter seeking before the onset of darkness.

3.3 Restraint and Facilities

3.3.1 Restraint and Handling Practices

Introduction

Facilities such as yards, races, crushes and loading ramps must be adapted to suit the animals and the husbandry systems. Equipment worn by or placed on a camelid (halters, packs, etc.) must also be designed or adapted for the unique physiologic requirements of camelids.

Facilities originally intended for sheep or cattle may not be appropriate without modification. Likewise appropriate and safe facilities for llamas and guanaco may be different from those for the smaller alpacas. Properly managed facilities and restraint systems can greatly facilitate the undertaking of husbandry procedures resulting in reduced risk of injury and distress to animals and stock handlers.

Halter use and halter fit is a very important component of camelid handling. Haltered camelids can be at significant risk of being caught on fences or other objects resulting in injury or death. Camelids are obligate nose-breathers, and an ill-fitting halter that slips down over the soft tissue of the nose can result in suffocation.

Minimum Standard No. 4 – Restraint and Facilities

- (a) All facilities, including fences, yards, sheds, and housing must be constructed, maintained and operated in a manner that minimizes the likelihood of distress or injury to animals.**
 - (i) The storage of all health remedies, toxic materials and associated equipment must be secure and inaccessible to camelids.**
 - (ii) The facilities must have light available at a minimum of 20 lux to insure safe inspection and handling of animals.**
 - (iii) Power cables and associated fittings must be inaccessible to camelids.**
 - (iv) Surfaces must be composed or constructed of non-slip materials to minimize the risk of injury.**
- (b) Methods of restraining other than catching by hand must only be used**
 - (i) When they are suitable for the animals being handled; and**
 - (ii) Where the operators are fully conversant with their operation; and**
 - (iii) When they are in good working order so as to minimize the risk of injury or unnecessary pain or distress; and**
 - (iv) For only as long as necessary to perform particular husbandry practices; and**
 - (v) Where they allow the animal to be released immediately if required.**
- (c) Only the minimum force required must be used when restraining camelids.**

- (d) **Animals which are physically restrained must be kept under supervision**
- (e) **Electroimmobilization devices must not be used**
- (f) **Chemical (drug) immobilization techniques must only be used by registered veterinarians**
- (g) **Animals which are to be restrained by tether must have been habituated to being handled that way**
 - (i) **Halters must be specifically designed for use with camelids, and must be properly fitted to each animal.**
 - (ii) **Halters must never be left on unattended for extended periods without being checked at minimum every 12 hours.**

Recommended Best Practice

- (a) **Special care should be taken to make sure there are no gaps where camelids can get their heads or legs stuck.**
- (b) Camelids should be handled quietly with care and patience. Familiarising camelids with handling facilities and management routines from an early age reduces apprehension and assists handling.
- (c) Managers should avoid handling in periods of adverse weather conditions (e.g. thunder and hailstorms, strong winds, excessive heat), except in cases where emergency movement or transport of the animals is required.
- (d) Handling camelids in dusty facilities should be avoided as it may cause lung or eye irritation, or disease. As a general rule, if the dust is uncomfortable for the handlers, it is uncomfortable for the camelids.
- (e) Large herds of camelids may need to be broken into smaller herds after entering handling facilities. Animal stress can be minimized by keeping camelids within sight of familiar animals where possible. Avoid isolating individual camelids as much as possible.
- (f) Halters should not be left on while unattended longer than is necessary for the humane and effective handling of camelids during periods when such handling is necessary e.g. shows, sales, mating and transporting.
- (g) **Camelids may be chucked, a procedure where a rope is loosely tied around the hindquarters to immobilize the rear legs and keep the animal in kush. In New Zealand llamas and guanaco are generally too large to safely immobilize by chucking, so the procedure is used primarily on alpaca. A chucked animal should be released as soon as is practicable, and should not be left unattended.**
- (h) All packs, **covers** and other equipment fitted to camelids must have been designed for the purpose, must be fitted properly, and must not cause the animal undue discomfort or distress in its normal use.
- (i) In extensive operations catch-pens where camelids can be isolated and easily caught for examination and treatment should be accessible.

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Useful Information

When used appropriately, useful aids to assist in the safe movement of camelids include:

- wands
- herding tape

These aids provide visual cues to constrain or direct camelid movement.

When **guanaco** are held in yards for long periods they are liable to become restless. They may attempt to jump over yard fences and there is an increased risk of injury. Work needs to be planned to ensure that camelids are only held for short periods. Alternatively, camelids can be held in adjacent pastures or paddock facilities until such time as they can be processed efficiently.

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4. Food and Water

4.1 Food and Feeding

Introduction

All camelids should receive a daily diet in adequate quantities and containing sufficient nutrients to meet their requirements to maintain good health and welfare.

When considering the amount of food and nutrients camelids require, a number of factors need to be taken into account:

- physiological state
- extensive or intensive management systems
- age
- sex
- size
- body condition
- state of health
- nutritional composition of feed
- quality of diet
- introduction of new feeds
- maximum periods of food deprivation (e.g. during transportation)
- growth rate
- previous feeding levels
- feeding frequency
- terrain
- genetic impact of species or bloodlines
- level of activity and exercise
- climatic and seasonal factors (e.g. extreme weather)
- provision of shelter.

These factors create variation between individuals in terms of food and nutrient requirements.

Grazed pasture is the main source of feed for camelids in New Zealand. Although there is considerable variation in pastoral management systems throughout New Zealand, due for example to extensive and intensive farming situations, season, climatic differences, and land and soil types, there are some common feeding management techniques available for camelid keepers.

Efforts should be made to provide non-endophyte pastures for camelids that show sign of ryegrass staggers. **There is considerable variability among individual animals in their sensitivity to endophyte. Llamas generally seem less susceptible than alpacas to ryegrass staggers.**

The general principles of grazing management are to optimise animal intakes by increasing the efficiency of feed utilisation (reduction of wastage), and improve feed quality through management of

pasture growth. At certain times of the year, keepers may introduce controlled grazing systems such as break feeding and rotational grazing, such that pasture or crop is rationed according to a feed budget which ensures that the daily feed requirements of the animals are met. Pasture is rationed, depending on stocking rates, for daily grazing needs but breaks may need to be shifted more frequently in wet or muddy conditions. The amount of pasture available for consumption on each break should meet the needs of all the camelids while they are on that break. Where the available budgeted/allocated pasture fails to meet these needs, additional supplementary feeds with appropriate dry matter and energy content are included to ensure that daily intakes are sufficient.

Feeding levels are best determined by monitoring the body condition of the camelids (see Appendix III, "Condition Scoring of Camelids", to this code), or regular live weight monitoring. BCS is a means of taking into account the variability in size and conformation. It is difficult to specify a complete range of the quantities of food and nutrients required as a minimum standard.

Minimum Standard No. 5 – Food

- (a) **Camelids must receive adequate daily quantities of food and nutrients to enable each Camelid to:**
- (i) **maintain good health; and**
 - (ii) **meet its physiological demands; and**
 - (iii) **minimise metabolic and nutritional disorders.**
- (b) **If any camelid shows signs of emaciation (if the Body Condition Score (BCS) of any adult camelid is 1, or the BCS of any tui is 2 or less, or the BCS of any cria or a Suri of any age is 3 or less) immediate remedial action through improved nutrition, husbandry practice, or veterinary attention must be taken to both remedy the condition and prevent further deterioration and any risk to animal health or welfare.**

Note

In New Zealand it is illegal to feed ruminant proteins to camelids (regulation 4 of the Biosecurity (Ruminant Protein) Regulations 1999).

Recommended Best Practice

- (a) All camelids rising 2 years and over should generally have a BCS (body condition score) of 3 (see Appendix III, "Condition Scoring of Camelids", to this code. On lush New Zealand pastures many camelids will grow obese (BCS 5), even in the absence of any supplementary feed.
- (b) Suri-type llamas and alpacas have a natural BCS of 4 or 5. BCS 5 Suris should not be considered obese.
- (c) Feeding methods should be designed to reduce fouling and wastage. Camelids will not eat muddy or faecal-contaminated pasture.
- (d) Measures should be taken to minimise access of camelids, and particularly pregnant females, to toxic plants and noxious or harmful materials including:
 - (i) Senecio spp. (ragwort, groundsel); Myoporum laetum (Ngaio);

- (ii) most garden ornamental plants (e.g. oleander, rhododendrons, azaleas, yew, daphne, laurel, privet, rhubarb leaves).
 - (iii) toxic paint and timber preservatives; and
 - (iv) herbicides and herbicide residues.
 - (v) Endoparasites associated with ryegrass and other grass species.
- (e) Camelids are prone to Facial Eczema and Ryegrass Staggers and precautions must be taken to protect against these conditions and treatment must be provided should a camelid be affected.
- (f) While camelids are less likely to accidentally consume non-food items, measures should be taken to minimise access **items such as:**
- (i) electrical fittings
 - (ii) building paper
 - (iii) loose fencing wire
 - (iv) twine and plastic wrap.
- (g) Changes in diet, especially if feeding grain and/or other readily fermentable carbohydrates, should be gradually introduced over a 5 – 10-day period. This will allow rumen bacteria to adjust and thus prevent digestive problems and the risk of death through acidosis. Animals should be closely monitored during this period.
- (h) Grain and other readily fermentable carbohydrates are not recommended for camelids.
- (i) Mould contaminated or excessively dusty supplementary feeds should not be fed to camelids.
- (j) When feeding brassicas and/or concentrates, a supplementary source of roughage such as hay, silage or baleage should be added to the diet to aid proper digestion.
- (k) There should be enough reserve feed to allow more frequent shifts of camelids if it is very wet and the fodder grazed becomes trampled and muddy. An alternative area should be made available, such as an adjacent paddock, to provide an area free of standing water and mud area for animals to lie down.
- (l) Supplementary feeds should be conserved and stored in a way that preserves feed quality and reduces the risk of the growth of moulds and contamination by rodents, birds, and cats.
- (m) Female camelids should be well fed to meet pregnancy requirements, lactational and/or growth demands and to ensure that they are in good body condition going into winter.
- (n) When feeding baled forage, twine and wrap should be removed to prevent the risk of illness or death from ingestion and to avoid injury from entanglement.
- (o) Animals in ill-health or poor condition, or in late pregnancy or early lactation, should not be deprived of food or water for longer than 12 hours.
- (p) Preparation for the transport of tuis requires particular care and prolonged periods without food and water should be avoided. Access to food should be limited during the 12 hours prior to transportation of tui and adult camelids (the use of holding paddocks is encouraged) and then removed altogether for the last 4 – 6 hours (see the *Code of Recommendations and Minimum Standards for the Welfare of Animals Transported within New Zealand*, and any other relevant code or guideline. During long periods of transport camelids may be provided with fresh

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meadow hay. There are differences of opinion within the industry as to the optimal feed schedule prior to transport.

General Information

Signs of ill-thrift or emaciation in crias and tuis may include rapid weight loss relative to herd mates, rough body appearance (hair loss) and being bullied by herd mates.

Liveweight monitoring is a more appropriate measure of the success of a feeding regime than BCS for crias/tuis.

Pregnant females of BCS greater than 4 accompanied by a lack of fitness may have problems with dystocia during birthing.

Healthy adult camelids have some natural variation in their metabolisms, so a herd of animals may vary in their body condition scores, even if all are in good health and receiving sufficient nutrition.

In common with other ruminants, camelids have a ruminant digestive system requiring a regular supply of nutrients and micronutrients (minerals, vitamins and elements required in small amounts to enable the body's chemical reactions to function effectively); however, daily intake requirements are strongly influenced by ambient temperatures and changing seasons.

Consideration needs to be given to the quality and quantity of the diet, including energy content (ME) and levels of micronutrients, needed to maintain good health and meet the requirements of growth, pregnancy, lactation, and environmental stress, as appropriate to the species and environment. Low energy feeds, such as barley straw or baled rank pasture, may not meet minimum feed requirements, as the animal cannot eat sufficient bulk to meet maintenance requirements.

Feed demands are increased by sustained cold and wet weather and wind chill effects. Nutrient allowances should be increased by 20 – 30% when camelids are in exposed or poorly sheltered conditions in winter.

During prolonged summer or dry conditions supplementary feeding for females with young at foot (introduced gradually to allow pre-weaning training) will have welfare and growth benefits.

Back fencing as a strip grazing practice may increase the risk of exposure to harmful bacteria and/or internal parasites through increased contamination by faecal material.

4.2 Water

Introduction

The provision of an adequate supply of water is critical for maintaining the health and welfare of camelids. The way in which daily water requirements are supplied varies between farms. Water needs for different species of camelids vary during the year, which if not adequately fulfilled can lead to rapid deterioration of animal health and welfare.

Minimum Standard No. 6 – Water

- (a) All camelids must have access to an adequate daily supply of drinking water that is not harmful to health.**
- (b) Any camelids retained in yards or within holding facilities for longer than 3 hours**

must have access to drinking water.

Recommended Best Practice

- (a) Watering facilities should be designed to reduce fouling and wastage.
- (b) Water reticulation systems without any storage capacity or other backup supply systems must be checked daily to ensure they are in working order and any problems promptly rectified.
- (c) The water delivery system must be at a height that is appropriate for the size of the camelids being supplied.
- (d) When camelids are being worked in yards during hot weather and/or subjected to stressful events such as weaning, Tb testing, pregnancy scanning or shearing, access to drinking water should be provided.
- (e) Camelids being held for transport should not be without water for periods longer than 3 hours.

General Information

The daily consumption of water by camelids can vary widely according to species, body weight, age, sex, climatic conditions, type of diet and feed intake.

Some camelids will have significantly increased requirements for water at certain times. For example:

- lactating females
- weaned camelids (up to 10 days after weaning).

In excessively hot weather conditions, all camelids will require more water as camelids drink water to mitigate heat stress.

To ensure that water is always available (where used) water reticulation systems need to be inspected regularly for normal function, preferably daily during summer or extended periods of dry weather **or when the system may be frozen**, and at least weekly during winter. Where extensive grazing systems are used, depending on the size of the storage systems, less frequent inspections may be suitable.

5. Shelter and Housing

5.1 Shelter and Shade

Introduction

The relationship between an animal and its environment is crucial to its welfare and most camelids are required to cope with regularly changing climactic conditions and, occasionally, with more severe and extreme events. Depending on the environment and circumstances, persons in charge of animals have a fundamental obligation to ensure that animals in their care have adequate shelter or protection.

Adverse weather events can affect the welfare of fit and normal camelids, but have a greater impact on those more vulnerable due to age (young cria or elderly animals) or condition (freshly shorn, suffering illness or disease). Severe or prolonged adverse weather conditions can also affect animal health, production and reproduction, as well as result in increased mortality.

Among the factors affecting an individual animal's susceptibility to weather conditions are:

- the severity of the weather conditions (humidity, rain, wind, snow, etc) and the quality or adequacy of any mitigating factors such as shade or shelter.
- fleece colour and length
- body condition
- physiologic status such as newborn, stages of growth, pregnancy and lactation
- sex, age, and fleece type (Huacaya or Suri)
- feed and water availability, composition and intake
- acclimatization or any carryover effects from previous environments or weather conditions
- any mitigating factors such as mustering, time off pasture, or holding in yards
- the social structure of the herd and the status of individuals within it
- individual variation

Shelter and shade may be provided in a number of ways including through the use of topographical features such as gullies or hollows (of adequate depth), natural features such as stands of trees or scrub, hedges or shelter belts, or artificial structures such as buildings, hay stacks, etc.

Some sites may be unsuitable from a welfare point of view due to rainfall, poor drainage, steep slopes and/or susceptibility to flooding.

Shelter may also be important when environmental conditions are not extreme, for example where female camelids seek isolation to give birth, or where an animal that is ill wishes to separate itself from its group.

5.1.1 Cold Conditions and Hypothermia

The combined effect of wind and cold ambient temperatures, measured as wind chill, has a major influence on the welfare of all camelids through increasing their energy demands for warmth. The prevention of wind chill is an important welfare factor for camelids.

Rainy weather further compounds the influence of wind and cold as camelids, when wet, may have reduced insulation. While it lacks the high grease content of sheep's wool, camelid fiber does have

effective water-repellent abilities. The outmost layer of fleece forms a wet "crust" off which the rain flows. Danger arises when rain is combined with strong winds which can open the fleece structure and allow rain to fully penetrate and water-log the fleece. This significantly reduces the insulative qualities of the fleece, and can result in rapid heat loss and discomfort. This condition is exacerbated by low ambient temperatures and wind chill effects. Body condition will also have an influence. Young camelids, have very little fat cover and are more vulnerable to the effects of cold weather.

Recently shorn camelids are especially vulnerable to hypothermia resulting from cold and wet weather. Care should be taken to ensure that shearing of camelids is timed to allow for adequate growth of fibre before anticipated adverse weather.

Research findings have shown that during winter conditions when ambient temperature is less than 5°C, camelids begin to divert energy from growth and maintenance into heat production. Provision of good shelter including shelter belts, tree plantations and landforms can reduce feed demands for maintenance by 15 – 20% per day in cold weather.

Early signs of significant cold exposure in camelids include behavioural changes such as shivering and huddling together. Where animals are exposed to cold conditions with which they cannot cope their core body temperature drops below the normal range of 37.5 to 38.3 C, possibly resulting in hypothermia. A hypothermic animal may have a core body temperature below 33C. As hypothermia progresses animals become depressed, listless, laterally recumbent and may die. Owners must be aware of the difference from resting and advanced signs of hypothermia. Hypothermia can progress rapidly so stages of depression and listlessness may not be seen prior to the animal becoming recumbent. Such depression and listlessness indicate the need for urgent remedial action.

5.1.2 Hot Conditions and Heat Stress

The combined effects of high ambient temperatures, high relative humidity and exposure to sunlight, combined with low wind speeds, can cause stress. For example, where the ambient temperature is 25°C in conjunction with a relative humidity level of 60% or more, **some camelids may display signs of heat stress, with more animals becoming susceptible as the temperature increases. In some regions shade provision may be imperative even during normal sunny conditions during summer months.**

Other factors that affect an animal's ability to cope with heat include insulation, coat colour and structure, breed, **pregnancy status**, acclimatisation, diet, social factors, individual variation in heat tolerance, water temperature and availability, type of ground surface and stage in the productive cycle. Heat loading may also be exacerbated by the body heat generated from some diets and from excessive activity such as yarding and handling during hot weather.

If camelids are not shorn regularly the length and density of their fibre coats may induce heat stress in weather conditions that are sub-critical to camelids that have been shorn. Regular shearing before seasonal hot conditions reduces the risk of heat stress and is beneficial to camelid health.

When camelids are exposed to conditions that cause heat stress they will use a number of ways to relieve the heat load. These include increased respiration rate, reduced grazing activity and increased water consumption. If the heat load continues, animals will progress to open mouth panting, with tongues extended when severe. If relief cannot be achieved, core body temperature rises (hyperthermia), the animal becomes recumbent, and they may die. Camelids internal temperature varies depending on the ambient conditions and the time of day, they tend to start cool in the morning and warm as the day progresses.

Heat stress may be managed in a number of ways other than merely the provision of shade. All camelids need to be provided with means to minimise heat stress. Camelids may not always choose shade, even on hot days. Where shade is limited in hot conditions, it is particularly important that water supplies are plentiful as camelids drink water to mitigate heat stress.

Minimum Standard No. 7 – Shelter

- (a) All camelids must have access to shelter to reduce the risk to health and welfare caused by exposure to adverse weather.
- (b) Where conditions are likely to lead to fatal hypothermia remedial action must be taken.
- (c) All camelids must be provided with shade or other means to minimise the effects of heat stress.
- (d) Camelids giving birth must be provided with an environment affording the newborn cria protection from reasonably expected climactic conditions likely to compromise their welfare and survival.
- (e) Where animals develop health problems associated with adverse weather conditions, priority must be given to remedial action that will minimize the consequences of such exposure.

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Recommended best practices

Storms, floods and droughts

- (a) The fleece status has a significant impact on a camelids' vulnerability to adverse weather conditions. Shearing timing should be adapted to account for local weather conditions.
- (b) Shelter should be provided, even in non life-threatening situations, to improve animal welfare.
- (c) Shelter can be provided by land contours, vegetation, windcloth or other artificial structures. Trees can diffuse rain and wind but, without land contour shelter, camelids may still not be adequately protected in extreme weather. Young crias are very susceptible to heat and cold stress. When limited natural shelter exists, managers should provide some form of artificial shelter (e.g. hay bales).
- (d) Many districts are prone to heavy rainfall, un-seasonal and winter snowstorms, flooding and droughts which can cause livestock distress and deaths. In these districts owners or persons in charge of camelids should:
 - (i) Have contingency plans prepared in advance
 - (ii) Monitor weather forecasts and take heed of severe weather warnings
 - (iii) Ensure threatened livestock have access to, can be, and if necessary are moved quickly to safer terrain (e.g. higher ground in flood, lower or sheltered terrain in snowstorms)
 - (iv) Hold emergency feed reserves at readily accessible sites
 - (v) Ensure ready access to livestock by keeping tracks clear

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- (vi) If necessary accustom livestock to eat supplementary feed likely to be offered in severe weather
- (vii) Seek advice from local authorities, Federated Farmers, Rural Support Trusts, agricultural consultants or the National Animal Welfare Emergency Management Group (NAWEM)
- (viii) Seek advice from local farmers with greater experience of local conditions

(e) In areas susceptible to drought, owners or persons in charge of camelids should:

- (i) Have a response plan for making and implementing decisions (such as destocking) early
- (ii) Sell or move animals which cannot be or are unlikely to be provided with adequate feed or water early
- (iii) Ensure provisions are made for continued supply of water
- (iv) Provide shade thereby reducing the requirement for drinking water
- (v) Adapt or expose animals to alternate sources of feed likely to be offered during periods of feed shortage
- (vi) Adapt routine management or husbandry activities to reduce compromises to animal welfare (e.g. weaning earlier than usual where dams are losing condition, mustering in the coolness of morning, avoiding prolonged yarding)

(vii) Ensure reserve supplies of supplementary feed (e.g. hay, silage, concentrates) are or will be available

(viii) Seek advice from local authorities, Federated Farmers, Rural Support Trusts, agricultural consultants or the National Animal Welfare Emergency Management Group (NAWEM)

(ix) Seek advice from local farmers with greater experience of local conditions

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General Information

Newly shorn camelids are especially vulnerable to adverse weather events and require more feed to sustain body temperature and maintain body condition. The maintenance requirement may be increased for up to two months post shearing. There needs to be ready access to covered yards or effective shelter for several weeks after shearing in case of cold wet weather.

It is acknowledged that in the most extreme weather conditions, despite optimal planning and diligent management, some animals may die.

5.2 Long-Term Housing Facilities

Introduction

Few camelids are routinely housed in New Zealand as most routine management and husbandry practices result in the temporary holding of camelids for short-term specific needs (e.g. quarantine, weaning, drenching, weighing, display for on-farm sale).

In situations where camelids are being housed for lengthy periods they are totally dependent on their keepers for all daily requirements, welfare and safety, and keepers must be aware that there are additional responsibilities of care.

Sufficient floor or pad space needs to be provided to enable the camelids to exhibit normal behaviour patterns relating to resting, kushing, rumination and play, and to minimise aggression within the group. When grouping animals, group structures should take account of individual animal relationships where possible, and avoid a wide range of liveweights to reduce the risk of bullying. Stocking density should be calculated based on the heavier animals.

Minimum Standard No. 8 – Long-Term Housing Facilities

- (a) All animals must be able to lie down at once and rest comfortably for sufficient periods each day to meet their behavioural needs, this must include a sufficient large and dry area where the camelids can rest by lying down.
- (b) Floors must be composed or constructed of a non-slip material to minimize the risk of injury.
- (c) When housed camelids must be penned in groups, with individual confinement restricted to those under treatment for ill-health, injury or disease.
- (d) Animals known to be aggressive must be penned separately if there is insufficient space for pen mates to avoid injury
- (e) All fittings and internal surfaces, including entry races and adjoining yards that may be used by the housed animals, must be constructed and maintained to ensure there are no hazards likely to cause injury to the animals.
- (f) All sharp objects, protrusions and edges, including damaged flooring likely to cause injury must be removed, repaired or covered
- (g) Water supplies must be well protected to ensure that the risk of flooding, loss of supply or fouling is minimised.
- (h) Any electrical fittings and attachments to main voltages must be out of reach of the camelids, or protected from interference or damage by the camelids
- (i) Building design, or ventilation and airflow, must be sufficient to prevent the build-up of harmful concentrations of gasses such as ammonia and carbon dioxide.
- (j) If ammonia levels of 25 ppm or more are detected within the housing, immediate action must be taken to reduce ammonia levels.
- (k) Natural or artificial lighting must be available during daylight hours, but should not be so intense as to cause discomfort.
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Recommended Best Practice

- (a) Housing needs to be constructed with the wellbeing of the animals in mind. It should provide accommodation that is dry, well ventilated, with shelter from the prevailing weather. Dust levels, air temperature and relative humidity should not be harmful.
- (b) Animals penned individually for health, management, or other reasons should be housed next to and within sight of other camelids, unless their medical condition precludes this.

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- (c) Outdoor runs should be provided.
- (d) Lighting that is sufficient to enable inspection of all animals kept indoors (20 - 50 lux) should be available but should not be so intense as to cause discomfort to the camelids.
- (e) Ammonia levels should not consistently exceed levels of 10 – 15 ppm.
- (f) Soiled bedding and waste food should not be allowed to accumulate to a level that poses a threat to the health and welfare of the animals.
- (g) Emergency response plans should be developed to identify potential hazards and these should be part of the management practice routines to ensure safety and welfare of camelids and handlers.
- (h) To reduce aggressive interactions and allow camelids free movement and sufficient room to move past each other, pens should allow free movement and allow camelids to move past each other.
- (i) The minimum area per pen for groups of camelids held for longer than 24 hours should be 9 sqm. Larger pens, e.g. greater than 36 sq m, are favoured.
- (j) As a guide the minimum space allowance, based on body weight and size, should not be less than:
 - (i) 1.2 sq m per 50 kg cria/tui increasing to 1.8 sq m for camelids up to 80 kg
 - (ii) 2.1 sq m per adult camelid up to 120 kg
 - (iii) 2.8 sq m per adult male and camelids up to 200 kg.
- (k) Preventative measures should be employed to minimise contamination of stored feed by rodents, birds and other pests.
- (l) Ceiling height should be determined in relation to the size of the camelids to allow the camelids to exhibit normal playful behaviour (recommended greater than 2.4 metres).
- (m) Frequent changes of group structure should be avoided.
- (n) Feeding and watering systems should be constructed to be readily accessible, prevent competition and take into account the feed, stock type and size of the enclosure.
- (o) Holding facilities should provide for a separate pen to hold and treat bullied, unwell or injured camelids until recovery, and to manage bullying.
- (p) Environmental enrichment practices should be considered and, where used, should not increase the risk of injury to camelids. Such practices may include:
 - (i) positive human contact
 - (ii) the use of a radio to accustom camelids to a range of noises and voices.

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General Information

50 lux is measured as being sufficient light to read a newspaper at arm's length.

As a guide, a level of 10 – 15 ppm of ammonia in the air can be detected by smell and an ammonia concentration above 25 ppm may cause eye and nasal irritation in people. In general, if the level of noxious gases within a housing facility is uncomfortable for people, it is also uncomfortable for the

camelids. Such levels compromise animal welfare and may predispose them to respiratory disease and reduced performance.

Appropriate rodent control measures include poisoning (using appropriate bait stations) and trapping.

Poor growth performance, signs of bullying, frequent hair in the mouth, bare skin patches, and ill-thrift are all indicative of welfare issues that require remedial action.

Settling of camelids is improved by allowing them visual contact with animals in adjoining pens.

Emergency contingency plans need to consider:

- rapid release of camelids into a secure environment
- access to water source or fire extinguisher/s
- familiarisation of staff with emergency procedures.

Animals housed for long periods of time become accustomed to routine. Changes to routine such as visits from strangers, noise, vehicles and unfamiliar dogs can cause undue stress and should be discouraged. As of the writing of this document camelids are not being housed for long periods in New Zealand, so there is very limited information for the long-term impact on camelids welfare. Owners and managers should be aware of this, and respond accordingly to ensure animal welfare is maintained.

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Familiarisation of camelids with facilities at a young age reduces apprehension.

6. Husbandry Practices

6.1 Selection and Breeding

Introduction

Selection of animals with desirable traits and culling those with deleterious ones is one of the foundations of animal husbandry. Selective objectives are inevitably a balance of compromise between animal traits and the ability of husbandry techniques to overcome any compromises. Increased production efficiency can be associated with a risk of behavioural, physiological and immunological problems and therefore compromises to animal welfare.

Recommended Best Practice

- (a) Where increasing the productivity of the animal is known or suspected to compromise animal welfare, optimized health and welfare objectives should be part of animal selection practices.
- (b) Selection processes resulting in significant routine compromises to animal welfare (e.g. caesarean sections) should be replaced.
- (c) The animal welfare impacts of animal selection and breeding objectives should be monitored for favourable and unfavourable consequences, and the results incorporated into future objectives.

(d) In extensive systems, where animals are unaccustomed to daily supervision, breeds or strains suited to easy births and good maternal care should be used. In more intensive systems, where animals are well habituated to the presence of humans and management activities, assistance should be provided to animals experiencing difficulties without unduly disturbing others giving birth in the vicinity.

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(e) Maiden females should be well grown, well fed and more closely monitored around the time they give birth as they have a higher incidence of birthing difficulties.

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6.1.1 Testing to aid selection and breeding

Introduction

The selection of animals for breeding can be further enhanced by testing for their likely performance. This can take the form of exposing animals to pathogens and selecting those individuals displaying resistance to the disease (e.g. facial eczema, rye grass staggers, internal parasite resistance or resilience). It can also involve the soundness of breeding animals to ensure they are fit for successful breeding.

Minimum Standard No. 9 – Selection and Breeding Traits

- (a) Tests for animal performance which have the potential to compromise animal welfare must only be used**
 - (i) Where they are necessary (i.e. the information cannot be derived in other, less-harmful ways, and**
 - (ii) Where the tests are likely to result in information appropriate to the selection and breeding objectives, and**

(iii) Where any harm is minimized as far as practically possible.

- (b) Identifying camelids resistant to facial eczema by dosing them with sporodesmin toxin must be carried out only under veterinary supervision.
- (c) Animal selection and breeding programmes must be monitored so favourable consequences can be enhanced and unfavourable consequences eliminated.
- (d) Soon to birth females must be well grown and fed and supervised about the time of birthing.

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Recommended Best Practices

Animals treated with sporodesmin toxin to assess their susceptibility to facial eczema are sensitive to sunlight and should be tested indoors or given access to shade and the clinical disease should not be produced.

General Information

Breeding for resistance to some diseases may require the diseases to express itself in animals. For example, selecting camelids for resistance to internal parasites can involve exposing them to heavily larvae-infested pasture and measuring the worm burden that develops. Expert advice should be sought prior to such procedures being carried out.

6.1.2 Reproductive Technologies

Introduction

In addition to selecting animals with desirable genotypes, there are a number of established and developing technologies being used to facilitate genetic gains and better manage animals. The most common technique currently in use is Embryo Transfer, but work is ongoing in advancing many other technologies, and these may become available in the future.

Minimum Standard No. 10 – Reproductive Technologies

Embryo transfer must only be carried out by veterinarians, or by trained and competent operators under veterinary supervision, using appropriate pain relief, sedatives and anaesthesia.

Recommended Best Practice

- (a) Less invasive techniques should be selected in preference to more invasive ones.
- (b) Invasive procedures should only be used where there is sufficient reason to justify the genetic gain and/or management of the animals.

General information

Camelids preferentially carry single pregnancies, with live twins constituting less than 0.1% of live births. Twins are usually aborted during the final trimester of pregnancy. It may be possible to breed

animals that are capable of successfully carrying twins to term. Any treatments to increase fecundity and thus the probability of multiple births should be weighed against the animal welfare implications.

6.2 Behaviour of Camelids

Introduction

Camelids are highly social and hierarchical animals that seek comfort in herd situations. They must have other camelids for companionship, either in the same paddock or within sight in an adjacent paddock. Camelids have a natural flight response and specific behavioural needs relating to dust bathing, kushing, birthing behaviour and social space. Newly weaned camelids are vulnerable to separation stress.

Minimum Standard No. 11 – Socialisation of Camelids

- (a) Camelids are herd animals and must never live alone without a companion camelid.
- (b) A cria must not be raised apart from other camelids.

Recommended Best Practice

- (a) Camelids that cannot be housed with other camelids due to issues of aggression must at minimum have other camelids within sight.
- (b) Camelids gain confidence and security from larger groups, so while two is the minimum, a larger group size will improve animal welfare.
- (c) In emergency situations where a camelid must be kept separate from all other camelids, some other animals should be provided for companionship (sheep, goats, etc.). The camelid should be observed frequently to ensure it is not under undue stress, nor that it is fighting with or fleeing from its non-camelid paddock companions.

Skills and a good understanding of camelid behaviour is required in all aspects of the management of camelids. Differences in behaviour arising from species, gender and bloodline variation occur and should be considered. Poor husbandry practices have a direct impact on camelids welfare.

Camelids in controlled grazing systems adjust quickly and positively to a consistent routine, whether it be movement time or supplementary feeding, which normally leads to a more settled behaviour, better growth and maintenance of body condition. Lack of, or disrupted, routine may aggravate bullying and disrupt herd structure, and hence may impact on camelid welfare.

Camelids are hierarchical animals by nature, and the aggression and bullying by more dominant camelids as they seek to establish a “pecking order” can cause injuries or stress to more subordinate camelids. Studs during the breeding season require careful management to limit fighting.

Likewise, subordinate camelids may get less than their feed and water requirements when housed in group situations, or kept in larger mixed groups, if a dominant animal monopolizes the food or water source. Having an appropriate number of feed and watering stations should be implemented to prevent this situation.

Deleted: For the safety and welfare of both camelids and their handlers, care should be exercised when handling camelids. It is preferable for larger herds of camelids to be broken down into smaller herds for handling and yarding purposes. The size and numbers of herds will vary depending on the size and design of the yards and facilities.¶

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In Australia and the United States llamas and alpacas are used as sheep guards. Sometimes they are placed alone with the sheep they are guarding. There is still debate if such guard animals should be deployed singly or in pairs to ensure their welfare.

Some camelids bought as pets in a small group can be left alone upon the death of their companions. In these circumstances the onus is on the owner to ensure the animals continuing welfare, either by obtaining a new companion camelid, or by re-homing their animal.

As camelids are directly exposed to many climatic variations and their natural responses and movements are modified by farm fences and management, the role of the stock handler is crucial in assuring animal welfare (see section 3, "Stockmanship", of this code).

Dust bathing is a natural behaviour of camelids and areas to express this should be provided.

6.2.1 Mixing of Camelids

Introduction

Camelids are highly social and hierarchical in nature. Mixing unfamiliar camelids can result in fighting and injury unless preventative measures are put in place. This is particularly important for breeding males. A large paddock can be used to minimise confrontation and, where possible, paddocks with broken contours and natural cover will assist in reducing stress.

Deleted: Minimum Standard No. 12 – Mixing of Cam... [1]

Recommended Best Practice

(a) When a new camelid is added to an existing herd, or when two or more groups of camelids are joined into a single herd, they must be observed on mixing, and then daily until settled, for signs of injury or continued aggression likely to lead to injury so that remedial action can be taken if necessary.

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(b) If any camelids are subjected to persistent bullying they should be removed from that herd, and placed with another group where bullying is not a problem. The affected animal should be checked for illness and injury and monitored closely to ensure that confrontation is minimised. When predisposing factors have been identified they should be dealt with immediately.

(c) Herds should be grouped according to factors such as previous management history, bodyweight, species, sex, age, and pregnancy status. The ideal is a manageable herd size that balances management needs and animal behaviour needs.

(d) New arrivals can have more luck integrating into larger herds, as the herd size makes it easier for a new animal to avoid potential bullies. Running camelids in large enough areas will assist integration of new arrivals by giving them space to avoid conflict.

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General Information

Signs of injury, aggression or stress include continual harassment, hair loss, fighting, vocalization (including humming), excessive fence pacing, and isolation. When mixing, consideration needs to be given to:

- differences in species, gender, bloodlines, age, body size
- climatic conditions

- physiological status and the seasonality of camelids as it affects their behavioural status (e.g. late pregnancy, crias at foot, recently weaned)
- temperament
- size of facility or paddock in which camelids are to be mixed
- availability of food and water.

6.3 Macho (Male) Camelids

Introduction

Male camelids kept separately from the herd have the same requirements as all other camelids as regards shelter, health and other aspects of their well being. Males still need to socialise and to have sight of other camelids or behavioural problems can arise. Males should not be afforded less care or attention than other camelids due to separation from larger herd groupings.

Care should be taken to ensure social compatibility between one or more male camelids if they are kept or held within the same area of confinement.

Minimum Standard No. 13 – Macho (Male) Camelids

- (a) Keepers must develop management practices to cater for the specific welfare needs of male camelids.**
- (b) Male camelids must not be kept in a situation where they can force matings upon either females under 12 months of age, or pregnant females, as regular unwanted matings can seriously damage female camelids.**

Recommended Best Practice

- (a) Male camelids should not be left with a group of females to "paddock mate" them when they have female cria at foot more than 10 weeks of age, as this can result in the unwanted mating of the cria.
- (b) When a male camelid is being used to "pen mate" a female under supervision, the keeper should ensure that the mating proceeds safely without injury to either animal.
- (c) Male and castrated camelids grow "fighting teeth" which can be used to inflict severe injury. Where male camelids are kept together and where fighting among them becomes a problem fighting teeth should be inspected annually and when they develop points on the top of these teeth these points should be removed. Pre-emptive removal fighting teeth, where practical, can significantly reduce the risk of injury
- (d) Aggressive male camelids may need double fences separating them from other male camelids, as fighting over the fence can result in severe injuries.

General Information

It is possible to run large groups of male camelids together without incident. This situation mimics the "bachelor herds" that naturally form. Care needs to be taken during the breeding season, as engaging in matings or observing other males mating may experience an increase in aggression.

Guanaco males can be significantly more territorial and aggressive towards other males compared to other camelids, and extra care may be required.

6.4 Castrated Camelids (geldings and wethers)

Introduction

Castrated camelids may or may not display behaviour associated with non-castrated (male) camelids, and therefore may or may not be suitable to keep with female camelids. Castrated camelids should be observed to determine whether their behaviour is suitable to be included within a female herd.

Generally castrated camelids can be kept together without danger provided their fighting teeth are trimmed. Should the castrated camelids display aggression to other males they should be treated as male camelids.

6.5 Female (Hembra) Camelids

Introduction

The behaviour and nutritional needs of female camelids varies depending on their pregnancy and lactation status. This can complicate husbandry in herds where births are spread out over many months.

Minimum Standard No. 14 – Female (Hembra) Camelids

- (a) Assistance must be given to females that are observed with birthing difficulties.
- (b) Camelids giving birth must be provided with an environment affording the newborn cria protection from reasonably expected environmental and climactic conditions likely to compromise their welfare and survival.

Recommended Best Practice

- (a) The provision of appropriate feed during pregnancy and through lactation should encourage that females maintain a BCS of 3.
- (b) As birthing time approaches planning should be undertaken to minimize stress on females to reduce birthing losses in newborn cria. Appropriate planning should be undertaken for feed, water and shelter requirements to minimise disturbance.
- (c) During birthing and directly after birth care should be taken to minimize stress to mothers and newborns.
- (d) Guanaco females should be settled into birthing paddocks for at least 7 – 10 days prior to start of birthing.
- (e) If new females are to be added to or removed from a 'birthing herd' care should be taken to ensure that the new social situation does not cause undue stress to the newly introduced or existing members of the herd.

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(f) Females due to birth should be observed on a daily basis.

(g) Female camelids that have difficulty with birthing, mothering, or lactation should have this status fully disclosed before being sold.

General Information

The standard gestation period for camelids is 330 – 365 days depending on the species. The developmental status of the cria is not always correlated to the pregnancy length. Fully developed cria can be birthed at 320 days, and dysmature cria can be birthed at 370 days. The risk factor of newborn cria and the associated need for additional care should be related to the developmental status, not the gestation length.

Birthing can be a particularly stressful period for females, and all aspects of care, including shelter and provision of food and water, need to be carefully managed at this time. Females in good condition at birthing (BCS 3 – 4) are more able to be good providers to their offspring and cope. Maiden (first time) mothers have a higher incidence of birthing and mothering difficulties, and should be observed more closely and frequently.

In general, unfit and unsettled females are more likely to experience birthing difficulties.

Regular exercise appears to reduce birthing problems and, if possible, it would be good practice to have females on steeper hill paddocks prior to set-stocking at birthing.

Twinning is very unusual in camelids, most females will abort twins at 8 to 10 months gestation.

6.6 Crias and Birthing

6.6.1 Newborn Crias

Introduction

Colostrum is high in antibodies and its timely ingestion and absorption gives newborn animals immunity from infections. It is also an important source of nutrients. Colostrum is not only important for immunity but also for gastrointestinal function and newborn animals that are better able to absorb their food will have a greater chance of surviving and growing well. The best colostrum is contained in the first milk from the female, subsequent milking provides lower concentrations of antibodies.

Minimum Standard No. 15 – Colostrum

To ensure their welfare, cria must receive sufficient colostrum **from their dam** or good quality commercial colostrum substitute in their first 24 hours of life.

Recommended Best Practice

- (a) Ideally colostrum should be given within 6-12 hours, as time passes the ability of the gut to absorb antibodies rapidly decreases and the value of the colostrum declines.
- (b) Females should be observed to ensure they are allowing their cria to feed, and that the cria are gaining sufficient nutrition from the dam's milk.
- (c) Weighing young cria regularly is the best way to ensure they are getting sufficient nutrition.

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- (d) Birthing losses can be reduced when female camelids are moved to birthing paddocks without hazards that could threaten newborn cria, as they are at risk of rolling down hills into, or becoming trapped in drains, ditches, fences and bush.
- (e) Adequately fed alpaca cria should gain a minimum of 100 grams per day, and llama and guanaco cria a minimum of 200 grams per day, for the first weeks of life.

General Information

While supervision of birthing is recommended, if camelids are unaccustomed to close contact with humans it is better to leave them undisturbed and observe them from a distance using binoculars if necessary.

The ability of a cria to successfully absorb the antibodies present in the colostrum declines rapidly 24 hours after the first feed. At-risk cria should therefore always be fed colostrum first.

6.6.2 Hand Reared Crias

Introduction

In some instances it may be necessary to hand rear crias that have been deserted during birth or orphaned through the death of the mother.

Colostrum is a very high-energy food and is required by the cria to obtain nutrients and antibodies when first born, and is critical for survival.

Breeders should be prepared for the possibility that crias may need to be hand reared, and have equipment and colostrum on hand. If camelid colostrum is not available, then colostrum from any ruminant species or reconstituted powdered colostrum can be used. Care must be taken to select a brand of powdered colostrum in which the antibodies are still present, i.e. have not been destroyed by the production process.

Minimum Standard No. 16 – Hand Reared Crias

- (a) Hand reared cria must receive colostrum or an equivalent substitute within the first 24 hours after birth.
- (b) Hand reared cria must have daily access to feed, fresh roughage and clean fresh water.
- (c) Hand reared cria must be raised in the company of other Camelids.
- (d) Hand reared cria must be sold with full disclosure.

Recommended Best Practice

- (a) A supply of powdered or frozen colostrum from any ruminant species should be readily available for feeding to hand-reared cria.
- (b) Colostrum should be fed for the first four days of an animals' life, ideally longer, as it also provides local immunity in the gut. [A colostrums/milk mix with a declining fraction of colostrum can be fed in the days that follow.](#)

- (c) Hand reared cria should be inspected daily during the rearing period for signs of diarrhoea, dehydration, constipation and/or coughing. Veterinary advice should be sought for any of these conditions.
- (d) The keeper must minimize their social interaction with the bottle-fed cria to ensure it does not inappropriately bond with humans, which can lead to severe behavioural issues later in life.
- (e) 24 weeks is the recommended weaning age.

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General Information

Good hygiene practices are required for the maintenance of feeding equipment, bedding material and toileting areas to keep crias healthy.

Frequent small feeds (preferably 4 or 5 daily) may be required in the first 2 weeks of life.

Cria need to be feed 8 to 10% of their body weight daily for the first two months.

Camelids milk generally has a higher fat and protein content and less sugar and is more concentrated than cows' milk. It is more similar to sheep and goats' milk. Ewe milk replacers are therefore preferable to cow milk replacers.

Hand rearing involves additional responsibilities in terms of time, facilities and commitment. A good understanding of the cria's requirements is essential for success.

There are additional challenges in avoiding future behavioural problems through taming. Hand-reared cria should be reared, weaned and associated with other camelids as soon as is practicable. Hand-reared camelids lacking appropriate contact with others of their species may become overly dependent on humans and this may lead to unpredictable and possibly highly aggressive behaviour when adults. This is sometimes referred to as "Berserk Male Syndrome."

6.7 Weaning

Introduction

Weaning is a highly stressful time. For management reasons this generally occurs before natural weaning, where suckling often continues until the cria is at least 10 months old.

Management of weaning requires particular care, handling and husbandry.

Newly weaned camelids are often sold and relocated. Preparation for transport is also an important part of the weaning process.

Minimum Standard No. 17 – Weaning

- (a) Cria must only be weaned after they have gained the ability to meet their nutritional needs from pasture forage.**
- (b) Weaning must be managed in a way that avoids excessive stress on the dam and cria and minimises negative impact on their health and welfare.**
- (c) Newly weaned cria must be provided with ample high quality, familiar feed, water and shelter.**
- (d) Weaned camelids must be inspected more frequently to check for signs of ill thrift,**

injury or stress, and where appropriate remedial action must be taken to ensure the welfare of the camelids.

Recommended Best Practice

- (a) Crias should not be weaned at less than 24 weeks of age, unless climatic or management extremes are a factor.
- (b) Weaning should be carried out in fine settled weather if possible.
- (c) Newly weaned animals can be more vulnerable to parasitism due to the stress, and extra care should be taken to ensure they do not develop a dangerous worm burden.
- (d) Crias should be weaned into an environment with which they are familiar.
- (e) Operations like vaccination and drenching should be performed at least 7 – 10 days pre-weaning to reduce additional stress at the time of separation. Weaning should involve only separation of the dam and cria.

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General Information

Frequent inspections help management routines and condition camelids to contact with handlers.

Feeding supplements to females and cria a few weeks before weaning accustoms cria to feed, farm and people routines. Continuing with the routine feeding supplements over the weaning process can be helpful in reducing the stress of separation. Weaned animals must be able to thrive on what the other adult animals are eating, this is usually pasture forage (grass).

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Adding a small number of well-behaved older camelids ("auntie" females for females, "uncle" wethers for males) to a group of newly weaned camelids may aid in settling the cria and helps with handling, and shifting from paddock to paddock. Newly weaned males should not be placed with male camelids that could forcibly mate them.

There is debate on the best and least stressful technique for weaning. Some farms move the dams and cria out of sight and sound of each other, while on others the two are separated but visible to one another. Fences need to be cria-proof and secure. Double-fencing may be necessary to prevent cria from continuing to feed through the fence. Crias that are in danger of self-harm due to their attempts to reunite with their dam should be moved out of sight of the dam.

Very fast-growing cria are sometimes mistakenly assumed to be capable of being weaned early. This is not necessarily the case, as these animals may be more milk dependent, as they are receiving such a copious supply from their dam.

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6.8 Shearing

General Information

Shearing is an important part of camelid husbandry requiring animals to be handled carefully during the procedure and managed well afterwards to prevent exposure.

Alpacas and most llamas do not naturally shed their fiber, and they must be shorn periodically to prevent them from becoming over-fleeced with associated health risks (heat stress, skin infection,

development of dags, etc). Guanaco and Vicuna shed their coats annually, but they may require shearing so as to efficiently collect the fleece for commercial purposes.

The timing of shearing can be a significant part of animal husbandry, the local conditions and forecast weather must be taken into account. While most alpacas and many llamas require shearing on an annual basis, some animals with particularly thin or slow-growing coats may be best managed with a less frequent shearing frequency.

Separate parts of the fleece may be removed to ensure animal welfare. This includes removal of matted or contaminated fleece to reduce discomfort and skin inflammation, or wool around the face that is obscuring vision. Animals trained to carry packs may require the fleece on the torso to be shorn to a length that allows the packs to be fitted safely and comfortably.

Minimum Standard No. 18 – Shearing

- (a) All extensive and severe cuts or injuries must be treated immediately.**
- (b) Camelids must have access to food and water as soon as possible after shearing.**
- (c) If a camelid is restrained for shearing, the equipment used must be in compliance with Minimum Standard 4- Restraint and Facilities.**

Recommended best practice

- (a) Camelids should be shorn as frequently as is necessary to mitigate animal health and welfare concerns. Usually this would be once a year.
- (b) If an animal must be shorn in winter, or in areas that are subject to very cold weather, and in areas where there is minimal natural shelter, camelids should be shorn using winter, snow or cover combs, or blade shears to ensure that they retain a protective and insulating layer of fleece.
- (c) Animals shorn in summer may suffer from the effects of sunburn. Use of a cover comb to leave a protective layer of fleece can prevent this. Animal (equine) sunscreens are also available to provide protection until the fleece regrows.
- (d) Camelids should not be shorn if the forecast is for cold wet weather unless the animals are to be given additional feed after shearing and/or provided with suitable shelter minimizing the risk of exposure.
- (e) Shearing should be carried out skilfully and carefully to ensure that shearing cuts are kept to a minimum.
- (f) Freshly shorn animals should not be kept in dusty yards for longer than necessary, as shearing cuts may be potential access sites for pathogens causing infection.
- (g) Provision should be made for extra feed, shade and shelter after shearing. There should be access to covered yards or effective shelter for several weeks after shearing where there is a risk of cold wet weather.
- (h) Lengthy shearing times increase the stress levels on the animals. Shearing a restrained animal should never take more than 20 minutes, and under 10 minutes is a reasonable time. Shearing

a free-standing animal, which is the normal practice with most llamas, can take longer. Care should be taken to ensure the animal does not become excessively stressed by the process.

General information

While most llamas are shorn while standing, alpaca are normally shorn in a recumbent position with the legs secured, either by handlers or ropes. All equipment for restraining a camelid for shearing needs to be well designed, and capable of releasing the animal quickly if necessary. In a typical shearing situation one handler holds the restrained camelids head, while the other shears the animal. Keeping the head slightly elevated above the body can reduce stress reactions during shearing. Care should be taken such that the animal cannot place itself in a position where it might regurgitate then aspirate stomach contents, such as hanging with the head below the body.

Quick, efficient shearing by a trained team greatly reduces the stress level on the animals. The experience of previous shearing will affect a camelids reaction to subsequent encounters.

6.9 Animal Identification

Introduction

Individual animal identification underpins good camelid-keeping practices and allows traceability, production recording and selection.

When microchipping or tagging camelids, care should be taken to ensure that stress and discomfort are minimised by the use of appropriate restraint, the selection and maintenance of instruments, attention to hygiene and the after-care of animals.

Recommended Best Practice

- (a) Manufacturers' instructions for applying microchips and tags should be followed.
- (b) Camelids should be restrained when ear tagging is being undertaken to avoid soft tissue damage as ears tear easily during application with some equipment. Alternative animal-friendly tagging systems are recommended (e.g. breakaway pin-type applicators).
- (c) When ear tagging, care should be taken to avoid cartilage ridges and major blood vessels.
- (d) The quantity or size of ear tags should not damage the ear structure, or cause the animal undue discomfort.

7. Animal Health, Disease and Injury Control

7.1 Health

Introduction

Healthy camelids have a good appetite, and are active and aware. To ensure the welfare of camelids, it is necessary for camelid owners, stock handlers and persons in charge to be familiar with the normal behaviour of camelids, and the signs of good health as well as ill health. They also need to be aware of the common diseases of camelids. Early recognition of ill health will enable expert assistance to be requested.

Camelids are very stoic animals, and often mask signs of distress or ill-health and the indications of trouble can be very subtle.

Routine checks and preventative care is important to reduce the risk of parasite burden, disease and injury.

Currently all medications for camelids are used "off label" by veterinary advice. This may change in the future as the population increases and companies begin to market products specifically at the camelid market.

Minimum Standard No. 19 – Health

- (a) A regular routine of vaccination, vitamin D supplementation, parasite management, and shearing must be implemented.
- (b) Toe nails that grow excessively long and cause lameness or other injury to the foot must be trimmed.
- (c) Those responsible for the welfare of camelids must be competent at recognising the signs of ill health or injury, and take remedial action as appropriate.
- (d) Medication must only be used in accordance with registration conditions, manufacturers' instructions or professional advice.

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Recommended Best Practice

- (a) All farms should have at minimum a catch-pen where camelids can be confined for close examination and treatment.
- (b) Isolation of camelids from a herd is not a common behaviour, except occasionally at birthing, and its cause should be investigated.
- (c) During and after treatment sick or injured camelids should not be kept alone unless absolutely necessary.
- (d) Records detailing deaths, sickness in animals, nature of illness, treatments given, withholding periods if any, and responses to treatment should be kept to assist with any disease investigations.

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- (e) Camelids are vulnerable to hypophosphataemia (rickets) due to inadequate vitamin D levels. This is especially true of dark or heavily fleeced animals. This risk factors increases in area with less sunlight. All camelids should be given Vitamin D supplementation during the winter months, especially young and growing animals.
- (f) Records detailing routine health management (e.g. parasite control, vaccinations, including date of treatment and withholding period) should be kept.
- (g) A veterinarian or expert camelids consultant should be consulted for advice on establishing a preventative health care programme covering disease, injury and parasite control. A health programme should include consideration of vaccination, parasite control, trace element supplementation, nutrition, medication, culling, cross-grazing with other livestock species, post-mortems and disposal of dead camelids. Licensed vaccines are available for some diseases. Veterinary advice should be sought.
- (h) As often as practicable, post-mortems should be carried out on fatalities to assist in monitoring the health of the herd.
- (i) Dead animals should be appropriately disposed of as soon as possible.
- (j) When persistent scouring occurs, especially in conjunction with a rapid loss of weight or body condition, a veterinarian should be consulted to determine the appropriate treatment for the problem.
- (k) Camelids suffering from the uncoordinated and uncontrolled movements of rye grass staggers should be removed from the affected paddock until they recover. Rye grass staggers is a more common problem with alpacas than with llamas or guanacos.
- (l) All camelids are vulnerable to the toxic effects of Facial Eczema. Spore counts that are only considered low to moderate for sheep and cattle can be fatal to camelids. In regions where Facial Eczema is a hazard a management plan to mitigate that risk should be implemented. This can include but is not limited to spraying paddocks with anti-fungal agents before peak spore-development time, or by feeding sufficient zinc during high-risk times.

General Information

Signs of illness may include separation from the group, loss of appetite, elevated temperature, lameness, discharges from eyes, nose or vulva, changes in colour or texture of coat, changes in the appearance and consistency of urine or faeces (e.g. straining or scouring), shivering, sneezing, rapid or irregular breathing, persistent coughing or panting, rapid weight loss, chronic weight loss in spite of adequate feeding, abdominal distension, lack of coordination, seeking cover, seeking water, abnormal behaviour, groaning or other unusual vocalizations, teeth grinding, excessive or continuous rolling, excessive salivation, unusual aggression, and swollen navels, udders, joints or jaws.

In some areas of New Zealand, ticks are a welfare problem and should be controlled by grazing management and appropriate treatment of camelids.

Organic systems present special challenges to health management and may require particular attention to the effects of parasitism. Camelids can develop a strong natural immunity to parasite infection.

All colostrum substitutes and milk replacers are inferior to actual females' milk and careful attention to scouring problems in bottle-fed cria is therefore needed.

Scours can have parasitic, nutritional, bacterial or viral causes.

7.2 Painful Procedures

Minimum Standard No. 20 – Painful Procedures

- (a) All procedures that are likely to cause excessive pain, must be remedied by pain relief and/or sedation.
- (b) Animals suffering from unreasonable or unnecessary pain or distress must receive treatment to alleviate that condition.

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Recommended Best Practices

- (a) Castration of camelids is a significant surgical procedure and should be performed by a veterinary surgeon or a person acting under the supervision of a veterinary surgeon.
- (b) Dentistry, other than minor grinding of incisors, involving removal of teeth or grinding of molars requires pain relief, and the procedure should be provided by a veterinary surgeon.
- (c) Artificial breeding techniques such as embryo transfer or laparoscopic AI requires the presence of a Veterinary surgeon to provide sedation and pain management.

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7.3 Inspections

Introduction

Regular inspection of camelids to check they are healthy is a vital part of ensuring animal welfare under all camelid farming systems. Maintaining fence security prevents animal injury due to damaged wire, posts, gates, etc, and also prevents escape.

It is recognised that camelids are kept under a wide range of situations from intensively managed to free-range situations. The frequency of inspection of camelids will therefore vary depending on the circumstances under which the camelids are farmed. More frequent inspections will be possible in more intensive situations compared to extensive farming operations where the camelids may only be yarded two or three times a year.

Minimum Standard No. 21 – Inspections

- (a) The owner or person in charge must inspect camelids at such frequency as is appropriate to the circumstances and age of camelids, for signs of ill health, injuries and general well-being, and take action as required.
- (b) Camelids held in housing facilities must be inspected at least daily.

Recommended Best Practice

The frequency of inspections should be increased during hot or extremely cold weather, sudden storms, outbreaks of disease, the period when birthing is expected, or when herds of camelids have been recently mixed.

7.4 Emergency Slaughter

The humane destruction of small numbers of camelids may be required because of injury or disease. The overriding consideration during emergency slaughter is to prevent the animal from suffering further pain or distress. Any emergency slaughter procedure must be humane. Humane slaughter depends on rapidly inducing failure of brain function. This can be achieved by causing sufficient brain damage to render the animal insensible and then cutting the major blood vessels of the neck to cause heart failure and death. However, in some emergencies it may be more appropriate to kill the animal as quickly as possible by a throat cut to prevent or minimize further pain or distress.

Humane slaughter requires brain activity to cease as rapidly and as painlessly as possible, and that death ensues as soon as possible. This is usually undertaken either by directly damaging the brain (a blow or shot, with a firearm or captive bolt pistol, to the head) or stopping the blood supply to the brain (cutting both carotid arteries in the throat or sticking the major blood vessels in the chest and heart).

Minimum Standard No. 22 – Humane Slaughter

- (a) Camelids must be rapidly rendered insensible and remain in that state, until death supervenes.**
- (b) The spinal cord must not be severed or broken in any animal, until death supervenes.**
- (c) Animals rendered insensible by a blow or shot to the brain must be bled out immediately to ensure death occurs before recovery from stunning.**
- (d) Camelids to be killed must be handled, restrained, and killed in such a manner as to minimise unnecessary pain and distress prior to death.**
- (e) Persons undertaking emergency humane destruction must be competent in the handling and killing procedures.**

Recommended Best Practice

- (a) Devices for slaughter should be in good condition (e.g. knives need to be sharp), and appropriate for the animal (firearm of the appropriate calibre).
- (b) Free-bullet firearms should never be used at point blank range. Firearms should be used between 5 – 25 cms from the head.

General Information

Bleeding an animal should be carried out using a sharp knife with the incision cutting both carotid arteries and jugular veins in one swift stroke. Breaking the neck or severing the spinal cord immediately after cutting only produces paralysis, does not affect the time it takes for the animal to become unconscious and adds to the potential pain and distress of the procedure.

Whenever a firearm is used, it is very important that the operator is competent to use the gun and takes care in ensuring the safety of themselves and other animals.

The correct position of delivery of the captive-bolt or firearm shot is critical for the humane and effective slaughter of animals. In camelids the optimum position may be found by drawing two imaginary lines from the rear of the eyes to the base of the opposite ears. The shot should be delivered where these lines cross. The shot needs to be delivered towards the back of the head to ensure it does not just pass through the nasal cavity, this is especially important if the animal is lying with its head flat on the ground in front of it. When the animal is standing a shot from behind the ear aiming into the skull, or through from the back of the skull can be very effective.

For further information on humane emergency slaughter, see the Code of Recommendations and minimum standards from the emergency slaughter of farm livestock and/or consult your veterinarian.

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8. Pre-transport Selection

Introduction

Transport should be in accordance with the Code of Recommendations and Minimum Standards for the Welfare of Animals Transported within New Zealand or any code that replaces that code.

Stockmanship and patience are essential aspects of yarding, selecting and loading camelids for transport. Correct design of yards, loading ramps and other associated services is needed to facilitate loading and unloading with minimum distress and risk of bruising and/or other injuries.

Minimum Standard No. 23 – Pre-transport Selection

- (a) **The person in charge must examine the selected camelids prior to transport to ensure that all animals are in a suitable condition to be transported.**
- (b) **Animals must be able to kush and stand and bear weight on all four limbs and be fit enough to withstand the journey without suffering unreasonable or unnecessary pain or distress.**
- (c) **Animals that are likely to give birth during travel must not be selected for transport.**
- (d) **Unweaned camelids must not be transported without their dam, except in cases of emergency.**
- (e) **Transportation must have solid floors that are composed or constructed of non-slip material.**

Recommended Best Practice

- (a) Stock handlers should seek veterinary advice before transporting animals with conditions that may deteriorate during transport, and result in significant welfare compromise to the animal.
- (b) It is advisable that Camelids be held off pasture for a minimum of 4 hours before transport, but for no more than 12 hours. Clean water should be available from a familiar source. Clean meadow hay may be fed during lengthy transports.
- (c) Pregnant camelids should not be transported after 320 days of gestation. An exception can be made for short journeys of less than 20 minutes where the animal is not unduly stressed by the transport process.
- (d) Camelids generally travel in the kush position (sternal recumbancy). Transports must have solid flooring, and on long journeys cushioning should be provided in the form of rubber matting, carpet, straw, or similar.
- (e) Females with cria less than 10 days old should not be transported, expect in case of emergency.

9. Quality Management

9.1 Quality Assurance Systems

Recommended Best Practice

To ensure that standards of animal welfare and husbandry are maintained, each farm should implement a quality assurance program.

In addition, the New Zealand Llama Association, the Llama Association of Australasian NZ Branch, and the Alpaca Association of New Zealand will, through their industry publications and association-sponsored events, endeavour to keep the membership informed on the latest developments in camelid health and welfare.

General Information

In general, the elements of the quality assurance system should provide for the minimum standards and the recommendations for best practice in this welfare code.

9.2 Records

General Information

Maintaining accurate animal identification and documentation relating to animal health and reproduction is an integral part of a quality assurance system and good farm management practice.

Appendix I: Strict Liability and Defences

STRICT LIABILITY

In the prosecution of certain offences under the Animal Welfare Act 1999 committed after 19 December 2002, evidence that a relevant code of welfare was in existence at the time of the alleged offence and that a relevant minimum standard established by that code was not complied with is rebuttable evidence that the person charged with the offence failed to comply with, or contravened, the provision of the Animal Welfare Act to which the offence relates. (See sections 13(1A), 24(1) and 30(1A) of the Animal Welfare Act 1999, as amended by the Animal Welfare Amendment Act 2002.)

DEFENCES

It is a defence in the prosecution of certain offences under the Animal Welfare Act 1999 if the defendant proves that there was in existence at the time of the alleged offence a relevant code of welfare and that the minimum standards established by the code of welfare were in all respects equalled or exceeded. (See sections 13(2)(c), 24(2)(b) and 30(2)(c).)

If a defendant in a prosecution intends to rely on the defence under section 13(2)(c) or section 30(2)(c), the defendant must, within seven days after the service of the summons, or within such further time as the Court may allow, deliver to the prosecutor a written notice. The notice must state that the defendant intends to rely on section 13(2) or section 30(2) as the case may be, and must specify the relevant code of welfare that was in existence at the time of the alleged offence, and the facts that show that the minimum standards established by that code of welfare were in all respects equalled or exceeded. This notice may be dispensed with if the Court gives leave. (See sections 13(3) and 30(3).)

The strict liability provisions and the defence of equalling or exceeding the minimum standards established by a code of welfare apply to the following offences:

Failing to Provide

Section 12(a): A person commits an offence who, being the owner of, or a person in charge of, an animal, fails to comply, in relation to the animal, with section 10 (which provides that the owner of an animal, and every person in charge of an animal, must ensure that the physical, health and behavioural needs of the animal are met in a manner that is in accordance with both good practice and scientific knowledge).

Suffering Animals

Section 12(b): A person commits an offence who, being the owner of, or a person in charge of, an animal, fails, in the case of an animal that is ill or injured, to comply, in relation to the animal, with section 11 (which provides that the owner of an animal that is ill or injured, and every person in charge of such an animal, must, where practicable, ensure that the animal receives treatment that alleviates any unreasonable or unnecessary pain or distress being suffered by the animal).

Section 12(c): A person commits an offence who, being the owner of, or a person in charge of, an animal, kills the animal in such a manner that the animal suffers unreasonable or unnecessary pain or distress.

Surgical Procedures

Section 21(1)(b): A person commits an offence who, without reasonable excuse, acts in contravention of or fails to comply with section 15(4) (which provides that no person may, in performing on an animal a surgical procedure that is not a significant surgical procedure, perform that surgical procedure in such a manner that the animal suffers unreasonable or unnecessary pain or distress).

Transport

Section 22(2): A person commits an offence who fails, without reasonable excuse, to comply with any provision of section 22(1) (which provides that every person in charge of a vehicle or an aircraft, and the master of or, if there is no master, the person in charge of, a ship, being a vehicle, aircraft or ship in or on which an animal is being transported, must ensure that the welfare of the animal is properly attended to, and that, in particular, the animal is provided with reasonably comfortable and secure accommodation and is supplied with proper and sufficient food and water).

Section 23(1): A person commits an offence who, without reasonable excuse, confines or transports an animal in a manner or position that causes the animal unreasonable or unnecessary pain or distress.

Section 23(2): A person commits an offence who, being the owner of, or the person in charge of, an animal, permits that animal, without reasonable excuse, to be driven or led on a road, or to be ridden, or to be transported in or on a vehicle, an aircraft, or a ship, while the condition or health of the animal is such as to render it unfit to be so driven, led, ridden or transported.

Ill-treatment

Section 29(a): A person commits an offence who ill-treats an animal.

Inspection of Premises

Section 127(1): Inspectors appointed under the Animal Welfare Act 1999 have the power to enter any land or premises (with the exception of dwellings and marae), or any vehicle, aircraft or vessel, at any reasonable time, for the purpose of inspecting any animal.

Inspectors include officers of MAF Compliance and Enforcement Group, inspectors from approved organisations (e.g. Royal New Zealand SPCA, AWINZ) appointed by the Minister, and the Police.

Appendix II: Codes of Welfare

Codes of Welfare

- Animal Welfare (Broiler Chickens: Fully Housed) Code of Welfare 2003
- Animal Welfare (Rodeos) Code of Welfare 2003
- Animal Welfare (Pigs) Code of Welfare 2005
- Animal Welfare (Layer Hens) Code of Welfare 2005
- Animal Welfare (Zoos) Code of Welfare 2005
- Animal Welfare (Circuses) Code of Welfare 2005
- Animal Welfare (Painful Husbandry Procedures) Code of Welfare 2005
- Animal Welfare (Companion Cats) Code of Welfare 2007

Regulations and Circular Deemed to be the Animal Welfare (Commercial Slaughter) Code of Welfare 2002

- Clauses 1(a) and 2, and the heading preceding clause 2, of Part 7 of Schedule 1 to the Fish Export Processing Regulations 1995 (SR 1995/54)
- Regulation 80(1) of the Game Regulations 1975 (SR 1975/174)
- Regulation 76 of the Meat Regulations 1969 (SR 1969/192)
- The Slaughter of Stock, Game, and Poultry Regulations 1969 (SR 1969/194)
- New Zealand Fishing Industry Agreed Implementation Standards 003.4 Live Eels and Rock Lobsters Circular 1995

Codes of Recommendations and Minimum Standards

- Sea Transport of Sheep from New Zealand, September 1991
- Welfare of Sheep, July 1996
- Welfare of Dairy Cattle, June 1992
- Welfare of Deer During the Removal of Antlers, July 1992, amended August 1994, August 1997
- Welfare of Horses, February 1993
- Welfare of Bobby Calves, July 1997
- Care of Animals in Boarding Establishments, August 1993
- Welfare of Animals at the Time of Slaughter at Licensed and Approved Premises, July 1996
- Sale of Companion Animals, September 1994
- The Animals Protection Act and Its Implications for Those Responsible for Farm Animals, February 1994
- Welfare of Animals Transported within New Zealand, November 1994, amended June 1996, August 1998
- Welfare of Animals at Saleyards, May 1995
- Emergency Slaughter of Farm Livestock, December 1996
- Welfare of Dogs, May 1998
- Welfare of Ostrich and Emu, September 1999

Guidelines

- Welfare of Stock from which Blood is Harvested for Commercial and Research Purposes, April 1996
- Welfare of Yearling Fallow Deer During the Use of Rubber Rings to Prevent Antler/Pedicle Growth, September 1997

- Welfare of Red and Wapiti Yearling Stags During the Use of Rubber Rings to Induce Analgesia for the Removal of Spiker Velvet, September 1998

<p>Codes and Guidelines may be obtained from:</p> <p><i>Executive Co-ordinator Animal Welfare Group Biosecurity New Zealand Ministry of Agriculture and Forestry PO Box 2526 WELLINGTON Tel: 04 894 0366 email: animalwelfare@maf.govt.nz</i></p>	<p>Or can be inspected at:</p> <p><i>Pastoral House Reception Level 10 25 The Terrace WELLINGTON</i></p>
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Codes and Guidelines are available on MAF's website.

The web page address is: <http://www.biosecurity.govt.nz/animal-welfare>.

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Appendix III: Condition Scoring of Camelids

BODY CONDITION SCORE CHART FOR CAMELIDS

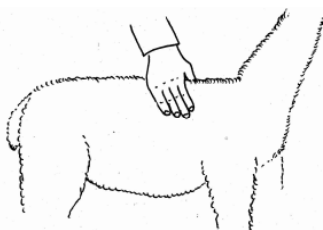
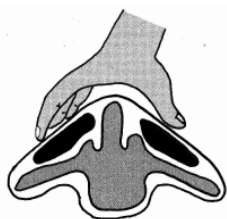
This chart can be used broadly for all species of farmed camelids in New Zealand.

Body condition scoring (BCS) is based on palpation of the ribs, spine, pelvis and rump of live animals. The simple scoring system varies from score 1 (emaciated) to 5 (excessive condition).

Visual assessment of the body condition of live camelids is difficult, particularly when fibre is long. A long coat can disguise the actual appearance of the pelvis, ribs and spine, while a short coat can make an animal's appearance more irregular and highlight these areas. The only reliable method of assessing live animal body condition is by palpation of the ribs, spine, pelvis and rump.

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Camelid body scoring



- ✓ Check the spine as per diagram
- ✓ *Keep a record of each body score*
- ✓ Check the ribs
- ✓ Look at upper rear legs
- ✓ Feel the chest
- ✓ Look at front legs and chest

Score 1 requires vet inspection asap. Score 4 and 5 may require nutritional advice, or just a diet (no extra feed).

	<p>BCS1 - EMACIATED</p> <ul style="list-style-type: none"> -very steep angle along spine & curves inward - ribs are very easily felt - hard bony v-shaped chest - very increased space between rear legs - very little muscle & absolutely no fat
	<p>BCS2 - THIN</p> <ul style="list-style-type: none"> - spinal slope more than 45 degrees - ribs can be easily felt - hard chest with a slight v-shape - some increased space between rear legs - some loss of muscle
	<p>BCS3 - OPTIMAL (for adult camelids)</p> <ul style="list-style-type: none"> - about 45 degree angle along spine - ribs felt with slight pressure - firm muscular chest - chest makes straight line between front legs
	<p>BCS4 - OVERWEIGHT (for adult camelids)</p> <ul style="list-style-type: none"> - convex shape between the backbone & upper ribs (ideal for adolescent huacaya alpaca under one year old) - ribs felt with some pressure - somewhat rounded soft feeling chest - inner thighs smooth & less defined
	<p>BCS5 - OBESE (for adult camelids, normal for Suri-type adult llamas and alpacas, and in cria < 6 months old)</p> <ul style="list-style-type: none"> - backbone looks flat - firm pressure needed to feel ribs - rounded soft feeling chest - large area of contact between rear legs - little or no definition on inner thighs - may have difficulty walking properly

Appendix V: Other Documents

- Diagram of Fighting Teeth [To be added]
- Diagram of proper target for euthanizing with firearm [To be added]

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Minimum Standard No. 12 – Mixing of Camelids

When a new camelid is added to an existing herd, or when two or more groups of camelids are joined into a single herd, they must be observed on mixing, and then daily until settled, for signs of injury or continued aggression likely to lead to injury so that remedial action can be taken if necessary.