

Dairy Cattle

Code of Welfare

15 December 2016

TITLE

Code of Welfare: Dairy Cattle

COMMENCEMENT

This Code of Welfare comes into force on 16 December 2016.

REVOCATION

This Code of Welfare revokes and replaces the Code of Welfare: Dairy Cattle, dated 13 June 2014.

ISSUING AUTHORITY

This Code of Welfare is issued by the Minister for Primary Industries, by a notice published in the *Gazette*, under section 75 and 76 of the Animal Welfare Act 1999, after having complied with the matters specified in section 75(1) and 76(2).

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Contents	Page
Introduction	4
Part 1: General Requirements	6
1.1 Application	6
1.2 Interpretation and definitions	6
Part 2: Stockmanship	7
Part 3: Feed and Water	8
3.1 The Importance of Planning Feed Supply	8
3.2 The Importance of Feeding Newborn Calves	10
3.3 Hand Rearing Calves	10
3.4 Growing Dairy Cattle	11
3.5 Water	12
Part 4: The Physical Environment	13
4.1 Shelter	13
4.2 Floods, Storms, Droughts	14
4.3 Farm Facilities	15
4.4 Stand-off Areas and Feed Pads	15
4.5 Housing Cows and Calves	16
Part 5: Husbandry Practices	18
5.1 Behaviour and Stock Handling	18
5.2 Droving	19
5.3 Mixing Dairy Cattle	19
5.4 Restraint	20
5.5 Identification	20
5.6 Milking	21
5.7 Drying-off	22
5.8 Calving in Dairy Cattle	23
5.9 Caring for Recumbent Cows	24
5.10 Calf Management	25
5.11 Mothering Calves onto Cows	26
5.12 The Selection of Animals for Mating	26
5.13 Pregnancy Examinations	26
5.14 Painful Husbandry Procedures	27
5.15 Pre-transport Selection	27
Part 6: Health	29
6.1 Inspection and Treatment	29
6.2 Lameness	30
6.3 Animal Health Plan	31
6.4 Emergency Humane Destruction	31
Part 7: Quality Management	33
Schedule I – Body Condition Scoring	34

Schedule II – Animal Welfare (Calves) Regulations 2016	37
Schedule III – Interpretation and Definitions	41

Introduction

This introduction is not part of the Code of Welfare, but is intended to indicate its general effect.

Purpose

The purpose of this Code is to provide information to the owners and persons in charge of dairy cattle about the standards they must achieve in order to meet their obligations under the Animal Welfare Act 1999.

This Code encourages all those responsible for dairy cattle to adopt the highest standards of husbandry, care and handling, and to equal or exceed the minimum standards.

Adequately maintaining the welfare of dairy cattle requires experience, training and the observance of high standards.

Background

The Animal Welfare Act 1999 provides for the welfare of animals in New Zealand. It puts obligations on people who own or are in charge of animals to provide for the welfare of their animals.

The Act establishes the fundamental obligations relating to the care of animals and provides for the development and issue of codes of welfare.

Codes of welfare expand on the basic obligations of the Act by setting minimum standards and recommending best practice for the care and management of animals.

This Code of Welfare also references regulations issued under the Animal Welfare Act 1999. Regulations are prescribed under the Animal Welfare Act and impose enforceable requirements on owners and persons in charge of animals. For ease of reference, regulations relevant to this code are included in Schedule II – Animal Welfare (Calves) Regulations 2016. Penalties for failure to comply with the regulations specific to this code are also referenced in Schedule II. However, this Code does not provide an exhaustive list of all obligations under the Act or regulatory requirements. Owners and persons in charge of animals are responsible for ensuring that they are aware of and understand all Act and regulatory requirements that are relevant to them.

Where regulations have been issued but are not yet in force, due to a delayed commencement date, they are referenced in italics and the commencement date is noted.

Who should read this Code of Welfare?

This Code of Welfare is intended for all persons responsible for the welfare of dairy cattle.

Under the Act the “owner” and every “person in charge” of an animal are responsible for meeting the legal obligations for the welfare of animals under their care. The Act also provides for liability of employers, principals, directors and officers of bodies corporate.

The owner of some dairy cattle may place them in the care of others who become the persons in charge, but this does not derogate from their responsibility to ensure that the requirements of the Act are met.

Why is this important?

Failure to meet a minimum standard in this code may be used as evidence to support a prosecution for an offence under the Act. A person who is charged with an offence against the Act can defend him or herself by showing that he or she has equalled or exceeded the minimum standards in this code.

The recommendations for best practice in this code have no legal basis and are included to encourage higher standards of animal welfare.

Legislative background

This code does not provide an exhaustive list of the Act's requirements, and owners and those in charge of animals should note that they must comply with the minimum standards in this code and in the general provisions of the Act. For further information on the Act and the legal effect of codes of welfare, see www.mpi.govt.nz.

Other information

Other codes of welfare should be consulted where appropriate (see www.mpi.govt.nz).

Although efforts to include relevant regulations within this code have been made, there may be other regulations which are relevant to you. The full list of all Animal Welfare regulations should be consulted where appropriate (see www.legislation.co.nz).

Part 1: General Requirements

1.1 Application

This Code applies to all persons responsible for the welfare of dairy cattle.

This Code applies to all dairy cattle. This includes all calves born from dairy cows until weaning wherever they are being reared, all dairy replacement stock wherever they are being raised, and calves sent for slaughter. It also includes dairy cattle that are kept as "house cows" and any bull brought onto the farm for the purpose of mating dairy heifers or cows or kept at a breeding centre. It does not include dairy cattle, once weaned, raised for beef production.

1.2 Interpretation and definitions

Refer to Schedule III – Interpretation and Definitions.

Part 2: Stockmanship

Introduction

The importance of good stockmanship cannot be over-emphasised. The knowledge, skills, abilities and attitude of the stockperson are integral to the standard of welfare. Stockmanship is the ability to identify an animal's needs and ensure that action is taken to address those needs along with an affinity and empathy with animals.

Owners, managers or persons in charge are required to ensure that their staff have either the relevant knowledge and training, or appropriate supervision and support to ensure that the health and welfare needs of the dairy cattle in their care are met. Personnel should undergo training either formally, or on the job, by experienced supervisors. All staff, including contract or temporary staff, should be trained and competent in the relevant task.

The owners or persons in charge may place dairy cattle in the care of others for purposes such as milking, feeding and management, rearing, transport and slaughter but this does not absolve them from their responsibility to ensure these tasks will be carried out in accordance with this code.

Those responsible for the care of dairy cattle should be competent and well trained. Staff should be appropriately instructed in the care and maintenance of dairy cattle and how their actions may affect the animals' welfare. Knowledge of the normal appearance and behaviour of dairy cattle is essential for monitoring their health and welfare. It is important that those in charge of dairy cattle should be able to recognise early signs of distress or disease, so that prompt action is taken or advice sought. It is acknowledged that stockmanship abilities may determine the number of dairy cattle that can be cared for by one individual.

Minimum Standard No. 1 – Stockmanship

Dairy cattle 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) Quality assurance programmes should emphasise the importance of staff training.
- b) Animal handling procedures should be included as written procedures in the quality assurance system, which should be easily accessible to all personnel.

General Information

This Code establishes minimum standards of care for dairy animals and is intended to encourage all owners and persons in charge of those animals to adopt the highest standards of husbandry, care and handling, based on the recommended best practices. While this Code is based on current knowledge and technology available at the time of issue, it does not replace the need for experience and common sense in the handling of animals.

Information on qualifications and accredited training providers is available from the Primary Industries Training Organisation www.primaryito.ac.nz and the NZQA www.nzqa.govt.nz.

Part 3: Feed and Water

Introduction

Animals need to receive a diet in adequate quantities and of adequate nutritional quality, in order to meet their requirements for good health and welfare.

When considering the amount of food and nutrients required by animals, a number of factors need to be taken into account including:

- physiological state
- nutritional composition and quality of feed
- age
- sex
- size
- body condition
- future metabolic needs relative to body condition
- state of health
- growth rate
- level of production
- previous feeding levels
- feeding frequency
- terrain
- genetic effects of strain or breed
- level of activity and exercise
- maximum periods of food deprivation (e.g. during transportation)
- introduction of new feeds
- climatic and seasonal factors (e.g. extreme weather)
- provision of shelter.

Given the many factors to be considered and the natural variation in the needs of individual animals, it is not appropriate to specify the complete range of quantities and nutrients required. Rather than simply following a regime of feeding pre-determined levels of feed, additional information to allow feeding levels to be adjusted according to need can be obtained by monitoring body condition score, or by weighing at regular intervals.

3.1 The Importance of Planning Feed Supply

Introduction

Dairy cattle at all stages of their lives require food which is adequate to maintain their health, vigour, satisfactory growth, production and reproduction. The cow is the most important component of the dairy farm system as it is her function to turn feed into milk. In such a biological system, there may be considerable fluctuations in the rate at which the animal grows and in the case of the heifer and cow, fluctuations in food requirements associated with the physiological demands of lactation and pregnancy.

In New Zealand, where outdoor grazing is practised virtually all year round, both pasture quality and quantity are climate dependent. The herd manager needs to remain alert to the welfare and productivity problems this can create and plan accordingly. In particular he/she needs to take account of:

- the marked increase above maintenance levels of feed requirements in late pregnancy

- the high levels of feeding a lactating cow needs, especially during early lactation, to allow maximum production and lessen the weight loss that may detrimentally affect her health and future reproduction
- the high feed requirements of dairy cattle during growth, pregnancy and lactation, and that pasture growth may not be of sufficient quantity or quality during certain times of the year to meet these requirements. Provision needs to be made for times of expected shortfall
- the planning that is required in times of limited pasture growth, especially during drought and winter periods, and during recovery from these times when herd condition score is low
- the increase of feed requirements for the animal's maintenance needs during cold, wet and windy weather.

Many feedstuffs can pose a risk to animal health in particular circumstances. Stock handlers need to be aware of possible dangers such as frothy bloat, nitrate or toxic plant poisoning, rumen acidosis, choke and the effects of fungal contamination.

Minimum Standard No. 2 - Food

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| <p>(a) Dairy cattle of all ages must receive sufficient quantities of food and nutrients to enable each animal to:</p> <ul style="list-style-type: none"> i) maintain good health; ii) meet their physiological requirements; and iii) minimise metabolic and nutritional disorder. <p>(b) When the body condition score of any animal falls below 3 (on a scale of 1-10), urgent remedial action must be taken to improve condition.</p> <p>(c) Automated feeding systems must be monitored at least once every 24 hours to ensure they are in working order and any problems rectified promptly.</p> <p>(d) Feeding must be managed so that any injury and/or conditions resulting in ill health, as a consequence of the food or feeding methods, are minimised.</p> |
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Recommended Best Practice

- a) Weaner and young growing dairy cattle should be fed sufficient to achieve target live weights (refer to section 3.4).
- b) Body condition score at calving should be 5 for a cow and 5.5 for a heifer and no more than 7 for either, to minimise calving and metabolic problems.
- c) To avoid being influenced by gut-fill the body condition score should be assessed at the same time each day.
- d) Where a change of feed is incorporated into the diet it should be introduced gradually, e.g. over a 7 - 10 day period. Abrupt changes in diet should be avoided.

General Information

Regular body condition scoring is an important management tool. Body condition scoring is a useful method of visual and manual assessment to determine whether animals have been receiving adequate nutrition (refer to Appendix I, "Body Condition Scoring" of this code and *Condition Scoring Made Easy*, by Kevin Macdonald and John Roche, DairyNZ 2008; ISBN 0-476-00217-6).

3.2 The Importance of Feeding Newborn Calves

Introduction

Colostrum is the first milk produced by the cow after calving and contains special nutrients and antibodies which are essential to protect the calf from disease. The newborn calf can absorb antibodies from the colostrum, but begins to lose this ability from about six hours after birth. In addition, the concentration of antibodies in the colostrum diminishes rapidly after the cow has calved and is reduced markedly after two milkings.

Minimum Standard No. 3 - Feeding Newborn Calves
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To ensure their welfare newborn calves must receive sufficient colostrum or good quality commercial colostrum substitute.

Recommended Best Practice

- a) Every calf should receive at least two litres and preferably four litres of colostrum as soon as possible after birth, preferably within the first six hours. If it is suspected that a calf has not received this colostrum, then colostrum or a suitable substitute should be given to the calf within 24 hours of birth.
- b) Although antibodies cannot be absorbed by the calf beyond 24 - 36 hours after birth, colostrum, either fresh or stored, should be fed for at least the first four days of the calf's life, as it can provide local immunity in the gut and is a highly digestible, high quality food.
- c) Colostrum, milk or milk replacer should be fed at the rate of 10 - 15% of bodyweight per day during the first week after birth (i.e. about 2 - 7 litres per day), preferably divided into not less than two feeds per day.
- d) Colostrum from cows induced to calve prematurely is of low quality and should not be fed to newborn calves.

General Information

Dried whole colostrum is commercially available and can be used if needed – it may contain specific antibodies to help control a particular disease problem. Cow vaccination programmes to boost the level of antibodies in colostrum may be advised in certain cases. These practices can be discussed with a veterinarian.

Many calves left on their mothers do not get enough colostrum and so providing supplementary colostrum would be beneficial for a large proportion of calves.

3.3 Hand Rearing Calves

Introduction

Newborn and young animals are vulnerable to adverse environmental conditions and poor management. Consequently all calves require special attention to ensure they are healthy and to allow their individual needs to be assessed.

A newborn calf does not have a functional rumen, and therefore needs to be fed on liquid feeds until the rumen has developed sufficiently to allow it to utilise solids i.e. for at least four weeks.

Minimum Standard No. 4 – Hand Rearing Calves

A calf must be given suitable liquid feeds until the rumen has developed sufficiently to allow it to utilise solids as the sole feed source.

Recommended Best Practice

- a) Calves should receive sufficient liquid feed to meet their total nutrient requirements, until at least four weeks of age.
- b) Calves should also have access to solid feeds (appropriate concentrates, hay, or grass) from their first week of life. Consumption of these solids will enhance rumen development and will contribute increasingly to satisfying the calf's nutrient requirements.
- c) Calves should not be weaned off liquid feed until the rumen has developed sufficiently to enable them to meet their total feed requirements from solids. In general, this means giving a proportion of the diet as liquid feed until six weeks of age and/or until they have reached 65 kg or 80 kg liveweight for Jerseys and NZ Holstein-Friesians respectively (see section 3.4).
- d) Liquid feeds should be fed warm, but not above the calf's normal body temperature (39°C).
- e) When calves are fed in groups, care is needed to ensure that all calves, even the slowest drinkers, are consuming what they need.
- f) All equipment including teats, buckets and 'calfeterias', should be thoroughly cleaned after use.
- g) To prevent digestive upsets, overfeeding, rapid changes of diet, or underfeeding should be avoided.

3.4 Growing Dairy Cattle

Recommended Best Practice

- a) To achieve satisfactory lactation and reproductive performance, the target liveweights in Table 1 should be achieved.

Table 1: Target Liveweights (kg) for female dairy cattle

Age (months)	Weaning (3 months)	9 months	15 months	Immediately before first calving	Mature (non-pregnant)
NZ Holstein-Friesian	80 - 100	200	300	410	500 – 550
J x F cross	90	180	270	370	400–500
Jersey	60 - 80	160	240	330	350–400
% of mature		40%	60%	90%	100%

General Information

For animals with a breeding value for liveweight that is higher than average for the breed, or with a high proportion of northern hemisphere genetics, these targets should be increased. See DairyNZ www.dairynz.co.nz for current information.

3.5 Water

Introduction

The provision of an adequate supply of water is critical for maintaining dairy cattle health and welfare. The way in which daily water requirements are supplied varies between farms. Different classes of dairy cattle have wide variations for water needs during the year which, if not adequately fulfilled, can lead to rapid deterioration of animal health and welfare.

Steps need to be taken to ensure that all animals get adequate access to water. Herd hierarchy and social interaction can limit access of individual cows to drinking water; this may be aggravated during hot weather when water consumption will rise and in winter when water may freeze. Human intervention may be required to ensure water is available to all dairy cattle.

Minimum Standard No. 5 – Water
<ul style="list-style-type: none">(a) All dairy cattle must have access to a daily supply of drinking water sufficient for their needs and that is not harmful to their health.(b) The water delivery system must be reliable and maintained to meet daily demand.(c) In the event of a water delivery system failure, remedial action must be taken to ensure that daily water requirements are met.

Recommended Best Practice

- a) Troughs should be cleaned and maintained regularly.
- b) Water should be palatable.
- c) The farm water supply should be able to meet peak demand of 14 litres/milking cow/hour at the trough.
- d) The quality of water for dairy cattle should be monitored.

Part 4: The Physical Environment

4.1 Shelter

Introduction

Dairy cattle in New Zealand pastoral systems are exposed to the effects of the weather: heat, cold, rain, snow, and wind. With the exception of the young, and provided their nutritional needs are met, dairy animals tolerate weather variations well. Nevertheless, occasions do arise when weather extremes can create welfare risks (i.e. dairy cattle may be exposed to conditions that can lead to either hyper- or hypothermia).

Farmers therefore need to have in place management plans to provide shelter and/or shade where such welfare risks are likely to occur. 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 or hay stacks.

Early signs of significant cold exposure in dairy cattle include behavioural changes such as seeking shelter, facing away from the wind or rain with the back hunched, 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 (hypothermia). As hypothermia progresses, animals become depressed and listless and may die. Such depression and listlessness indicates the need for urgent remedial action.

When dairy cattle 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, seeking shade, and increased water consumption. If the heat load continues to rise, animals will progress to open mouth panting, with tongues extended when severe. If relief cannot be achieved, core body temperature rises (hyperthermia) and they may die.

From 1 August 2017, see Schedule II – Animal Welfare (Calves) Regulations 2016:

- *Regulation 9 - Shelter requirements before and during transportation and at points of sale or slaughter.*

Minimum Standard No. 6 - Shelter
<p>(a) All classes of dairy cattle must be provided with the means to minimise the effects of adverse weather.</p> <p>(b) Newborn calves that have been removed from their mothers must be provided with shelter from conditions that are likely to affect their welfare adversely.</p> <p>(c) Sick animals and calves that are not suckling their mother must have access to shelter from adverse weather.</p> <p>(d) Where animals develop health problems associated with exposure to adverse weather conditions, priority must be given to remedial action that will minimise the consequences of such exposure.</p>

Recommended Best Practice

- a) Shelter (e.g. windbreaks or natural topography) should be provided to protect animals from adverse weather especially cows when they are close to calving.
- b) Animals that are photosensitive should be protected from exposure to direct sunlight.
- c) During hot weather conditions the heat loading on animals, especially during the afternoon, should be reduced by, for example:
 - i) provision of plentiful drinking water
 - ii) use of paddocks close to the dairy
 - iii) movement of animals at their own pace

- iv) provision of water sprinklers at the dairy and in the dairy yards
- v) provision of shade
- vi) use of sun protection formulas e.g. zinc
- vii) once a day milking in the morning.

General Information

Satisfactory protection from the effects of adverse weather, for calves that are not sucking a cow, can usually be achieved by housing the calves in a well ventilated building with dry bedding and avoidance of draughts. Where calves are sucking a cow, the cow will ensure that the calf is situated in available sheltered areas, if they are provided.

While hypothermia is generally not a problem for a well fed cow or calf, it may be a problem for both classes of animal when calving occurs in cold, wet and windy weather. Newborn, wet or sick calves, and those that have been transported or deprived of food, are particularly vulnerable and need to be managed accordingly. Animals, up to yearling age are more susceptible to cold conditions than adult dairy cattle. Cows can also experience hypothermic stress during cold or wet weather, especially if they are thin or unhealthy.

Protection can be provided by the appropriate use of calf and cow covers.

While ambient temperature and humidity are important factors contributing to heat stress, solar radiation is a major factor contributing to heat loading, especially in dark coated animals. This is very effectively reduced by shade. The quality of shade (i.e. amount of solar radiation that is blocked) influences whether cows choose to use it. Studies have shown that there is an increase in milk production in cows that have voluntary access to shade during hot days. Providing shade to cows also reduces their demand for drinking water.

A substantial increase in body temperature occurs during walking on hot days, whether or not the cows have had previous access to shade.

All the above factors need to be kept in mind when considering the welfare of dairy animals.

4.2 Floods, Storms, Droughts

Introduction

Contingency plans for emergencies such as floods, storms, snow or drought need to be in place to ensure the welfare of animals. While it is neither possible nor reasonable to put plans in place to deal with every potential problem, farms susceptible to extreme climatic conditions will benefit from contingency plans that help prevent the severe damage and welfare compromise that floods, storms and drought can produce.

Recommended Best Practice

- a) Farmers should make an assessment of the risks of their susceptibility to floods, storms and droughts and develop contingency plans for these events, if necessary.
- b) In areas subject to floods and storms farmers should:
 - i) heed weather warnings
 - ii) ensure animals can be moved to safer and accessible ground as soon as possible
 - iii) hold sufficient stored feed at accessible and safe sites
 - iv) ask for assistance, if needed, from local regional authorities, Federated Farmers, farm management professionals or the farm veterinarian.
- c) In areas prone to drought farmers should:
 - i) have a plan in place that ensures stock feed requirements can be met before stock welfare is compromised

- ii) ensure the availability of good sources of suitable water, not dependent on rainfall
- iii) provide additional shade, where necessary, to reduce the water requirements of the stock
- iv) ask for assistance, if needed, from Federated Farmers, farm management professionals or the farm veterinarian.

4.3 Farm Facilities

Introduction

The construction, maintenance and operation of dairy farm facilities are important to facilitate milking, for the conduct of important husbandry procedures (e.g. artificial breeding), and for the movement of animals to and from grazing.

Minimum Standard No. 7 - Farm Facilities

Farm facilities must be constructed, maintained and operated in a manner that minimises the likelihood of distress or injury to animals.

Recommended Best Practice

- a) Races should be constructed so as to enable dairy cattle to walk comfortably, with minimum risk of distress or injury.
- b) The surface of the dairy yard should provide satisfactory footing and be easily cleaned.
- c) Floors should have non-slip surfaces.
- d) Fences, gates and loading ramps should be designed to allow good animal flow and to prevent injury. Loading ramps should be carefully constructed with non-slip footing and with side boards or rails to prevent animals falling off or getting their legs trapped.
- e) Head bails and crushes should be constructed to allow efficient handling of dairy cattle i.e. they should not endanger the animal, or the operator, and should allow for easy release to avoid choking.
- f) Handling facilities should be available to manage dairy cattle safely when undergoing routine procedures and for animals that require treatment. (See also Section 5.4, "Restraint", of this code).

General Information

Information on the construction and maintenance of farm dairy facilities and races is available in the *Dairying and the Environment Manual*, Section 4.4, www.dairynz.co.nz and is also a component of industry standard NZCP1 (*Farm Dairy Code of Practice*).

4.4 Stand-off Areas and Feed Pads

Introduction

It is common practice during winter to use either stand-off areas, or feed pads, to prevent the severe pugging and pasture damage that can result when cows graze on water-logged soils. How often such facilities are used and for how long is influenced by the weather and soil type. Surface type and area per cow are determined by the owner or manager.

Cows are likely to suffer significant discomfort if the surface type and area per cow are not appropriate for the frequency of use. This discomfort may reveal itself as reduced lying time, underfeeding and an increased incidence of mastitis and lameness.

Sacrifice paddocks also require careful management if stock are to be kept free from distress.

Minimum Standard No. 8 – Stand-off Areas and Feed Pads

Dairy cattle must be able to lie down and rest comfortably for sufficient periods to meet their behavioural needs.

Recommended Best Practice

- a) After standing on concrete surfaces for 12 hours or more per day, for more than three consecutive days, cows should be given at least one full day on a suitable alternative surface, where they are free to lie down and rest.

General Information

Research shows that cows prefer to lie down for between 8 and 13 hours each day and that the welfare of cows for which lying is restricted to four hours each day, for up to four continuous days, is compromised. If lying is restricted, cows will compensate later, by lying down in preference to grazing.

When cows have been deprived of lying down they show signs including:

- hanging of the head and appearing tired during standing off
- choosing to lie down instead of grazing when back at the paddock after being stood off
- excessive stiffness or lameness
- not lying down on returning to the stand-off area after grazing.

The size of a stand-off area will depend on the surface provided and whether it is also used as a feed-pad.

Cows prefer to lie down on soft surfaces and are reluctant to lie down when the surface is slippery and/or wet. A well-drained woodchip, bark or post-peeling pad is preferred by cows, compared to concrete, sand or sacrifice paddocks.

Where harder surfaces, such as concrete or raceways, are used for periods of 12 hours or more each day for consecutive days, welfare will be compromised. Lameness, stiffness, agitated behaviour and weight loss are likely to occur.

Further useful information can be found in the publication "*Minimising muck, maximising money. Stand off and Feed pads. Design and Management Guidelines*" Dexcel, 2005 and *Dairying and the Environment Manual*, Section 4.5, www.dairynz.co.nz.

4.5 Housing Cows and Calves

Introduction

In New Zealand, few adult dairy cattle are housed, but calves are often kept indoors during rearing. There is an increasing interest in the housing of dairy cattle. Farmers may wish to hold cows in facilities for longer periods of time in winter. In these situations animals are totally dependent on stockpeople for all their daily requirements, welfare and safety, and farmers need to be aware there are additional responsibilities of care.

The design and construction of dairy cattle housing needs to be carried out with the well-being of the animals in mind. Cows and calves require accommodation that is dry, well ventilated and draught free. The space allowances for housed animals will depend upon whether cows receive some or all of their feed supply in the housing area. The important factor is to allow enough area per cow to ensure they achieve adequate lying time i.e. at least eight hours each day.

Minimum Standard No. 9 – Housing Cows and Calves

- (a) Dairy cattle must be able to lie down and rest comfortably for sufficient periods each day to meet their behavioural needs.
- (b) 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.
- (c) Ventilation must be sufficient to prevent a build-up of harmful concentrations of gases such as ammonia and carbon dioxide.
- (d) If ammonia levels of 25 ppm or more are detected within the housing, immediate action must be taken to reduce the ammonia levels.
- (e) All sharp objects, protrusions and edges, including damaged flooring likely to cause injury to dairy cattle, must be removed, repaired or covered.

Recommended Best Practice

- a) The bedding area should be well drained and covered with dry comfortable material.
- b) Soiled bedding should not be allowed to accumulate to a level that poses a threat to the health and welfare of the animals.
- c) The building should be designed to ensure that air circulation, dust levels, temperature, relative humidity and gas concentrations are kept within limits which are not harmful to the dairy cattle. Ammonia levels should not consistently exceed levels of 10 - 15 ppm.
- 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 animals.

General Information

As a guide, a level of 10 –15 ppm of ammonia in the air can be detected by smell and an ammonia level over 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 dairy cattle. Such levels compromise animal welfare and may predispose dairy cattle to respiratory disease and reduced performance.

As a guide 50 lux is sufficient light to read a newspaper at arm's length.

For those considering permanent housing, refer to "*Minimising muck, Maximising money. Stand-off and Feed pads. Design and Management Guidelines.*" Dexcel, 2005 Dairying and the Environment Manual, Section 4.5, www.dairynz.co.nz.

Part 5: Husbandry Practices

5.1 Behaviour and Stock Handling

Introduction

Distress and risk to both the animals and their handlers are decreased when good facilities reduce the need to apply pressure to the animals in order to handle them.

Minimum Standard No. 10 – Stock Handling
(a) Dairy cattle must be handled at all times in such a way as to minimise the risk of pain, injury or distress to the animals.
(b) Dairy cattle must not be prodded in sensitive areas, including the udder, eyes, nose, anus, vulva or testicles.
(c) Only the minimum force required must be used when moving dairy cattle.

Recommended Best Practice

- a) The following behavioural characteristics should be taken into account when handling dairy cattle:
 - i) they have poor vision for both distance and detail and should be given time to adjust when being moved into shadowy areas. Exposure to sudden movements of nearby objects should be avoided
 - ii) their hearing is similar to that of humans, so they should not be subjected to sudden loud noises
 - iii) their instinct to herd is strong, so they should not be isolated unnecessarily.
- b) Stock handlers should understand those things that cause stress in dairy cattle and appreciate how they might react to other dairy cattle, other animals, humans, strange noises, sights and smells.
- c) Aids to facilitate handling of dairy cattle, such as:
 - i) sticks and flags as an extension of the arm
 - ii) dogs
 - iii) vehicles, and
 - iv) backing gatesshould all be used carefully.
- d) Electric goads should not be used to move dairy cattle other than stubborn or recalcitrant animals. Electric goads should not be applied to any animal for more than one second at any one time. If the desired effect is not achieved after four or five attempts, their use should be discontinued.
- e) Tails should not be lifted or twisted.
- f) If it is necessary to use dogs, they should be under full control at all times and muzzled if necessary.
- g) Dairy cattle should not be moved by being pushed with a vehicle.
- h) Backing gates should be used carefully. They should not be used in a manner likely to result in pain, injury or distress.

General Information

Driving dairy cattle intensely, as a way of speeding them up, can contribute significantly to cow lameness. Cows should be moved at such a pace that they can see where they are going and where to place their feet.

5.2 Droving

Introduction

Dairy cattle are often moved on foot between farms. Young stock and dry cows may be overwintered on run-off blocks. Whole herds may be moved at the end of a season, when changes in sharemilking contracts occur and when stock are shifted to new farms.

Minimum Standard No. 11 - Droving
(a) Care must be taken at all times to minimise injury or distress to the animals. (b) Droving distance and speed must take account of the conditions and the fitness of the animals. (c) Animals which become injured or distressed must be rested and remedial action taken.

Recommended Best Practice

- a) Drivers should check with the road and rail authorities for any requirements that may be specific to the area through which the dairy cattle are to be walked.
- b) There should be clear warnings to other road users.
- c) Dairy cattle should not be driven more than 10-12 km/day without a period for rest and feed, including water. If this travel includes any hills, then the distance should be less than 6 - 8 km/day.

General Information

Laboured breathing or panting, particularly with the tongue extended, indicates that dairy cattle are being driven too quickly and are experiencing respiratory stress.

Signage indicating that stock are on the road and orange/yellow flashing lights may be used 100m ahead and behind the animals. Drivers should wear high visibility clothing.

The Transit NZ stock permit outlines rules about stock safety on state highways.

5.3 Mixing Dairy Cattle

Introduction

Dairy cattle live in groups in which they establish social hierarchies. Whenever animals are introduced into a herd, they will be challenged as newcomers and will have to establish their place in the group. These challenges can be aggressive and lead to injury and distress, and such behaviour needs to be managed. This is particularly important when first introducing heifers into a milking herd.

Bulls are potentially dangerous at all times. Bulls need to be handled with special care and management skills to ensure their safety, the welfare of other animals and that of their handlers.

Recommended Best Practice

- a) The introduction of new animals into the herd should not occur more frequently than is necessary, because of the social stress involved as the introduced and resident dairy cattle re-establish a hierarchy.
- b) Introductions should be well managed and monitored. Dairy cattle should be provided with sufficient area, so that newcomers can move into free space if pushed or bunted by the other animals.

5.4 Restraint

Introduction

A quiet approach when handling dairy cattle is important. Facilities need to be adapted to suit the management system being used and may include yards, races, crushes and head bails to allow efficient examination and treatment when required.

Minimum Standard No. 12 - Restraint

- (a) Restraint must be applied in such a way as to minimise stress and risk of injury to the animal.
- (b) Nose rings and equipment used for dairy cattle restraint must be fit for purpose and used in a manner that does not inflict unnecessary pain or distress.
- (c) Dairy cattle restrained for routine procedures must be kept under close supervision.
- (d) Methods of physical restraint must allow for the animal to be easily released.
- (e) Animals that are tethered must be inspected at least once every 12 hours.
- (f) Electroimmobilisation devices must be used only in a manner that allows animals to breathe normally, demonstrate normal responses to pain and must not be used in place of pain relief when undertaking painful husbandry procedures.

Recommended Best Practice

- a) Operators should be fully conversant with the safe operating procedures of restraint equipment which should be maintained in good working order.
- b) Electroimmobilisation devices should only be used on adult dairy cattle.

General Information

Stock handlers need to be aware that head bails and crushes can cause injury to the animals or people if they are not managed properly.

Electroimmobilisation devices do not block pain and maybe aversive to animals. NAWAC has recommended that they be declared restricted devices. They need to be used in such a way that they do not mask the normal responses to pain, and should not be used in place of pain relief.

From time to time, individual animals, such as pets and show animals may be temporarily tethered. Those dairy cattle that are to be restrained by tether should be quiet and be trained to the conditions.

5.5 Identification

Introduction

Permanent identification by eartag is mandated by government agencies. Other forms of identification are also used.

Minimum Standard No. 13 - Identification

Hot branding must not be used without pain relief.

Recommended Best Practice

- a) Permanent tags should be inserted using the applicators designed for the purpose and according to the manufacturer's specifications.
- b) Care should be taken when applying an ear tag to avoid hitting the cartilage ridges or major blood vessels.
- c) Any infection resulting from tag application should be treated promptly.
- d) Where freeze branding is used, it should be applied by a competent operator.

5.6 Milking

Introduction

Efficient milking is essential for the good health, welfare and productivity of the cow. The modern dairy cow produces more milk than a calf can consume so needs to be milked regularly for good udder health.

The milking process needs to be carried out calmly and with regular routines, to create a stress-free environment for the cow. This will ensure that a complete milk ejection reflex occurs in the cow prior to or during milking. Gathering cows from the paddock, driving along the race, holding them in the yard, and entering and exiting from the milking bail are all part of this process.

Farmers traditionally milk cows twice a day. However, new management options in the dairying industry continue to be developed. Alternatives such as more frequent or once-a-day milking are being used increasingly for at least part of the season. The principles for good cow welfare apply no matter which milking process is being followed.

Minimum Standard No. 14 - Milking

- (a) All cows must be milked, or suckle calves, frequently enough during lactation to minimise discomfort and maintain udder health.
- (b) Milking equipment must be well maintained to minimise the risk of damage to, and infection of, the teats and udder.
- (c) Milk letdown must not be stimulated by the insertion of water or air into the vagina.

Recommended Best Practice

- a) All lactating cows including those being sold or exhibited (unless sickness or good management practices dictate otherwise) should be milked or suckle calves at least once every 24 hours.
- b) To minimise the risk of discomfort or damage to the teats:
 - i) the partial vacuum in the milking machine should not be higher than 50 kpa
 - ii) the teat-cup liners and the pulsation system should function properly, and
 - iii) cows should not be over or under-milked.
- c) Milking machines should be tested at least once a year and more frequently if the milking process is compromised, as indicated by milking speed, teat damage and/or cow behaviour. All faults should be corrected immediately.
- d) The risk of teat and udder infections should be minimised by practising good hygiene during milking and disinfecting teats after removal of teat-cups at every milking.
- e) Heifers should be familiarised with the milking facility prior to calving.

- f) Where there is a risk of an extended failure of the electricity supply, provision should be made for an independent generator to operate the milking machine and ancillary equipment.
- g) Cows should be milked immediately after separation from their calves.

General Information

Milk removal, conducted in good environmental conditions and with an efficient milking machine, is complete after about 6 to 8 minutes for most cows, depending on milk yield and rate of milk flow. If this is not being achieved, seek professional help.

Signs of discomfort (not ruminating, constant movement and/or excessive defecation by the cow while in for milking) and/or an increased incidence of sores on the teats can indicate faults in the vacuum level or pulsation system, or the presence of stray electrical voltages in the farm dairy.

Once-a-day milking may improve dairy cow health and welfare, through reduced incidence of lameness, improved conception rates and higher BCS. Once-a-day milking may, however, increase udder pressure in high yielding cows and increase the risk of mastitis. Therefore, cows need to be selected and managed carefully for once-a-day milking.

5.7 Drying-off

Introduction

Cows are generally dried-off at the end of their lactation. Individual animals may be dried-off earlier for other farm management reasons e.g. feed shortages. The aim is to shut down milk secretion and allow the teat canal to seal as rapidly as possible

Generally, management procedures such as feed restriction and reduced milking frequency are used to lower milk yield around the time of drying-off, rather than a sudden cessation of milking. Drying-off may increase udder pressure in high yielding cows and increase the risk of mastitis. Therefore, cows need to be managed carefully during the drying-off period, including the first month of the dry period. Drinking water must be available for all cows throughout the drying-off period.

Recommended Best Practice

- a) The drying-off process should be done in a manner which minimises discomfort.
- b) Cows should be milked less frequently for one week before dry-off.
- c) Cows should have reduced food intake for the last few days before drying-off and for one week after.
- d) Cows should be put in a clean, dry paddock, well away from the milking area or milking animals for the first few days after dry-off.
- e) Cows should be monitored weekly for signs of udder pain or swelling, for at least 3 weeks after dry-off.

General Information

Although lower feeding levels seem to reduce discomfort after dry-off, cows fed less are likely to experience hunger. Alternative dry-off procedures, such as feeding low-quality diets ad libitum may help lower milk yields before dry-off, without causing hunger.

5.8 Calving in Dairy Cattle

Introduction

Calving is a critical period for the welfare of both cow and calf. Pastoral farming in New Zealand is subject to varied weather conditions. Shelter (see Section 4.1 “Shelter” of this code) and nutrition important (see section 3 “Feed and water” of this code) are especially important around the calving period. Feed quality and quantity, together with the trace element and mineral status, need to be taken into consideration.

Where early termination of pregnancy is warranted on welfare grounds, veterinarians may use induction on individual cows to treat particular health problems. However, NAWAC does not support the use of induction of otherwise healthy cows in order to manipulate calving patterns because it has the potential to affect the welfare of both cow and calf adversely. Information on current industry practice, codes and guidelines is available from your veterinarian or New Zealand Veterinary Association www.nzva.org.nz.

Minimum Standard No. 15 – Calving in Dairy Cattle

- (a) Dairy cows close to calving must be inspected at least twice every 24 hours.
- (b) If during inspection of a cow or heifer calving is not proceeding normally, e.g. she is experiencing vigorous and regular abdominal straining without progress, remedial action must be taken.
- (c) A moving vehicle must not be used to provide traction to assist calving.
- (d) All inductions must be conducted under the direct supervision of a veterinarian.

Recommended Best Practice

- a) Easy-calving sires should be selected for heifer mating as large calves can cause significant damage to small dams, particularly during their first calving.
- b) Induced calving for non-therapeutic reasons should not be used.
- c) Cows close to calving should be inspected frequently; preferably at least every 6 hours.
- d) Calving paddocks should provide dry ground, shelter and protection from adverse weather.
- e) Those inexperienced in stock management should obtain immediate expert advice if they find a cow having difficulty calving. As a guide, heifers should not be left trying to calve for longer than 2 hours, and adult cows longer than 1 hour, before assistance is given or veterinary help sought (calving in this context means vigorous and regular abdominal straining).
- f) To minimise the potential for damage to either cow or calf, controlled traction should only be used if the operator has diagnosed an unrestricted birth canal and the calf is in the normal position for delivery. Where no progress is made after 5 minutes of controlled traction, veterinary advice should be sought. The veterinarian, in considering the welfare of cow and calf, will outline the options available - these may include epidural anaesthesia, analgesics, caesarean section and/or a foetotomy procedure.

General Information

The important features to be taken into consideration when deciding to assist a cow to calve are:

- an assessment of the size of the calf, whether it is still alive, and whether it is in the correct position for delivery
- an assessment of cow health and condition
- whether there is adequate lubrication to facilitate delivery
- the amount and direction of traction, which alters as the calf enters and passes through the pelvic canal
- whether the cow is able to stand, or whether it must be calved lying down.

With a difficult calving, veterinarians have been trained to select techniques that will lead to the best outcome, taking into account the welfare of both the cow and unborn calf.

5.9 Caring for Recumbent Cows

Introduction

There are a number of conditions and practices relating to nursing recumbent dairy cattle that can significantly compromise the welfare of the animals involved. The management of lifting cows with hip clamps or slings needs to be done correctly to prevent pain or possible injury.

Minimum Standard No.16 - Caring for Recumbent Cows

- (a) If hip clamps are used they must be removed if the cow cannot promptly support her own weight.
- (b) Cows must not be transported, so that all her weight is carried by the hip clamps and vehicle.
- (c) Cows suspended in a sling must be able to breathe freely, not suffer unnecessary discomfort, and be lowered from the sling if they are unable to support their own weight after one hour.

Recommended Best Practice

- a) Any cow that is unable to stand should receive veterinary attention within 48 hours of becoming recumbent or be destroyed humanely. Recumbent cows need to be inspected frequently, kept in an upright position (i.e. lying on their sternum with legs tucked under the body), and shifted from side to side as often as possible.
- b) Flotation technology for recumbent cows should be used as a preferred method.
- c) Cows that are unable to stand should be kept on soft ground.
- d) Where hip clamps are used, the following guidelines should be followed:
 - i) prior to their application, a veterinary examination should be made to rule out conditions that will not respond and that will only increase pain and distress for the cow
 - ii) the hip clamps should be padded and applied firmly, to prevent slipping and bruising
 - iii) the rear of the animal should be lifted to a point where the feet are touching the ground, so that weight bearing can take place
 - iv) if, after taking the weight of the animal on the hip clamps, the cow cannot be persuaded to take weight on the forelegs, the use of the clamps should be discontinued
 - v) if an animal has failed to respond initially, she should be allowed to rest for a period before hip clamps are tried again.
- e) Where cow slings are used:
 - i) suspended animals should be inspected frequently
 - ii) no more than two suspending sequences in a day should be attempted.

General Information

Hip clamps are most effective in the early stages of milk fever or post-calving paralysis, particularly when the cow is showing signs of a response to treatment. Careful diagnosis is important, as the use of a hip clamp is not appropriate where there is a fractured leg, pelvis or hip dislocation.

Repeated use of hip clamps is only acceptable if bruising and distress are minimal, some indication of progress is evident, and the clinical condition of the cow continues to warrant such use. (Note that external skin bruising is not necessarily an indication of underlying muscle damage).

Cow slings are designed to suspend the recumbent cow so that circulation in the limbs is improved. They are not suitable as an aid for the cow to stand up, because pressure on the lower abdomen of the cow triggers a reflex that relaxes her leg muscles when using such a device.

Prolonged use of the sling is only acceptable if bruising and distress are minimal, some indication of progress is evident, and the diagnosis of the clinical condition of the cow continues to warrant such use.

5.10 Calf Management

Introduction

In dairying systems, because milk is the product to be sold, calves are removed from their mothers at a young age. The importance of colostrum for newborn calves and the ongoing feed requirements for calves are stated in section 3. Consideration of the health of the cow, the effects of early weaning on her welfare and the need to be milked regularly are referred to in section 5.6.

Good management of calves is essential for their welfare. Many are destined to have only a few days of life before they are slaughtered, but that does not remove the obligation to manage them to the same standard as every other animal on the farm.

Calves may be kept and reared on the farm or sent elsewhere for rearing (usually for beef), or sent for slaughter, or killed on the farm. Humane destruction on the farm as a routine procedure needs to meet the same animal welfare expectations as routine killing in other situations. All methods of humane destruction require a level of skill to achieve the rapid death of the animal. It is important that anyone killing calves on the farm is suitably trained and competent in the technique used. Animals may be killed on the farm by professional contractors, however owners and persons in charge of the calves remain responsible for meeting the requirements in this code of welfare up until the time of killing.

Shooting or the use of a captive bolt firearm are recommended methods to routinely kill unwanted calves where lethal injection by a veterinarian is not an option. These techniques require appropriate training in handling, killing and checking for death to ensure animals are immediately made insensible and death is confirmed. Signs of insensibility and death, and procedures to ensure death occurs, are described in section 6.4. Because there is a risk of ineffective operator technique, calves cannot be killed by a blow to the head except in unforeseeable or unexpected situations requiring emergency humane destruction, as defined section 6.4.

See Schedule II – Animal Welfare (Calves) Regulations 2016:

Minimum Standard No. 17 – Calf Management

- (a) Calves must be handled and moved in a manner which minimises distress and avoids pain, injury or suffering.
- (b) Premature calves that are unlikely to survive, or calves that have debilitating congenital defects, must be humanely destroyed at the earliest opportunity.
- (c) When calves are killed on farm, the following apply:
 - i) Calves must be rendered immediately insensible and remain in that state until death is confirmed.
 - ii) Persons undertaking humane destruction must be suitably trained and competent in the procedures for handling and killing of calves.
 - iii) Calves must not be killed by the use of blunt force to the head except in the circumstances described in regulation 5(1) of the Animal Welfare (Calves) Regulations 2016.

Recommended Best Practice

- a) Cows should be kept out of sight, sound and smell of newly weaned calves.

5.11 Mothering Calves onto Cows

Introduction

No technique to foster calves onto nurse cows should compromise the welfare of either cow or calf. All techniques should be used with minimum stress to both the cow and the calves.

Recommended Best Practice

- a) Calves fostered onto a nurse cow should all be of similar size and age.
- b) Nurse cows with calves at foot, should be inspected at least once every 24 hours to ensure that both cows and calves are in good health.

5.12 The Selection of Animals for Mating

Introduction

The use of bulls for mating heifers, and for breeding those cows in the milking herd that are not pregnant after a period of artificial breeding, is a common practice in New Zealand.

Recommended Best Practice

- a) Dairy cattle should be of suitable age, size and condition to experience pregnancy and calving.
- b) When selecting bulls for breeding, consideration should be given to:
 - i) the physical size of the bull relative to the heifers/cows to be bred (for heifers, use a bull breed that is smaller than the dam breed)
 - ii) the likely size of the offspring relative to their dams
 - iii) the fact that all bulls can be dangerous, both to each other and to handlers
 - iv) the health and welfare of the bulls.

5.13 Pregnancy Examinations

Introduction

Pregnancy examinations are used widely to achieve more accurate management decisions in respect to culling, calving and managing feed during the cow's dry period.

When manually examining the reproductive tract per rectum, or using ultra-sound by the transrectal approach, there is potential for rectal perforation that can compromise welfare and cause death.

Recommended Best Practice

- a) Pregnancy examinations should only be undertaken by trained and competent operators.

5.14 Painful Husbandry Procedures

Introduction

Farming dairy cattle involves a number of husbandry procedures such as disbudding, dehorning, castration and tail shortening, which have been identified as causing pain and distress. These procedures are covered in a separate Code of Welfare and readers are directed to the *Animal Welfare (Painful Husbandry Procedures) Code of Welfare 2005* for information.

5.15 Pre-transport Selection

Introduction

When selecting animals for transport, other industry standards and/or codes for transport need to be considered. Information and requirements that owners need to be aware of when selecting animals for transport can be found in the *Animal Welfare (Transport within New Zealand) Code of Welfare*, and for conditions of acceptance for slaughter the *Animal Welfare (Commercial Slaughter) Code of Welfare*.

The transport of cull dairy cows and young calves, particularly to slaughter, poses a significant risk of potential adverse welfare situations.

For the purposes of this code, transportation does not include droving.

See Schedule II – Animal Welfare (Calves) Regulations 2016, Regulation 6 - Fitness for transport.

From 1 February 2017, see Schedule II Animal Welfare (Calves) Regulations 2016:

- Regulation 10 – Maximum time off feed before slaughter.

From 1 August 2017, see Schedule II – Animal Welfare (Calves) Regulations 2016:

- Regulation 8 - Requirements for loading and unloading facilities; and
- Regulation 9 - Shelter requirements before and during transportation and at points of sale or slaughter.

Minimum Standard No. 18 – Pre-transport Selection
<p>(a) The person in charge must examine the selected dairy cattle prior to transport, to ensure that all animals are fit and healthy for transportation.</p> <p>(b) All dairy cattle, including calves, must be able to stand and bear weight on all four limbs and be fit enough to withstand the journey without suffering unreasonable or unnecessary pain or distress.</p> <p>(c) Any animal likely to give birth during transport must not be selected.</p> <p>(d) Every unweaned calf to be transported off the farm must have been fed at least half of that day's ration of colostrum or milk, not more than 2 hours before transportation.</p> <p>(e) Electric prodders must not be used to drive calves.</p>

Recommended Best Practice

- Dairy cattle should undergo suitable preparation for transport including pre-transport conditioning before long-haul journeys.
- Collection areas should provide adequate shelter and comfort for all animals, particularly calves, easy access for the person collecting them and facilitate efficient handling of the animals.
- In the absence of ramps, calves should be lifted to support their whole body.

- d) Every effort should be made to ensure calves, pregnant, peak lactation and cull dairy cows are transported for the shortest possible time.

General Information

The preparation for transport of mature animals, especially pregnant cows, will depend on the method, the distance and the time involved. For guidelines on preparation, a veterinarian or long-haul transport operator should be consulted.

Part 6: Health

Introduction

Prevention of ill-health or distress is much better than cure. Good stock handlers will have effective preventative programmes in place. They will also be familiar with their animals' normal behaviour, recognise early signs of disease or distress, have a planned animal health programme in place and take immediate action when necessary.

Minimum Standard No. 19 - Health

- (a) Those responsible for the welfare of the dairy cattle must be competent at recognising ill-health or injury and take remedial action as appropriate.
- (b) Veterinary medicines must only be used in accordance with registration conditions, manufacturer's instructions or professional advice.
- (c) Professional advice must be sought where there is any significant injury or disease, or if a problem persists.

Recommended Best Practice

- a) Stock handlers should be familiar with the more common health problems of dairy cattle and organise prompt and/or expert attention should they occur.
- b) Sick animals should be separated from healthy companions.

General Information

Signs of illness include any difference from normal appearance or behaviour such as: listlessness, separation from the herd, lameness, changes in milk, faeces or urine, abnormal swellings or growths on any part of the body, bloat, lack of co-ordination when moving, pus or bloody discharge from body orifices, recumbency, physical depression, evidence of pain such as grunting and/or groaning, extreme nervousness and twitching, excess salivation, coughing or difficult breathing, loss of weight or body condition, changes in behaviour and demeanour, changes in appetite and eating behaviour, lack of or excessive chewing, or lack of gut fill.

Conditions which are painful and warrant immediate treatment are serious injury, purulent infections, severe haemorrhage, deep wounds, bone fractures, lameness, severe or chronic inflammation or damage to the eye and surrounding structures.

Organic dairy production systems present special challenges to health management and may require particular attention, to avoid welfare compromise.

6.1 Inspection and Treatment

Introduction

The frequency of inspection of stock depends on the circumstances and management system. Situations in which careful inspection is particularly important are:

- when cows are close to calving
- when cows are being grazed on restricted areas
- when nutritional related conditions, such as bloat, ryegrass staggers, facial eczema or nitrate poisoning or other potentially toxic feed problems are likely to occur
- when receiving treatment for a disease or disorder
- when natural hazards are present

- during natural disasters.

Recommended Best Practice

- a) Dairy cattle should be inspected as frequently as is necessary to detect any problems.
- b) Any injured or ailing animal should be treated or humanely destroyed by a knowledgeable and competent stockperson immediately. Veterinary advice should be sought when:
 - i) there is persistent ill-thrift and poor performance which does not respond to treatment
 - ii) first aid does not result in satisfactory resolution of the problem
 - iii) there is difficulty in calving a cow which the stock handler is unable to resolve
 - iv) a cow is recumbent and unable to stand and does not respond to treatment, or before hip clamps are used
 - v) there is persistent lameness that does not respond to treatment
 - vi) there is concern about the welfare of the animal.

6.2 Lameness

Introduction

Lameness is a painful condition and warrants immediate and effective treatment. The most important factors that determine the prevalence of lameness in the herd are:

- the driving pressure exerted on the herd when moving the animals and their resulting walking speed
- the design, construction and condition of the races, notably wet or muddy surfaces
- handling in the yard and excessive backing gate pressure.

Recommended Best Practice

- a) Dairy cattle should be managed so as to minimise the incidence of lameness.
- b) Dairy cattle should be moved at a pace and with enough space such that they can keep their heads down and see where to place their feet.
- c) To allow cows to rearrange into a milking order the backing gate should not be moved for at least 15 minutes after the last animal has entered the yard.
- d) The backing gate should have a buzzer or bell so that the cows know when it is active and in motion.
- e) Any motorised gate should move no further than one metre in five seconds and for no longer than 5 seconds in any one movement.
- f) All staff should be trained in the prevention, identification and treatment of lameness.
- g) When an animal is found to be lame, the affected foot should be carefully examined and treatment instituted within 24 hours.
- h) Those animals not responding to treatment within 3 days should be seen by a veterinarian or humanely destroyed.
- i) Non-steroidal anti-inflammatory drugs (NSAIDs) should be used to assist pain relief.

General Information

Antibiotics should be used to treat lameness only where evidence of infection exists. In many animals, judicious hoof trimming and appropriate use of hoof blocks will achieve the desired result.

Isolation of the lame animal(s) from herd mates and the restriction of walking, are important factors in the healing process.

The dairy industry is developing programmes (e.g. 'Healthy Hoof') to assist in the early recognition and treatment of lameness. Locomotion or gait scores have also been developed to aid in the early identification of

lame cows. These are based on observing the way they stand and walk, looking for ease of gait, degree of spinal arching and head carriage.

6.3 Animal Health Plan

Recommended Best Practice

- a) Every herd operator should have an animal health plan drawn up and updated regularly with their attending veterinarian.
- b) A recording system relevant to this plan should be kept up-to-date by the herd operator, because regular monitoring of the records aids management and quickly reveals any problem areas.

General Information

Computer-based recording systems for dairy herds are now available and can produce useful diagnostic outputs from simple input records. These records can be discussed with a farm adviser/veterinarian.

6.4 Emergency Humane Destruction

Introduction

Unexpected and unforeseeable emergencies arise from time-to-time where animals experience severe pain or suffering that will become worse if they are not immediately treated or humanely destroyed. People in charge of dairy cattle need to be prepared for these situations, with adequate competence to use a method that is appropriate for the animals being killed. Any destruction procedure must rapidly stop brain function by destroying the brain or causing sufficient brain damage to stun the animal until death is confirmed.

Signs of insensibility include immediate collapse, with or without involuntary muscle movements (e.g. kicking, seizures), no blinking if the surface of the eye is touched, dilated pupils and no regular rhythmic breathing.

Death is confirmed when there are no signs of regular, rhythmic breathing, no sign of heartbeat, no blinking if the surface of the eye is touched, and the eyes are fixed with dilated pupils. Animals need to be checked immediately for these signs, and rechecked in 3-5 minutes. If signs of life are seen, animals need to be re-shot (if using a firearm) or subjected to a follow-up procedure to ensure death (see below).

Minimum Standard No. 20 – Emergency Humane Destruction
<ol style="list-style-type: none">(a) Dairy cattle must be rendered immediately insensible and remain in that state, until death is confirmed.(b) Persons undertaking emergency humane destruction must be suitably trained and competent in the procedures for handling and killing of dairy cattle.(c) Calves must not be killed by the use of blunt force to the head except in the circumstances described in regulation 5(1) of the Animal Welfare (Calves) Regulations 2016.

Recommended Best Practice

- a) Free-bullet firearms should never be used at point blank range. Instead shotguns and rifles should be used between 5-25 cm from the head.
- b) Shotguns should not be used to destroy adult animals.
- c) Captive bolt firearms, of a suitable design and calibre should be used to render dairy cattle insensible.
- d) All dairy cattle should be bled out as soon as possible after they have been rendered insensible.

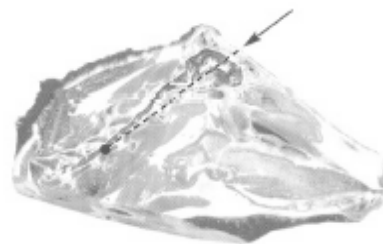
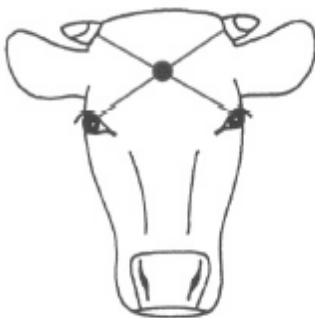
General Information

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, other people and other animals. Advice on legal requirements and safe storage and use of firearms, including captive bolt firearms, is available from the New Zealand Police and DairyNZ.

There are two types of captive bolt firearms – penetrating and non-penetrating. A penetrating captive bolt enters the skull and comes into contact with brain tissue; a non-penetrative captive bolt employs a “mushroom” percussive head. Both methods provide a concussive blow to the skull, resulting in insensibility because of brain tissue damage, although the damage caused by the penetrating captive bolt will result in less chance of the animal regaining sensibility. The captive bolt firearm must be applied directly against the head of the animal at the position shown below. The firearm will only function correctly if it is cleaned and maintained, and the correct cartridge size used, in accordance with manufacturer’s instructions.

Because death is not guaranteed following the use of a captive bolt firearm, it is recommended to bleed the animal out immediately after it becomes insensible. If bleeding out is not desirable for other reasons, such as damage to the hide, veterinarians or DairyNZ can provide advice on alternatives.

The correct position is critical for the humane and effective slaughter of animals. The optimum position for dairy cattle is at the intersection of two imaginary lines drawn from the rear of the eyes to the opposite horn buds.



The blood supply to the brain in cattle is markedly different from other livestock and this difference can result in prolonged consciousness when only the carotid arteries and jugular veins are severed (the throat cut). Therefore, killing any dairy cattle by cutting the throat may not produce rapid death and therefore is not humane, unless the animal has first been rendered insensible.

For further information on emergency humane destruction see DairyNZ guidelines. If you are inexperienced with the procedure a veterinarian should be consulted.

Part 7: Quality Management

Introduction

To ensure that standards of animal welfare and husbandry are maintained, each farm will need to implement a quality assurance programme that provides written procedures. The elements of the quality assurance programme will provide for the minimum standards and where possible, the recommendations for best practice of this code.

Recommended Best Practice

- a) To ensure that standards of animal welfare and husbandry are maintained, each farm should have a quality assurance system that provides documented procedures.
- b) The elements of the quality assurance system should provide for the minimum standards and, where possible, the recommendations for best practice of this code.
- c) The quality assurance system should provide for all incidents resulting in significant sickness, injury or death of animals to be investigated and documented. Where the results of an investigation may have implications for current industry management practices, a report outlining the incident and implications should be forwarded to the appropriate industry body for consideration.
- d) The quality assurance system should require continual review of existing systems, procedures and training schedules that could enhance the welfare of dairy cattle.
- e) The quality assurance system should include a record of issues identified and the remedial action taken.

General Information

The adoption or adaptation of an industry generic quality assurance programme will generally meet these recommendations.

While the quality system should be based on the general principles of Standard AS/NZS 9001 or similar, it is not essential that the quality system be certified under the JASANZ (Joint Accreditation Standards for Australia and New Zealand) certification scheme.

Schedule I – Body Condition Scoring

A good source of information about body condition scoring is the 2008 DairyNZ publication *Condition Scoring Made Easy* by Kevin Macdonald and John Roche. Stockhandlers need to pay special attention to this publication regarding the feeding levels and time required to replace lost body condition, especially before calving.

When body condition score drops below specified levels (see also in section 3.1 above), remedial action may involve veterinary attention, improved nutrition and/or husbandry practice changes.

The table below provides a guide on how to assess body condition score. Body condition scoring of dairy cows is based on palpation as looks alone can be deceiving. At lower condition scores the weight of assessment is more on the backbone, ribs and short ribs (loin), pin bones and tail-head, while at higher scores the assessment also includes the rump and thigh (see figure 1 below). Body condition score ranges from 1 to 10 with 1 being extremely thin and 10 being extremely obese. In assessing body condition score, each point should be assessed individually and then an average score arrived at because different breeds carry their weight on different parts of the body.

When assessing the various parts consider:

- Backbone - is it flat or a ridge, and are the joints easily seen or felt between?
- Ribs and short ribs (loin) - can you see and feel them easily?
- Hip bones - are they flat or pointed?
- Pin bones - are they rounded or pointed and have a tap-like appearance?
- Rump area - is it flat?
- Thigh area - is it depressed or rounded?

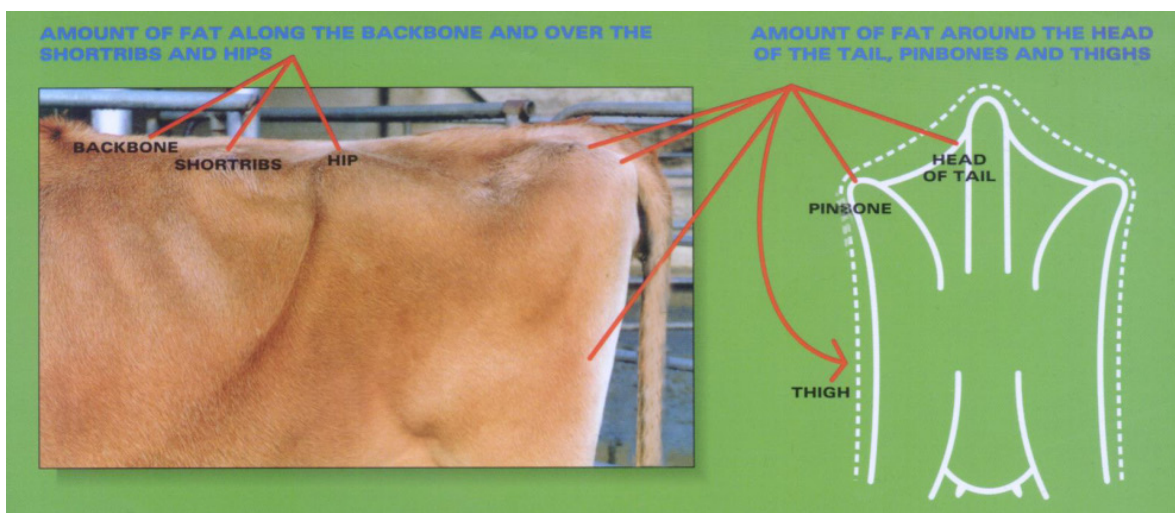


Table of characteristics of points at each score (items in bold are the critical assessment points for each score)

BCS 1		No internal or external fat reserves
BCS 2 (emaciated)	Backbone Ribs Short ribs Pins Hip bones Tail-head Rump	Notches distinct, easy to count All easily counted from a distance Very sharp edges Three-pronged tap formation very evident Deep depressions on side of hooks Very prominent, angular and sunken Severe depression
BCS 3	Backbone Ribs Short ribs Pins Hip bones Tail-head Rump Thigh	Prominent and notches distinct Easily seen, no discernable cover Deep indentation and sharp ends Three-prongs discernible but no sharp edges Sharp edges; depression on sides appearing Prominent with a deep V shape Slight depression Indented – no visible fat
BCS 4	Backbone Ribs Short ribs Pins Hip bones Tail-head Rump Thigh	Slightly risen and tops of notches visible Rounded but easily felt Rounded at ends Triangle shape with no sharp edges Depressions in side appearing, no sharp edges Sunken with shallow “U” shape Slight depression Slight depression
BCS 5	Backbone Ribs Short ribs Pins Hip bones Tail-head Rump Thigh	Smooth Rounded to touch and not individually visible Rounded edges Slightly rounded Rounded Even cover, no sharp edges Flat even cover Smooth and flat
BCS 6	Backbone Ribs Short ribs Tail-head Pins Rump Thigh	Rounded across the loin Rounded and fat cover felt Smooth edge to ends and starting to round Fat cover appearing Fat cover bulging Flat Starting to round

BCS 7	Backbone Tail-head Pins Hip bones Rump Thigh	Flattened out across loin Fat folds appearing either side Not discernable Well rounded and buried in fat Well rounded Rounded outwards with rolls of fat
BCS 8	Ribs Short ribs Hip bones Pins Thigh	Very flat Flat without indentation Flat edges to hooks Large folds of fat on either side Rolls of fat easily felt
BCS 9 (obese)	Backbone Rump	Buried in fat Fat protruding
BCS 10		Excessive internal and external fat

Schedule II – Animal Welfare (Calves) Regulations 2016

Although efforts to include relevant regulations within this code have been made, there may be other regulations which are relevant to you. The full list of all Animal Welfare regulations should be consulted where appropriate (see www.legislation.co.nz).

3 Interpretation

In these regulations, unless the context otherwise requires,—

off farm, in relation to a calf, means off the property on which the calf was born or resides

young calf means a bovine that is up to 14 days of age and has been separated from its mother.

5 Prohibition on killing calves by blunt force to the head

- (1) A person must not kill a calf by using blunt force to the head unless—
 - a) the calf is in severe pain or distress and, as a result, requires immediate humane destruction; and
 - b) there is no reasonably practicable alternative to the use of blunt force available.
- (2) In this regulation,—

blunt force does not include the firing of a firearm (as defined in section 2(1) of the Arms Act 1983)

calf means a bovine that has not had milk (or milk replacer) permanently removed from its diet.
- (3) A person who contravenes this regulation commits an offence and is liable on conviction,—
 - a) for an individual, to a fine not exceeding \$3,000;
 - b) for a body corporate, to a fine not exceeding \$15,000.

6 Fitness for transport

- (1) An owner or a person in charge of a young calf must not transport the calf, or permit the calf to be transported, off farm for the purpose of sale or slaughter or as a result of sale unless the calf is at least 4 full days (96 hours) of age.
- (2) Subclause (1) does not apply to a person who is in charge of a young calf only for the purpose of transport.
- (3) An owner or a person in charge of a young calf must not transport the calf, or permit the calf to be transported, off farm for the purpose of sale or slaughter or as a result of sale unless—
 - a) the calf is free from signs of any injury, disease, disability, or impairment that could compromise the calf's welfare during the journey; and
 - b) the calf is alert and able to—
 - i) rise from a lying position; and
 - ii) stand and bear weight evenly on all 4 limbs; and
 - iii) move freely; and
 - iv) protect itself from being trampled and from being injured by other calves; and
 - c) the calf's hooves are firm, worn flat, and not bulbous with soft unworn tissue; and
 - d) the calf's navel cord is shrivelled and not pink or red coloured, raw, or fleshy.
- (4) However, subclause (3)(a) and (b) do not apply if the owner or person in charge of the young calf has a veterinary declaration that the calf is fit for transport.
- (5) An owner or a person in charge of a young calf that is being transported or is to be transported off farm for the purpose of sale or slaughter or as a result of sale must have a system in place that, if followed, will ensure compliance with subclauses (1) and (3).

- (6) A person who contravenes subclause (1) or (3) commits an offence. The offence is an infringement offence with an infringement fee of \$500.

7 Maximum duration of transport

- (7) A person in charge of a young calf must not transport the calf unless the total duration of the journey from the point of loading the calf onto the vehicle to the point of arrival at the final destination of the journey is no more than 12 hours.
- (8) A person in charge of a young calf who transports young calves must have a system in place that, if followed, will ensure compliance with subclause (1).
- (9) A person who contravenes subclause (1) commits an offence and is liable on conviction,—
- for an individual, to a fine not exceeding \$5,000;
 - for a body corporate, to a fine not exceeding \$25,000.

8 Requirements for loading and unloading facilities

- (1) Subclause (2)—
- applies to a person who is, or will be,—
 - the owner or person in charge of a young calf at a place at which the calf is intended to be loaded onto a stock transport vehicle for transport off farm or from a place of sale for the purpose of sale or slaughter or as a result of sale; or
 - the owner or person in charge of a young calf at a place at which the calf is intended to be unloaded from a stock transport vehicle used to transport the calf off farm or from a place of sale for the purpose of sale or slaughter or as a result of sale; but
 - does not apply to a person who is in charge of a young calf only for the purpose of transport.
- (2) A person to whom this subclause applies must provide facilities designed to, or make available other means that,—
- enable the calf to walk onto (if subclause (1)(a)(i) applies) or off (if subclause (1)(a)(ii) applies) the stock transport vehicle by its own action; and
 - minimise the risk of a calf slipping and injuring itself, falling off the facilities or other means, or becoming otherwise injured or distressed.
- (3) A person in charge of a young calf must take all reasonable and practicable steps to ensure that the calf is not, while the person is in charge of the calf,—
- loaded onto a stock transport vehicle for transport off farm or from a place of sale, for the purpose of sale or slaughter or as a result of sale, otherwise than through the use of the facilities or means referred to in subclause (2); or
 - unloaded from a stock transport vehicle used to transport the calf off farm or from a place of sale, for the purpose of sale or slaughter or as a result of sale, other than through the use of such facilities or means.
- (4) In this regulation, **stock transport vehicle** means a vehicle that has a loading height of 90 centimetres or more from the lowest point of the tyres to the height of the deck or body of the vehicle onto which a calf will be loaded.
- (5) A person who contravenes subclause (2) commits an offence. The offence is an infringement offence with an infringement fee of \$500.
- (6) A person who contravenes subclause (3) commits an offence and is liable on conviction,—
- for an individual, to a fine not exceeding \$2,000;
 - for a body corporate, to a fine not exceeding \$10,000.

9 Shelter requirements before and during transportation and at points of sale or slaughter

- (1) Subclause (2) applies to an owner or a person in charge of a young calf at a location where—

- a) the calf is being held before being transported off farm for the purpose of sale or slaughter or as a result of sale (other than the location at which the calf is normally housed on the farm); or
 - b) the calf is being held off farm while awaiting sale or slaughter.
- (2) A person to whom this subclause applies must—
- a) ensure that the calf has access to shelter that—
 - i) is ventilated to the extent that there is no threat to the health or welfare of the calf due to insufficient ventilation; and
 - ii) provides protection from adverse weather, including precipitation and extremes of heat and cold; and
 - iii) enables the calf to stand up and lie down in a natural posture; and
 - b) ensure that faeces and urine do not accumulate in the shelter to an extent that may pose a threat to the health or welfare of the calf.
- (3) A person in charge of a vehicle must not transport a young calf off farm for the purpose of sale or slaughter or as a result of sale unless—
- a) the vehicle provides shelter that—
 - i) is ventilated to the extent that there is no threat to the health or welfare of the calf due to insufficient ventilation; and
 - ii) provides protection from adverse weather, including precipitation and extremes of heat and cold; and
 - iii) enables the calf to stand up and lie down in a natural posture; and
 - b) the person ensures that faeces and urine do not accumulate in the vehicle to an extent that may pose a threat to the health or welfare of the calf.
- (4) A person who contravenes this regulation commits an offence and is liable on conviction,—
- a) for an individual, to a fine not exceeding \$2,000;
 - b) for a body corporate, to a fine not exceeding \$10,000.

10 Maximum time off feed before slaughter

- (1) A person in charge of a young calf being held at slaughter premises for slaughter must ensure that the calf is slaughtered as soon as possible after its arrival at the premises.
- (2) If it is not possible to slaughter a young calf within 24 hours after the calf was last fed on the farm on which it resided, the person in charge of the calf at the slaughter premises must,—
- a) if the calf is able and willing to feed,—
 - i) ensure that the calf is fed a volume of colostrum, milk, or milk replacer that equates to at least 5% of the calf's body weight no more than 24 hours after the calf was last fed on the farm; and
 - ii) ensure that the calf is slaughtered as soon as possible after it is fed; or
 - b) if the calf is unable or unwilling to feed, humanely euthanise or slaughter the calf without delay.
- (3) A person in charge of a young calf being held at slaughter premises for slaughter must have a system in place that, if followed, will ensure compliance with subclauses (1) and (2).
- (4) In this regulation, slaughter premises means premises designed and operated for the purpose of, or for purposes that include, slaughtering animals.
- (5) A person who contravenes subclause (1) or (2) commits an offence and is liable on conviction,—
- a) for an individual, to a fine not exceeding \$5,000;
 - b) for a body corporate, to a fine not exceeding \$25,000.

11 Prohibition on transport by sea across Cook Strait

- (6) A person in charge of a young calf on a vehicle must not permit the calf to be transported by sea across Cook Strait.
- (7) A person who contravenes this regulation commits an offence and is liable on conviction,—
 - a) for an individual, to a fine not exceeding \$5,000;
 - b) for a body corporate, to a fine not exceeding \$25,000.

Schedule III – Interpretation and Definitions

Act

The Animal Welfare Act 1999.

ACVM

Agricultural Compounds and Veterinary Medicines Group of the Ministry for Primary Industries.

adverse weather

Unfavourable weather conditions that may pose harm or risk to the animals.

animal

As defined in the Act:

- 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 the 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 above, any animal in the pre-natal, pre-hatched, larval, or other such developmental stage.

automated feeding system

An electronically controlled system for feeding groups of animals.

available technology

NAWAC takes to mean technologies which are used practically to care for and manage animals, for example, existing chemicals, drugs, instruments, devices and facilities.

body condition score (condition score)

A 1 - 10 scoring system used to classify the condition of animals, based on the assessed amount of fat and/or muscle covering they have (see Appendix I, "Body Condition Scoring", to this code).

breeding value

The genetic value of an individual animal for a particular trait, based on an analysis of the data from its relatives.

bull

An uncastrated male bovine.

calf

A bovine that has not had milk (or milk replacer) permanently removed from its diet.

calving

Giving birth to calves.

colostrum

Milk secreted by the cow for the first few days after calving, characterised by high protein and antibody content.

cow

An adult female bovine.

droving

Moving animals from one place to another off-farm by driving them on foot along roadways or stock routes.

drying-off

The management technique of stopping milk production in cows.

farm facilities

All structures and equipment such as buildings, yards, races, fences, gates, loading ramps, restraining devices and drains.

feed pad

An enclosure used for providing supplementary feed in troughs.

foetotomy

Dissection of a dead foetus whilst still in the uterus to assist in its delivery.

food/feed

The words "food" and "feed" are used interchangeably.

foster

A management practice whereby a calf is moved soon after birth, to be fed by a cow that is not its mother.

goad

An object used to stimulate or prod an animal to make it move.

good practice

NAWAC takes 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 experience-based 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.

heifer

A young female bovine until completion of the first lactation.

hip clamps

A mechanical device that attaches to the hips of an animal to assist in raising them to a standing position.

housing

A roofed structure with or without walls where an animal may be kept (other than the farm dairy) and that is permanent or semi-permanent.

husbandry

Care and management practices in dairy cattle production.

hyperthermia

Abnormally high body temperature.

hypothermia

Abnormally low body temperature.

ill-treat

As defined in the Act: "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."

lux

International measure of light intensity (not to be confused with watts).

megajoule (MJ)

A measure of energy = a million joules; 1 joule = 0.239 calorie and 1 calorie is the amount of energy required to heat 1g of water by 1 degree centigrade.

metabolisable energy (ME)

A measure of the amount of dietary energy that is 'useable' by the animal.

minimum standards

Minimum standards provide the details of specific actions people need to take in order to meet the obligations in the Act. They are identified in the text by a heading, and generally use the word "must" or similar. They are highlighted in boxes within the text.

newborn

A recently born calf, less than 24 hours old.

nurse cow

A lactating cow that suckles one or more calves, not necessarily her own.

owner

As defined in the Act: "in relation to an animal, includes the parent or guardian of a person under the age of 16 years who -

- e) Owns the animal; and
- f) 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 the Act: "in relation to an animal, includes a person who has an animal in that person's possession or custody, or under that person's care, control, or supervision."

pest

As defined in the Act: "means -

- g) Any animal in a wild state that, subject to subsection (2), the Minister of Conservation declares, by notice in the Gazette, to be a pest for the purposes of this Act:
- h) Any member of the family Mustelidae (except where held under a licence under regulations made under the Wildlife Act 1953):
 - i) Any feral cat:
 - j) Any feral dog:
 - k) Any feral rodent:
 - l) Any feral rabbit:
 - m) Any feral hare:
 - n) Any grass carp:
 - o) Any Koi or European carp:
 - p) Any silver carp:
 - q) Any mosquito fish:
 - r) Any animal in a wild state that is a pest or unwanted organism within the meaning of the Biosecurity Act 1993."

photosensitivity

A condition in which exposure to sunlight will result in disease.

recommended best practice

NAWAC takes to mean the best practice agreed at a particular time, following consideration of scientific information, accumulated experience and public submissions on this 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".

recumbent

The state of lying down and being unable to stand.

routine procedures

Husbandry procedures routinely undertaken in commercial dairy cattle production.

sacrifice paddock

An area of land used to keep animals confined so that they do not damage pasture over wider areas of the farm during wet weather conditions.

scientific knowledge

NAWAC takes 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.

stand-off area (loafing pad)

An enclosure with a constructed base to keep animals confined so that they do not damage pasture over wider areas of the farm during wet weather conditions.

stockhandler

A person who undertakes the immediate day-to-day husbandry tasks associated with management and care of dairy cattle.

tether

To restrain by the head or neck with a rope, chain, collar or halter.

weaner

A young animal which is no longer given access to milk from a cow, nor to milk replacer from another source.

weaning

The act of permanently removing milk (or milk replacer) from the diet of the calf.