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The IDF Guide to Good Animal Welfare in Dairy Production 2.0



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The IDF Guide to Good Animal Welfare in Dairy Production 2.0

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This publication updates the IDF Guide to Good Animal Welfare in Dairy Production from 2008

THE IDF GUIDE TO GOOD ANIMAL WELFARE IN DAIRY PRODUCTION 2.0

ABSTRACT

The updated IDF Guide on Animal Welfare aims to promote the implementation of good animal welfare practices in dairy production at global scale and refers to key standards (OIE Terrestrial Animal Health Code, and ISO Technical Specification 34700 :2016). This guide provides recommendations on : stockmanship, feed and water, physical environment, husbandry practices and health management. To assess the level of welfare for the animals in dairy production systems, example animal welfare outcome measures are proposed.

Keywords : *Animal Welfare, Good Dairy Farming Practice, Standards, Welfare measure for dairy cattle*

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TABLE OF CONTENTS

Foreword	1
Foreword from the World Organisation for Animal Health.	1
Foreword from the Food and Agriculture Organization of the United Nations	3
Foreword from the International Dairy Federation	5
Acknowledgements	7
Introduction	9
Purpose of the IDF work.	9
Does this guide relate to other Animal Welfare Standards ?	9
Who should use this document ?	10
What is Good Animal Welfare ?	10
1. The Benefits of Good Animal Welfare	11
2. The Five Action Areas for Good Animal Welfare	13
2.1. Stockmanship	14
2.2. Feed and Water	15
2.3. Physical Environment	17
2.4. Husbandry Practices	20
2.5. Health Management	24
3. ISO Technical specification ISO/TS 34700 :2016 - Animal welfare management – General requirements and guidance for organisations in the food supply chain	29
Appendix 1 : Summary and connection between this Guide and various OIE guidelines and standards.	33
Appendix 2 : Glossary of terms.	39
References	41

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FOREWORD

FOREWORD FROM THE WORLD ORGANISATION FOR ANIMAL HEALTH

In 2002 the World Organisation for Animal Health (OIE) included animal welfare into its mandate. Since then, significant advances have been made in the development of science-based animal welfare standards, which are adopted by our 182 Member Countries following an inclusive engagement process. Science-based animal welfare recommendations have been codified in international standards and included in the Terrestrial Animal Health Code and the Aquatic Animal Health Code. Among these is Chapter 7.11. on Animal welfare and dairy cattle production systems, developed with the support of international experts in dairy cattle health and welfare and adopted in 2015. These standards provide essential guidance to OIE Members to improve animal welfare and the wellbeing of their owners globally.

The OIE's role and processes for setting science-based international standards for animal welfare are now well established within the strategy and structure of the organisation. As a reflection of this work, the OIE adopted the Global Animal Welfare Strategy during the 85th OIE General Session in May 2017.

Through this Strategy, the OIE has specifically acknowledged the importance of broad engagement with stakeholders and inter-disciplinary approaches to animal welfare, with a more active public-private partnerships for a more efficient commitment in implementing the OIE standards. A recent example of this Strategy is the support to the development of the ISO Technical Specification TS 34 700, adopted in 2016, which provides an operational framework for private and public sector cooperation to integrate OIE animal welfare standards into commercial livestock enterprises.

Synergies with our partner associations such as the International Dairy Federation result in the integration of the ISO tool and the OIE standards in this document to contribute to the common goal of improving animal welfare in the global dairy industry. Therefore, we welcome the new version of the IDF guidelines on animal welfare in dairy cattle, which will certainly support the dairy industry to meet the increasing demand of our society for a high level of welfare for livestock production systems.

Monique Eloit
Director General
World Organisation for Animal Health (OIE)

Paris, April 2019

FOREWORD FROM THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

FAO congratulates the International Dairy Federation for the timely publication of this Guide to Good Animal Welfare in Dairy Production 2.0.

FAO recognizes the importance of good animal welfare practices, which benefit the producers, their animals and the society as a whole, and supports their implementation through a variety of awareness raising and capacity development activities, in partnership with several stakeholders. FAO believes that global adherence to animal welfare principles has a positive impact on poverty eradication, food security, public health, climate change and the environment. In many regions, a secure and high-quality supply of food depends on the health and productivity of animals, and these in turn depend on the care that animals receive. Good animal welfare practices contribute also to improving the immunity of animals, reducing diseases and the need for veterinary drug use, especially antimicrobials.

Animal welfare is gaining momentum in the global agenda. The international community, governments and industry have integrated animal welfare into sustainable approaches to food security and agricultural development. The World Organisation for Animal Health has codified animal welfare recommendations in international standards and included them in its Terrestrial Animal Health Code and the Aquatic Animal Health Code. However, in many countries animal welfare standards and practices are not sufficiently implemented. For this reason, FAO works to develop the capacities of governments authorities, producers and livestock industries and to enable them to be aware of those standards and practice, translate them into their legislation and codes of practice, implement them and by doing so, enhance the welfare of their farm animals. FAO continues its efforts to intensify collaboration and partnerships among all parties with the final aim of mainstreaming animal welfare in all livestock production systems worldwide.

FAO emphasizes the need to follow a multidimensional approach that takes into consideration cultural, economic and social differences between and within countries. Knowledge sharing, education, training and capacity development are the keystones of FAO strategy on animal welfare.

This publication is a valuable complement to the IDF/FAO Guide to Good Dairy Farming Practice and an important, additional step towards the improvement of the welfare of dairy animals and the development of the sector. FAO has a long-standing history of collaboration with IDF and it is committed to strengthen it even further and translate it in joint efforts to make the best use of this publication.

Bukar Tijani
Assistant Director-General
Food and Agriculture Organizations of the United Nations (FAO)

Rome, April 2019

FOREWORD FROM THE INTERNATIONAL DAIRY FEDERATION

The dairy sector is committed to implementing best practices to ensure animal welfare based on scientific evidence and reference standards. With the publication of the IDF Guide on Animal Welfare in 2008 and its close collaboration with international bodies (OIE, FAO), the International Dairy Federation (IDF) took the leadership in establishing reference documents on animal welfare for the dairy sector.

Since then, public awareness of animal health and welfare has heightened. The IDF is actively contributing to the work on animal welfare of the World Organisation for Animal Health (OIE), and the International Organization for Standardization (ISO). This new IDF Guide on Animal Welfare refers to key standards (OIE Terrestrial Animal Health Code - Chapter 7.11 Animal welfare and dairy cattle production systems, and to ISO Technical Specification 34700 :201) and provides guidelines to help dairy farmers and milk processors interpret and implement them based on scientific evidence and expertise.

Farmers know that healthy cows produce quality milk, and the dairy sector is wholly committed to developing progressive animal health and welfare initiatives that provide safe, nutritious and secure dairy products to global consumers. The update of this IDF Animal Welfare Guide shows how the dairy sector is working proactively to safeguard consumers trust while maintaining a viable, sustainable dairy industry promoting science-based animal welfare standards.

We are proud to contribute to the development of animal welfare expertise that brings benefits to animals, farmers and society.

Caroline Emond
Director General
International Dairy Federation (IDF)

Brussels, April 2019

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The Guide to Good Animal Welfare in Dairy Production 2.0 was prepared by the International Dairy Federation Action Team on Animal Welfare. This guide updates the previous IDF Guide to Good Animal Welfare in Dairy Production (2008).

This Guide was prepared by Luc Mirabito (FR), Jenny Jago (NZ) and Nita Harding (NZ) with contributions from Olav Østerås (NO), Warren Skippon (CA) and Helen Dornom (AU). Their active input made the production of this document possible. We would like to give a special thanks to Dr María Sánchez Mainar (IDF Head Office) for her active contribution to this document and for coordination of the work.

Many thanks also go to the rest of Action Team members as well as the Standing Committee Members on Animal Health and Welfare and Farm Management, and the representatives of the World Organisation for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO) for the revision of this document.

INTRODUCTION

Purpose of the IDF work

Since the adoption of the first IDF guide ten years ago, animal welfare, including health, has become one of the major challenges of the animal production sector. In most countries, public awareness and expectations have been raised. Hence, it's important that the dairy sector works proactively to ensure high standards of animal welfare and to safeguard consumers trust.

Furthermore, during the last decade, new scientific data, tools, and animal welfare standards have been published (OIE, 2018 ; ISO, 2016). Precision dairy farming has become a reality and new questions on global health have emerged (such as the extent to which use of antimicrobials in livestock contributes to antimicrobial resistance or the sustainability of livestock farming).

Does this guide relate to other Animal Welfare Standards ?

This document shows how to achieve the goals set by the OIE and ISO Standards on a practical level (see appendix 1 for a more comprehensive view) :

OIE Standard (Chapter 7.11.) describes the criteria (or measurables) to ensure the welfare of dairy cattle (as the global standard for assessment)

This standard describes outcome-based criteria, specifically animal-based criteria which can be used as indicators of animal welfare. Consideration should also be given to the design of the system and animal management practices. The use of these indicators and appropriate thresholds should be adapted to the different situations in which dairy cattle are managed. These criteria can be considered as tools to monitor the impact of design and management, given that both of these can affect animal welfare.

ISO Technical specification ISO/TS 34700 :2016 - Animal welfare management – General requirements and guidance for organizations in the food supply chain (as the standard most used by the dairy sector)

This standard was published in December 2016. Its purpose is to ensure the welfare of animals raised for food or feed production around the world through : 1) adoption of a management tool for the implementation of the animal welfare in accordance with the principles of the OIE TAHS (Section 7) ; 2) provision of guidance for the implementation of public or private animal welfare standards and relevant legislation that meet at least the OIE TAHC (Section 7) ; and 3) facilitation of the integration of animal welfare principles in business-to-business relationships.

Who should use this document ?

This document is provided to raise producer awareness of animal welfare and encourage the implementation of good welfare practices on dairy farms. It is intended for use by farmer organisations, dairy processors and farmers (producers).

What is Good Animal Welfare ?

An animal is in good state of welfare if it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear and distress. Animal welfare refers to the physical and mental state of the animal in relation to the conditions in which it lives and dies. This differs from the treatment that an animal receives which is covered by other terms such as animal care, animal husbandry, and human treatment.'

Animal care is the application of sensible and sensitive animal husbandry practices to livestock on the farm as a lead up to good animal welfare. Good animal welfare requires the pursuit of disease prevention strategies and adoption of appropriate veterinary care, shelter, management and nutrition, a stimulating and safe environment, humane handling and humane slaughter or killing (OIE Article 7.1.1). In dairy production systems, this will include not only animals producing milk, but also the newborn calves, pre-weaned calves, young female animals to be used as replacements, dry cows, breeding bulls and males in rearing units.

Good animal welfare has not only a positive effect on production, but also on the economic performance of the farm. Good animal welfare outcomes are also linked to human (farmers) wellbeing as animal suffering usually also has a negative effect on human wellbeing and vice versa.

Good dairying practice of animal welfare is underpinned by the framework provided in The Five Freedoms that describe an animal's fundamental needs (FAWC 2009). Animal management practices should aim at keeping animals :

- Free from thirst, hunger and malnutrition
- Free from discomfort
- Free from pain, injury and disease
- Free from fear and distress, and
- Able to engage in normal patterns of animal behaviour

The use of animals carries with it an ethical responsibility to ensure the welfare of such animals to the greatest extent practicable. (OIE Article 7.1.2 (6))

1

THE BENEFITS OF GOOD ANIMAL WELFARE

For a dairy farmer to be successful at producing milk of good quality, the welfare needs of dairy animals must be met. Welfare needs should be considered from the perspective of the animal. An animal's basic needs are linked to addressing the essentials for life in the first instance, beyond which the achievement of good welfare centres around the availability of improved living conditions that may ultimately translate into improved productivity.

Studies have shown that the provision of living conditions that focus on the welfare of the animals, such as appropriate bedding, space and access to water, results in improved milk yields, fewer cases of clinical mastitis and teat lesions, and a reduced rate of removal of cows. Studies in pasture-based dairy systems show a correlation between stockperson attitudes and behaviour, and cow behaviour and productivity, with fear of humans accounting for 19% of the variation in milk yield between farms (Breuer et al. 2000, Hemsworth et al. 2000). The same is found in cubicle systems where milk yield is related to resources giving better animal wellbeing, like soft bedding, access to water and space (Ruud et al. 2010, Næss et al. 2011).

By extending the approach of “One health” theme used for human and animal health, a “One welfare” approach may be used to highlight the interconnection between animal welfare, human wellbeing and the environment and to promote objectives such as food security, safety, public health, sustainability, reduced human suffering and improved productivity within the dairy sector (FAO, 2009 ; OneWelfare, 2018).

2

THE FIVE ACTION AREAS FOR GOOD ANIMAL WELFARE

Dairy production systems vary widely around the world : species are predominantly buffalo and cattle, but large numbers of goats and sheep are also farmed for milk production. Herd size varies from single female animals to many thousands. Feeding systems vary from extensive forage or grazing to full total mixed ration. Animals may be either fully pastured or fully housed.

To ensure that this guide is broadly applicable, generic principles that define best management practices are outlined. Hence, the focus is on the measurement of success based on outcomes for the animal rather than the allocation of resources into the system.

This guide identifies five key Action Areas to be considered when developing and implementing quality management systems for dairy animal welfare :

- Stockmanship
- Feed and water
- Physical environment
- Husbandly practices
- Health management

Each Action Area has an associated set of principles that can be used to further define best management practices.

The welfare of animals in dairy production systems can be assessed and monitored using a combination of measures that indicate the level of delivery within the five action areas. These will be preferentially measures of the responses of the animals to system, as well as the inputs into the particular system to meet the animals' needs where there is science-based evidence or when the measures of the response are not feasible (OIE Article 7.1.4). The selection of parameters to be used will, therefore, be specific to the dairying system under consideration. It may include elements of the following :

- o Observation of animal behaviour that indicates:
 - stress or distress (e.g., incessant vocalisation)
 - hunger or thirst (e.g. incessant vocalisation, queuing at resources, aggression)
 - social instability (eg aggression)
 - painful milking procedures (eg dunging, kicking)
 - heat stress (eg increased respiratory)
 - slippery flooring (eg gait score)
- o Inappropriate feeding (e.g. stereotypical behaviour).
- o Behavioural tests: Fearfulness of humans because of ill treatment can be evaluated through flight distance assessment.
- o Assessment of body condition score.
- o Assessment of locomotion score and foot condition.
- o Assessment of relevant physiological indicators such as reproductive efficiency, milk yield, growth rates.
- o Assessment of environmental stressors such as excessive heat or cold, lack of shelter, faecal accumulation and stocking density in housed, pasture and combination systems.
- o Assessment of presence and severity of lesions indicative of improper barn environment and lack of cow comfort such as hock lesions, neck wounds, open sores or other injuries.
- o Assessment of the level of training and skill of stockpersons and availability of veterinary assistance.
- o Assessment of the adequacy of food and water the physiological needs of the animals by monitoring growth rates and milk yield.
- o Assessment of health management plans and records of animal treatments including incidence of disease, mortality and culling rates, and complications from common procedures.
- o Assessment of the physical appearance of the animals, and in particular, cleanliness and presence of ectoparasites.
- o Assessment of the use of genetically appropriate animals for the location and climate. Where genetic selection is used for breeding replacement animals this should always take into account the health and welfare of the animals in the specific location and climate and include selection for disease resistance.

2.1. Stockmanship

Good stockmanship underlies the success of the dairying operation. A good stockperson will have empathy for the animals in their care and ability to identify their needs and will take action to provide their requirements. A good stockperson should have knowledge about the needs and typical behaviour of the animals they are taking care of.

The handling of animals should foster a positive relationship between humans and animals and should not cause injury, panic, lasting fear or avoidable stress. Anyone handling, being

the owner, or responsible for animals, should have sufficient skill and knowledge to ensure that animals are treated in accordance with this principle.

- o Those responsible for the care of animals should be competent and well-trained or experienced and have management skills appropriate to the scale and technical requirements of the production system or have appropriate supervision.
- o To ensure proper care of the animals, it is of relevance that sufficient staff is available for routine and peak activities. Veterinarians and other experts should be available when needed to advise on the care of the animals.
- o Knowledge of normal appearance and behaviour of animals is essential for monitoring their health and welfare ; a competent operator should be able to understand the significance of a change in behaviour of the animals.
- o Those in charge of animals should be able to recognise early signs of distress or disease so that prompt veterinary advice or intervention can be sought.
- o A competent operator should be able to handle animals compassionately and in an appropriate manner, anticipate potential problems and take the necessary preventative actions. Animal handling equipment should be available where necessary.
- o People carrying out veterinary related tasks should be able to demonstrate competency especially for husbandry procedures that could cause suffering, e.g., disbudding/dehorning and for animal obstetrics.
- o Educational programmes for farmers should include basic knowledge on animal behaviour and good practices leading to good animal welfare.
- o In some countries and supply chains there may be farm quality assurance programmes relating to animal welfare. Where these exist, operators should :
 - Be familiar with and comply with all relevant national regulations and standards, and key industry standards/assurance schemes relating to product quality and safety, and to animal welfare ;
 - Ensure records are maintained to demonstrate compliance with regulations and assurance schemes ;
 - Keep themselves updated on technological developments so as to prevent or correct welfare problems ;
 - Emphasise the importance of training of personnel ;
 - Include animal handling procedures as a competence in farm quality assurance systems.
- o All domestic transport should be in accordance with national regulations wherever these exist.

2.2. Feed and Water

Good nutrition is the fundamental requirement for dairy animals and it is considered as one of the biggest contributors to animal welfare. Improper nutrition not only affects productivity but also the health, behaviour and welfare of an animal (FAO, 2013 ; FAO,

2012). Animals should have access to sufficient feed and water, suited to the animals' age and needs, to maintain normal health and productivity, and to prevent prolonged hunger, thirst, malnutrition or dehydration.

The general principles for ensuring adequacy of food and water are that :

- o The diet provided, and water allocated, must take account of the animal's physiological state, i.e. lactation, pregnancy and growth, nutritional composition and quality of feed, and climatic factors. Milk yield in adult female animals, and growth rates of young animals should be monitored for unexpected changes.
- o Animals must have access to sufficient good quality food and drinking water to maintain good health, meet their physiological and production requirements and minimise metabolic and nutritional disorders. A balanced ration that supplies the energy and metabolic needs of the lactating dairy animal is essential.
- o Water supplies should be offered with sufficient access, be of good quality, regularly checked and maintained.
- o Growing animals should be fed well so as to achieve optimal growth to meet the requirements for replacement dairy animals.
- o Ensure that feed and water supplied do not contain levels of biological, chemical or physical substances, which are harmful to health. Animals must be protected from toxic plants and chemicals or any other harmful substances that they could ingest. Run-off from effluent and chemical treatments of pasture and forage crops should not enter stock water supplies. Feed should be stored correctly to prevent spoilage and ensure that it does not become contaminated or deteriorate.
- o Changes of feed should be introduced into the diet gradually.
- o Body condition scores at cow level should be monitored at regular intervals especially before and at calving, peak lactation and drying off. Appropriate minimum levels should be set beyond which urgent remedial action must be taken or veterinary advice sought. Fat cows should also be avoided.
- o Feeding and watering systems must be monitored to ensure they are in working order and any problems promptly rectified. Where appropriate, alarms should be installed to alert operators of problems. A plan should be in place to ensure such systems can still be operated in emergencies, e.g. back-up generators.
- o Supplements such as minerals and vitamins need to be formulated to maintain good health, and this should be done with professional advice and taking into account potential micronutrient deficiencies or excesses in the geographical area.
- o Feeding stations, and water troughs or drinkers, should be located so that all animals can access these often enough and for sufficient time to obtain sufficient food and water for good health on a daily basis and to minimize the risk of agonistic behaviours. The number of animals per water trough, and the grazing area and /or feeding space per animal should be assessed to ensure this is the case.
- o Feeding stations, and water troughs and drinkers, should be designed and constructed to ensure the supply of sufficient food and water, ensure the ready access of all animals to feed and water, and that the equipment does not contaminate the feed or water, or cause injury to the animals.

- o Where cattle are maintained in outdoor conditions, extra food and water supply should be provided when there is a risk of prolonged, reduced nutrition.

Young Dairy Animals

- o New born dairy animals must receive adequate colostrum, both quantity and quality, or, if such is not available, appropriate commercial colostrum substitute. First colostrum feeding is preferably as soon as possible or latest within six hours of birth.
- o In situations when pre-weaned calves cannot be allowed to suckle, they should receive liquid feed in a way that fulfils their need to suckle (i.e. through a teat bucket or the like).
- o Pre-weaned calves should not be weaned off liquid feeds until the rumen has developed sufficiently to allow it to utilise solids and to meet their nutritional needs from solids.
- o Pre-weaned calves, especially newborn calves, should be fed milk at least twice daily to ensure sufficient intake.
- o Weaned replacement heifers should have access to balanced solid feed of good quality from an early age to promote good rumen development. Cud (partly chewed food regurgitated by ruminants) feeding may be a good alternative for the development of rumen physiology in weaned replacement heifers.
- o All feeding equipment used for young animals should be thoroughly cleaned after use.
- o Feeds and grassland/pasture use should be monitored to deliver appropriate quality and amount of feed to growing weaned replacement heifers.

2.3. Physical Environment

Dairy cattle in commercial production may be kept in housed or pastured systems, or a combination of both :

- o Housed : These are systems where cattle are kept on a formed surface, indoors or outdoors, and are fully dependent on humans to provide basic animal needs such as food, shelter and water. The type of housing will depend on the environment, climatic conditions and management system. The animals may be housed unrestrained or tethered in the housing system.
- o Pastured : These are systems where cattle live outdoors, and have some autonomy over diet selection, water consumption and access to shelter. Pastured systems do not involve any housing except that required for milking.
- o Combination systems : These are systems where cattle are managed in any combination of housed and pasture production systems, either simultaneously, or varied in accordance with weather or physiological state of the cattle.

The physical environment, including the substrate (walking surfaces, lying surfaces etc.) and the different equipment used (handling and restraining, fences, automatic systems etc.)

should be suited to the species so as to minimize the risk of injury, pain and transmission of diseases or parasites to animals.

Milking environment

- o The ground should have a non-slip surface, be well drained and free of mud and manure.
- o Proper ventilation is important to maintain adequate air quality, prevent build-up of effluent gases (e.g. ammonia) and to remove excess heat and moisture.
- o If cattle do not have sufficient access to natural light, supplementary lighting which follows natural periodicity should be provided for their health and welfare.
- o Dairy animals can be milked inside or outside of housing.

Where dairy facilities (milking parlours and handling yards) exist :

- o Dairy facilities should be designed, constructed and maintained to minimize obstructions and hazards that have the potential to cause distress or injury.
- o Floors should provide satisfactory footing and be easily cleaned.
- o Fences, gates and loading ramps should be designed to allow good animal flow and prevent injury.
- o Head bails and crushes should be designed to allow efficient handling of cattle, not endanger the animal or the operator and allow easy release of the animal.

Feedlot areas and yards for holding animals

- o The surface type and area should be appropriate for the nature and frequency of use to ensure that animals do not suffer discomfort.
- o Holding areas should be designed to enable sufficient resting/recumbence time ; as well as reduce underfeeding and the risk of mastitis and lameness associated with confinement.

Housing of dairy animals

- o Housing systems should be designed, constructed, operated and maintained to meet the needs of the animals. Requirements will vary depending on the environment, climatic conditions and management system.
- o Bedding areas should be well drained, dry, safe and comfortable, and cleaned regularly and/or bedding renewed as it becomes soiled. Where there is a concrete surface that is used for lying this should be covered with a soft appropriate bedding material.
- o Sufficient space should be allowed to prevent discomfort and ensure that the animals are able to meet their natural behavioural requirements and postural changes, such as for lying down/resting, moving about, eating, drinking and the elimination of faeces and urine, and without being subjected to excessive social pressure and aggressive behaviour. Overcrowding increases social and microbiological stress in all age groups, and therefore it increases risk of disease.

As a general guideline, the minimum space provided should be 1 m² per 100 Kg liveweight, but the actual space allowance that is provided should ensure that each animal within a group achieves adequate lying/resting times, adequate access to food and water and is not subjected to excessive aggression. Where there is only individual spaces for cows, or other cattle, to rest, there should be at least one space provided per cow/animal.

- o Social grouping of animals should be managed in accordance with the age and physiological status of the animals and by maintaining previously established groups to maintain preferential relationships and thus favour positive social behaviour, and minimize injury, distress and chronic fear.
- o The accommodation and management practices followed should ensure that air circulation, air quality, temperature, humidity and concentrations of ammonia, carbon dioxide and slurry gases are kept within limits which support good animal health and are not aversive to animals. Ammonia levels should be kept below 25ppm. Management of temperature includes management of both excessively cold and hot temperatures, and animals should be able to use their natural methods of thermo-regulation.
- o Lighting should be sufficient to enable inspection of animals, but not so intense as to cause discomfort and ensure that animals can maintain a reasonable circadian pattern of light and dark periods. Groups of young animals should be kept to a reasonable size to minimise social and microbiological stress and sorted by size/age to prevent bullying.
- o Regular manure evacuation should be provided and there should be sufficient drainage in housing and walkways.
- o The volume, intensity and duration of noise in animal housing should be managed to ensure that animals are not exposed to sudden or unexpected noises. Animals should not be exposed to an average of more than 85 dB over 8 hours. Equipment should be constructed, located, operated and maintained in a manner that minimises noise.
- o Flooring should be designed and maintained to minimise slipping and falling, promote good foot health and reduce the risk of claw injuries, and to enable cleaning to maintain good hygiene and minimise the risk of transmission of diseases and parasites.
- o Gates and alleys should be designed and operated to allow free movement of animals, with no protrusions that may cause injury as animals move along alleys or through gates.
- o Animals should not be permanently tethered. If animals are tethered they should be able to lie down, stand up, maintain normal body posture and groom themselves unimpeded. They should also be able to interact with neighbouring animals.
- o Young animals, especially those that have been separated from their dam, need soft, dry bedding, a draught free enclosure, and supplemental heat, if necessary, to prevent cold stress.
- o Pre-weaned calves should not be isolated and should preferentially be housed in small groups.

- o Weaned calves may be kept in housed, pastured or combination systems, and in all systems should be kept in groups.

Management of animals kept in outside situations

- o Equipment and a management plan should be available to deal with extreme conditions to ensure animals are protected from adverse weather conditions and the consequences thereof which includes stress factors such as weather extremes, forage shortages, unseasonable change and other conditions causing cold or heat stress.
- o In hot conditions shade or other means of cooling should be provided. In cold conditions shelter and additional feed inputs should be provided.
- o Where exposure to weather conditions results in development of health problems remedial action should be taken to minimise the consequences of such exposure.
- o Young animals that have been removed from their mothers should be provided with shelter from conditions that are likely to affect their welfare adversely.
- o Tracks and races between milking and housing areas, and grazing areas should be laid out and managed to minimise walking distances. Tracks and races should be constructed and maintained to minimise any welfare risks to animals, and in particular to minimise leg and foot health problems.
- o Stocking density in pasture systems should be determined by the available food and water supply and the pasture quality.
- o When animals are grazed intensively on crops, and the conditions underfoot become wet and muddy, a suitable area that provides a dry surface should be provided for the animals to lie down and rest.
- o Protection from predators should be provided, when necessary, for animals grazing at pasture.

Disaster management

A plan should be in place to evacuate animals from buildings in the case of fire, and for the management of animals in the event of a natural disaster such as an earthquake or flooding where relevant. In emergency situations, interventions typically cover provision of animal health services, emergency feeding and water supplies, shelter provision, destocking (marketing, slaughtering) and restocking. The need for a particular intervention depends on the nature of the emergency, the local context and the phase of the emergency (FAO, 2016).

2.4. Husbandry Practices

Handling animals

- o Handle animals with care and in a calm and consistent manner considering their natural behaviour at all times in a way as to minimise risk of injury and distress.

- o Stock handlers should be familiar with individual animal behaviour and examine all animals at least once daily when they are milked, or in the paddocks or barns.
- o All animals, in particular young animals and stock bulls should be managed and handled in a manner that promotes good temperament and docility.
- o Take account when handling animals that they have different vision for distance and detail. They also should not be subjected unnecessary loud noises. Cattle can hear high frequency sounds above the hearing range of people so may respond to noise that people can't hear. They also have a good sense of smell, better than people, and have sensitive skins so will even feel gentle touching.
- o Use handling aids e.g., goads and dogs, carefully so as not to cause pain or distress. Dogs used for handling animals must be appropriately trained and under full control at all times. Electric prodders should only be used on adult animals and only when they can move away from the prodder. Prodders should not be used on sensitive areas of the animal (face, genitals, udder).
- o Ensure that animals are moved at such a pace that they can see where they are going and where they are placing their hooves.
- o When herding animals for longer than normal distances ensure that driving speed and distance takes account of conditions and fitness of the animals, and observe for signs of distress which would indicate that animals may need rest, water and feed.
- o When mixing animals provide sufficient area that newcomers can move into free space if pushed and observe their behaviour carefully.
- o Take a quiet approach at all times with animal restraint and apply restraint in such a way as to minimize the risk of injury to the animals and the handler.
- o Nose rings and equipment used for animal restraint must be fit for purpose and used in a manner that does not inflict unnecessary or ongoing pain and discomfort. Animals restrained for husbandry procedures must be kept under close supervision. Operators should be conversant with safe operation of all restraint equipment and such equipment should be kept in good working order.
- o Most dairy animals are gregarious. Use herd management and husbandry procedures that do not unnecessarily compromise social activity, and do not isolate them unnecessarily as their instinct to herd is strong. Dairy animals should be kept in appropriate social groups to allow for positive social behaviour and minimize injury, distress and chronic fear.

Milking

- o Milking should be comfortable for the lactating animal. In particular, animals should not be over-milked or under-milked to prevent pain and damage to the udder and teats. Lactating animals should be regularly checked for abnormal milk and udder health at every milking.
- o Establish a regular milking routine that recognises stage of lactation. For example, females in full lactation may need more frequent milking to relieve udder pressure.
- o All animals must be milked or suckled frequently enough during lactation to minimize discomfort and maintain udder health.

- o Where animals are milked with equipment, this must be maintained to a level that minimises risk of damage to teats and udder. Where there is a risk of an extended failure of the power supply, provision should be made for an independent generator of sufficient power to start and operate the milking machine and ancillary equipment.
- o Where animals are milked by hand, correct techniques must be applied in order to avoid harm to the udder or teats.
- o Take special care of animals being milked for the first time, and if possible, familiarise them with the milking facility prior to giving birth.

Painful Husbandry Procedures

- o Do not use procedures that cause avoidable pain, distress, suffering or discomfort. The welfare benefit to the animal of carrying out the procedure should be justifiable in terms of benefit to the animal. Options for enhancing animal welfare when potentially painful husbandry practices are routinely performed include : ceasing the practice, undertaking an alternative practice that is known to be less painful (e.g. perform disbudding with thermal cautery by a trained operator with proper equipment at an early age, rather than dehorning older cattle after the horn bud has attached to the skull), and the use of pain relievers. Where painful procedures cannot be avoided, the resulting pain should be managed to the extent available methods allow.
- o Hoof trimming should be done by a competent trained operator or farrier if the hoof length or shape is abnormal and resulting in lameness.
- o Dehorning and disbudding should be done with consideration of the animal's welfare and include the use of appropriate anaesthesia and pain relief. Disbudding at an early age is preferable to dehorning older cattle.
- o Tail docking should not be carried out on any animals.
- o Adhere to national regulations with respect to carrying out painful husbandry procedures, e.g., whether the procedure is permitted, age regulations or the need for provision of pain relief.
- o Veterinary procedures should be carried out using techniques that minimise potential pain e.g. the use of local anaesthetics, sedatives and pain-relieving medication.
- o Animals should be clearly identified to facilitate post-operative inspections.
- o Where animals are permanently identified, the least invasive approach should be used, with avoidance of freeze branding and hot iron branding.

Reproduction, birthing and weaning practices

- o Heifers should have their first service/mating when breed specific growth targets are achieved.
- o Males that have a greater likelihood of siring low birth-weight offspring should be selected for mating with young or smaller framed females as large offspring can cause significant damage to small dams particularly during their first parturition.

- o The management of cows during pregnancy is important especially with regard to feed management to ensure cows calve at the appropriate body condition score, and that they are adequately prepared and managed for the transition between pregnancy and lactation.
- o Animals close to giving birth should be provided with a quiet and hygienic place where they can give birth undisturbed by herd members and kept under surveillance.
- o Where animals give birth in outdoor areas, the pens or paddocks should provide shelter and protection from adverse weather conditions and be well drained.
- o When an animal is having difficulty giving birth appropriate assistance should be given to ensure the health and welfare of the cow and newborn is protected to the greatest extent possible.
- o Animals that are unable to stand as a consequence of birthing difficulties or metabolic disease must be provided with food and water and shelter from adverse weather and be placed on bedding or on soft ground.
- o Apparatus to lift and support recumbent animals should be used with care and according to manufacturer's specifications ; in particular animals must be able to breathe freely and not suffer unnecessary discomfort.
- o New-born animals should not be transported to sale yards until sufficiently hardy e.g. adequate body condition and a dry navel. Adequate colostrum should be provided prior to transportation.
- o New-born and other young dairy animals must be handled and moved in a manner that minimizes distress and avoids injury, bruising and suffering.
- o Fostering techniques promoting the attachment of young to nurse animals should not compromise the welfare of either and should be done with minimum stress to both parties.
- o Procedures for pregnancy diagnosis, semen collection, artificial insemination and embryo transfer should only be undertaken by trained and competent operators.
- o Reproductive efficiency can be assessed by monitoring conception rates, anaestrus intervals, abortion rates, incidence of dystocia, retained placentas and metritis.

Transport of animals on and off the farm

- o All domestic transport should be in accordance with national regulations wherever these exist. However, in absence of national regulations, international (OIE) standards should be used as guidelines for domestic as well as international animal transport.
- o During transport, select appropriate vehicles and ensure that animals are not over-crowded.
- o All animals selected for transport off the farm must be fit enough to withstand the planned journey without suffering unreasonable or unnecessary pain or distress - when in doubt consult a veterinarian. Animals unable to stand unaided and bear weight on each leg should not be transported. Humane and effective arrangements should be made by the owner and agent for the handling and care of any animal rejected as unfit to travel.

- o Pregnant animals close to calving should not be transported except in an emergency or to improve their welfare, e.g., moved to a location to improve transitional nutrition, so they can be closely monitored during calving or for veterinary care. If such animals need to be transported this must be done with particular care and consideration for their condition. They should not be transported except in an emergency or to improve their welfare, e.g., moved to a location to improve transitional nutrition, so that they can be more closely monitored during calving, or for veterinary care.
- o Every unweaned animal to be transported off the farm should be fed at least half of that day's ration of colostrum or milk prior to transportation.
- o Transport collection areas for young animals should provide adequate shelter and comfort for all and facilitate their handling.
- o Preparation and planning for transport should include consideration of the animal's physiological state e.g. whether it is a female in peak lactation, as well as the method, distance and duration of the trip.
- o Provision for feeding, watering and resting times should be made when animals are transported for longer periods of time.
- o Loading and unloading should be done using appropriate ramps, or approved slings in the case of sea transport.
- o When taking delivery of new animals be sure to :
 - Keep them in a quiet environment with feed and water for an appropriate adaptation time ;
 - Pay careful attention to their behaviour and health status ;
 - Introduce them in an appropriate group at the appropriate time ;
 - Consider the risk of the introduction of contagious diseases with new animals, and undertake appropriate biosecurity procedures to minimise this risk.

2.5. Health Management

This section relates to health management in relation to animal welfare, and not to management of risk associated with causative agents of ill health. In this respect the main concerns for health management in relation to animal welfare are :

- lameness, mammitis/mastitis, injuries, acidosis for dairy cows, milk fever and other metabolic diseases ;
- diarrhoea and anaemia for calves ;
- respiratory disease ;
- heat stress ;
- arthritis ;
- tropical and contagious diseases for all ages and species of dairy animal.

Veterinarians are trained animal health professionals and their advice should be sought in all matters of animal health management. Allowing unqualified personnel to treat animals can result in severe animal health and welfare problems due to incorrect diagnoses and

treatments or poor surgical techniques with incorrect or inadequate anaesthesia and pain relief. Health management plans should meet relevant national and international veterinary requirements.

Viral, bacterial, and parasitic diseases should be prevented and controlled through appropriate biosecurity measures, adequate layout and management of the keeping system and good management practices including prophylaxis and monitoring.

Separate area should be provided for sick or injured animals.

Stockmanship skills relating to animal health

- o Those responsible for the welfare of the animals must be competent at recognising ill health or injury and take professional advice as appropriate. Stock handlers should be familiar with the first signs of more common health problems of their stock and organise prompt and expert attention. Standard operating procedures for the management and treatment of more common health problems should be developed with veterinary assistance.
- o The frequency of inspection of stock will depend on the circumstances and management systems. More than one daily inspection is particularly important in the case of :
 - animals close to giving birth ;
 - new born and newly-weaned calves ;
 - animals that are being held in restricted areas controlled by electric fences ;
 - conditions likely to promote diseases such as bloat, milk fever, nitrate or other poisoning, or mastitic occurrence ;
 - a situation of disaster (either man-made or natural) or emergency ;
 - outbreaks of contagious disease (e.g., foot and mouth disease) ;
 - bankruptcy;
 - economic and/or psychosocial breakdown of the owner, the person responsible for animals, or anyone handling animals, could impact the level of care and welfare of the animals. The sector should have some mechanism of identifying and following up such cases.

Managing lameness

- o Animals should be treated against the agents that led to lameness and isolated from the rest of herd to avoid the disease spread.
- o Animals should be managed so as to minimise the incidence of lameness.
- o This will require that procedures for moving animals do not place unnecessary pressure on feet and legs, and that lane ways, yards and facilities are designed and constructed with good cow flow and appropriate surfaces in mind.
- o Farm personnel should be able to identify lame cows.
- o Cow locomotion should be assessed using a standardised scoring system that allows the early detection of lameness, and levels of lameness should be monitored and

investigated where necessary to determine underlying causes and appropriate treatment.

- o Hooves should be inspected frequently, and hoof-care carried out in a timely manner using professional assistance as appropriate. Hooves of cows identified as lame should be inspected as soon as possible for appropriate treatment.
- o Intervention plans for preventing and maintaining good claw health at acceptable bench marks should be prepared.

Managing injuries

- o Animals should be managed to minimise the incidence of injuries.
- o The physical environment, including surfaces for resting and walking, should be designed, constructed and maintained to minimise the risk of injury to animals.
- o Animals should always be handled in a way that minimises the risk of injury and distress. This includes keeping dairy animals in appropriate social groups. Animals that are distressed are more likely to move unexpectedly and cause injury to themselves, other animals and people.
- o Regular observations of animals should include checking for injuries. When there is evidence of injuries, the facilities and animal handling should be reviewed to identify the cause of such injuries and enable preventative actions to be taken.
- o Minor injuries, such as superficial skin lesions and hair loss from rubbing, should receive first aid treatment, if necessary, and be monitored.
- o Serious injuries which are painful and warrant immediate treatment include deep wounds, purulent infections, severe haemorrhage, bone fractures, and damage to the eye and surrounding structures. Veterinary advice should be sought for serious injuries.

Seeking veterinary advice

- o Veterinary advice should be sought immediately when :
 - there is an acute and/or severe case ;
 - in the case of a fracture or severe injury where emergency slaughter or euthanasia is not performed ;
 - a high proportion of animals in a herd are affected by a disease ;
 - an animal is recumbent and unable to stand and does not respond to treatment after 12 hours, and where emergency slaughter or euthanasia is not performed ;
 - where there is suspicion that an OIE-listed infectious disease or national listed disease is present ;
- o Veterinary advice should be sought in a timely manner when :
 - where there is persistent ill-thrift and poor performance ;
 - when first aid or other initial farm treatment does not result in satisfactory resolution of the problem.
- o Only use stock remedies or veterinary medicines registered for use in production animal and as prescribed by a veterinarian. Administer these in the correct manner so as to avoid unwanted side effects such as painful swellings. Veterinarians must

leave notes on therapies provided and the treatment plan for each animal as well as withdrawal (withholding) times.

Herd health management programmes

- o A planned herd health management programme should include :
 - Preventative action plan for diseases and conditions of concern relevant to the farm, proposed environmental and management changes, vaccination programmes and parasiticide treatments as necessary, and for management of diseased or injured animals. An intervention plan with acceptable bench-marks should form part of the herd health management programme ;
 - Mineral and vitamin supplementation to prevent deficiencies, and where necessary to correct deficiencies if they occur, according to professional diagnosis in place ;
 - Provision of magnesium and calcium supplements around calving time to manage downer cow syndrome and other metabolic disease ;
 - Consideration of the need to maintain an ongoing satisfactory level of cleanliness and hygiene of animal housing, pastures and milking facilities ;
 - Adequate nutrition to ensure good health for all classes of dairy animals, and to ensure adequate growth rates for growing animals ;
 - Management of non-ambulatory animals (animals that are unable to walk) ;
 - Animals with serious health problems or injuries should be isolated and treated promptly, or killed humanely if treatment is not feasible or the prognosis for recovery is poor. Professional advice should be sought to help prevent future cases.
- o A biosecurity plan should be implemented to minimize the risk of the introduction and spread of disease on farm, including when introducing new stock of unknown disease status to the farm, and from visiting personnel such as veterinarians, advisors and technical personnel. This plan may include feasible quarantine/isolation periods, and eventually include preventative measures like vaccinations and treatment for parasites. The plan should include actions to be taken in the event of an outbreak of disease that is greater than normal occurrence on farm, or in the event of a disease that is new to the area such as a foreign animal disease.
- o A recording system relevant to the animal health plan and to the country's national and international requirements should be kept up-to-date by the herd operator and regularly monitored as this aids management and quickly reveals problem areas. Records should include animal identification. Minimum recommended record requirements include :
 - Morbidity rates ;
 - Culling rates and mortalities and their causes per age-group ;
 - Reproductive disorders and abortions, neonatal deaths ;
 - Levels of lameness within a herd should be scored regularly and where necessary investigated to determine underlying causes and appropriate prevention. Claw trimming should be included in the records ;

- Incidence and details of preventable diseases and injuries ;
- Incidence of mastitis ;
- Vaccinations, diagnostic tests ;
- All treatments and withdrawal times for medicines whether controlled by veterinary regulations or not.

Euthanasia

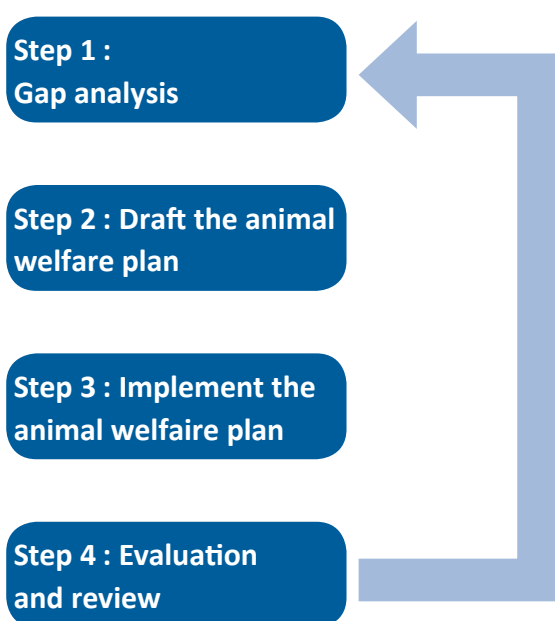
Where it is necessary to euthanise sick or diseased animals, or those in pain :

- o Once the decision has been made to euthanise the animal this should be done promptly to minimize suffering.
- o Appropriate equipment for carrying out euthanasia should be provided, and staff should be trained in the use of this equipment.
- o Do this in such a manner as to avoid unnecessary pain. Whenever possible, animals should be stunned first and remain unconscious until death is confirmed.
- o In addition to national regulations, international (OIE) standards should be used as guidelines.
- o Where a captive bolt device is used, the selection of the cartridge strength must be appropriate for the particular class of animal.
- o Immediately following stunning, an acceptable secondary step must be used to ensure death (e.g. bleeding, pithing etc.)

3

ISO TECHNICAL SPECIFICATION ISO/TS 34700 : 2016 - ANIMAL WELFARE MANAGEMENT – GENERAL REQUIREMENTS AND GUIDANCE FOR ORGANISATIONS IN THE FOOD SUPPLY CHAIN

This Technical Standard is intended to support the implementation of relevant practices to ensure good animal welfare in livestock production systems by providing requirements and guidance for the application of animal welfare principles. The document is designed to guide users in conducting a gap analysis and developing an animal welfare plan that can be used to facilitate the implementation of OIE standards, and any public or private sector animal welfare standards.



The development of an animal welfare plan should be based on the steps shown in Figure 2. The feedback process allows for a continual improvement process for the implementation of animal welfare standards.

Figure 2 : The different steps to develop an animal welfare plan

ANNEXES

Appendix 1: Summary and connection between this Guide and various OIE guidelines and standards

This table summarises the links between the IDF Guide to Good Animal Welfare in Dairy Production and various OIE guidelines and standards. The relevant articles of Chapter 7.1, Article 7.1.5 General principles for the welfare of animals kept in livestock production systems, 7.1.1. Animal welfare in dairy cattle production systems and 7.6. Killing of animal for disease control purposes, are presented between brackets. As an example, outcome measures are included that can be used to assess the level of welfare for the animals in dairy production systems.

IDF Animal welfare area	OIE principle	Good practice (suggested measures for assessing good practice, and referenced to OIE Guidelines)	Objectives of these measures	Indirect outcome (resource based)	Direct outcome (animal based)
o Stockmanship	<ul style="list-style-type: none"> The handling of animals should foster a positive relationship between humans and animals and should not cause injury, panic, lasting fear or avoidable stress. (7.1.5 (10)) Owners and handlers should have sufficient skill and knowledge to ensure that animals are treated in accordance with these principles. (7.1.5 (11)) 	<ul style="list-style-type: none"> Staff training and experience (7.11.7(15)) Educational programmes available Veterinary assistance or other experts available (7.11.7(1) b) Awareness of national regulation/standard and industry welfare standards Animal handling procedures and equipment available (7.11.6(6)) 	<ul style="list-style-type: none"> To demonstrate good stockmanship in the dairying operation so that animals are well cared for, and action is taken to meet their needs. 		<ul style="list-style-type: none"> Flight distance assessment Behaviour indicating fear or stress Injuries

IDF Animal welfare action area	OIE principle	Good practice (suggested measures for assessing good practice, and referenced to OIE Guidelines)	Objectives of these measures	Indirect outcome (resource based)	Direct outcome (animal based)
<ul style="list-style-type: none"> o Feed and Water 	<ul style="list-style-type: none"> o Animals should have access to sufficient feed and water, suited to the animals' age and needs, to maintain normal health and productivity and to prevent prolonged hunger, thirst, malnutrition or dehydration. (7.1.5(7)) 	<ul style="list-style-type: none"> o Monitoring quality of feed and water (7.11.7(2)) o Young animals (7.11.7(9) and 7.11.7(10)) : <ul style="list-style-type: none"> • Colostrum quality and quantity and management of feeding, • Feeding to promote rumen development, • Hygiene of feeding equipment. 	<ul style="list-style-type: none"> o To ensure animals have access to sufficient good quality food and drinking water to maintain good health, meet their physiological and production requirements, and minimise metabolic and nutritional disorders. 	<ul style="list-style-type: none"> o Water – number of animals per water trough o Condition of water troughs o In pre-weaned calves : water accessible o Feed – grazing area and/or feeding space per animal o Adequate nutrition for all classes of stock 	<ul style="list-style-type: none"> o Milk yield trends for female animals o Growth rate trends of young animals o Body condition score adult animals o Reproductive efficiency o Signs of thirst and hunger
<ul style="list-style-type: none"> o Physical Environment in relation to physiological needs 	<ul style="list-style-type: none"> o The physical environment, including the substrate (walking surface, resting surface, etc.) should be suited to the species so as to minimise risk of injury, pain and transmission of diseases or parasites to animals. (7.1.5(3)) 	<ul style="list-style-type: none"> o Flooring, fences, gates – number of animals slipping/falling, grooming behaviour (7.11.6(5)) o Housing environment - < 25ppm ammonia, maintenance of thermoneutral zone for animals, no respiratory distress, no shivering/huddling (7.11.6(3) and 7.11.6(1)) o Lighting – natural light or light to mimic circadian patterns (7.11.6(2)) o Hygiene – cleaning procedures (7.11.6(5)) 	<ul style="list-style-type: none"> o To ensure the physical environment is designed, constructed, operated and maintained to meet the needs of the animals 	<ul style="list-style-type: none"> o Animals outdoors : Equipment and management plan to deal with extreme condition including for example <ul style="list-style-type: none"> • provision of shade and shelter • Provision of additional food and water 	<ul style="list-style-type: none"> o Locomotion scores o Cleanliness of animals o Hock lesions, open sores, injuries, hair loss o Behaviour indicating heat or cold stress, agitation or nervousness o Cow comfort index

	<ul style="list-style-type: none"> o For housed animals, air quality, temperature and humidity should support good animal health and not be aversive to animals. o Where extreme conditions occur, animals should not be prevented from using their natural methods of thermo-regulation. (7.1.5(6)) 	<ul style="list-style-type: none"> o Noise – level of agitation or nervousness of animals (7.11.6(4)) o Young animals – dry, draught free and comfortable housing (7.11.7(11)) o Disaster management – evacuation plans, preparation for natural disasters, alarms, back-up systems (7.11.7(1)c and 7.11.7(16)) 	<ul style="list-style-type: none"> • parturition paddock • protection from predators 	<ul style="list-style-type: none"> o Lying down behaviour 	
<ul style="list-style-type: none"> o Physical and Social environment in relation with behavioural needs 	<ul style="list-style-type: none"> o The physical environment should allow comfortable resting, safe and comfortable movement including normal postural changes, and the opportunity to perform types of natural behaviour that animals are motivated to perform. (7.1.5(4)) o Social grouping of animals should be managed to allow positive social behaviour and minimise injury, distress and chronic fear. (7.1.5(5)) 	<ul style="list-style-type: none"> o Tethered animals – ability to stand up and lie down comfortably (7.11.7(11)) o Cubical systems - > one cubicle per cow (7.11.6 (5)) o Lying surfaces – lying times, clean and dry lying surfaces, space per animal (7.11.6(5)) <ul style="list-style-type: none"> • Animals outdoors : provision of shade and shelter • Locomotion scores • Food and water – body condition scores, growth rates • Resting areas • Protection from predators (7.11.7(1) and, 7.11.7. (5)) 	<ul style="list-style-type: none"> o To ensure the physical environment is designed, constructed, operated and maintained to meet the behavioural and social needs of the animals. 	<ul style="list-style-type: none"> o Individual space only systems - > one space per cow <ul style="list-style-type: none"> o Social groupings – appropriate for the class of animal, 	<ul style="list-style-type: none"> o Physical appearance of animals – body condition score, cleanliness, lesions and injuries, o Behaviour - agnostic/ depressive behaviours, lying times, vocalisation

IDF Animal welfare action area	OIE principle	Good practice (suggested measures for assessing good practice, and referenced to OIE Guidelines)	Objectives of these measures	Indirect outcome (resource based)	Direct outcome (animal based)
<ul style="list-style-type: none"> o Husbandry Practices 	<ul style="list-style-type: none"> o Genetic selection should always take into account the health and welfare of the animals. (7.1.5(1)) o Animals chosen for introduction into new environments should be suited to the local climate and able to adapt to local diseases, parasites and nutrition. (7.1.5 (2)) o Where painful procedures cannot be avoided, the resulting pain should be managed to the extent that available methods allow. (7.1.5 (9)) 	<ul style="list-style-type: none"> o Milking management (7.11.7.(12)) o Painful husbandry procedures (7.11.7.(13)) o Animal health programme and recording system (7.11.7.(1) b) o Selection plan based on animal health and welfare, as well as productivity (7.11.7(6)) o Reproduction : <ul style="list-style-type: none"> • Genetic selection criteria • Preparation and management of transition cows – body condition score, incidence of dystocia, mortality of cows and calves • Calving areas – hygiene, shelter, bedding (7.11.7(5)) • Transport of animals – loading facilities, vehicles, preparation and planning for travel, fitness for transport evaluation, management of newly arrived animals (7.11.7(3)) • Pain control and age for disbudding/dehorning procedures (7.11.7(13)) • No tail- docking (7.11.7(13)) • The least invasive approach for using identification devices (7.11.7(13)) 	<ul style="list-style-type: none"> o To ensure that husbandry practices provide an acceptable level of animal welfare 	<ul style="list-style-type: none"> o Pain management—age, method used, use of pain relief and anaesthesia 	<ul style="list-style-type: none"> o Animal handling – flight distance assessment, behaviours that indicate fear or stress o Physical appearance of animals – body condition score, cleanliness, lesions and injuries, coat condition, ectoparasites, discharges, foot condition, posture o Reproductive efficiency – conception rates, anoestrus intervals, abortion rates, level of dystocia, retained placentas, metritis, bull fertility o Udder health, milk quality, behaviour at milking, milk yield

<ul style="list-style-type: none"> o Health Management 	<ul style="list-style-type: none"> o Diseases and parasites should be prevented and controlled as much as possible through good management practices. Animals with serious health problems should be isolated and treated promptly or euthanised humanely if treatment is not feasible or recovery is unlikely. (7.1.5(8)) 	<ul style="list-style-type: none"> o Stockmanship – training and experience to detect first signs of ill-health (7.11.7(15)) o Animal health programme and recording system (7.11.7(1)) o Euthanasia plan (7.6) o Biosecurity plan (7.11.7(1) a) 	<ul style="list-style-type: none"> o To ensure the health of the animals is managed to optimise the physical and behavioural health of dairy animals. 	<ul style="list-style-type: none"> o Planned herd health programme with regular monitoring and inspection o Disease incidence and treatments recorded for each animal o Interventions points defined o Sick animal area o Management plan for non-ambulatory animals o Culling and mortality reasons and rates recorded o Emergency plans for disease outbreaks o Evidence of veterinary input into treatment plans and dispensing of veterinary medicines 	<ul style="list-style-type: none"> o Lameness management – locomotion scores, hoof condition o Physical appearance of animals – body condition score, cleanliness, lesions and injuries, coat condition, ectoparasites, discharges, posture o Animal health records – productivity, reproductive efficiency, treatments, morbidity rates, culling and mortality rates, complications from common procedures o Number of animals in sick area, their condition
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IDF Animal welfare action area	OIE principle	Good practice (suggested measures for assessing good practice, and referenced to OIE Guidelines)	Objectives of these measures	Indirect outcome (resource based)	Direct outcome (animal based)
				<ul style="list-style-type: none"> o Euthanasia plan to cover : <ul style="list-style-type: none"> • Euthanasia decision process equipment for carrying out euthanasia • Staff training for euthanasia • Method of euthanasia o Biosecurity plan to cover the movement of animals on and off the farm, visitors and equipment coming onto the farm, security of boundaries, sanitation practices, supply of water and feed, disposal of manure and dead stock etc, control of other species including pests, source of semen and embryos 	

Appendix 2 : Glossary of terms

Body condition score : a visual assessment of the fat reserves of an animal

Colostrum : first milk rich in immune factors, secreted by the mammary gland of female mammals a few days before and after the birth of their young.

Cud : The partially digested food that is regurgitated from the first compartment of the cow's stomach into the mouth to be chewed again.

Culling : culling refers to the removal of animals from the group by euthanasia, sale for slaughter or disposal of animals that died on farm. Recording of culling and reasons for culling are important to improve animal health and welfare on farm.

Dehorning : removal of the horns of adult animals after they have formed from the horn bud by cutting or sawing.

Disbudding : removing the horn buds before they become attached to the periosteum of the frontal bone, typically before 2 months of age, in young animals (calves, kids) using a hot iron or chemical cauterisation.

Euthanasia : means the act of inducing death using a method that causes a rapid and irreversible loss of consciousness with minimum pain and distress to animal.

Flight distance : a measure of how close a person can get to an animal before the animal moves away.

Neonatal: relating to newborn animals

Newborn calf : Calf during the first 48 hours of birth

Pre-weaned calf : Calf older than 48 hours that receives a milk-based diet. Their ruminant digestive system has not developed sufficiently to enable them to maintain growth, health and good welfare on a fibrous diet.

Weaned replacement heifer : Calf that no longer receives milk in its diet receives but a fibrous diet. This female calf is intended to become a producing cow in a herd after attaining the appropriate degree of maturity

Mastitis : Inflammation of one or more quarter of the mammary gland, almost always caused by infecting microorganisms (IDF Bulletin 448/2011)

Non-ambulatory : a state where the animal cannot rise and walk of its own accord

Replacement : Process of removing an animal from a production unit and replacing it with another animal, usually a heifer

Stocking density : a measure of how many animals in relation to the area the animals have access to. Used mainly in outdoor systems and measured in number of adult animals per hectare.

Tail docking : removal of all or part of the tail of an animal

Welfare assurance scheme : a certification scheme with a specific focus on farm animal welfare standards, including requirements for, for example : environmental enrichment, bedding, more generous space allowance, humane slaughter and restrictions on mutilations and transport times

Young Dairy Animals encompasses new born, pre-weaned calves and weaned replacement heifers.

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Example: 1 Singh, H. & Creamer, L.K. Aggregation & dissociation of milk protein complexes in heated reconstituted skim milks. *J. Food Sci.* 56:238-246 (1991).

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ANNEX 1

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“	Usually double quotes and not single quotes
? !	Half-space before and after question marks, and exclamation marks
±	Half-space before and after
microorganisms	Without a hyphen
Infra-red	With a hyphen
et al.	Not underlined nor italic
e.g., i.e.,...	Spelled out in English - for example, that is
litre	Not liter unless the author is American
ml, mg,...	Space between number and ml, mg,...
skimmilk	One word if adjective, two words if substantive
sulfuric, sulfite, sulfate	Not sulphuric, sulphite, sulphate (as agreed by IUPAC)
AOAC <u>INTERNATIONAL</u>	Not AOAC!
programme	Not program unless a) author is American or b) computer program
milk and milk product	rather than “milk and dairy product” - Normally some latitude can be allowed in non scientific texts
-ize, -ization	Not -ise, -isation with a few exceptions
Decimal comma	in Standards (only) in both languages (as agreed by ISO)
No space between figure and % - i.e. 6%, etc.	
Milkfat	One word
USA, UK, GB	No stops
Figure	To be written out in full
1000-9000	No comma
10 000, etc.	No comma, but space
hours	∅ h
second	∅ s
litre	∅ l
the Netherlands	
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