OIE RECOMMENDATIONS FOR THE ON-FARM WELFARE OF DAIRY CATTLE

SUBMISSION BY THE INTERNATIONAL COALITION FOR ANIMAL WELFARE[1]

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Introduction

The International Coalition for Animal Welfare (ICFAW) welcomes the decision by the OIE to produce guidelines concerning the on-farm welfare of dairy cattle.

The majority of cattle farmed in the world for dairy production are kept in extensive farming systems, often outside on pastureland for much of the year. In more intensive systems, however, cows are kept indoors in cubicle houses, tie-stalls or straw yards. The welfare of cows kept for dairy production depends on the housing system, nutrition, management and genetics.

The dairy cow carries the double burden of producing large quantities of milk while at the same time trying to maintain body condition and carry her next calf. This imposes great metabolic demands that can compromise her welfare. Lameness and mastitis are significant indicators of poor dairy cow welfare, as are reproductive, metabolic and behavioural disorders[2].

In these recommendations, we will consider dairy cows, while lactating or not lactating, calves and heifers that will become dairy cows. The welfare of dairy bulls is also an important concern in some countries.

Most of ICFAW comments are applicable to all types of dairy production, but some of them could refer more specifically to intensive farming. ICFAW hopes that the OIE will, at a minimum, address the following general principles.
This code should be read in conjunction with and is a supplementary enhancement to any other legislation such as: Animal welfare, Disease acts, Identification acts, Codes, Standards.

Provisions for Management

Ensuring high welfare of dairy cattle is contingent on several management factors, including system design, good stockmanship, responsible husbandry and appropriate care. Serious problems can arise in any system if one or more of these elements are lacking.

ICFAW recommendation on stockmanship

- As good management and stockmanship are critical to providing an acceptable level of animal welfare, personnel involved in handling and caring for dairy cattle should be competent and receive appropriate training to equip them with the necessary practical skills and knowledge of dairy cattle behaviour, health, and needs.

ICFAW recommendation on health care management

- All production units should have a contract with a veterinary surgeon trained and specialised in caring for dairy cattle, at all stages of life. At a minimum, animals should be inspected at least quarterly.
- Sick animals should be treated promptly, and if prognosis is poor, cows or calves should be humanely euthanized on the farm rather than left to suffer.
- Hospital pens can be used to separate sick animals to prevent the spread of disease and ensure that they do not have to compete for access to feed, water and other resources, and are as comfortable as possible. Sick animals should be kept in visual and auditory range of herd mates if being separated would cause them distress. Sick animals should be attended to at least twice daily, and if their condition is severe they may require attention more often. They should be provided with adequate feed and water having due regard for their condition and according to expert veterinary advice where appropriate, unless it is necessary to withhold these for medical reasons. Sick animals, especially if downers, should be examined by a veterinarian without undue delay.
- New animals brought in from outside the herd should be quarantined and tested for any infections disease agents as appropriate to any national or regional requirements, before they are introduced into the established group.
- Each production unit should have a properly designed veterinary health plan developed with its veterinary surgeon, and, when appropriate, other experts. In this plan, health and caretaking activities should be prescribed for the whole year production cycle, if animals are kept on-site for that duration, or for each phase of the animal's life (e.g., birth to weaning, growth, breeding, lactation period, and dry period). The plan should be evaluated and updated each year in consultation with the experts, when appropriate..
- Each production unit should keep detailed records of births, purchases, sales, health history including lameness, mastitis, metabolic disorders, deaths and use of medicines. Preventative and routine use of antibiotics should be prohibited.
- Marking, branding, and other identification techniques should be carried out in a way so as not cause pain or distress, or risk introducing infection.
- Farms should have an emergency euthanasia plan and proper working equipment for the swift provision of a humane death in cases where an animal becomes injured or ill, is suffering, and is unlikely to recover. Skilled farm personnel with training in euthanasia should be available at all times, including during late night and weekend hours.

ICFAW recommendation on contingency planning

- Contingency plans should be in place for emergencies such as breakdown of milking equipment or equipment vital to the animals (e.g., automated waterers, misters, feeders, ventilators), and a functioning emergency source of power should be available. Similar plans should be in place in case of disasters such as fire and flood.
- All staff must be aware of and understand emergency plans, and they must be prepared and able to undertake their task effectively and efficiently.

ICFAW recommendation on water and feed

- The water requirements of lactating cows are closely related to milk production, moisture content in the feed and environmental factors such as air temperature and humidity[3]. All dairy cattle should have sufficient access at all time to adequate supplies of clean water.
- All dairy cattle should be provided with regular, daily, extensive pasture access for grazing[4]during the pasture growing season. During the rest of the year regular access to an outdoor area for exercise should be made possible except in extreme weather conditions.
- All dairy cattle should have adequate quantities of wholesome food sufficient for their nutritional and behavioural needs. The diet should provide sufficient nutrients and energy.

Palatable fibrous food (at least 10%) such as silage, grass and hay should be available ad libitum to meet metabolic requirements in a way that promotes digestion[5] and ensures normal rumen function.

- As diets composed of greater than 50% cereal grains and other concentrated foods contribute to adverse health effects, grains, if given to dairy cattle, should be introduced slowly and comprise no more than 50% of the daily diet.
- Foodstuffs containing mammalian protein (except milk) should not be permitted.
- A body condition scoring chart should be included in the standards, and animals should not have a body condition score equivalent to 2 or less on the scale developed by Edmonson et al[6]. If the body condition falls below 2 a veterinarian must be consulted without undue delay. Feed and water should be free of inedible materials, mold and other contaminants. It should be fresh and palatable, and delivered in clean, well maintained containers that offer easy access to all animals.
- Automatic watering systems should be cleaned regularly and checked on a minimum daily basis to see that they are in proper working order.
- Efforts must be made to avoid sudden changes in diet.
- Suitable measures must be taken to ensure that the area around the water and feed troughs is not muddy or unhygienic.
- It is strongly recommended that food and water troughs are places under shelter, to encourage consumption and reduce spoiling of the contents.
- The size and position of troughs must be such that aggression and competition is minimised or eradicated. In cases where horned animals are kept, extra space will be required to accommodate their horns.
- Suitable measures must be in place to make provision for change of season and the resultant of deficient natural grazing or the availability thereof. Provision must be taken to be able to provide supplementary and additional feed during these times.

ICFAW recommendation on milking procedures

- Cows should be handled calmly, carefully and consistently as they are collected, milked and during post milking movement. Handlers should work quietly without rushing the cows. Milking parlours should be free from loud noises that frighten the animals. The use of excessive force in order to introduce animals into the parlours should be avoided.
- Electric prods or goads should not be used routinely.
- Milking equipment should be designed, constructed, managed, maintained, cleaned and disinfected so that the risk of injury, pain and disease in dairy cows is minimised.
- The tails of dairy cows must not be docked. It is permissible to trim the switch instead.Scientific research does not support claims that tail-docked cows have better hygiene or improved milk quality.[7,8,9,10,11,12,13] In addition, no differences in frequency of mastitis have been found between tail-docked and intact cows.[14]
- Long waiting times before milking can lead to dairy cows having insufficient time for eating and resting, and may also increase the risk of lameness[15]. Waiting time in collecting or milking areas before milking of each cow should be as short as possible. When any milking systems are used cows should have access to food and water independently of visiting the milking system.

ICFAW recommendation on inspection of cattle

- Dairy cattle should be inspected at least once daily, and twice when a robotic milking system is used. Sick or injured animals, peri-parturient cows and heifers, and animals displaying abnormal behaviour should be inspected more frequently. Calves should be inspected at least twice a day. During inspection attention should be paid to body condition, activity, condition of skin, eyes, ears, tail, legs, feet, udder, external genitalia and locomotion, as well as to the presence of external parasites, to the respiratory rate and depth, to the presence of coughing, to the condition of faecal droppings and to feed and water consumption.
- The detection of any abnormalities during these inspections should trigger immediate action, including consultation with a veterinarian where appropriate.

ICFAW recommendation on outdoor units

- Whenever weather conditions and the state of the pasture allows, dairy cattle should have access to pastureland during the grass growing season. Natural or artificial shelter from adverse weather conditions and predators should be available.
- Shelter should provide protection from extremes of heat, cold and windy conditions. Shade is necessary to prevent heat stress. Misting systems are also helpful during dry summer periods of excessive heat. Sheltered areas should provide comfortable lying space for all animals simultaneously and must also be dry and hygienic at all times
- Pastures should be well maintained, and kept free of poisonous plants and hazardous objects that could cause injury to the animals.
- Wet and muddy outdoor areas should be minimised with good planning and well drained land.

ICFAW recommendation on indoor units

- The indoor space for dairy cattle should allow them sufficient freedom of movement to be able to groom themselves without difficulty and sufficient room to stretch their limbs freely and to adopt unrestricted postures when lying down, rising, resting and sleeping.
- Passageways and doorways should be wide enough to allow free movement of people and animals including passing each other without difficulty.
- Dairy cattle indoors should have access at all times to a lying area of solid construction, bedded, sloped (but with an incline of not more than 4%[16]) and with sufficient space to allow all animals to lie down at the same time. Because the risk for behavioural problems, fear and pain associated with housing are highest for tie-stalls and lowest for cows at pasture, dairy cattle should not be tethered[17]on a permanent basis. or housed on fully slatted floors and where such systems are used they should be phased out. Cattle that are tethered should, as a minimum, be able to lie down, stand up, turn around and walk.
- If cubicles are used, their total space allowance should be at least 8.6 m^2 /cow. A lying area of at least 2.7m^2/ heifer (up to 400 kg) is necessary to avoid negative impact on welfare. Cubicle width should be at least 1.8 times cow hip width[18].
- The indoor climate for dairy cattle should be monitored so that temperature, air velocity, humidity, toxic gases, dust and other atmospheric conditions do not adversely affect the welfare of the cattle. As a guide, cattle should not be exposed for more than brief periods to levels of ammonia exceeding 20 ppm, carbon dioxide over

3000 ppm, hydrogen sulphide greater than 0.5 ppm and dust levels (total suspended particles) over 10 mg/m3[19].

- Good ventilation is important for reducing airborne pathogens and moisture produced by cows. Automatic ventilation equipment should be attached to an alarm and backup power source to prevent failure of the system.
- Facilities should be clean and safe for the animals and designed and maintained in a way that prevents reoccurring injuries due to sharp protrusions, broken or faulty equipment.
- Creosote for treatment of wood and other paints, preservatives or disinfectants should not be used if they give off toxic fumes or could otherwise jeopardize the health of the animals.
- Dairy cattle should not be permanently housed indoors. All dairy cattle should be provided with regular, daily, extensive pasture access for grazing during the grass growing season. During the rest of the year regular access for exercise to an outdoor area should be made available.

Special provisions for dairy cattle

Lameness

The incidence of foot and leg disorders, and thus lameness, in dairy cows is often high. Lameness is a painful condition that can lead to a great deal of suffering. It can be caused by a number of interacting factors such as excessive genetic selection for high milk yield, inappropriate nutrition, poor housing and environment.

ICFAW recommendation on lameness

- The effects of feed composition on legs and claws should be taken into account.
- Indoor housing should provide enough space for necessary exercise and allow for rest in different postures to keep legs and claws healthy.
- Floors should not be totally slatted and should not be hard and slippery. Contact with manure slurry should be minimised. Floors completely or partially covered with straw, sand, rubber or other soft material are best.
- To recognize problems with legs and claws early, the use of a locomotion scoring system[20] is advisable as are regular hoof baths and hoof trimming by a veterinary surgeon or a hoof trimming specialist.
- In genetic selection programmes, more weight should be given to fitness and welfare traits, even when these appear to conflict with selection for higher milk yield.
- Veterinary care should be sought.

Mastitis

Mastitis is an inflammation of the udder usually caused by bacterial infection. In many cases, it can cause the cow great discomfort and pain. If inadequately treated mastitis can lead to severe illness and even death.

ICFAW recommendation on mastitis

- Good milking techniques[21] should be applied and milking equipment should be maintained so as to prevent mastitis and udder injuries. Special attention should be paid to the vacuum level and pulsation rate which should be kept within manufacturers' specifications.
- Materials in direct contact with teats e.g. rubber, silicone, should be certified for this use, and must be cleaned and disinfected appropriately between milkings.
- Access to well managed pastureland, where the risk of infection is low, can have both preventative and curative effects on mastitis[22].
- Mastitis resistance and low somatic cell counts should be given high priority when selecting cattle for breeding.
- Veterinary care should be sought.

Production related diseases

These conditions occur as a result of the animals being unable to satisfy the metabolic demands of milk and calf production placed upon them, and include calcium deficiency, magnesium deficiency and acetonaemia(inadequate energy intake to maintain body reserves). These conditions can be treated, but prevention should be the primary focus to avoid suffering.

ICFAW recommendation on production related diseases

Production related diseases can be reduced by avoiding inbreeding and appropriate management of the calving interval, as well as attention to appropriate care and nutrition. More emphasis should be placed on lifetime productivity, as opposed to high yield, short life span cow genetics. Research shows that a reproductive management strategy with extended calving intervals of 15 months or more may have significant welfare advantages for high yield milking cows, without reducing overall milk production[23] .

Non-ambulatory cattle

Non-ambulatory (downed) animals are those who have lain down or fallen into a recumbent position and are unable to rise on their own. Highly productive dairy cows are particularly susceptible to becoming non-ambulatory, especially just after calving or at the end of their productive life. Therefore, it is essential that OIE animal welfare standards for dairy cows include provisions for the humane care and treatment of downed animals, or humane euthanasia if necessary.

ICFAW recommendation on non-ambulatory cows

- It is essential that spent cows are sent for culling while they are still fit for transport, if they are to be shipped off the farm. An animal which is likely to have difficulty rising and walking should be humanely euthanized on the farm, and should not be loaded onto a transport vehicle while still alive.
- It is unacceptable to drag, push or hoist an animal by a chain or any other equipment likely to cause pain or suffering. Non-ambulatory cows should only be moved with complete body support that prevents further physical damage and minimises stress. Downed cattle may be rolled onto a reinforced conveyer belt or other sled-like device

which can be pulled by a tractor for moving them to an area where they can receive treatment. . The conveyer belt or sled must be big enough to support and hold every part of the animal from the ground to prevent dragging.

- Downed cows should be elevated within five hours, or they may suffer additional physical damage due to crushed nerves and muscles. They should be moved to an area with soft, thick bedding. A specialized lifting harness can be used to aid cows back to their feet, although such devices must be used with appropriate consideration for the comfort and welfare of the animal concerned. If this is not available, rolling the animal to her opposite side every two hours can help prevent crush syndrome.
- Feed and water should be provided in an accessible way. If a cow cannot move, her feed and water should be within reach. Water should be available in a container that will not spill.
- Veterinary care should be sought without undue delay.
- Animals that are not likely to recover should be humanely euthanized without undue delay.

Housing during the winter period (or equivalent)

In climates with a distinct winter, or other inclement season such as a strong rainy season, a period of housing may be necessary. Keeping cows comfortable during the housing period is essential to ensure their welfare. However, evidence suggests this is not always achieved. Over the years, common breeds such as the Holstein Friesian have got bigger, but in many cases the housing system has not changed to accommodate this size increase. Consequently, some cows are longer than the lying space allocated to them, which can be detrimental to their welfare. Where necessary, this may require reconstruction of existing facilities or provision of new buildings.

ICFAW recommendation on housing during the winter period (or equivalent)

- Cattle should not be tightly tethered, except on a short-term temporary basis while awaiting e.g. veterinary treatment. Cattle that are tethered should, as a minimum, be able to lie down, stand up, turn around and walk.
- In loose housing systems the number of animals housed should not exceed the number of cubicles available. A number of spare cubicles (at least 10%) should be available. The design and dimensions of the passageways and of the exercising area should be such as to minimise or avoid adverse behaviour such as bullying, trampling, crushing.
- The length of a standing or a cubicle should be such that the animal can stand and lie on solid flooring. Cubicles and standings should allow for the species-specific movements of the animal when she stands up and lies down to avoid restricting these movements or causing the animals difficulties when lying down or rising.
- A lying area should be available which consists of a solid floor covered by straw, rubber mats or other suitable soft bedding to ensure comfort and to reduce risk of injuries. Cow comfort scores, based on the proportion of cows lying down in the resting area, should be used in order to ensure that bedding is comfortable[24]
- As a guide, dry cows or cows nursing a single calf in loose housing systems, except those with cubicles, require at least 4.65m2 lying area and a total area of at least 6.5m2. As a guide milking cows and cows nursing several calves in loose housing systems require at least 6.0m2 lying area and a total area of at least 8.5m2.

- Where cows calve inside they should be placed in a pen or a yard separated from other livestock. As a guide a calving pen for a single cow should be at least 12m2, and the shortest side should be at least 3 meters. The environment in such pens, e.g. floors, bedding, temperature and hygiene, should be appropriate to ensure the welfare of calving cows and new born calves.
- Young heifers should be separated from entire males before they start cycling and until they reach a weight at which they are suitable for service.

Breeding

Selective breeding policies over the years have primarily focused on increasing milk yields. This drive for increasing levels of production has been acknowledged by many as a key factor associated with many of the health and welfare problems suffered by modern dairy cows[25]. These problems may be further exacerbated by new breeding techniques such as embryo transplantation, in vitro embryo production, sexing of sperm and cloning[26].

ICFAW recommendation on breeding

- To avoid health and welfare problems suffered by modern dairy cows due to selective breeding policies focused on increasing milk yields, breeding should put more emphasis on traits such as robustness, longevity, resistance to infectious diseases and production diseases such as mastitis, low somatic cell counts.
- For heifers an appropriate bull should be selected to minimise the risk of dystocia due to relative foetal oversize.
- New breeding techniques should only be allowed if they are scientifically documented not to lead to pain, health problems, body disorders or birth problems either for mother or calf.
- Cloning should not be carried out nor should clones or their offspring be used on farms as cloning entails serious health and welfare problems for both cloned animals and their surrogate dams.[27]
- Embryo transfer should only be carried out with a general or epidural anaesthetic, by a veterinarian.
- Sexed semen should be used where available to prevent an overabundance of unwanted male calves[28].
- If a bull is used for natural mating, the floor should not be slatted or slippery. The bull should be kept with other cattle or, if alone, in sight of other cattle and with sufficient space for resting and exercise. Appropriate facilities for restraint are needed.

Calving

The natural inclination of a cow nearing parturition is to seek a protected, secluded location in which to give birth. Cows on pasture with sufficient space to choose a safe and comfortable birthing location are able to satisfy this behavioral need. If they are not on pasture, cows nearing their calving date should be separated from the rest of the herd and provided with a clean, dry, bedded area for comfortable labour and delivery.

ICFAW recommendation for calving

- Periparturient cows should remain undisturbed except when medical intervention is necessary for the health and safety of the cow or the calf. Restraints such as a stanchion may be required if birthing assistance is needed.
- Calving aids should not be used to speed the birthing process, only to assist in cases of dystocia, and should not cause undue pain, distress, or further medical problems.
- Cows should have free access to feed and water at all times..
- Newborn calves are susceptible to hypothermia. The temperature, ventilation, and air quality of the birthing area should meet the requirements of the newborn calf. Soft, dry bedding and supplemental source of heat can help prevent cold stress.
- Calving pens should be thoroughly cleaned and disinfected between births.

Calf rearing

Often calves do not survive long enough to take their first colostrum and many others die before they reach the age of 6 months[29]. Scouring (diarrhoea) is a major contributor and respiratory infections are common in calves between 8 and 20 weeks of age. Good husbandry and stockmanship are essential for successful calf rearing. The disposal of calves of low economic value is also an issue that can compromise animal welfare. Conventionally, dairy bull calves not used for beef or breeding are often killed soon after birth. This is ethically very questionable, even if those calves are humanely handled and killed.

ICFAW recommendation for calf rearing

- Calves are best off with their mother or a foster mother. Immediately after birth both male and female calves should get as much natural colostrum as possible, preferably from their mother, but if that is not possible, then from another cow or by hand-feeding. When hand feeding, two to four liters of colostrum should be provided by bottle during the first eight hours. Over the next 48 hours calves should receive approximately 6 liters of colostrum/whole milk daily, divided into several feedings. Calves should continue to receive colostrum during the first three to four days of their life[30]. After that, dairy milk or artificial milk should be provided and, from 7 days of age, roughage and other solid food should be additionally provided.
- If weaned and housed in single boxes this should be on straw, in view of other cattle and for no longer then the first two weeks of life, after which calves are best kept in groups on straw, hay, erogostis or grass.
- If kept individually, all calves should have enough room to lie down comfortably, stand up, turn around, and express normal grooming behaviour..
- To avoid diarrhoea and respiratory infections calves should be kept in stable groups and be offered a good diet and a stable climate with adequate ventilation.
- Calves from different sources should not be mixed.
- Artificial teats can help prevent cross sucking behaviour in group housed calves.
- Calves should never be kept in darkness, and when the outdoor climate permits, calves should have daily access to the outdoors.
- Natural or artificial indoor lighting should be provided during normal daylight hours, and the level of light should permit inspection of the animals for health and well-being.
- When calves are housed outdoors in hutches or pens, shelter that adequately prevents heat and cold stress should be provided. Calf housing should ensure comfortable temperatures at all times, and while enclosures for individual calves should be well

ventilated to prevent the build-up of moisture and ammonia, they should also be secure enough to eliminate draughts.

- Calves should not be tightly tethered at any time. Restraining calves temporarily when necessary for medical treatment is only allowed.
- Hutches, shelters and pens for calves should be located on well-drained ground to prevent the build-up of mud.
- All calves should have access to a clean, dry, solid bedded area with sufficient suitable bedding material for lying comfortably at all times.
- Calf areas should be thoroughly cleaned and disinfected between uses.

The removal of the calf from the cow

In natural environments, the relationship between the cow and her calf can remain close for more than 14 months, especially if the cow has no other calves,[31] and they can share a special bond for years.[32] Social bonding between mother and young is mediated by hormones and neurotransmitters that facilitate attachment and maternal behaviour.[33] When allowed to wean naturally, calves gradually incorporate grass and other forage into their diet[34] until they no longer nurse by 7-14 months of age[35]. The needs of the calf are best met by the mother cow in an appropriate environment so that the calf can nurse and interact with other calves. However, conventional industry practice is to remove the calf from the cow within 24 to 48 hours of birth. Concern has been expressed that removal of the calf at such an early age is not in the welfare interests of the cow or calf. Others argue that if it is not possible to keep a calf with its mother for six months, as in a beef suckler herd, then the least cruel act is to separate them as soon as possible, because later separation, after a strong bond has formed, will be even more stressful for mother and calf.

ICFAW recommendation on removal of the calf from the cow

- Immediately after birth, the cow should be able to lick her calf. If she is not able to do this, care should be taken to ensure that the calf's mouth and nostrils are clear of foetal membranes and mucus. The calf's navel should be treated with suitable antiseptic.
- It is preferable to leave the calf with his mother as the separation is stressful. But, if the calf is to be separated from its mother then sooner seems to be better than later, i.e. within 48 hours seems the least stressful.[36,37,38]
- If the calf is to stay with its mother, they should remain together for at least three months, and preferably six. The weaning process should be gradual. Suckling should decrease naturally over time when solid feed, roughage and water are provided and through temporary separation of the mother with only visual contact in addition to short periods of separation, when the cow is milked.
- Weaning and social regrouping are both stressful events. To avoid additive stress effects, calves should be weaned before they are mixed into group housing.

Disbudding

Most dairy cattle are born with horn buds that have the capacity to develop into mature horns. When cattle are kept in stable groups and with enough space, social and aggressive behaviour among horned cattle does not usually lead to problems. But most indoor housed dairy cattle don’t have enough space and in this crowded environment, horns may cause injuries to other animals and to persons handling them.

ICFAW recommendation on disbudding

- Dairy cattle should be kept in stable groups with enough space so that horns do not lead to injuries during social and aggressive behaviour. Where horns are a problem, disbudding of young calves, rather than dehorning of adult cattle, should be carried out.. Disbudding should be done in the first five weeks of life by a veterinary surgeon with a hot iron under anaesthesia and with suitable and adequate analgesic administration thereafter[3940]. However both disbudding and dehorning should be avoided by the breeding of polled cattle.
- Chemical cauterisation should not be carried out as it is a painful protracted process.The paste can leak caustic chemicals from the site of application, damaging the skin and eyes of the calves, the udder of mother cows, and even other calves[4142]
- Horned and dehorned cattle should not be mixed.

Hot and cold branding

Two types of branding are commonly used on cattle to identify ownership: hot iron and freeze branding. Both hot and cold branding techniques are mutilations, and cause intense pain as the branding implement is held to the hide for several seconds, producing a permanent scar. Freeze branding is painful but is thought to be less painful than branding with a hot iron.[43,44]Both methods should be avoided as nowadays there are other ways to mark cattle (e.g. electronic identification or ear-tags) and to recognize individual animals for instance when a cow is in heat.

Cattle are never to be branded on the face or any particular sensitive areas or more than once on same spot.

ICFAW recommendation on branding

Hot iron branding and freeze branding should not be used. Alternative methods for marking cows, using ear tags, microchips, collars, singe hairing, or, when possible, a step counter or a camera in the stable should be used to recognize individual animals. However, if branding is unavoidable freeze branding is preferable. Freeze branding should not be carried out on calves and should only be performed by trained, competent persons, with appropriate pain relief. Freeze branding is only done as a management aid, when checking individual eartags is unrealistic.

Special provisions for calves

Housing

Veal crates (narrow, individual pens, with slatted or concrete floors and no bedding) were banned throughout the European Union at the end of 2006 and are being phased out by several U.S. states including California, Colorado, Ohio, Michigan, Maine and Rhode Island. However, they are still permitted by law in most other parts of the world. From an animal welfare perspective this type of housing is totally unacceptable due to lack of space and natural social contact, the absence of bedding or other soft substrate to lie on, and the inability of calves to express normal behaviour such as walking, playing, and grooming.

Calves confined to a narrow stall can have locomotive problems such as stumbling and falling when they are eventually led out of the veal crate.[45]

ICFAW recommendation on housing of calves

- Veal crates should not be used.
- Calves separated from their dam should be kept in groups. However, they may be confined in individual pens until the age of two weeks provided that the pen is large enough to enable the calf to turn round without difficulty. They should not be isolated in individual pens after the age of two weeks unless a veterinarian certifies that this is necessary for veterinary treatment and, when a veterinarian so certifies, the pen should be large enough to enable the calf to turn round without difficulty.
- As a guideline, the width of any individual pen for a calf of two weeks of age should be at least 100cm. For calves up to eight weeks of age the width should be at least 110cm. The pen length shall be at least equal to the body length of the calf, measured from the tip of the nose to the caudal edge of the tuber ischii (pin bone) plus 30 cm[46].
- Individual pens for calves (except those for isolating sick animals) should not have completely solid walls, but open walls at a height which allows the calves to have direct visual and physical contact with other calves.

Group housing should be the standard.

- Fully slatted floors should be phased out. If used, the unobstructed space allowance available to each calf weighing less than 200 kg should be at least 2.2m2, while for calves 200 kg or more at least 2.5m2 should be provided[47].
- Calves should have a lying area of sufficient unobstructed floor space to be able to lie down simultaneously without hindrance.
- Each calf should be able to turn around, rest, stand up and groom comfortably without any hindrance or touching sides.
- As a guideline for solid floors, the unobstructed space allowance available to each calf weighing less than 200 kg should be at least 3.0m2 total area, of which at least 2.0m2 should be bedded. For a calf weighing 200 to 300 kg, at least 3.4m2 total area, with at a bedded area of at least 2.4m2,is required.

Diet

Normally a calf drinks colostrum from its mother directly after birth, starts eating roughage after approximately seven days and continues nursing until about six months of age.
In veal farming calves are often kept on a milk and milk replacer diet with little or no roughage for six months. This is detrimental for the development of the rumen and leads to health problems and abnormal behaviour.

ICFAW recommendation on the diet of calves

- Newborn calves should receive sufficient colostrum (re Calf Rearing paragraph) , as soon as possible after their birth and within the first six hours of life.
- All calves should be provided with an appropriate diet adapted to their age, weight and behavioural and physiological needs, to promote welfare and allow normal behaviour and development of the rumen.

- Calves over seven days old should receive in average a daily ration of at least 200 grams of roughage. At 15 weeks of age or older, at least 500 grams of roughage, of which at least 10% is long fibre feedstuff, should be provided.
- To promote welfare the feed should contain sufficient iron to ensure an average blood haemoglobin level of at least 7,5 mmol/litre.
- All calves over two weeks of age should have access to a sufficient quantity of fresh, clean, potable water, ad lib, as well as roughage.

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[1]The member organisations of the International Coalition for Animal Welfare, representing more than 12 million individual supporters internationally, are: Compassion in World Farming, Eurogroup for Animals, the Humane Society of the United States and Humane Society International, the International Fund for Animal Welfare, the Japanese Farm Animal Welfare Initiative, the National Council of SPCAs in South Africa, the Royal Society for the Prevention of Cruelty to Animals, and the World Society for the Protection of Animals.

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