

VISIONDAIRY HANDBOOK

Guidance on implementation
of the VisionDairy Charter
for Suppliers and Farmers

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(I) BACKGROUND

As part of our Forever Chocolate commitment, we have committed to using 100% sustainable ingredients in our products by 2030. Milk is amongst the vital ingredients we blend to produce quality chocolate, and we created our 'VisionDairy' programme to deliver on our commitment for sourcing sustainable dairy ingredients.

Our VisionDairy Charter consists of 15 principles for sustainability in dairy farming. Working collaboratively with the many suppliers and farmers in our dairy supply chains across the world, our journey will be one of continuous improvement to achieve our 15 ambitious principles.

Our **15 principles** are the long-term ambitions for our global dairy supply base;

- **'Core criteria'** for each principle have been established to align our global dairy supply chain, and set the compulsory standards for supply.
- A set of **'leadership position'** standards have been designed to highlight farms and practices that are 'best in class'. We will be supporting our suppliers in their progress towards the leadership position.
- A mixture of **input and outcome measures** will be collected from our supply chain to monitor compliance with our core criteria, and measure progress towards the leadership position.

Our 15 principles, core criteria and leadership position standards are discussed in Chapter III, and our outcome measures are explained in Chapters IV, V and VI.

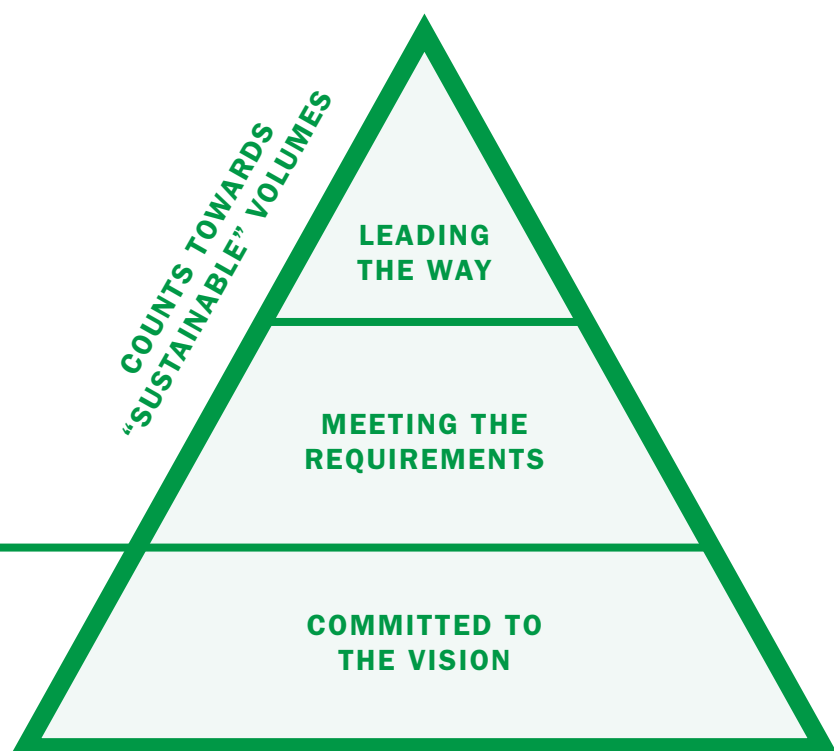
This handbook provides information to help suppliers and farmers to implement the VisionDairy Charter in our supply chains, in support of our Forever Chocolate commitments. In the following sections, you will find chapters on each of the 15 principles, with sub-sections to explain the technical elements of the charter, and information on the use of 'outcome measure' data to help track progress against our 15 principles.

(II)

FOREVER CHOCOLATE: WHAT THIS MEANS FOR OUR SUPPLIERS

Delivering on our ambitious Forever Chocolate commitment for all of our raw ingredients means working with suppliers that are committed to our vision of sustainability and continuous improvement. We believe that driving sustainable practices makes business sense, securing supply for the future with mutual benefit to Barry Callebaut, our suppliers and customers, whilst protecting the wellbeing of people, animals and our environment.

In order to achieve 100% sustainable dairy ingredients, we require all of our suppliers to work in line with our VisionDairy Charter by 2030. In the following graphic, we illustrate three-tiers of progress, with a requirement for all suppliers to comply with the requirements of Tier 2 — ‘Meeting the requirements’, or Tier 1 — ‘Leading the Way’, by 2030. Barry Callebaut will support you on your journey of continuous improvement and driving sustainable impact.



Leading the way

- Supplier meets 100% of core criteria and >50% of leadership positions
- Outcome measures are regularly submitted for a relevant number of farms
- Further initiatives are implemented by supplier e.g. research and development

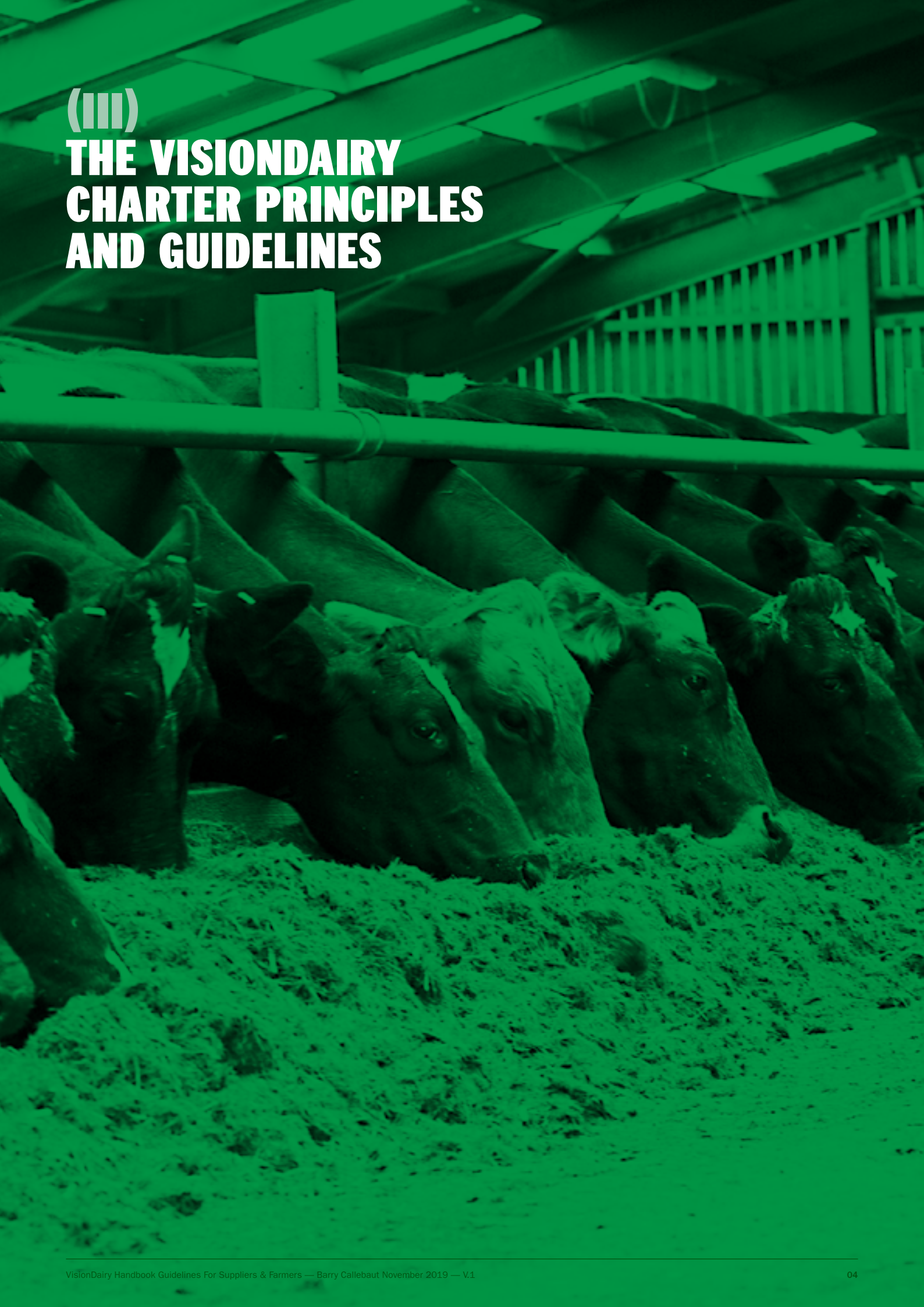
Meeting the requirements

- >75% of core criteria are met by supplier OR by accepted assurance scheme standards that are in place across supply (externally verified)
- Roadmap is in place to close gaps
- Key outcome measure data is regularly submitted for a relevant number of farms

Committed to the vision

- Supplier's programme benchmarked against VisionDairy Charter
- Roadmap in place to close gaps

Figure 1: The three tiers of progress within Barry Callebaut's dairy supply chain - a journey towards meeting our Forever Chocolate commitments.



(III)
**THE VISIONDAIRY
CHARTER PRINCIPLES
AND GUIDELINES**

1. OPTIMISE ANIMAL WELFARE

Animals are recognised as sentient beings and experience a 'good life'¹. This is achieved through proactive herd health management including cattle at all life stages, to prevent and control health challenges, to ensure comfort, freedom of movement and the ability to express normal behaviour, and to facilitate positive social interactions.

CORE CRITERIA

- 1.1:** All farms must undertake and record herd health planning annually with a veterinary surgeon or consultant. This plan must take a proactive approach to providing the 5 welfare needs of animals, including preventing and controlling health challenges, ensuring comfort, freedom of movement and the ability to express normal behaviour, and facilitating positive social interactions in cattle at all life stages.
- 1.2:** The farm must measure a selection of health indicators. Key health indicators include, but are not limited to, cow and calf mortalities/euthanasia, prevalence of mastitis and prevalence of lameness. Practical steps to address key challenges, for example in cow mortality, mastitis and lameness, must be undertaken.
- 1.3:** Cows and calves in year-round tethered/'tie stall' systems must receive daily exercise. New tie-stall facilities must not be constructed.

LEADERSHIP POSITION

- 1.4:** The farm's indicators of mortality, mastitis and lameness are within the top quartile of VisionDairy producers.
- 1.5:** The farm provides enrichment for cows; for example, cow brushes, loafing areas or access to grazing.
- 1.6:** The farm does not use tethering/tie stalls during the routine production and management of cows or calves. Temporary tethering for milking or during examinations/procedures is acceptable.

HERD HEALTH PLANNING

An animal health plan should be an active, farm-specific tool for animal health and welfare planning. The benefits of a good health plan include an improvement in animal welfare, farm efficiency and profitability. There is evidence from research and practitioners' experiences that farmers who use herd health planning efficiently have healthier and more productive stock. They spend less on drugs and veterinary attendance for diseased individuals/groups because there are fewer emergencies e.g. fewer outbreaks of infectious and metabolic diseases, fewer caesarean sections and reduced drug use.

Herd health plans should be specific to the farm and should feature the health problems affecting or presenting risks to the individual farm. It should therefore be compiled by a veterinary surgeon or consultant who understands the farm, its production system and challenges, alongside the farmer. Herd health plans should also include preventative measures and effective treatment plans.

The plan must take a proactive approach to providing the 5 welfare needs of animals, which are:

- Freedom from hunger and thirst;
- Freedom from discomfort;
- Freedom from pain, injury and disease;
- Freedom to express normal behaviour; and
- Freedom from fear and distress.

The herd health plan for a dairy farm should include:

- Preventing and controlling health challenges;
- Ensuring comfort;
- Allowing freedom of movement;
- Facilitating the expression of normal behaviour;
- Facilitating positive social interactions in cattle at all life stages.

Herd Health Plans should be active documents that are specific to individual farms, practical and easy to use and reviewed and updated at least annually alongside a veterinary surgeon or consultant.

¹ Farm Animal Welfare Council (2009) *Farm Animal Welfare in Great Britain: Past, Present and Future*. London, UK.

1. OPTIMISE ANIMAL WELFARE

The following cycle is an example of a process that can be used to ensure herd health plans are useful, relevant documents:



Figure 2: The herd health cycle.

1. OPTIMISE ANIMAL WELFARE

Prevalence rates of cow and calf/youngstock mortality and euthanasia, mastitis and lameness are key outcome measures that can provide information about the performance and management of the herd, and health challenges that need addressing. Here, we discuss how lameness and mastitis can be detected and monitored.

LAMENESS

Lameness is a major welfare problem for dairy cows. The general causes of lameness are multi-factorial, but include poor-quality floors in cattle housing, poor cow tracks, standing for too long on hard surfaces, poorly-designed cubicles, ineffective foot trimming, infectious diseases and poor nutrition. Lameness is painful and has a negative impact on welfare, longevity, fertility and milk production.

Regular lameness scoring enables producers to spot lameness problems and treat cows early. Early treatment is associated with reduced lameness and less severe foot lesions. Lameness can be assessed and scored using the AHDB Dairy mobility scoring system, as seen in Figure 1 (AHDB Dairy, 2013)².

MASTITIS

Mastitis is a common infection in dairy cows causing inflammation of the mammary gland and udder tissue. Mastitis is a complex disease and can be present in a herd sub-clinically, where few, if any, symptoms are present. However, more serious instances of disease can lead to a swollen and painful udder, reduction in milk yield, increased body temperature, lack of appetite, sunken eyes, reduced mobility and signs of diarrhoea and dehydration.

Mastitis is an increasing risk for dairy cows with increasing milk yields, increasing parity, increased somatic cell count in the preceding lactation, and when hygiene is poor.

Practices such as close attention to milking hygiene, the culling of chronically-infected cows, good housing management and effective dairy cattle nutrition to promote good cow health are essential in helping to control herd mastitis levels.

Although not easily identified visually, subclinical mastitis can be identified via Somatic Cell Counts (SCC). The SCC is a measure of milk quality and an increasing SCC usually indicates that a mastitis — causing pathogen is present. A subclinical cow, while appearing unaffected by the illness, may experience a reduction in yield due to the high SCC, and may represent a source of infection for other cows. Due to differences in immune status between cows, some infected cows may become sub-clinically infected, or present with clinical illness.

The SCC is quantified as the number of cells per millilitre (ml) in milk. In general terms:





- An individual cow SCC of 100,000 cells/ml or less indicates an 'uninfected' cow, where there are no significant production losses due to subclinical mastitis.
- A threshold SCC of 200,000 cells/ml is usually used to determine whether a cow is infected with mastitis. Cows with a result of greater than 200,000 cells/ml are highly likely to be infected in at least one quarter.
- Cows infected with significant pathogens have an SCC of 300,000 cells/ml or greater.
- Milk with an SCC of more than 400,000 cells/ml is deemed unfit for human consumption by the European Union.

² AHDB Dairy (2013) Mobility Score — Instructions Laminate. AHDB, Stoneleigh, UK. [online] Available from: <https://dairy.ahdb.org.uk/resources-library/technical-information/health-welfare/mobility-score-instructions/#.XP5ZMVxKiUk> [Accessed 10 June 2019]

1. OPTIMISE ANIMAL WELFARE



AHDB Dairy Mobility Score

Category of score	Score	Description of cow behaviour	Suggested action
Good mobility 	0	Walks with even weight bearing and rhythm on all four feet, with a flat back. Long, fluid strides possible.	<ul style="list-style-type: none"> No action needed Routine (preventative) foot trimming when/if required Record mobility at next scoring session.
Imperfect mobility 	1	Steps uneven (rhythm or weight bearing) or strides shortened; affected limb or limbs not immediately identifiable.	<ul style="list-style-type: none"> Could benefit from routine (preventative) foot trimming when/if required Further observation recommended.
Impaired mobility 	2	Uneven weight bearing on a limb that is immediately identifiable and/or obviously shortened strides (usually with an arch to the centre of the back).	<ul style="list-style-type: none"> Lame and likely to benefit from treatment Foot should be lifted to establish the cause of lameness before treatment Should be attended to as soon as practically possible.
Severely impaired mobility 	3	Unable to walk as fast as a brisk human pace (cannot keep up with the healthy herd). Lame leg easy to identify – limping; may barely stand on lame leg/s; back arched when standing and walking. Very lame.	<ul style="list-style-type: none"> This cow is very lame and requires urgent attention, nursing and further professional advice Examine as soon as possible Cow will benefit from treatment Cow should not be made to walk far and kept on a straw yard or at grass In the most severe cases, culling may be the only possible solution.

How to score your herd

If you haven't scored your herd for a while, information and film clips can be viewed on the AHDB Dairy website: dairy.ahdb.org.uk/mobility

In general:

1. Check your herd ideally at least once a month.
2. Choose a time and a place which will allow you to observe cows, ideally on a hard (ie, concrete) non-slip surface. Monitor each cow individually allowing them to make between 6-10 uninterrupted strides. Watch the cow from the side and the rear, and if possible ensure the cow turns a corner as part of her test.
3. Record the identities of cows scoring 2 or 3 and schedule treatment within 48 hours for score 2 cows and as soon as possible for score 3 cows. Check regularly to ensure treatment is working.
4. Keep a tally of cows that are score 0 and 1.
5. If you are uncertain about the exact score of a cow, make repeat observations. If you are still unsure, examine her feet.

Key benefits of scoring

1. Every cow is regularly assessed for the early signs of poor mobility prompting foot trimming and action lists.
2. Mobility trends can be monitored to identify new problems at an early stage
3. Provision of figures for benchmarking performance.
4. General foot health awareness is increased.
5. Motivates farm staff to improve herd mobility and therefore overall herd health.

For further information on using the mobility score contact your local Extension Officer or AHDB Dairy on 024 7647 8686.

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<https://bit.ly/30LsiTW>

Figure 3: AHDB Dairy Mobility Score guidance sheet. (AHDB, 2013)

1. OPTIMISE ANIMAL WELFARE

SOCIAL INTERACTIONS

Dairy herds are hierarchical, with some animals being dominant, and others being subordinate in the herd. Dominance in cattle is based on age, sex, breed, weight, presence of horns and territoriality. Hierarchies change constantly as cows are added or removed from the herd, and aggression and bullying can also appear when there are insufficient resources for all animals to share; for example, trough or cubicle space. Positive social behaviours such as social licking, synchronous lying or feeding, and play behaviours are associated with higher welfare conditions.

The herd health plan should facilitate positive social interactions at all life stages. This can be facilitated by management practices such as allowing calves to have sight and touch of at least one other calf, providing group housing for calves by weaning age, and providing housed cattle with a minimum of one cubicle per cow.

TETHERING

Tethering dairy cows in tie-stalls is a management practice in which each cow is tethered by either a chain, stanchion (metal bars) or rope tied around the neck, for up to 24 hours a day. Tethering prevents cows from performing their normal behaviours, reduces cow comfort, and exposes them to moisture and manure which may predispose them to foot disorders such as digital dermatitis and foot rot.

Daily exercise must be provided for year-round tethered dairy cows and should involve freedom of movement off-tether for at least one hour per day. Beyond 2030, this standard will be increased to requiring daily exercise for all cows in tethered systems regardless of the provision of seasonal grazing, then to prohibiting all tethering/tie stalls, at a later date.

ENRICHMENT

Environmental enrichment can be defined as modifications to the environment that can improve animals' biological functioning, help animals to cope with stressors in their surroundings, reduce frustration, increase the fulfilment of behavioural needs, and promote more positive affective states e.g. pleasure and calmness.

Environmental enrichment can be offered in different forms:

- Enrichment can include offering animals an 'occupation' e.g. a loafing area for housed cattle, or access to pasture. Compared to cows in tie stalls with no exercise, cows able to exercise daily can have significantly improved levels of lameness and mastitis.
- Physical features in the environment can offer animals a choice, for example secluded places and comfortable lying areas.
- Automatic brushes can allow cattle to groom themselves, particularly in body regions that they find hard to reach. Dairy cows are highly motivated to access an automated brush and brush use is associated with increased milk yield and cleanliness.

Nutritional enrichment can involve either presenting varied or novel food types or changing the method of food delivery. For adult cows, providing pasture access increases the time spent feeding and reduces aggressive interactions associated with feeding competition. For indoor cows, providing more feeding space or installing partitions between adjacent cows protects them from competition, increasing feeding time and reducing the number of competitive displacements.

Access to enrichment in the form of cow brushes, grazing, or loafing areas supports good welfare. The VisionDairy Leadership Position 1.5 relates specifically to enrichment for adult cows, and a minimum of one form of enrichment — cow brushes, grazing, or loafing areas — is required to achieve this.



Images 1 and 2: Images show a cow brush (left) and a loafing area (right) — considered to be forms of enrichment for adult cows. Photographs © Benchmark Holdings plc.

2. PROVIDE QUALITY, NUTRITIOUS AND SUSTAINABLE DIETS

The nutritional, behavioural and health needs of cattle at all life stages are met through the provision of a forage-based diet of sufficient quantity and quality, and a continuous supply of fresh water. The production of palm and soy has been identified as a key driver for deforestation which has negative social and environmental impacts. Therefore, steps are taken to procure soy and palm ingredients from certified deforestation-free sources.

CORE CRITERIA

- 2.1: Animals must have access to fresh, quality feed daily and continuous access to fresh water.
- 2.2: The compositions of cow rations must be recorded.
- 2.3: Records of all feedstuffs (purchased and home produced) must be kept. This should include supplier name, feed type including ingredient composition, date of delivery, quantity and the load or batch number (as applicable).

LEADERSHIP POSITION

- 2.4: The farm provides more than 40% forage (dry matter weight) in rations for cows, including both grass and conserved forage.
- 2.5: The origin and certification scheme or accreditation of all soy and palm-based feed ingredients utilised in rations is known and recorded.
- 2.6: All soy and palm feed ingredients are procured from certified deforestation-free sources. Accepted certification schemes include, but are not limited to, RTRS for soy and RSPO for palm oil.
- 2.7: Chemical and nutritional analyses are performed on home-produced feeds.

COW RATIONS

Good nutritional management is a cornerstone of dairy production. Dairy cattle depend on nutritionally balanced rations for producing milk, maintaining body condition score, fertility, immune function, foetal development, and other normal physiological processes. Dairy cow nutritional management must reflect the significant fluctuations in metabolic demands and dry matter intake that take place during the 365-day production cycle. Both insufficient energy levels, and the over-feeding of high-energy rations can compromise animal health, welfare and production.

To effectively meet the high nutritional demand of dairy cows, particularly in late gestation and early lactation, high-energy grain-based diets are often fed, sometimes as part of a ration in the parlour. These 'boluses' of grain-based feeds lead to a reduced proportion of acetate, higher proportion of propionate, and increased lactic acid production in the rumen, and can lead to sub-acute rumen acidosis (SARA) or clinical acidosis, which can predispose the herd to various other health problems including lameness, liver abscesses, diarrhoea and displaced abomasum³. Ideally forage should represent >40% of the ration to avoid lactic acid build up in the rumen.

Regular nutritional analyses are useful in formulating and revising cow rations, to ensure the ration is adequate and to account for fluctuations in the nutritional value of individual ration components.

³ Plaizier, J. C., Krause, D. O., Gozho, G. N., & McBride, B. W. (2008). Subacute ruminal acidosis in dairy cows: the physiological causes, incidence and consequences. *The Veterinary Journal*, 176(1), 21-31.

2. PROVIDE QUALITY, NUTRITIOUS AND SUSTAINABLE DIETS

SOY AND PALM CERTIFICATION

An increase in demand for soy and palm-based feed ingredients has been associated with displacing vital biomes such as the Amazon rainforest and Brazilian cerrado. To avoid purchasing soy and palm ingredients that are responsible for such displacement, it is necessary to purchase feed formulated from certified deforestation-free sources. The preferred alternative would be utilisation of home-grown protein crops.

Accepted certification schemes include, but are not limited to, RTRS for soy and RSPO for palm oil.



Image 3: Example of an indoor dairy herd on a total mixed ration (TMR). © Benchmark Holdings plc.

3. DELIVER QUALITY CALF CARE

Calves are managed to ensure suitable nutrition including colostrum in early life. Surgical mutilations are avoided, but when a procedure is deemed essential, pain relief is administered. Steps are taken to integrate dairy production systems with local, high-welfare beef production systems for rearing calves.

CORE CRITERIA

- 3.1:** Herd health and management planning must include the nutrition and colostrum intake, housing, husbandry and management of dairy and dairy-beef calves.
- 3.2:** When surgical mutilations including castration, disbudding, dehorning and removal of supernumerary teats are performed on-farm, pain relief must be provided.

LEADERSHIP POSITION

- 3.3:** The farm's calf mortality level is within the top* quartile of VisionDairy producers.
- 3.4:** When calves are transported for slaughter or to other sites for breeding, rearing or finishing, travel times remain below 8 hours.

NEONATAL NUTRITION

In dairy calves, low colostrum intake at birth results in the failure of passive transfer of immunity which is associated with an increased mortality risk and decreased health and longevity⁴, making this a major economic and welfare rise.

To collect the highest quality colostrum, producers should aim to milk freshly-calved cows 1 to 2 hours after calving if possible, with a maximum delay of 6 hours. Producers should aim to feed all calves colostrum within 1 to 2 hours after birth and by 6 hours at a maximum⁵. Calves should be fed at least three litres of colostrum in the first feed.

Forage such as grass silage, maize silage and hay should be fed to calves from the first week of age to assist in rumen development, increase rumination time, growth rate and decrease behaviours associated with stress^{6,7}.

SURGICAL MUTILATIONS

Surgical mutilations including castration, disbudding, dehorning and removal of supernumerary teats cause both acute pain during the procedures and long-term inflammatory pain. Therefore, pain relief must be provided. Ideally, local anaesthesia (e.g. bupivacaine or lignocaine) to block the sensation of acute pain, and analgesia (e.g. NSAIDs such as meloxicam) to reduce long-term inflammatory pain should both be provided before the painful procedure is undertaken. Providing both local anaesthesia and analgesia reduces stress hormone response, decreases the demonstration of pain behaviours and increases weight gain in the following 24 hours post-procedure, compared to providing anaesthesia only^{8,9}. Where procedures are to be carried out on a large number of calves, it may be cost and time-effective to use sedatives alongside anaesthesia and analgesia.

If horns are to be removed from calves, it is suggested that this is carried out under two-months of age (i.e. calves are disbudded rather than dehorned; see Table 1), as this results in a lower stress response. Cautery disbudding is also preferable compared to use of a caustic paste due to the lesser pain-related behaviours associated with cautery disbudding¹⁰. Tail docking is still carried out in some countries using cauterisation or rubber band, but is increasingly considered unnecessary, and where possible should be phased-out as a routine procedure.

All mutilation procedures should be agreed with veterinary advice.

⁴ Weaver, D. M., Tyler, J. W., VanMetre, D. C., Hostetler, D. E., & Barrington, G. M. (2000). Passive transfer of colostral immunoglobulins in calves. *Journal of Veterinary Internal Medicine*, 14(6), 569-577.

⁵ Godden, S. (2008). Colostrum management for dairy calves. *Veterinary Clinics of North America: Food Animal Practice*, 24(1), 19-39.

⁶ Coverdale, J. A., Tyler, H. D., Quigley III, J. D., & Brumm, J. A. (2004). Effect of various levels of forage and form of diet on rumen development and growth in calves. *Journal of Dairy Science*, 87(8), 2554-2562.

⁷ Phillips, C. J. C. (2004). The effects of forage provision and group size on the behavior of calves. *Journal of Dairy Science*, 87(5), 1380-1388.

⁸ Faulkner, P. M., & Weary, D. M. (2000). Reducing pain after dehorning in dairy calves. *Journal of dairy science*, 83(9), 2037-2041.

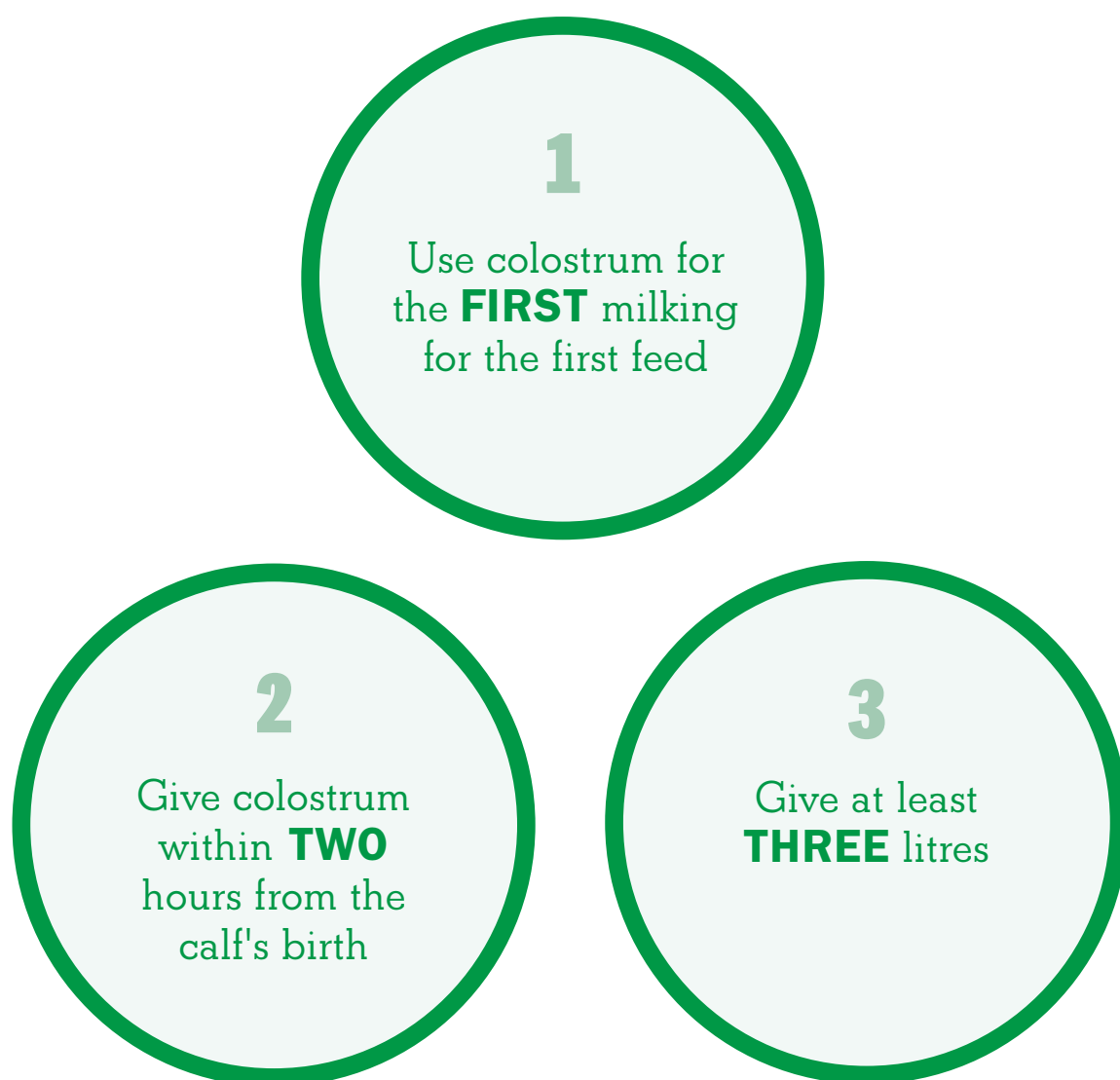
⁹ McMeekan, C., Stafford, K. J., Mellor, D. J., Bruce, R. A., Ward, R. N., & Gregory, N. (1999). Effects of a local anaesthetic and a non-steroidal anti-inflammatory analgesic on the behavioural responses of calves to dehorning. *New Zealand Veterinary Journal*, 47(3), 92-96.

¹⁰ Stafford, K. J., & Mellor, D. J. (2011). Addressing the pain associated with disbudding and dehorning in cattle. *Applied Animal Behaviour Science*, 135(3), 226-231.

3. DELIVER QUALITY CALF CARE

COLOSTRUM 1-2-3 FOR DAIRY CALVES

Figure 4: Colostrum 1-2-3 for dairy calves (Teagasc, 2019)¹¹



¹¹ Teagasc (2019). Colostrum feeding of the newborn. <https://www.teagasc.ie/media/website/animals/beef/dairy-beef/Segment-002-of-Section1-The-Newborn-Calf.pdf> [Accessed 13/06/2019]

3. DELIVER QUALITY CALF CARE

Table 1: Commonly practiced mutilations in dairy calves

Mutilation	Definition	Methods
Castration	Removal or destruction of the testicles	Rubber ring; burdizzo clamp; surgical castration (must be carried out by veterinarian only).
Disbudding	Removal of the horn buds from calves two-months and under	Thermal cautery disbudding (hot iron)
Dehorning	Removal of horns and horn producing tissue from calves over two-months of age	Horn amputation by write/cutters (must be carried out by veterinarian only)
Supernumerary teat removal	Removal of extra teats	Scissors

CALF TRANSPORTATION

Dairy calves are often transported long distances at a very young age. This is particularly stressful and risky for young calves who have underdeveloped immune systems and have little control over their body temperature. Transportation of young calves can result in high mortality rates and decreased bodyweight¹².

To reduce the welfare problems linked to calf transportation:

- Calves should be handled carefully during loading and unloading.
- Calves should not have to navigate steep ramps.
- Calves should have sufficient space to lie down on comfortable bedding whilst travelling.
- Calves should be kept at thermally comfortable temperatures (ideally 15-26°C).
- Journey time should be kept as short as possible, and should not exceed 8 hours (including loading and unloading).
- Calves should be assessed before transport to ensure that they are fit to travel.

¹² Weeks, C. (2007) UK Calf Transport and Veal Rearing. A report for Compassion in World Farming, Godalming, Surrey. Pp 15- 16

4.

PRACTISE RESPONSIBLE ANTIMICROBIAL USE

Medicines are used responsibly under the advice of a veterinary surgeon, and steps are taken to reduce, replace and refine the use of antimicrobial agents on-farm, including discontinuing use of antibiotics for growth promotion or routine prophylaxis.

CORE CRITERIA

- 4.1:** Use of medicines on-farm must be recorded, including the date, identification of animal(s) treated, product, dose, reason for treatment, and prescribing veterinary surgeon.
- 4.2:** Prescription medicines including antibiotics must be used responsibly under the direction of a veterinary surgeon.

LEADERSHIP POSITION

- 4.3:** The farm can demonstrate efforts to reduce, replace and refine the use of antibiotics. For example, by discontinuing growth promotion¹ and routine prophylaxis², demonstrating a reduction in the number of cow courses of antibiotics administered, using selective dry cow therapy, or using teat sealants.
- 4.4:** Raw waste milk from cows within an antibiotic withdrawal period is not fed to calves.

ANTIMICROBIAL USE

Antimicrobials are a naturally occurring, semi-synthetic or synthetic substances that kill or inhibit the growth of micro-organisms which include bacteria, viruses, protozoa and fungi. The term therefore includes antibiotics, antiprotozoals, antivirals and antifungals.

Antibiotics are naturally occurring, semi-synthetic or synthetic substances that kill or inhibit the growth of bacteria. Antibiotics are a specific sub-set of antimicrobials.

Growth promotion is the continuous use of antibiotics in-feed, often at low dose rates, to improve growth rates and feed conversion ratios of food producing animals. Growth promotion is not currently permitted in the EU.

Prophylaxis (or prophylactic treatment) is the treatment of a healthy animal or group of animals to prevent infection, before an expected disease challenge.

Metaphylaxis (or metaphylactic treatment) is the treatment of a group of animals in which one or more of the animals, or previously 'in-contact' animals, are showing clinical signs of a disease.

Antimicrobial resistance (AMR) is the ability of microbes to grow or survive in the presence of an antimicrobial agent. The effect of this phenomenon is to make an antimicrobial ineffective at treating infection with these microbes in an individual (animal, human or plant).

Use of the '3Rs' framework can help farmers and vets to ensure responsible use of antimicrobials on farms, and reduce the risk of AMR emerging and adversely affecting the health of people and animals. The goals are:

4.

PRACTISE RESPONSIBLE ANTIMICROBIAL USE

To **REDUCE** the annual usage of antimicrobial agents on farm, whilst preserving animal health and welfare. Usage data should be monitored in a medicine book or electronic record. Farms should focus on discontinuing the use of growth promoters, routine prophylactic treatments such as blanket dry cow therapy, and medicines classified by WHO (2018)¹³ as highest priority critically important to human health (fluroquinolones, macrolides, 3rd/4th generation cephalosporins and colistin).

To **REPLACE** the use of antimicrobial agents where possible, with sustainable solutions to prevent diseases such as vaccination and improved husbandry practices, to protect animal health and welfare. Proactive herd/flock health planning and analysis of medicine records should support the identification and control of prevalent diseases on farm, with a view to replacing antibiotic use with sustainable alternatives such as vaccines, teat sealants, enhanced biosecurity policies, and improved husbandry practices and facilities.

To **REFINE** the use of antimicrobial agents on farm, by ensuring the responsible and informed selection and administration of products to animals that have a clinical indication for treatment. Farmers should ensure that they follow veterinary advice on the storage, administration, handling and disposal of antimicrobial medicines, and ensure that they are only used in animals that have a therapeutic or metaphylactic need for treatment. Diagnostic testing should be applied by vets where appropriate.

IONOPHORES

Ionophores are antimicrobial substances with antibacterial and anticoccidial activity. Examples include monensin, narasin, lasalocid sodium and salinomycin.

Globally, ionophores could be used in several different ways in the dairy industry:

- To enhance growth in heifer rearing (as a growth promotor).
- To enhance milk production during lactation (as a productivity enhancer).
- To prevent ketosis and displaced abomasum by improving energy metabolism in dairy cows (this would be a form of prophylaxis in dry cows).
- To prevent coccidiosis during calf-rearing (prophylaxis).
- Ionophores are not used therapeutically in human medicine; however, ionophore usage in livestock should be monitored, and the principles of 'reduce, replace and refine' followed.

¹³ (WHO) World Health Organisation (WHO) (2018) Critically important antimicrobials for human medicine. 6th Revision. WHO, Geneva.

5. EMPLOY HUMANE SLAUGHTER AND TRANSPORT PRACTICES

Euthanasia, slaughter and live transport practices applied to dairy and beef animals at all life-stages are humane, and are undertaken by suitably trained and competent personnel.

CORE CRITERIA

5.1: The farm must practice humane methods for the euthanasia, slaughter and transport of animals.

LEADERSHIP POSITION

5.2: When adult cattle are transported for slaughter or to other sites for breeding, rearing or finishing, travel times remain below 8 hours.

EMERGENCY SLAUGHTER

If there is no other practical and humane means of alleviating pain or suffering of animals that are suffering from injury or disease, then emergency euthanasia becomes the only option.

Once the decision has been made to undertake emergency culling of an animal, it is important that the animal is euthanased as soon as possible to avoid any further suffering. Standard operating procedures should be specified in the herd health plan with advice from a veterinary surgeon.

In an emergency due to an accident or sudden illness, it may not be possible for an animal to be moved without causing avoidable suffering. In these instances, the animal must be culled where it is found. Some animals may require restraint to facilitate safe and effective euthanasia. Cattle can be restrained using a halter or the animal can be confined in a narrow pen constructed of hurdles or gates. Small and infant animals may be restrained in a small pen or box. If safe to do so, small animals may also be manually restrained, depending on the method of euthanasia to be used. If the animal is to be transported to another location, it needs to be fit to travel, which can be assessed by a veterinary surgeon. It may be possible to transport the animal to a veterinary surgery or to a slaughterhouse, depending on the nature of the emergency. It is important to always handle animals with care to avoid any unnecessary suffering.

There are a variety of methods available for emergency culling of cattle:

- Lethal injection
- Free-bullet firearms
- Captive-bolt stunning followed by bleeding or pithing

The choice of method of euthanasia of an animal in an emergency depends on who is to perform the euthanasia, the availability of equipment, legislation and licensing requirements, the location of the animal, and the species. Table 2 provides an overview of these methods.

5. EMPLOY HUMANE SLAUGHTER AND TRANSPORT PRACTICES

Table 2: Overview of method of emergency euthanasia of cattle.

Emergency euthanasia method	Benefits	Considerations
Lethal injection	Animals will rapidly lose consciousness	Needs to be carried out by vet (typically) who may not be readily available. May not be appropriate for animals in distress. There may be restrictions on how the carcass can be disposed of.
Free-bullet firearms	Effective use of firearms will kill the animal outright, with no need to bleed or pith the animal. Various firearms can be used to kill livestock, but a shotgun is best for on-farm culling, when used by a competent operator. Shotguns are a safer firearm than others because the shot disperses within the head of large animals.	It is very important that the correct ammunition is used, otherwise the animal might not be killed immediately, and/or the operator could be injured. Certification and licensing may be necessary for the use of this method. The use of firearms in enclosed spaces, or when animals are on hard surfaces, could result in ricochet of free bullets and is to be avoided for health and safety reasons.
Captive-bolt stunning	A captive-bolt stunner fires a retractable bolt against the animal's head and in many cases into the animal's brain, rendering it immediately unconscious. A rapid death is ensured by bleeding or pithing the animal immediately after stunning. Pithing is the physical destruction of the brain by insertion of a cane or rod through the hole in the skull made by the bolt.	Captive-bolt stunning followed by bleeding or pithing can be used for emergency killing of animals where a free-bullet is impractical for safety reasons. Certification and licensing may be necessary for the use of this method. Captive-bolt stunning and pithing require a competent and confident operator. An animal that has been pithed must not be used for human or animal consumption.

LIVE ANIMAL TRANSPORTATION

Live dairy animals, including dairy cows, bulls and calves/youngstock are frequently transported to different locations for the purposes of breeding, rearing, fattening and slaughter. The transportation of animals can be stressful and impacts on animal health and welfare. Journey times of less than 8 hours including loading and unloading, can minimise the impact of necessary journeys on dairy cattle.

6.

BUILD HEALTHY AND PRODUCTIVE HERDS

Breeding animals are selected and bred to optimise their health and welfare, longevity and lifetime production of dairy and meat products.

CORE CRITERIA

- 6.1: Herd health and management planning must include the selection of breeding stock based on a balanced range of traits for welfare and production.
- 6.2: Milk production must be monitored and recorded.

LEADERSHIP POSITION

- 6.3: The average number of lactations per cow at cull is within the top quartile of VisionDairy producers.

DAIRY COW GENETICS AND LONGEVITY

Traditionally, dairy cow breeding programmes have focused on improving milk production. However, this narrowly focused approach has led to important traits for health and welfare being overlooked. The considerable increase in average milk yield in dairy cows over the years has been accompanied by a concerning decline in fertility, longevity and body condition and an increase in leg, metabolic and udder disorders¹⁴.

The number of lactations at cull is used as a proxy measure for productive longevity in dairy cows. Reasons for culling may include economic reasons (i.e. declining fertility or decreased milk yield) and may also be linked to recurring health problems such as lameness and mastitis. Therefore, the number of lactations at cull provides an indication of the level of these challenges in the herd. However, it is important that cow longevity is considered alongside other welfare indicators, as cows with poor health should not be kept in production if this is detrimental to their welfare.

¹⁴ Oltenacu, P.A. and Broom, D.M. 2010. The impact of genetic selection for increased milk yield on the welfare of dairy cows. *Animal Welfare*, 19 (S), 39-49.

7.

EFFICIENTLY PRODUCE SAFE, HIGH QUALITY MILK

Cow management, facilities and equipment used in milking, milk handling and storage are managed to uphold milk quality and safety standards, and to minimise waste.

CORE CRITERIA

- 7.1: Milk quality and safety parameters must be regularly reported to the farmer from the processor.
- 7.2: Good hygiene practices are followed during milking operations; for example, hand washing, use of gloves and checking foremilk and udder cleanliness prior to milking.

LEADERSHIP POSITION

- 7.3: The farm's average raw milk somatic and bacterial cell count is within the top quartile of VisionDairy producers.
- 7.4: The farm has passed 100% of antibiotic residue tests in the past 12 months.
- 7.5: Biosecurity procedures to minimise the entry and transmission of livestock diseases are in place, including restricted personnel movements and use of personal protective equipment.

MILKING HYGIENE

The five-point plan is a set of 5 principles which, if followed, can help to reduce mastitis incidence and high cell counts by improving milking hygiene. The five principles are:

- Record and treat all clinical cases
- Disinfect teats post-milking
- Use (selective) dry cow therapy at drying off
- Cull cows with chronic mastitis
- Perform regular milking machine maintenance

BIOSECURITY

Biosecurity reduces and/or prevents the introduction of new diseases onto a farm from outside sources. Prevention is always better than cure because less time is spent treating the diseases, drug and vet costs are reduced and herd welfare and productivity are not compromised.

Vets or external specialists can support in establishing specific, individual herd biosecurity protocols so that losses can be contained. Basic biosecurity operating procedures can include protocols for:

- Manure handling
- Sanitation
- Housing different animal groups
- Pen/hutch use and disinfection
- Feed storage management
- Facility maintenance
- Boot disinfection
- On-farm disinfection
- Disposal of dead animals
- Animal Biosecurity (new animals to a herd or animals returning from shows etc)
- Visitor Biosecurity
- Wildlife Biosecurity (feed and feed storage areas, water sources, herd accommodation etc)

7.

BUILD HEALTHY AND PRODUCTIVE HERDS

Identifying the infectious diseases that are a threat to specific herds/farms can ensure implementation of relevant and practical biosecurity measures.

Key areas to address in terms of practical biosecurity measures include:

- Knowledge and records — Know the health status of purchased animals; know the diseases and how to prevent them; keep records of visitors and feed supplies.
- Quarantine and treatment — Have a facility and timescale in place depending on the risks. A 30-day quarantine period is often recommended for new arrivals, but this may not be long enough depending on which disease you are at risk of bringing onto the farm.
- Vaccination — May be used to protect the existing herd from acquiring some infections from new arrivals.
- Control the spread of disease from wildlife populations where possible – for example, by minimising the opportunity for direct contact between wildlife and livestock, or livestock contact with wildlife faeces.
- Boundaries — Design them to be stock-proof and prevent nose-to-nose contact with external herds — three metres is the accepted standard although this will not stop the spread of respiratory viruses.
- Prompt identification and culling or treatment of infected animals to reduce the on-farm burden
- Examination and testing of all purchased animals — Several diseases are easily detected by examination and sampling of blood and milk to find carrier animals. Their risk to the herd can then be determined.
- General farm hygiene — maintaining tidy premises and ensuring the prompt removal of dead stock and waste helps to reduce the risk of disease transmission.

8.

UPHOLD THE HUMAN RIGHTS OF WORKERS

Farmers and farm workers, including permanent, seasonal and contracted staff, experience working conditions that provide a sustainable livelihood and uphold their human rights.

CORE CRITERIA

8.1 Farms must comply with the principles of internationally-recognised labour practice set out in the Ethical Trading Initiative (ETI) Base Code¹⁵.

LEADERSHIP POSITION

8.2: Legally binding contracts of work are in place and copies provided to all non-family staff members, including seasonal, contracted and permanent staff.

8.3: The percentage of staff with long-term legally binding contracts of work are within the top quartile of VisionDairy producers.

THE ETI BASE CODE

The Ethical Trading Initiative (ETI) Base Code¹⁴ is founded on the conventions of the International Labour Organisation (ILO) and is an internationally recognised code of labour practice. It is expected that suppliers and farmers within our supply chain are compliant with all relevant local and national laws and regulations and have access to, understand, and uphold the ETI principles to ensure the rights and wellbeing of all workers. Suppliers are able to further demonstrate compliance by passing an audit based on the ETI base code, e.g. SMETA.

The full ETI base code can be accessed online, at <https://www.ethicaltrade.org/eti-base-code>.

CONTRACTS OF WORK

Legally-binding contracts of work are bilateral agreements that allow the employer and employee to negotiate terms and conditions of the employment arrangement to provide protections and clarification for both parties. Contracts must include conditions of employment, freedom of movement, overtime working conditions, and details of housing provision or rent in a language understood, agreed upon and signed by the workers. Long-term (i.e. non-fixed term) contracts are particularly beneficial in providing workers with job security.

CHILD LABOUR

Child labour is work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children. It is understood that children may assist periodically on a family farm; however, farmers should ensure that legislation is adhered to and that children under 18 do not work at night, and do not work long hours (more than eight hours a day or five days a week). Farmers should additionally ensure that children under 15 years of age only undertake light work, and no hazardous work (for example, involving operating heavy machinery or handling chemicals). Please refer to 'Base Code Guidance: Child Labour'¹⁶ for more information.

WORKING HOURS

Working in the farming industry, and particularly on dairy farms, often entails long and unsociable hours of work. Whilst long hours and weekend work may be necessary and agreed in contracts by many farm staff, employers should ensure that working hours are not excessive (i.e. <60 hours/week) unless in exceptional circumstances, work schedules allow regular days off (2 in every 14 days), over-time is compensated, and breaks for rest and meal times are provided. Please refer to the ETI Base code for more information.

¹⁵ Ethical Trading Initiative (ETI) (2018) The ETI Base Code. ETI, London. [online] Available from: https://www.ethicaltrade.org/sites/default/files/shared_resources/ETI%20Base%20Code%20%28English%29.pdf [Accessed 11 June 2019]

¹⁶ Ethical Trading Initiative (ETI) (no date) *Base Code Guidance: Child Labour*. ETI, London. [online] Available from: https://www.ethicaltrade.org/sites/default/files/shared_resources/eti_base_code_guidance_-_child_labour_web_0.pdf [Accessed 19 June 2019]

8. UPHOLD THE HUMAN RIGHTS OF WORKERS



Figure 5: The key principles of the ETI Base Code (ETI, 2018)

9.

SUPPORT THE HEALTH AND WELLBEING OF WORKERS

Farmers and farm workers, including permanent, seasonal and contracted staff, operate in a safe environment that supports their health and wellbeing.

CORE CRITERIA

- 9.1:** Essential work items including personal protective equipment and first aid boxes must be paid for and provided for farm workers.
- 9.2:** A farm safety plan must be maintained on-farm.
- 9.3:** Numbers and records of health and safety incidents must be maintained on-farm.

LEADERSHIP POSITION

- 9.4:** Staff retention rate is within the top quartile of VisionDairy producers.

FARM SAFETY PLAN

A farm safety plan should:

- Identify the hazards and risks on farm.
- Provide a written plan aiming to minimise the risk of injury or ill-health for those who work on the farm.
- Set out the arrangements and resources provided to safeguard the health and safety of people on the farm.

The example template on the next page from HSA¹⁷ gives guidance for creating and maintaining a Farm Safety Plan.

¹⁷ Health and Safety Authority (no date) Guidelines on the Preparation of a Safety Statement for a Farm. HAS, Dublin. [online] Available from: https://www.hsa.ie/eng/Publications_and_Forms/Publications/Agriculture_and_Forestry/Guidelines_on_the_Preparation_of_a_Safety_Statement_for_a_Farm.pdf [Accessed 11 June 2019].

9.

SUPPORT THE HEALTH AND WELLBEING OF WORKERS

STEP 1 DRAW UP A HEALTH AND SAFETY POLICY

Your policy should begin with a declaration specifying your commitment to securing a workplace that is as safe and healthy as possible.

Specify how the policy or relevant sections (safety notices/warning notices etc) will be brought to the attention of employees, contractors and visitors

STEP 2 IDENTIFY THE HAZARDS

A hazard is anything (or any work activity) that has the potential to cause harm or injury.

Some hazards are obvious, for example unguarded moving parts of machinery, working at heights, slurry tanks (drowning, gases), or over-head powerlines. Less obvious, but at the root of many accidents, are hazards presented by untidy yards, workshops etc, and poor machine maintenance.

Farm activities likely to cause ill-health must be also considered. In the case of some hazards eg. excessive noise, it may take months or even years before damage materialises. Farmers lung, brucellosis, Weils disease and toxoplasmosis are some of the more serious diseases found in the farming population.

Walk around your farmyard and examine all aspects of the farm. Look at the activities at different times during the year as the work place or work system(s) may change from season to season. When identifying hazards it is helpful to record the various activities first, then the dangers (or hazards) associated with these activities. Focus less on the trivial details and concentrate on the significant hazards that could result in serious harm.

STEP 3 CARRY OUT A RISK ASSESSMENT

Where a hazard (or hazardous activity) exists, the next step is to determine the likelihood of it happening, and the consequences/seriousness if it happens. Then decide whether you have taken enough precautions or should do more to prevent harm.

Risk will depend on many, often related, circumstances, e.g.

- Is anyone exposed to the hazard? Who is exposed — children, skilled worker, member of the public, etc?

- Is the hazard likely to cause injury and how serious?
- Is the hazard well controlled?
- Is the level of supervision adequate?
- What training has been provided?

STEP 4 DECIDE PREVENTION/CONTROL MEASURES

Based on your risk assessment, decide whether the preventative/control measures you have in place are adequate or whether more should be done.

Wherever possible, hazards should be eliminated. However, this may not always be possible and you may have to consider how the risk of injury can be reduced.

Some common methods of reducing risk are:

- Fencing off/containing the hazard
- Replacing the hazard with something less hazardous (e.g. AI to replace stock bull)
- Providing training and/or supervision
- Providing information or reminders (e.g. warning notices)
- Providing personal protective equipment (PPE) or clothing (e.g. eye goggles, earmuffs)

STEP 5 RECORD YOUR FINDINGS AND DISSEMINATE

Record the more significant hazards and most important conclusions from your risk assessment and the associated prevention/control measures in a Farm Safety Plan document.

Make the Farm Safety Plan available to all workers, including family members, and casual relief/contract workers.

STEP 6 REVIEW AND UPDATE

Review and update the farm safety plan at least annually, and when new hazards arrive on farm (e.g. new machinery).

Farmers and farm workers, including permanent, seasonal and contracted staff, operate in a safe environment that supports their health and wellbeing.

10. DEVELOP THE KNOWLEDGE AND SKILLS OF WORKERS

Farmers and farm workers, including permanent, seasonal and contracted staff, have access to training, information and mentorship for continuous development of knowledge and skills to safely perform their duties and fulfil their responsibilities for cattle health and welfare.

CORE CRITERIA

10.1: Members of staff must receive annual training covering relevant aspects of their work; for example, health and safety, animal husbandry and management, transport and euthanasia.

LEADERSHIP POSITION

10.2: The average number of training days per staff member, covering relevant aspects of health and safety, animal husbandry, management, transport and euthanasia, is within the top quartile of VisionDairy producers.

10.3: The farm has provided one or more apprenticeship or trainee/student placement on the farm within the last 12 months.

STAFF TRAINING AND EDUCATION

Regular training and education of farmers and staff members is important to maintain standards of health and safety and animal welfare, and provides opportunities for continual professional development. Training can include in-house training, for example provided by farmers, consultants or veterinary surgeons, or external training, including the attendance of day courses, workshops or online training.

Image 5: On-farm staff training. © Benchmark Holdings plc.



11.

REDUCE CARBON FOOTPRINTS

Greenhouse gas emissions on-farm are minimised through climate-smart agriculture practices including energy conservation and generation or use of renewable energy. Opportunities for increasing carbon sequestration on-farm are identified and utilised.

CORE CRITERIA

11.1: The source and usage of energy on-farm must be known and recorded.

LEADERSHIP POSITION

11.2: The percentage of energy use from renewable sources (generated on or off-farm) is within the top quartile of VisionDairy producers.

11.3: The carbon footprint on-farm is evaluated using a recognised tool (including, but not limited to, LCA or Cool Farm Tool) and recorded annually.

11.4: Levels of carbon emissions are within the top quartile of VisionDairy producers.

RENEWABLE ENERGY

Investing in sources of renewable energy such as solar, wind and biogas/anaerobic digesters can decrease the farm's carbon footprint whilst also increasing profitability, as farmers can decrease energy costs and excess energy can often be sold back to the national grid, achieving financial returns. Collaborative options for environmental mitigation strategies such as anaerobic digestion plants can decrease initial costs per farm and increase economic viability for smaller operations.

CARBON FOOTPRINTING

Carbon footprinting enables farmers to calculate the total greenhouse gas emissions released into the atmosphere as a result of their farming activities. Carbon footprinting converts all farm emissions into carbon dioxide equivalent (CO₂-eq) which is used to calculate Global Warming Potential (GWP).

Carbon footprinting can be used to show how management decisions can sequester carbon or reduce greenhouse gas emissions.

The Cool Farm Tool¹⁸ provides a free way to calculate farm greenhouse gas emissions. Alternative tools such as Carbon Navigator and 2.0 LCA amongst others, can also be used.

Image 6: An anaerobic digester. © Benchmark Holdings plc.



¹⁸ <https://coolfarmtool.org/>

12.

PROTECT ENVIRONMENTAL WATER QUALITY

Fertiliser, manure and chemical use on-farm is managed to minimize their impact on water quality. Ground and surface water ways and non-target areas are protected from nutrient loading and pollution.

CORE CRITERIA

12.1: Farms must have a nutrient and effluent plan on the storage and application of manure and fertilisers.

LEADERSHIP POSITION

12.2: The farm nutrient and effluent plan includes the amount of fertiliser used and practical steps to reduce risks of nutrient loading to non-target areas/waterways.

12.3: The farm has an active programme to regularly measure nutrient balance and loading in the environment.

NUTRIENT AND EFFLUENT PLAN

A well implemented nutrient and effluent management plan will ensure the waterways contain low levels of nutrients and pollution including soil matter, fertilisers and pesticides, allowing wetland aquatic plants to thrive. Fertilisers, manures and composts are important inputs on many farms, for building soil fertility and organic matter. However, it is important that nutrients are used efficiently and not wasted, from economic and environmental perspectives, because wasted nutrients represent loss of profit, acid rain, eutrophication and carbon emissions.

Fertilisers should be applied in a targeted way, avoiding water courses, wildlife habitats and work or residential areas. Nitrogen, phosphorus, potassium, sulphur and micronutrients should be applied in balanced quantities and as part of a nutrient and effluent management plan. Red Tractor Assurance and LEAF Marque standards provide examples of how farmers can devise nutrient and effluent management plans for their farms.

Red Tractor provides a Manure Management Plan¹⁹ example template that can be found online — see reference 19.

The LEAF (Linking Environment and Farming) Marque Standard²⁰, which requires farmers to consider the following:

- Nutrients and pesticides
- Record organic and inorganic fertiliser applications
- Ensure application does not exceed agronomic requirement
- Control run-off pathways to reduce risks of nutrients or pollution loading in water i.e. natural vegetation
- Ensure application follows the manufacturer's instructions and environmental regulation limits
- Ensure pesticides are stored and disposed of properly
- Soil and crop protection
- Prevent soil from compaction by choosing appropriate post-harvest management techniques i.e. winter cover crops
- Reduce runoff and soil erosion i.e. using natural vegetation
- Livestock management
- Manage livestock waste sensibly
- Control livestock access to watercourses
- Protecting watercourses
- Provide alternative drinking arrangements for livestock
- Keep a boundary between watercourses and fields where livestock roam

Do not apply pesticides during heavy rain, wind events or in hot, dry weather. Practical steps that can help reduce the risk of nutrient loading in non-target areas may also include replacing nitrogenous fertiliser with the use of legumes grown as part of the crop rotation, and/or by recycling organic wastes (compost, manure etc.).

NUTRIENT TESTING

The nutrient composition of soils, watercourses, synthetic fertilisers, manures, composts and crop residues can be assessed to better understand the balance of nutrients in the environment, and to help revise and improve the nutrient and effluent management plan to drive efficiency. This can be undertaken using local soil and water testing facilities.

¹⁹ Red Tractor Assurance (2016) Manure Management Plan – 250 kg/ha. Red Tractor, London. [online] Available from: https://assurance.redtractor.org.uk/contentfiles/Farmers-5605.pdf?_=636446148316706666 [Accessed 11 June 2019]

²⁰ Linking Environment and Farming (LEAF) (2016) LEAF Marque Standard, Version 14.1. LEAF, Warwickshire. [online] Available from: <https://s3-eu-west-1.amazonaws.com/leaf-website/LEAF-Marque-Standard-v14.1-Final.pdf> [Accessed 11 June 2019]

13.

SUPPORT SOIL HEALTH

Soil health is conserved and enhanced, through a proactive programme to optimise soil quality and retention.

CORE CRITERIA

13.1: The farm must have a soil health policy in place.

LEADERSHIP POSITION

13.2: The farm implements regular soil testing for nutrients and organic carbon content.

13.3: The farm's soil health policy includes a practical programme for building soil quality; for example, through no-tilling, use of winter cover crops or green manure.

SOIL HEALTH PLAN

A soil health plan is fundamental to ensure soil fertility, structure, stability and biodiversity, is conserved and enhanced. Soil is the foundation to agricultural production; healthy soil assists water management, carbon storage, and prevents soil erosion, compaction and nutrient run-off. The purpose of a soil health plan should be to preserve and accumulate the soil organic matter. Red Tractor Assurance and The Soil Association provide information on how farmers can devise Soil Management Plans for their farms.

Red Tractor provides a Soil Management Plans²¹ example template that can be found online — See reference 21.

The Soil Association²² guidance on this vast topic for organic land and crops offers examples of good soil management, such as:

- Manage and build soil quality through a) no-tilling b) use of winter cover crops c) green manure/organic materials
- Frequently conduct soil testing for nutrients and organic carbon content
- Study water-use to establish minimum water wastage and enhance soil water content
- Reduce the likelihood of run-off and soil erosion and implement strategies such as under-sowing, overwintering green cover crops, no till/direct drilling or minimum tillage farming, choosing suitable stock type and levels, and contour farming.

²¹ Red Tractor Assurance (2017) Soil Management Plan. Red Tractor, London. [online] Available from: https://assurance.redtractor.org.uk/contentfiles/Farmers-6870.pdf?_=636428845825635140 [Accessed 11 June 2019]

²² Soil Association (2003) Soil Management on Organic Farms. Soil Association, Bristol. [online] Available from: <https://www.soilassociation.org/media/4332/sa-tech-guide-soil.pdf> [Accessed 11 June 2019]

14.

MINIMISE USE OF FRESH WATER

Fresh water consumption on-farm is minimised, and opportunities to increase the percentage of water use from renewable or recycled sources are identified and utilised.

CORE CRITERIA

14.1: The source and volumes of water used on farm, must be known and recorded.

LEADERSHIP POSITION

14.2: The proportion of renewable/recycled water use (non-mains, such as grey water or harvested rain water) on-farm is within the top quartile of VisionDairy producers.

WATER USE

Dairy farms have large demands for water for animal drinking, plate cooling of milk, cleaning of equipment/facilities and the irrigation of feed crops. The large volume of water used means that it is important for dairy farmers to be as efficient as possible with water use. A number of interventions can assist dairy producers in reducing their water usage including:

- Using grey (dirty) water where possible e.g. re-use parlour cleaning water for washing down external yards
- Using green (rain) water for irrigation
- Ensuring plate cooler water is re-used e.g. for hot water boiler
- Installing trigger hoses to save water when washing down
- Fixing leaks and drips
- Installing a water meter to log water use

15.

CONSERVE AND ENHANCE BIODIVERSITY

The natural landscape, habitats and biological diversity of wild plant and animal species are conserved and enhanced. Invasive pest control is implemented on-farm using humane methods whilst protecting non-target species.

CORE CRITERIA

15.1: Farms must have a conservation and biodiversity management plan.

LEADERSHIP POSITION

15.2: The farm's conservation and biodiversity management plan includes a pest management solution to protect non-target species.

15.3: The percentage of land not in production (e.g. heathland, hedgerow, permanent meadow, watercourse, wetland, woodland) or under a designation scheme is within the top quartile of VisionDairy producers.

15.4: The farm has not undertaken conversion of high conservation value land such as forests, wetlands and grasslands to agricultural production in the past 5 years.

CONSERVATION AND BIODIVERSITY MANAGEMENT PLAN

Biodiversity is the variety of life found on earth; it is the foundation of all agriculture. It supports our food supply from the soil to the delivery of vital ecosystem services such as pollination. Conservation and biodiversity management plans help farmers to identify key wildlife habitats on their farms, employ farming practices that protect wildlife species and take steps to build habitats and biodiversity. This not only has benefits for the environment and the survival of wild species, but can benefit farm performance; for example, by supporting pollination.

'Farm Wildlife'²³ encourages a management approach to vitalise farmland wildlife conservation without negatively impacting farm operations or production.

²³ Farm Wildlife (2019) Helping you to help wildlife on your farm. [online] Available from: <https://farmwildlife.info/> [Accessed 11 June 2019]

²⁴ Linking Environment and Farming (LEAF) (no date) Landscape and Nature Conservation and Enhancement Plan. [online] Available from: https://archive.leafuk.org/eblock/services/resources.ashx/001/028/196/FINAL_LEAF_Landscape_and_Nature_Conservation_and_Enhancement_Plan_Report_template_for_v._12.0.pdf [Accessed 11 June 2019]

Some examples of ways to improve biodiversity include:

- Enhance and expand the quality of existing habitats, whilst introducing areas of new habitats and connecting related habitats within close proximity (i.e. creating wildlife corridors).
- Protect non-target species from invasive pests; for example, by deploying very targeted pest control.
- Maintain small flower-rich habitats that are home to the native wildflowers that were ordinarily located across the landscape. These diverse habitats support and promote populations of pollinators.
- Create areas of new habitats at field margins and field boundaries to support and protect wildlife from farm activities and inputs. Field boundaries encourage wildlife to thrive, whilst connecting habitats across farmland.
- Support and enhance wetland aquatic habitats and features by minimising harmful farm activities near waterbodies.
- Understand the importance of providing seed-rich habitats for farmland seed-dependent wildlife.

The Landscape and Nature Conservation and Enhancement Plan by LEAF²⁴ provides a template and guidance on good practices for wildlife conservation on farms — See reference 24.



Image 7: A dairy herd at pasture. © Benchmark Holdings plc.

(IV)

UNDERSTANDING SUSTAINABILITY THROUGH OUTCOME MEASURES

A key element of the programme is the collection and interpretation of sustainability outcome measures. Here, we explain these metrics and their use in understanding supply chains.

WHAT ARE SUSTAINABILITY OUTCOME MEASURES?

Sustainability Outcome Measures are pieces of data used to quantify and understand the sustainability impacts of a food production system. They incorporate environmental, ethical (including human and animal wellbeing) and economic measures.

WHY ARE THEY USEFUL?

Traditionally, the sustainability of different food production systems has been defined by 'input' criteria, such as the type and size of farm, the feed used or the genetics of the animal. Although these measures are important in managing a livestock system, they do not directly measure the sustainability impact and often fail to capture the full effect of a system upon human and animal wellbeing, the environment and farm efficiency.

Sustainability outcome measures are collected by observing the impact of the system on key elements of sustainability over time. For example, animal welfare outcomes include physical and behavioural measures that are recorded by directly observing the animals at different life stages, to give a better understanding of how each animal has experienced its living environment.

HOW DO WE MEASURE THEM?

Sustainability outcome measures cover the full production process and can be measured both on-farm and at the processor. For example, animal welfare outcome measures submitted for a single farm may include the mortality rate of adult cows, and the number of mastitis cases per 100 cows in the reporting period. Much of these data may already be collected for production and management purposes. When data is supplied by the processor, 'aggregated measures' for a representative sample of farms may be submitted, for example representing the average somatic cell count across the farms during a reporting period. Because it is not always possible to collect outcome measures relating to certain issues, we also include a selection of input measures that provide information about the farming practices and resources used in our dairy supply chain.

HOW DO WE USE THEM?

Outcome measure data are collected continuously from farms and suppliers in a supply chain. The data collected are then independently analysed. This outcomes-based approach helps to provide robust and ongoing information about the sustainability of our milk. The results produced allow us to identify areas where improvements can be made, as well as to help find solutions. Solutions may be identified by looking directly at the data and identifying farms and suppliers already employing best practice and achieving good results, or through further research and innovation to improve performance where solutions are currently unknown. Importantly, this approach allows farmers and suppliers to pioneer their own solutions and innovations to make progress. We recognize that flexible and creative interventions are crucial for tackling some of the long-standing challenges in sustainable food production.

(v)

OUTCOME MEASURE REPORTING FOR OUR VISIONDAIRY PROGRAMME

We will be asking our suppliers to submit data from individual farmers, and/or aggregated data from groups of supplying farms. Annual submissions of aggregated data for an essential selection of outcome measures relating to a representative sample of farms will be expected from all our suppliers. This is a requirement in order for suppliers to count as “sustainable” according to the VisionDairy program. A selection of individual farmers will also work with us as “VisionDairy Farms” and will submit a comprehensive set of outcome measure data regarding their operations on a quarterly basis. This data will be used to showcase excellence in our supply and to illustrate the variation in production systems that can deliver best practice dairy farming in different geographies.

Animal-based measures should cover the lifespan of the animals whilst on farm, and data should be collected wherever possible from all animals on farm within the data collection period. If this is not possible, a representative sample of animals should be used.

To initiate data collection and understand limitations in existing data, historical data (12 months) will be requested from each supplier or individual farm. Historical data are used to highlight differences in measurement protocols used between sites and suppliers and identify any missing outcome measures.

Data can be collected in several ways. It will initially be collected using a bespoke excel (or other spreadsheet) format provided by Barry Callebaut, and submitted by email. Following onboarding of farms and suppliers, outcome measures can be later be collected and reported via Barry Callebaut’s dedicated online web portal, allowing visibility of trends and benchmarking of results.

(VI) OUTCOME MEASURES

Each principle of the VisionDairy Charter is accompanied by a series of outcome measures, that are used to measure farm compliance with the core criteria, and progress towards the leadership position of the Charter. In this section, we provide further information on these measures and detail what information is to be collected (Table 4). In addition to these measures, a census of information regarding number of workers, number of animals and milk production etc is required to enable processing of this data in to meaningful statistics (Table 3). To facilitate data collection, a template will be provided.

For individual “VisionDairy Farms”, all of the following farm information, livestock census and outcome measure data should be collected and reported on a quarterly basis, to provide a comprehensive overview of performance.

For suppliers, only the information and measures *starred and in bold should be collected and reported annually, to provide an essential overview of performance across a representative sample of farms in their supply.

Table 3: Farm/supply information and livestock census

Outcome Measure(s)	Information required (Details specific to suppliers is *starred)	Response options/units	
Farm/supply information	*Farm/Supplier name	Name of farm or supplier	
	*Milk pool/Processing site	Name of milk pool/processing site	Milk pool/Processing site
	Farm name/Code (if anonymity is necessary)	Farm name /code	Farm name/Code (if anonymity is necessary)
	Start date of quarterly reporting period	Date	DD/MM/YY
	Last date of quarterly reporting period	Date	DD/MM/YY
	*Breed(s) in milking herd	Breed(s) in milking herd *Most common breed in the milking herd	e.g. Holstein Friesian
Livestock Census	Total/ *Average number of lactating and dry cows (include breeding heifers >365 days of age) at the start of the reporting period (excluding sold animals)	Total/Average number of lactating and dry cows (include breeding heifers>365 days of age) at the start of the reporting period (excluding sold animals)	
	Total/ *Average number of youngstock on farm (<365 days of age) at the start of the reporting period (excluding sold animals)	Total number of youngstock on supplying farms *Average number of cows on supplying farms	Total/Average number of youngstock on farm (< 365 days of age) at the start of the reporting period (excluding sold animals)
	Total/ *Average total milk production over reporting period DSF	In litres *Average total milk production by supplying farms, in litres	Total/Average milk production over reporting period DSF
	*Average number of full-time staff (permanent and short-term) during the reporting period	Average of the number of employees (at the beginning and end of the reporting period) on supplying farms	Average number of full time staff (permanent and short-term) during the reporting period
	Date of last audit and company/scheme	Date	DD/MM/YY

Table 4: Vision Dairy outcome measures

Charter Principle	Outcome Measure(s)	Information required	Response options/units
Cow Welfare			
1. Optimise animal welfare	Frequency/ *Most common frequency of herd health planning meetings with a veterinary surgeon/ advisor	Frequency of herd health planning meetings with veterinary surgeon/ advisor *Number of farms with a herd health plan (created within a year)	At least once a year/ every 2 years/ Less than every 2 years/ Never
	Percentage of adult dry or lactating cows that died or were euthanased on-farm	Number of adult dry or lactating cows that died or were euthanased on-farm during the reporting period	Number of cows
	Number of cow cases of mastitis per 100 cows	Total number of cow cases of mastitis during the reporting period (Number of cows treated or culled)	Number of cows
	Percentage of cows identified and/or treated with severe lameness (AHDB score 3)	Number of cows identified/ treated with severe lameness (Severe lameness = mobility score 3; see AHDB guidelines: https://dairy.ahdb.org.uk/resources-library/technical-information/health-welfare/mobility-score-instructions/#.WONcGNJKg2w)	Number of cows
	*Use of tethering (on single farm or *on all supplying farms) during routine production of cows and/ or calves, with/ without daily exercise	Use of tethering during routine production of cows, with/ without daily exercise (Not including temporary tethering for milking or during procedures)	No tethering/ Seasonal tethering (up to 10 months/year)/ Tethering used all year with daily exercise (at least 1 hour/day)/ Tethering used all year without daily exercise
	*Provision of enrichment for housed cows (on single farm or *on all supplying farms)	Use of tethering during routine production of calves, with/ without daily exercise (Not including temporary tethering during procedures)	No tethering/ Seasonal tethering (up to 10 months/year)/ Tethering used all year with daily exercise (at least 1 hour/day)/ Tethering used all year without daily exercise
	Number/ *Average number of days of access to pasture/ grazing for milking herd	Are cow brushes provided for housed cows? (Yes/No) *Number of farms providing brushes	Yes/No
		Does the farm provide any loafing areas or access to grazing? *Number of farms providing loafing area/ access to grazing	Loafing areas available at housing/ Access to pasture is available for all or some of the year/ No loafing area or pasture access
		Number/ *Average number of days of access to pasture/ grazing for at least 4 hours/day for the milking herd in the last 12 months	Number/ Average number of days

	*Provision of fresh feed daily and a continuous source of fresh water for all animals	Do all cows and calves have access to a continuous source of fresh water? (Yes/No) *Number of farms offering cows and calves continuous access to fresh water?	Yes/No (individual farm) Number of farms (supplier)
2. Provide quality, nutritious and sustainable diets	Percentage dry-matter of milking cow rations consisting of forage (grass, hay, silage, straw, etc.)	What percentage dry-matter of the milking cow rations consists of forage?	%
	Records for all feedstuffs (purchased and home produced) must be kept for a minimum of one year	Are records for all feedstuffs (purchased and home produced) kept for a minimum of one year? (Yes/No)	Yes/No
	Percentage of soy used in feed rations that is 'certified' as sustainable	If soy is used, what percentage of the soy is certified as sustainable? (if known) (e.g. by RTRS)	%
	Percentage of palm used in feed rations that is 'certified' as sustainable	If palm is used, what percentage of the palm is certified as sustainable? (if known) (e.g. by RSPO)	%
	Are chemical and nutritional analyses performed on home produced feed?	Are chemical and nutritional analyses performed on home produced feed? (Yes/No)	Yes/No

3. Deliver quality calf care	Percentage/ *Average percentage of calves born that are subject to surgical mutilations (for example, castration, disbudding, dehorning or removal of supernumerary teats)	How many/ *What is the average number of male calves born on the unit during the reporting period that were castrated?	Number/ Average number of calves
		How many/ *What is the average number of calves that were disbudded? (use of hot iron/ scoop)	Number/ Average number of calves
	Percentage of adult cows with docked tails	How many/ *What is the average number of youngstock (<365 days) that were dehorned? (use of wire/cutters)	Number/ Average number of youngstock
		How many/ *What is the average number of female calves that had the supernumerary teats removed?	Number/ Average number of calves
	* Is pain relief routinely used for surgical mutilations (castration, disbudding, dehorning, removal of supernumerary teats or tail docking) (on individual farm or *on supplying farms)?	How many adult cows in the herd have docked tails (at the end of the reporting period)?	Number of cows
		What pain relief is provided when calves are castrated, if any?	Local anaesthetic AND analgesia/ Local anaesthetic only/Analgesia only/Sedation only/No pain relief
		What pain relief is provided for calves that have supernumerary teats removed, if any?	Local anaesthetic AND analgesia/ Local anaesthetic only/Analgesia only/Sedation only/No pain relief
	Percentage of calves (<365 days old) that died or were euthanased on-farm	What pain relief is provided for tail docking of cows, if any?	Local anaesthetic AND analgesia/ Local anaesthetic only/Analgesia only/Sedation only/No pain relief
		How many calves (<365 days old) died or were killed on farm in the reporting period?	Number of calves
	Maximum transport time of calves to next destination (if known)	What is the maximum transport time of calves (<365 days) from the farm? (To calf collection site, rearing/breeding/ finishing sites, or to slaughter; if known)	Number of hours

4. Practice responsible antimicrobial use	Number/ *Average number of courses of antibiotics given per cow	What is the (*average) number of courses of antibiotics given per cow during the reporting period? ("One course" of antibiotic treatment is a single dose or set of successive doses given to an individual animal to treat or prevent a case of infection or disease. A course of treatment within a 7-day period = 1 course; treatment of 1.4 days = 2 courses, etc.)	Number/Average number of cow courses
	Are calves fed with raw waste milk from cows within an antibiotic withdrawal period?	Are calves fed with raw waste milk from cows within an antibiotic withdrawal period? (Yes/No)	Yes/No
	Method of emergency slaughter on farm	What is the method of emergency slaughter for animals on the farm?	Lethal injection/Free bullet firearms/Captive bolt followed by bleeding/pithing/Humane killer/Other
	*Maximum transport time of cull cows to slaughter (on individual farm or *on supplying farms)	What is the maximum transport time of cull cows from the farm? (if known)	Number of hours
Farm Performance			
6. Build healthy and productive herds	*Average number of lactations at cull	For cows culled during the reporting period, what is the average number of lactations prior to cull?	Number of lactations
	Average daily milk yield/cow	For the reporting period, what is the average daily milk yield/cow? (in litres/day)	Number of litres/day
7. Efficiently produce safe, high quality milk	*Average somatic cell count	During the reporting period, what was the average somatic cell count for the herd/ *supplying herds? (in cells/ml)	Number cells/ml
	*Average bacteria cell count	During the reporting period, what was the average bacterial cell count for the herd/ *supplying herds? (in cfu/ml)	Number cfu/ml
	Did the farm fail any antibiotic residue tests in the past 12 months?	Did the farm fail any antibiotic residue tests during the reporting period? (Yes/No)	Yes/No (individual farm)
	*Percentage of farms that failed any antibiotic residue tests in the past 12 months	*How many farms failed any antibiotic residue tests during the reporting period? (Number)	Number of farms (supplier)
Are biosecurity procedures in place to minimise the entry and transmission of livestock diseases, including restricted personnel movements and use of personal protective equipment?		Are biosecurity procedures in place to minimise the entry and transmission of livestock diseases, including restricted personnel movements and use of personal protective equipment? (Yes/No)	Yes/No

8. Uphold the human rights of workers	Does the farm owner/manager understand and declare compliance with the Ethical Trading Initiative's Base Code? *Percentage of farm owners/managers understand and declare compliance with the Ethical Trading Initiative's Base Code	Does the farm comply with the Ethical Trading Initiative Base Code? (Yes/No) *How many farm owners/managers understand and declare compliance with the Ethical Trading Initiative's Base Code?	Yes/No (individual farm) Number of farms (supplier)
	Percentage of non-family workers with legal contracts of work	Does the farm employ any non-family workers? (Yes/No) If yes, what percentage of these workers have legal contracts? (including conditions of employment, freedom of movement, overtime working conditions, and details of housing provision or rent in a language understood, agreed upon and signed by the workers)	Yes/No %
9. Support the health and wellbeing of workers	Availability of personal protective equipment and/or first aid boxes on-farm for staff	Does the farm provide personal protective equipment for staff e.g. (e.g. protective footwear, masks, gloves)? (Yes/No)	Yes/No
	Use of a farm safety plan *Percentage of farms that have a health and safety plan	Does the farm have a farm safety plan? (Yes/No) *How many farms have a health and safety plan?	Yes/No (individual farm) Number of farms (supplier)
	Number/*Average number of health and safety incidents per staff member	What is the number/*average number of health and safety incidents that occurred during the reporting period?	Number/Average Number
	Percentage staff retention rate	How many permanent or short-term staff have left employment, or been replaced, in the reporting period?	Number

10. Develop the knowledge and skills of workers	Number/ *Average number of days of training attended per staff member	How many staff training days/ *Average number of staff training days attended during the reporting period in total, by all staff?	Number/Average number of days
	Number/ *Average number of student or apprentice placements provided	How many student or apprentice placements have been provided on the farm during the last 12 months? *What is the average number of student or apprentice placements provided by supplying farms during the last 12 months?	Number
Environmental Stewardship			
11. Reduce carbon footprints	*Percentage/Average percentage and type of renewable energy used	What type(s) of energy is used on the farm(s)? (wind/ solar/biogas/oil/gas)	Renewable energy only e.g. wind/solar/biogas/Renewable — conventional fossil fuel mix/ gas/oil
	*Carbon footprint result and methodology used in the last 12 months	What is the actual or estimated (*average) percentage use of renewable energy on farm during the reporting period? Has the farm completed a carbon footprinting exercise in the last 12 months? *How many farms have completed a carbon footprinting exercise in the last 12 months? If yes — what tool(s) was used?	Percentage Yes/No (individual farm) Number of farms (supplier) Name of tool(s)
12. Protect environmental water quality	Use of/ *Percentage farms using a nutrient and effluent management plan for the application and storage of fertiliser and manure	Does the farm have a nutrient and effluent plan? (Yes/No) *How many farms have a nutrient and effluent plan? If yes, does the farm's nutrient and effluent plan include amounts of fertiliser used? (Yes/No)	Yes/No (individual farm) Number of farms (supplier) /No

13. Support soil health	Use of/ *Percentage farms using a soil health plan	Does the farm have a soil health plan? (Yes / No) *How many farms have a soil health plan?	Yes / No (individual farm) Number of farms (supplier)
14. Minimise use of fresh water	Volume of water used per unit of milk produced	What is the actual or estimated volume of water used on farm during the reporting period? (if known) (In litres)	Litres
	*Percentage of water used on-farm that is renewable/recycled	What is the (*average) percentage of water used on farm that is renewable or recycled water? (e.g. grey water, harvested rainwater etc)	%
15. Conserve and enhance biodiversity	Use of/ *Percentage farms using a conservation and biodiversity management plan	Does the farm have a conservation and wildlife management plan? (Yes / No) *How many farms have a conservation and wildlife management plan?	Yes / No (individual farm) Number of farms (supplier)
	Inclusion of a pest management solution in the conservation and biodiversity management plan, to protect non-target species	If yes, does the conservation and wildlife management plan include a pest management solution to protect non-target species? (Yes / No)	Yes / No
	Percentage of land not in production or under an environmental stewardship scheme	What is the percentage of the farm not in production or is under an environmental stewardship scheme?	%
	Conversion of high conservation value land for agricultural production in the last 5 years	Has the farm undertaken conversion of high conservation value land (e.g. Heathland, hedgerow, permanent meadow, watercourse, wetland, woodland) for agricultural production in the last 5 years? (Yes / No)	Yes / No