

Dairy Cattle Animal Welfare Standards in the United States

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1 Introduction

Understanding the animal welfare audit landscape today requires an understanding of both the history of animal welfare in the supply chain and the development of the profit model of animal welfare certification schemes. As with other farmed animal systems, animal welfare standards have been developed for dairy cattle to ensure that animals on farms receive humane treatment. At the behest of retailers and the food service industry, and in response to repeated undercover videos, implementation of dairy on-farm animal welfare assessments or “audits” in the United States and abroad has been driven primarily by risk management and brand protection (Stull et al., 2005; Wolf and Tonsor, 2017). The most widely adopted audits are those designed, managed, and mandated by industry groups such as dairy, swine, poultry, egg, and beef trade organizations. The intent of industry-mandated animal welfare standards and subsequent audits was to deliver accountability in a way that ensures little to no disruption of the supply chain and to avoid the proliferation of customer-specific programs. As a result, industry programs guarantee that only the most basic welfare expectations are met, that is, no abuse or neglect. Whether industry programs meet consumer expectations, that all animals in production systems, on the whole, experience good welfare, can be debated (Alonso et al., 2020).

Industry-led animal welfare programs do stand alone in the shadow of a doubt. Animal welfare certification schemes continue to proliferate in the United States and abroad, each hoping to corner some portion of the market. Unlike the industry-funded programs, most branded “certifications” are based on a profit model, charging for the use of their logo per unit/volume of sales, a fact that goes unnoticed by unsuspecting consumers. While there has been some effort by the dairy industry to publish and track the results of animal welfare audits, there has been little to no such transparency in the realm of animal welfare certification. As a result, there is little evidence that any animal welfare certification has delivered measurable improvement in animal welfare (KilBride et al, 2016). Nor has there been any

evidence that marketing animal welfare certification delivers significant advantages to the bottom line of any brand beyond the basics of risk mitigation (Lai, Y. and Yue, C., 2020).

Quite a few individuals entrenched in the development and execution of animal welfare audits understand that the majority of industry programs and certifications do not meet the consumer expectations, nor the promise of good welfare as defined by the five-domain model of animal welfare (Mellor et al, 2020). This is because, even when well designed, audits *per se* do not improve or ensure good welfare. As applied by most companies and industries today, audits and certification schemes may deliver increased sales and/or offer some cover when under attack by the all too familiar, undercover expose by an animal activist organization. Looking toward a future when animal welfare audits are more than a marketing or risk management tool and instead recognized as the keystone of an effective animal welfare program designed to elevate the welfare of animals in all five domains, it is worth reflecting on the path that has brought the industry to where it stands today.

2 History of on-farm assessments and audits in the US dairy industry

As with eggs, poultry, and swine, the US dairy industry had been subject to little to no oversight specific to animal welfare. Judgment about what it meant to provide humane care has historically been left up to the farmers and their trusted advisors to define and informally assess. Out of the scope of most state and federal legislation, the welfare of dairy cattle has been influenced in much the same way as was described in Chapter 8 of Swine Production. Although the National Organic Program (NOP) final rule was first published in 2000, it was not until 2002 that audits attempting to formally assess the welfare of dairy cattle were developed. Most consumers are unaware that organic certification does not include any formal assessment of the welfare of animals. Requirements for a minimum of 120 days on pasture for dairy cattle, with no requirement for shade, and that animals are generally in good health, were the limited extent of considering animal welfare in organic production. Given zero allowance to treat sick animals with antibiotics and maintain organic status, it would seem critical that organic farms make animal welfare a priority. While enforcement rules were strengthened in January of 2023, the reality remains that coverage of animal welfare is limited, and it will not be formally evaluated as part of organic certification. In 2002, two animal welfare assessments were available for voluntary implementation: the On-the-Dairy Self Evaluation Guide, Verified Premium Plus (VPP), and Certified Humane Raised and Handled (Stull et al, 2005). The VPP was designed and managed by the Dairy Quality Center (Stratford, Iowa, formerly Dairy Quality Assurance Center), a for-profit organization that reports that today, “over 145 dairies participate in the VPP program”. In VPP, farms are paid a premium for dairy-beef by select packers enrolled

(Home - Dairy Quality Center, accessed 4/24/2022). The Certified Humane Raised and Handled (CH) standard is designed and managed by Humane Farm Animal Care (HFAC), a non-profit organization supported by a variety of animal welfare organizations including the Humane Society of the United States (HSUS) which is additionally supported with income from users of the certification service whom pay a license fee for the use of the CH logo on the pack (Fee Schedule - Certified Humane). The CH certification represented the first consumer-facing animal welfare audit in the US, attempting to attract conscientious consumers willing to pay a premium for animal products raised under the umbrella of the CH standard. Since 2002, competing certification schemes have entered the US market, including American Humane Certified (AHC), Global Animal Partnership (GAP), Animal Welfare Approved (AWA), and Validus, to name a few. Despite continued interest from retailers, adoption of animal welfare schemes on a broad scale has been underwhelming. The CH currently displays on their website (New! - Farm Brands that Ship - Certified Humane accessed 7/21/2025) only 99 entities that display their logo (including those in South America), from a total of 360 certified farms. Most of such entities are for eggs, in contrast, only 11 refer to some type of dairy product, including goat, sheep, and cow cheeses, goat milk, and raw milk sales. While little has been published examining the lackluster adoption of animal welfare certification schemes, tenured supply chain professionals understand that broad adoption of such schemes is limited due to:

1. Increased cost due to licensing fees, audit administration, segregation of raw material, and limited supply flexibility resulting in a competitive disadvantage
2. Lack of consumer willingness to pay (WTP) a premium for certified products
3. Lack of transparency to program results
4. No ability to demonstrate that good animal welfare is ensured or at best, improved

While there is a plethora of published literature purporting consumer WTP for animal welfare-related certifications, recent studies examining actual purchasing behavior demonstrate that attitude does not necessarily translate into intention, and intention rarely translates into action at the checkout counter (Lagerkvist and Hess, 2010; Alonso et al, 2020). The fact that the animal welfare certification scheme's profitability and promise have been lost in translation was further stifled by the emergence of industry-driven programs aiming to curtail supply chain chaos. The chaos was driven by the multiplication of animal welfare audits, whose only success appeared to be driving cost and complexity into the supply chain while trying to advance animal welfare as a competitive marketplace. Following the lead of United Egg Producers and other industry groups, in 2009, with support of the national check-off program for US dairy, Dairy Management Inc., the National Milk Producers Federation (NMPF), developed Farmers Assuring Responsible Manage-

ment (FARM) (FARM YIR, 2021). Since then, the FARM program has expanded its scope from animal welfare to additional pillars of antimicrobial stewardship, workforce development, biosecurity, and environmental stewardship.

3 *Farmers Assuring Responsible Management (FARM™)*¹

Launched in 2009, with the stated task of “earning the public’s trust and demonstrating that the dairy farmers share their values and therefore are committed to taking excellent care of their animals”, the FARM program began as a voluntary animal welfare assessment to be conducted by farmers, farm advisors or their co-op field representatives aimed at creating a culture of continuous improvement. Participants include milk cooperatives, processors, milk handlers, or other dairy organizations that officially enroll in the program by signing the FARM participation agreement. As of March 2023, the FARM-Animal Care program was on its fourth iteration (version 4) and covers 99% of the US dairy supply.

The nuts and bolts of the FARM program are developed through a 4-committee process managed by NMPF which comprises a Farmer Advisory Council (FAC) that includes dairy farmers only, an Animal Care Technical Writing Group that includes veterinarians and academic experts, an Animal Health and Well-Being Committee representing NMPF members only, and the NMPF Board of Directors. The final decision on all program specifics is left to the board. Since its inception, the FARM program has relied on second-party evaluations completed at least once every three years by a trained FARM evaluator. Only individuals with a minimum of 5 years of dairy or animal science-related education or dairy experience, who have successfully completed an annual FARM evaluator training and examination, are qualified to conduct FARM evaluations.

Perhaps due to its lack of rigor and actual enforcement of program standards, the FARM program has been the target of criticism from within and outside of the industry. Hence, the FARM program has responded over the last twelve years with step changes on how the program is managed and enforced. Although not as rigorous as some in the supply chain would prefer, the FARM program has matured (Table 5.1). Today, FARM exceeds available certification schemes in their transparency of reporting, evaluator training, 3rd party oversight, management of farms unable to meet the most basic standards of care, and the external review of the audit by the USDA and the Professional Animal Auditor Certification Organization (PAACO).

On the whole, the FARM program includes audit criteria similar to the vast majority of animal welfare audits (Table 5.2). Those intimately familiar with the animal welfare audit landscape will be quick to recognize that the differences between audits are subtle. The most significant differences include whether:

1 FARM Animal Care Version 5 was released in July 2024. Updates include a benchmark for moderate lameness, mandatory corrective action for managing pain for dehorning and training for family employees. Version 5 will be enforced through 2027 at which time another update will be released.

1. The audit is written with the consideration of multiple stakeholders
2. Each criterion is written in such a way that it is clear, that is “auditable,” avoiding the use of terms like “sufficient” and “adequate”
3. Score cards, with clear definitions of animal-based outcome scoring systems are provided
4. The sample size and sample procedure are clearly defined and designed to provide an accurate estimate of the prevalence of each animal-based measure
5. Clear direction is given on how to evaluate required paperwork and training
6. Animal-based outcome measure goals are set to the industry average or a higher benchmark
7. Certification is based on value judgments of management systems rather than evaluation of animal welfare
8. Certification is determined by a farms ability to achieve a certain score or points
9. There are no blind spots. Cattle reared offsite or under different management temporarily are within the scope of the audit
10. The audit and process are designed to improve the welfare of cattle
11. The audit has been reviewed and certified by an external body of experts and is itself certified

TABLE 5.1. Evolution of the FARM-Animal Care program from 2002 to 2022

Farm-Animal Care	Key Program Changes
2002	– NMPF develops the Caring for Dairy Animals Technical Reference Guide with DQCA
2009-2012	– Farm Animal Care Introduced – Voluntary Participation
2013-2016	– Mandatory Participation – Voluntary Action Plans – Tail Docking to be phased out by 2022 – 3rd Party oversight - representative sample of farms are audited by an external 3rd party
2017-2019	– Updated evaluator training – Mandatory Corrective Action Plans for: Employee Training, Tail Docking, Documented Veterinary Oversight – Probation and Suspension
2020-2022	– Willful Mistreatment Protocol – Immediate Corrective Action: Tail Docking – Mandatory Corrective Action (to be completed within 9 months): disbudding by 8 weeks, written protocols for humane euthanasia, non-ambulatory cattle, calf care and fitness for transport – Continuous Improvement Plans (a plan must be developed within 3 years): when animal-based outcomes do not meet the standard measures, broken tails added to animal-based measures – PAACO certified and USDA ISO 34700 certified – Includes offsite rearing or housing within 10 miles of the primary milking facility

The FARM audit covers the full life cycle of cattle while they are on the farm, including newborn calves and evaluation of fitness for transport. Like many audits, FARM is designed to be independent of housing designs, operation size and geographical location and consists of 3 measures across all life stages (Table 5.2):

1. *Management-based measures:* These measures evaluate and verify documentation taking place on farm including, but not limited to, standard operating procedures, internal audit reports, caretaker training forms, maintenance, written euthanasia plans and animal care policies. In addition to verification of such documents, the FARM audit incorporates caretaker interviews to verify whether caregivers are adhering to written SOPs.
2. *Animal-based measures:* Defined as outcome measures focusing on animal-specific traits, animal-based measures, are direct indicators of how an individual animal is currently coping with the environment. The animal-based measures in FARM and their thresholds are summarized in Table 5.2.
3. *Facility-based measures:* Historically, audit programs have relied heavily on evaluating measures that assess the farm's environmental conditions (i.e., resource or facility-based measures) as these measures provide insight into potential risk factors that threaten future animal welfare and are typically assessed more consistently between auditors. Resource-based measures evaluated in the FARM audit include evaluation of housing cleanliness and comfort, lighting, air quality, feed and water access, and protection from severe weather.

4 Point distribution and overall score

The main difference between the FARM program and other industry animal welfare and certification schemes is that the FARM program is not a point-based audit. Those experienced in animal welfare audits can appreciate the limitations of point-based audit schemes. The experience of these authors, having developed audits, has revealed that there is no practical or pragmatic way to assign points to a specific item. When examined objectively, it may be realized that specific items represent either a critical failure, a non-negotiable, or an area in need of improvement. Point-based audits run the risk of farms developing a strategy for passing an audit year after year without trying to meet specific requirements. Whether or not an audit succeeds in improving animal welfare is not determined by a score or points. Success is determined by whether action must be taken, in what time frame improvement must be demonstrated and whether or the improvement is sustained. Mandated, documented and timely continuous improvement, no matter how large or small the task, is the capstone of a successful animal welfare program, not a passing score.

As with other programs, the FARM program considers incidences of abuse or neglect critical failures. The FARM program is unique in their development of the

TABLE 5.2 Summary of measures included in the FARM-Animal Care Program (items in italics in FARM Version 4 are required to be corrected/developed within 9 months)

Management-Based Measures	
Herd Health and Nutrition	Caretaker Training & Standard Operating Procedures (SOPs)
<i>Valid VCPR</i>	Stockmanship & Job Specific Training – <i>Employee & Family</i>
Herd Health Program – Including written protocols for common diseases and procedures	Cow Care Agreement – <i>Employee & Family</i>
Medication, Treatment Records, and Animal ID	<i>Required SOPs – Calf care, non-ambulatory cattle, Euthanasia, Fitness for Transport</i>
Mortality and Morbidity	Emergency Contact/Preparedness
Euthanized	<i>Disbudding by 8 weeks of age</i>
Nutritional Program	Pain management is provided for painful procedures, including disbudding
Animal-Based Measures	Facility-Based Measures
Body Condition – Calves, Heifers, Cows	<i>Feed & Water Access from day 3 of age</i>
Hygiene – Calves, Heifers, Cows	Protection from heat and cold
Hock Score – Cows	Housing – Clean and dry with ability to stand up, lie down and have visual contact without risk of injury
Locomotion – Cows	Adequate Lighting and Ventilation
Knees – Cows	
Broken Tails – Cows	
Signs of Neglect and No Tail Docking	

“Neglect or Willful Mistreatment Protocol” or NWMP, which is known as “WMP” in short. The WMP adds an extra layer for consumer trust for participating FARM program milk processors, dairy cooperatives, and organizations that animal mistreatment allegations against dairy facilities are addressed. If an allegation of animal mistreatment at a facility is brought to the attention of the FARM program, credibility of the allegations is established through review by a FARM ad-hoc internal review panel. Allegations that are specifically brought forth to disparage the dairy industry, but are not credible, are dismissed.

Allegations with credible evidence of willful mistreatment or neglect are investigated by a 3rd party performing a focused audit of practices at the facility to determine if willful mistreatment of animals has indeed occurred. The 3rd party focused audits are currently contracted through an independent company such as Food Safety Net Services, Certification and Audit or FSNS C&A. The 3rd party auditors are qualified dairy industry personnel that do not have a conflict of interest in the operation or the outcome of the audit process or findings. If evidence of mistreat-

ment or neglect exists, the facility is put on probation. If placed on probation a farm is given clear directions on what procedures or practices need to be established and implemented. Whether the farm has successfully addressed the issues found is determined by subsequent visits, first by a 3rd party and later by a 2nd party. The farm must then undergo a FARM evaluation every six months for the next year to ensure the improvements in animal care are sustained before a farm is removed from probation and reinstated with good standing with the FARM program. If, after multiple subsequent visits, standards of improvement are not met, the facility is decertified and removed from the FARM program. Participants who choose to procure milk from a decertified facility are delisted and can no longer participate in the FARM program while procuring milk from a decertified facility. This specific level of participant accountability is unique to the dairy industry and represents a sea change in the management and accountability of industry programs.

The FARM program includes eight requirements that result in swift corrective action. Tail docking is prohibited and results in immediate corrective action (IAP), which requires follow-up in one, four, and 12 weeks. Mandatory corrective actions are required for 7 items highlighted in italics in Table 5.2. Mandatory corrective actions must be completed within nine months. Failure to meet the mandatory FARM standards within the allotted time frame will result in the farm being placed on conditional certification and given 60 days to meet the mandatory standards. Farms unwilling to make the required corrective actions are placed on conditional decertification. Processors participating in FARM are not able to buy or sell milk from farms that are conditionally decertified. The remaining items outlined in Table 5.1 fall under opportunities for continuous improvement. Farms are allowed three years to develop a plan (CIP) to improve these outcomes. All other items in the FARM program are considered informational, although a processor is welcome to assign CIPs to all items in the FARM program, they are not required.

5 Management-Based Measures

Like other audits, the FARM audit includes protocol-based measures and caretaker interviews as evidence that animal welfare is being addressed on a daily basis. Protocol-based measures review and verify documents pertaining to daily husbandry and management practices taking place on the farm for a specific production stage.

Documents reviewed during the audit vary from standard operating procedures to caregiver training logs. When evaluating protocols specific to animal welfare, auditors will review documentation regarding herd health management, euthanasia (e.g., methods and steps to ensure animals are euthanized in a correct and timely manner), calf care, stockmanship, fitness for transport and treatment records. The SOPs and records must be in a written or electronic form and accessible to the auditor at the time of the audit. For treatment records specifically, the farm must

include the following information: date product was administered, animal identification, product name, disease/condition treated, dosage, route administered, duration of the treatment and withdrawal time.

In addition to reviewing documentation, caregiver interviews serve as a valuable verification tool to confirm protocols and standards are being met. The caregiver, defined as someone who has daily responsibility for providing animal care, is a crucial component of an animal's environment and a key influencer on animal welfare (Hemsworth et al., 1989). All employee caregivers must sign a Cow Care Agreement and complete job-specific training with annual refresher training. Family members responsible for animal care are also encouraged to sign a Cow Care Agreement and complete job-specific training, but a corrective action timeline of 3 years is allowed for family members in FARM.

Typical of other audits, the FARM audit will include SOPs and training specific to euthanasia. Each farm must provide humane euthanasia for an ill or injured cattle, including conducting euthanasia using an approved method promptly, and confirmation of insensibility and death.

6 Animal-Based Measures

The animal-based measures included in FARM and most other audits include locomotion, body condition, hock and knee scores, and hygiene. Except for the Quality and Care audit, developed and managed by Danone North America, FARM is the only dairy audit to also include the evaluation of broken or injured tails as an indicator of poor stockmanship. As with other species, Qualitative Behavior Assessment (QBA) has yet to be utilized within US standards and audit protocols, primarily due to the impracticality of measuring such outcomes in a variety of housing systems and geographies. It should be appreciated that audits, when conducted according to specific sampling protocols, should normally take three to four hours on the smallest of farms, and typically take eight to ten hours on larger farms. The inclusion of QBA as presented in tools such as Welfare Quality is largely impractical and has yet to provide meaningful insight as to what needs to be improved or addressed at the farm level to improve welfare. Rather than evaluating outcomes related to behavior, some audits have instead opted to include enrichment, provisions beyond either barren or unfulfilling environments that are thought to fulfill the behavioral needs of cattle. The Quality and Care audit developed by Danone North America asks that farms minimize stress and provide enrichment through the provision of social housing for calves, delivery of milk to calves using a nipple, the provision of water and forage at day 1, low stress transitioning of heifers, access to outdoors or time off concrete, freedom from tie-stalls and the provision of brushes for cattle to groom themselves. To encourage progress, Danone North America has gone as far

as to give farms brushes and calf hutches to help farms improve calf housing and pilot social calf housing.

6.1 *Calculating sample size*

Except for critical criteria, all remaining measures assessed for FARM are evaluated on a sub-sample of cattle from the general population within the barn. The sample calculation methods used in FARM are provided in the audit tool and are based on peer-reviewed literature considering the practicality of evaluating large populations of cattle in a reasonable time frame.

Sample size is determined first by population size and then by age and grouping. To facilitate the audit, sample size and process should be calculated ahead of time by completing four basic steps before arriving on the farm:

1. Identify how many cows are kept on the facility, which age groups, the types of housing used on the site, when each group is fed, and when lactating cows are milked
2. Identify the minimum number of cattle to observe in each age group based on the guidelines described in the FARM

Animal-based measures are scored in pre-weaned calves, post-weaned heifers, pre-fresh heifers, and lactating cows in the FARM audit. Sample size calculations are determined for each age class. When there are fewer than 100 heads in an age class, the entire group is scored. If there are greater than 100 heads in an age class, a minimum of 100 heads are scored, making sure to sample across the entire group or pen. Given the current profile of farms in the US, the FARM sample strategy would mean that for most farms in the US, every cow, heifer, and calf on a farm would be evaluated. On larger farms, scoring of calves and heifers is to be done across the entire age group, whereas lactating cows will be scored based on a convenience sample approach. Lactating cows are evaluated for multiple outcomes which may be observed at once or by strategically observing specific pens at specific times during the milking schedule. It is ideal to score locomotion while cows are walking back from the milking parlor. Consistent and accurate evaluation of locomotion requires that cows be observed from the side, walking on an even surface, uninterrupted for at least two strides with an empty udder. This can only be accomplished while cows are returning from the milking parlor. It is ideal to score hocks while cows are in the milking parlor. Meanwhile, hygiene, body condition, and tails are best evaluated immediately after cows have exited the parlor and are standing and eating at the feed bunk. Knees may be scored in the milking parlor along with hocks or may need to be observed opportunistically, depending on the ability to observe the knees while in the parlor. The ideal scoring method results in the auditor evaluating a minimum of 100 cows out of two pens in larger herds. One limitation of the FARM program is that it allows auditors to evaluate all measures at once while cattle are in the pen. While more efficient, such an approach results in fewer animals

being evaluated and a less-than-ideal method of evaluating locomotion. Another notable limitation in the FARM program is that newborn calves up to day 2 are not considered in the sample calculation and are not required to always have water available. The FARM program has provided detailed scorecards and a pocket guide for each animal-based outcome, providing examples and clear direction for how each measure should be evaluated. Details specific to animal-based outcomes can be found here: <https://nationaldairyfarm.com/dairy-farm-standards/animal-care/farm-animal-care-version-4/> (nationaldairyfarm.com)

Unlike many audits, the FARM program does set thresholds that determine whether a farm will need to develop a corrective action plan specific to the outcome. Thresholds are set only for the most severe conditions based on peer-reviewed literature or available audit data. The FARM program currently has set thresholds at the industry average for each outcome. It would be fair criticism to wonder if setting thresholds for corrective action at the industry average would drive improvement in animal welfare in a meaningful way. This approach may certainly identify the worst performers. However, it is unlikely to drive improvement beyond the industry norm, but for the self-motivated farm striving to achieve a higher benchmark compared to their peer. It is also worth considering that, while 5% may seem like a laudable goal, this represents nearly one-half of a million cows suffering from severe lameness on any given day. If viewed along with average mortality and forced culling rates one could reasonably appreciate why some are suspicious of claims of good welfare and question the sustainability of animal agriculture.

TABLE 5.3 Descriptions and acceptability thresholds for animal-based measures included in the FARM Audit

Animal-based measure	Description	Acceptability threshold
Body condition	Proportion of animals observed with a body condition score (BCS) of 1, indicating emaciation	≤ 1%
Hygiene	Proportion of animals observed with a hygiene score of 3, indicating poor hygiene	≤ 10%
Hocks & Knees	Proportion of lactating cows observed with severe hock or knee injuries	≤ 5%
Lameness	Proportion of lactating cows observed with severe lameness (score 3)	≤ 5%
Broken Tails	Proportion of lactating cows observed with a broken/injured tail	≤ 5%

7 Facility-Based Measures

The facility-based, also known as resource-based, measures of FARM define the expectations for animal care practices and facilities. While this type of audit criterion does not directly measure an animal's welfare state, resource-based measures can help to identify risk factors or hazards that can impinge on animal welfare (Barnett and Hemsworth, 2009). Resource-based measures compliment the animal-based measures to provide a complete picture of the animal's welfare and how its environment and management practices influence overall welfare.

The FARM audit includes a subjective evaluation of flooring, bedding, feeding, and waterers. Facilities should be in a good state of repair and not cause or pose an imminent threat of injury to cattle. Feed and clean water must be available to all cattle aged 3 days and older. Auditors will also evaluate animal cleanliness as an indicator of facility design and management. Cattle should have access to a dry, clean area to lie down if they choose.

7.1 *Air Quality and Lighting*

Measures or subjective determination of acceptable lighting and air quality are consistent across most audits. This may be due in part to standards set by the OIE. While air quality and lighting recommendations have been established for poultry, there has been little to no work published on acceptable air quality and light provisions for cattle or how to consistently measure them. Current recommendations of the FARM and other audits are based on human safety recommendations only and provide little to no direction for how or where to measure. Given the wide variety in farm design, it seems impractical to develop a standard method of evaluating air quality or lighting beyond the superficial assessment required in FARM. If auditors can notice a strong or unpleasant odor of ammonia, have difficulty reading paperwork or are unable to safely navigate the housing environment, then the ammonia levels and lighting would be considered inadequate.

7.2 *Transportation*

Questions specific to transport in the FARM program are limited to the requirement for a written SOP on Fitness for Transport. Auditors are instructed to evaluate the condition of cattle that may be segregated for transport and to observe the condition and handling of cattle at the time of transport, should the opportunity avail itself during an audit.

8 Documenting non-conformances

At the end of the audit, the auditor should conduct an exit interview with farm management and review any non-conformances identified. Non-conformances are

documented on the audit tool and can be used to generate corrective action plans required by FARM, in addition to any non-required items at the discretion of the FARM evaluator. The FARM program requires that all audit results and corrective actions be recorded in the FARM program database. The FARM program database ensures that participants are held accountable for the timeliness of corrective actions in addition to providing a means to share consolidated results with consumers and customers while maintaining the privacy of individual farm information. Results are also used to inform future revisions of the FARM program when considering updates or changes in thresholds.

9 Third-Party Verification

To ensure the integrity of the FARM program, all facilities that had a 2nd party evaluation performed in that calendar year by a participating milk processor, dairy cooperative, or organization may be subject to a 3rd party outside-sourced verification. Facilities for 3rd party verification are selected through random sampling applied to each FARM program participant (cooperative or processor). Farms selected for 3rd party verification must allow the 3rd party verification to occur. The 3rd party verifications are conducted to ensure the FARM audits are being performed consistently and recorded accurately by 2nd evaluators. The 3rd party verification is contracted through the same independent company that performs the aforementioned WMP-focused audits (i.e., FSNS C&A) to ensure no conflicts of interest exist. The 3rd party verifiers are recertified annually at a FARM-hosted specific verifier training and utilize the same standards as the 2nd party evaluators. Inconsistencies are monitored and subsequently addressed with the 2nd party evaluators when noted. Additionally, FARM-hosted training can be adjusted to ensure calibration between the two groups, if inconsistencies are not with an individual evaluator or one individual group of evaluators.

Version 4 of the FARM program performs better than most audits in that:

1. Versions 3 and 4 of the FARM programs were revised considering multiple stakeholders while allowing for a period of open public comment, with results published on the website of the program
2. The FARM audit has been certified by PAACO, which aims to ensure each criterion is written in such a way that it is clear, which means it is “auditable”
3. Score Cards with clear definitions of animal-based outcome scoring systems are provided
4. The sample size and sample procedure are clearly defined
5. Direction is given on how to evaluate the required paperwork and training
6. Animal-based outcome measure goals are set for the most severe conditions
7. The audit is management system agnostic, that is, it does not favor 1 housing system over another

8. The audit is not point-based
9. The audit and process are designed to improve the welfare of cattle, should the farm perform below the industry average
10. The audit includes cattle raised off-site within 10 miles of the primary milking facility

10 Current value and future opportunities for FARM

As with all industry and privately managed audits or certifications, FARM V4 has an opportunity for continued improvement while keeping with its stated philosophy. As the single dairy welfare program required across the US supply chain and achieving USDA certification against the ISO 34700 (OIE) standard, the FARM program has become a global currency specific to animal welfare and has cemented FARM as the most widely and uniformly adopted dairy welfare standard in the US if not the world. Unlike private, for-profit certifications, FARM has achieved nearly 100% penetration across the US dairy supply chain. While processors, including Danone North America with their Quality and Care (QnC) program or Co-Op Processors like Dairy Farmers of America with their "Gold Standard," have chosen to develop audits specific to their direct supply, both simultaneously participate in FARM. The reality is that the dairy supply chain dictates that a single, common standard be used to not impede the purchase, sale, and processing of raw milk across the United States. Nevertheless, animal welfare certification schemes proliferated. Global Animal Partnership, Validus, Humane Farm Animal Care, American Humane, and A Greener World have each developed their animal welfare standards and audits. Niche brands or those with relatively small footprints continue to leverage animal welfare certification to garner a market premium, earn a market advantage, or simply support public commitments to animal welfare. The true irony of such niche efforts is that they drive costs into the system that deliver little to no actual improvement into the lives of the animals they are capitalizing on. Additional certifications required by specific customers may cost a dairy processor upwards of \$100,000 a year or more in audit costs alone. This added cost is in addition to the infrastructure cost required to segregate products and increased costs of procurement due to limiting procurement opportunities. The total costs to dairy processors of accommodating customer certification are unknown. Also unknown is the cost of certification claims by brands that choose to pay for the privilege of displaying animal welfare certification claims on the pack. What is known is that the cost has not translated into any demonstrable improvement in the welfare of dairy cattle, and that money that could have been invested in improving the lives of animals in production systems was instead spent on redundant audits and packaging. Adding to farmer and processor frustration is the continual proliferation of customer-specific standards. Often required by businesses that have no direct re-

lationship to the farmer network, such customer-specific requirements represent another brand-centric attempt to mitigate risk and/or differentiate their brand. While there is no evidence that the customer-specific requirement delivers value at the checkout counter, perhaps they are evidence that FARM has not yet managed to capture its true value. Opportunity for FARM in this space is to adopt a more aggressive timeline for corrective actions, to set goals to the top 25% of farms rather than the average, be willing to tackle difficult conversations specific to tie-stalls, lack of outdoor access, and social isolation and to require that farms meet all, that is 100% of the standards over time rather than a select few. The Quality and Care program (QnC) developed by Danone North America has aimed to create what the future of animal welfare audits and programs look like when a life worth living and sustained change is the goal. The first animal welfare audit to include enrichment, natural behaviors, and resources highly valued by dairy cattle as well as worker care. The QnC audit recognizes the interdependence of the welfare of both cows and caregivers, and that it takes more than pasture access to ensure good welfare. The QnC audit itself and summary-level results are to be shared online to share progress, or lack thereof, over time. This approach recognizes that a programmatic approach to welfare is what is needed if lasting improvement is to be realized. Understanding that audits are simply a tool to inform the next steps and not a promise of good welfare is key to developing a program that aims to create a habit of thought and culture of care on farms that strives to ensure good welfare for 100% of the cows, not 95%.

11 The future of animal welfare assessments and audits: Integrating precision livestock farming

The opportunity for the application of technology and precision livestock farming (PLF) to monitor the welfare of animals in production systems continues to grow. There are now several dairy-specific platforms under development, although none appear to be ready for broad adoption at this time. Monitoring animal handling and animal activity, evaluating body condition, locomotion, lying times, and feed availability are all possible today, although true validation studies are limited. Regardless of accuracy, the primary limitation to broad adoption will be due to the immense diversity in farm size, design, and cost. Adopting a risk-based approach, it may be possible for some processors to cover a considerable proportion of their volume by implementing PLF on a select group of large farms. Such an adoption would allow for continual evaluation of high-risk, critical areas on farms that may represent a risk to the business due to their size, public profile, or history. However, it is important to recognize that, based on our collective experience, farm size is not a predictor of success; it is merely a predictor of the likelihood of scrutiny. Therefore, considering that most dairy farms consist of fewer than 200 cows, many of which

are operated by Amish or other communities unlikely to accept such technology, it is unlikely that adoption of PLF will be the panacea for animal welfare monitoring.

12 Conclusion

While consumer attitude towards animal welfare does not seem to translate into intention and action at the check-out counter, it has been shown that information about animal welfare does influence consumer experience with a product, increasing expectations and resulting in favor when compared to other products based on sensory experience (Carlucci et al, 2009, Napalitano et al, 2008, Lange et al, 1999). Similarly, consumers must perceive a high-quality product to command a premium (McCluskey and Loureiro, 2003). The ability of a processor or dairy product brand to demonstrate improvement in providing a good quality of life to animals in production systems represents an opportunity in what continues to be an increasingly saturated and competitive market. Research demonstrates that consumers are aware of the possible negative impacts of poor animal welfare on food quality and safety (Carlucci et al., 2009). Today, most animal welfare audits, whether offering a label claim or simply required by the supply chain as a minimum standard for market access, offer little guarantee beyond 3rd party verification of the most basic of provisions: no abuse, no neglect, water (at day 3), and evidence of training. Consumers value more nuanced attention to the welfare of animals in production systems, favoring information specific to laying areas (outdoor or pasture access for dairy), and opportunities for socialization and engagement with their environment (Lagerkvist and Hess, 2011). While some certification schemes require pasture or outdoor access and may prohibit the use of tie-stalls, none go beyond the basics of animal welfare to consider quality of life beyond outdoor or pasture access. Interestingly, those that require pasture access do not also require that adequate shade be provided to mitigate heat stress, or that water is accessible in the pasture so that cattle do not have to walk long distances to access water, or that adequate shelter and warmth are provided during times of cold stress. Given the negative impact of heat stress on every life stage from cow to heifer to calf and fetus has been well established, it seems clear that the majority of audits have considered the consumer more than the cow in their development. Humane care, gentle handling, shelter, training, and good health are not debatable and should not be considered exceptional. Main et al. (2014) offered a framework for animal welfare certification schemes. A life worth living, a quality of life that permits consumers to benefit from animals in production systems, is the goalpost. Until this is realized, consumers will be left to consider whether benefiting from animals has passively slid into the realm of exploiting them.

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