Slaughter considerations for cull dairy cattle

Lacey Alexander,[1] Lily Edwards-Callaway[2]

[1]Beef Welfare Lead, Cargill, Wichita, KS 67202
[2]Associate Professor, Colorado State University, Fort Collins, CO 80523

Abstract

Dairy cattle are culled from the herd for multiple reasons and an evaluation of their condition is crucial in deciding their subsequent management (i.e., transport, euthanasia). When making decisions about the appropriate course of action for culled dairy cows, we need to consider the animals' ability to withstand the rigors of transport, to pass ante and postmortem inspection, and to ambulate on their own accord throughout the slaughter process. It is crucial to understand and acknowledge the conditions that cull dairy cattle must endure once they leave the dairy farm. Veterinarians play a critical role in guiding on-farm decisions about fitness for transport, ensuring the welfare of culled dairy cattle is prioritized throughout this critical period.

Key words: antemortem inspection, cull cow, fitness for transport, plant

Introduction

Ensuring animal welfare is a critical component of all livestock production systems including both how animals are raised and how they are processed at the end of their lives. The welfare of cull (i.e., market) dairy cattle as they transition from milk production to meat production has been identified as a high-risk challenge area for the industry.[1-3] Studies utilizing expert consultation to identify areas of opportunity in cull cow management have indicated that cull cow condition warrants further attention and amelioration.[4-5] As a dairy cow ends her production on the dairy, sending her to the slaughter plant is a suitable option if she is in the appropriate condition to withstand the journey and the associated processes at the slaughter plant. While the majority of culled cows sold for slaughter are in good condition, data from observations at auction markets and slaughter plants suggest that a portion of the cull cow population are in poor condition,[6-8] suggesting that across the supply chain, we, as an industry, are not always making decisions that prioritize cull cow welfare at this important juncture in a dairy cow's life. Making end-of-life decisions for dairy cattle is not simple and there are many competing factors (i.e., economic incentives, human-animal bonds, awareness/knowledge)[1,5,9] that make some of these decisions challenging to make. Despite the difficulty around these critical decisions, it is important that everyone involved have knowledge about both the journey that the cow needs to make to get to the terminal market once she leaves the farm and the consequences of these decisions on cow welfare. The objective of this paper is to review considerations for fitness for transport, the journey, and the in-plant processes as they relate to cull cow welfare.

Fitness for transport

All stakeholders that interact with cull dairy cattle (i.e., dairy owners and caretakers, auction market employees, transporters, slaughter plant employees, etc.) should understand the phrase "fitness for transport". Fitness for transport is the animal's ability to withstand transportation without compromising its welfare. Keeping fitness for transport considerations in mind should help individuals make good decisions when loading cattle for transport. Industry animal care guidelines for both beef and dairy cattle, both emphasize the importance of fitness for transport and provide examples of what makes an animal unfit for transport.[10-11] Additionally, the Beef Quality Assurance Transportation (BQAT) program,[12] which is a training program for transporters used by the beef and dairy industries, includes factors that one should consider when assessing fitness for transport. Some of the primary conditions that would make a cull cow unfit to be transported are the following: severe lameness, poor body condition score (less than 2), exhaustion/dehydration, fractures of limbs, spine injuries, open wounds, unreduced prolapses, calving, suspected nervous system disorders, and non-ambulatory animals. The National Beef Quality Audit (NBQA) is a survey that is conducted every five years and is funded by the Beef Checkoff administered by the National Cattlemen's Beef Association. In the 2022 NBQA, when assessing cull cattle at the slaughter plant, the following visible defects were found: full bag, calf in pen, retained placenta, bottle teats, mastitis, failed suspensory ligaments, swollen joints, foot abnormalities and lumpy jaw in the sample population. Borders et al.[7] reported the results of the 2022 NBQA and indicated that less than a quarter (21.2%) of dairy cows had no defect which was less than all other animal type categories (66.0% of beef cows, 79.9% of beef bulls, and 78.4% of dairy bulls had no defects).

Journey to slaughter

When assessing fitness for transport, we also must take into consideration what we are asking of the animals once they leave the farm. Will the animals be able to withstand the rigors of transport if: they going directly to slaughter, they are going to a sale barn or buying station, it is hot, it is cold, or if the journey is long? There is only one law in the United States that dictates the length of time animals can be in transit without feed, water and rest (FWR); the Twenty-Eight Hour Law[13] states if livestock are being transported for longer than 28 consecutive hours, they must be offloaded for at least five consecutive hours to get FWR. The Food Safety Inspection Service (FSIS) Directive 6900.2 Rev 3[14] states that if livestock arriving at a federally inspected establishment appear to be exhausted or dehydrated, inspection is to ask the establishment management if the truck driver stopped to provide the livestock FWR within the preceding 28 hours. If it is found that the animals were deprived of FWR, FSIS inspection will alert Animal and Plant Health Inspection Service (APHIS) so that APHIS can conduct an investigation. The 2022 NBQA reported that on average culled animals traveled 6.3 hours to the plant from their last place of origin;[7] this may not represent total travel time if they came from an auction market and not directly from a dairy. Additionally, the NBQA data showed that the maximum time in transit prior to arrival at the plant was 24 hours. Although these are falling within the federal regulation, these are still considerable distances for culled cattle to travel particularly if they are in poor condition.

At the slaughter plant

Once livestock arrive at the plant, their welfare is considered the slaughter plant's responsibility. The Federal Meat Inspection Act (FMIA)[15] mandates inspections to ensure meat safety, while the Humane Methods of Slaughter Act (HMSA)[16] requires that animals be handled and slaughtered humanely. At the plant, the USDA FSIS inspection will perform a task called ante mortem inspection before animals can be slaughtered. During ante mortem inspection, livestock are evaluated in motion and at rest for the following conditions: sickness, possibility of being treated with antibiotics (potential residue), may pose a threat to the health of workers, may have a reportable disease, may pose a slaughter floor contamination threat, or are otherwise unfit for human consumption.[17] During ante mortem inspection, the disposition of each animal is determined and the decision is made to either (1) pass the animal for slaughter, (2) slaughter it as a suspect, or (3) condemn it. If an animal is determined to be healthy and fit for human consumption, it is passed for slaughter. If the animal is unhealthy and unfit for human consumption, it is condemned. The decision to condemn an animal is made if it is: dead, clearly shows signs of a disease that would be condemned on the slaughter floor, has a central nervous system disorder, fever, or is non-ambulatory, or has a severe injury.[17] It should be noted that all non-ambulatory disabled cattle and calves must be condemned according to federal regulation. Animals that physically present with a questionable condition upon ante mortem inspection, and in the opinion of the inspector, may pose a potential human consumption threat, may also be deemed U.S. suspect. These animals are segregated and tagged for special post mortem inspection.

Visible defects that are commonly observed at plants that slaughter cull cows include but are not limited to: cancer eye, lump jaw, surgery, abscess, prolapse, arthritis, severely lame and poor udder condition. The HMSA[16] require plants to handle animals with minimum excitement and discomfort. It is necessary to consider that animals with the aforementioned conditions (and may not have been fit for transport) can often be a challenge to handle putting the plant at risk when having to deal with compromised animals. Additionally, it is important to remember, in accordance with FSIS Directive 6100.1 Rev 3,[17] once livestock arrive to slaughter, they must ambulate without assistance throughout the slaughter process. Upon arrival at the slaughter plant, cattle are expected to walk to a lairage pen. These pens have variable flooring and may have unfamiliar animals. Cattle remain in lairage for a large range of time, usually around a minimum of 2 hours. During this time cattle will also need to go through antemortem inspection; animals must be observed at rest and in motion meaning they will need to be handled during that time. Then animals will be moved out of the lairage pen, through the facility to the stunning area; this distance is highly variable. If cattle become recumbent and refuse to rise, they will be humanely euthanized and condemned. In short, upon arrival at the plant, culled dairy cattle will endure a holding period which includes multiple handling events prior to slaughter and must be able to withstand all pre-slaughter processes.

Conclusions – Getting involved as a veterinarian

Cull dairy cows have multiple jobs; when they are done producing milk, they enter the beef supply chain. While it is widely understood that economics is the bottom line in any business model, our commodity is an animal that can feel pleasure and pain. These cows have worked hard for us; it is our responsibility to do what's right for them. Culling management should take into account an animal's ability to withstand the journey from farm to slaughter without compromising welfare. Are we being realistic about the likelihood of her recovery? Why are we culling her? Is she injured? Is she exhausted? Once the trailer leaves to farm, where is she going? Is it hot? Is it cold? Will she be able to walk off the trailer? Will she pass ante mortem and post mortem inspection? Is she strong enough to walk through the plant process? In conclusion, fitness for transport can be correlated to timely culling and appropriate end of life decisions.

References

1. Edwards-Callaway LN, Walker J, Tucker CB. Culling decisions and dairy cattle welfare during transport to slaughter in the United States. *Front Vet Sci.* 2019;*5:* 343.

2. Roche SM, Renaud DL, Genore R, Shock DA, Bauman C, Croyle S, Barkema HW, Dubuc J, Keefe GP, Kelton DF. Canadian national dairy study: Describing Canadian dairy producer practices and perceptions surrounding cull cow management. *J Dairy Sci.* 2020;*103:* 3414-3421.

3. Cockram MS. Invited Review: The welfare of cull dairy cows. *App Anim Sci.* 2021; *37:* 334-352.

4. Stojkov J, Bowers G, Draper M, Duffield T, Duivenvoorden P, Groleau M, Haupstein D, Peters R, Pritchard J, Radom C, Sillett N, 2018. Hot topic: Management of cull dairy cows – Consensus of an expert consultation in Canada. . *Dairy Sci*. 2018; *101*(12):11170-11174.

5. Edwards-Callaway L, McBride B, Machuca E, Dean L, Sayre K, Cramer C, Román-Muñiz N, Keller K, Stallones L, Manriquez D. Expert consultation: factors influencing end-of-life decision-making for dairy cattle across the United States supply chain. *Animals*. 2024;*14*(22): 3311.

6. Vogel KD, Lee TL, Feinberg B, Loneragan GH, Walker J, Edwards-Callaway LN, Siemens MG, Thomson DU. An intercontinental survey of commercial abattoirs: Preliminary data on the prevalence of advanced preslaughter health and welfare conditions in mature cows. *Bov Pract.* 2018; *52:* 109-119.

7. Borders SE, Schwartz TE, Mayer TR, Gehring KB, Griffin DB, Kerth CR, Belk KE, Edwards-Callaway L, Scanga JA, Nair MN, Morgan JB, Douglas JB, Pfeiffer MM, Mafi GG, Harr KM, Lawrence TE, Tennant TC, Lucherk LW, O'Quinn TG, Beyer ES, Bass PD, Garcia LG, Bohrer BM, Pempek JA, Garmyn AJ, Maddock RJ, Carr CC, Pringle TD, Scheffler TL, Scheffler JM, Stelzleni AM, Gonzalez JM, Underwood KR, Harsh BN, Waters CM, Savell JW. National Beef Quality Audit – 2022: Transportation, mobility, live cattle, and hide assessments to determine producer-related defects that affect animal welfare and the value of market cows and bulls at processing facilities. *Trans Anim Sci.* 2024, *8*, txae033.

8. Stojkov J, Von Keyserlingk MAG, Duffield T, Fraser D. Management of cull dairy cows: Culling decisions, duration of transport, and effect on cow condition. *J Dairy Sci.* 2020;*103:* 2636-2649.

9. Walker JB, Roman-Muniz IN, Edwards-Callaway LN. Timely euthanasia in the United States dairy industry – Challenges and a path forward. *Animals.* 2019; *10:*71.

10. FARM. Farmer's Assuring Responsible Management. Animal Care Standards Reference Manual, Version 5, 2024. Available at: **FARM-14787-2023-Animal-Care-Standards-Reference-Manual.pdf**. Accessed Jan 27, 2025.

11. BQA. Beef Quality Assurance National Manual, 2024. Available at: **2024-bqa-national-manual_final-print-and-electronic-file**. Accessed Jan 27, 2025.

12. BQAT. Beef Quality Assurance Transportation Manual. 2021. Available at: **bqat-manual_02-10-2021-91.pdf**. Accessed Jan 27, 2025.

13. The Twenty-Eight Hour Law. 49 USC 80502: Transportation of animals, Available at: **https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title49-section80502&num=0&edition=prelim**. Accessed Jan 27, 2025.

14. United States Department of Agriculture. Food Safety Inspection. FSIS. FSIS Directive **https://www.fsis.usda.gov/sites/default/files/media_file/2021-03/6900.2.pdf**. Accessed Jan 27, 2025.

15. Federal Meat Inspection Act. 21 U.S.C. § 601 et seq, 1906, Available at: **https://www.govinfo.gov/content/pkg/COMPS-10270/pdf/COMPS-10270.pdf**. Accessed Jan 27, 2025.

16. Humane Methods of Slaughter Act. 7 U.S.C. § 1901 et seq, 1958, Available at: **https://www.govinfo.gov/content/pkg/USCODE-2019-title7/pdf/USCODE-2019-title7-chap48.pdf**. Accessed Jan 27, 2025.

17. United States Department of Agriculture. Food Safety Inspection. FSIS. FSIS Directive 6100.1, Revision 3. Antemortem Livestock Inspection. **https://www.fsis.usda.gov/sites/default/files/media_file/2020-07/6100.1.pdf** Accessed Jan 27, 2025.