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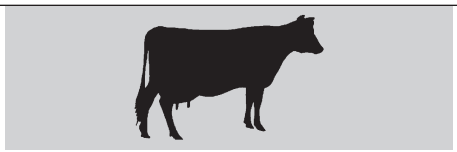

Case Study: Effect of on-farm dairy Beef Quality Assurance training on selected welfare-related and Beef Quality Assurance–related traits in lactating dairy cows

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ABSTRACT

This pilot study evaluated the effect of on-farm Beef Quality Assurance (BQA) training on welfare- and BQA-related traits in dairy cows and determined practices in place on dairy farms that negatively affected dairy cow welfare and BQA. Twelve dairies participated, with 4 in each category: small (1 to 199 cows); medium (200 to 1,499 cows); and large (1,500 cows or more). Two dairies in each category received BQA training. During 2 visits (before and after training) a survey was administered to identify management practices in place that concern dairy cow welfare and BQA, and an attempt was made to evaluate every lactating cow for BCS and locomotion score. The number of measures in place to avoid residues in the food supply was greater for milk than for meat (3.4 vs. 1.9; $P < 0.01$). Participants reported that injections were administered in each of the following locations: 63.9% neck, 17.3% hind leg, 15.3% upper hip/rump, 3.1% shoulder, and 0.4% tailhead. Because the neck is the only BQA approved location for administering i.m. or s.c. injections, educational efforts are needed to improve injection practices on dairy operations. The percentage of lame and severely lame cows per farm was 14.7 and 3.9% during the pretraining visit and 14.0 and 4.2% during the posttraining visit, respectively. One dairy producer hired a full-time employee to trim hooves and manage lameness on their operation after receiving BQA training. Implementation of an on-farm dairy BQA training has the potential to positively affect dairy cow welfare and BQA practices.

Key words: Beef Quality Assurance, body condition score, dairy cow, locomotion, welfare

INTRODUCTION

Although dairy cows are bred and raised for milk production, most enter the beef supply when culled from the milking herd. Dairy cows are a substantial contributor to the beef supply, with 3,125,000 slaughtered in 2013, accounting for 9.8% of all of the animals slaughtered for beef in the United States (USDA, 2014). The average milking herd culls approximately one-third of their cows annually (Smith et al., 2000; Hadley et al., 2006). The Beef Quality Assurance (**BQA**) program details how practices should be conducted on an operation to ensure that beef products are high quality and safe for consumers (BQA, 2012). Whereas this program has proven successful for the beef cattle industry, it is currently underutilized in the dairy cattle industry.

Many practices that promote BQA also encourage dairy cow welfare.

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Lameness is one of the leading welfare concerns in the dairy industry, with the average prevalence of lameness on dairies ranging from 20 to 55% (Cook, 2003; Espejo et al., 2006; von Keyserlingk et al., 2012). Additionally, lameness is a BQA issue, with dairy cows accounting for the majority of lame cattle that are marketed each year (Ahola et al., 2011a). Early identification of lame cows helps to ensure prompt treatment, increasing the chances of recovery and reducing the risk of sending severely lame animals to slaughter (Whay, 2002; Nordlund et al., 2004).

Since its inception, the BQA program has led to substantial improvements in end product quality and the value of carcasses from fed steers and heifers (NCBA, 2007). Widespread implementation of a dairy BQA program has the potential to markedly improve the welfare of dairy cows and quality of carcasses from market cows. The objectives of this study were to (1) evaluate the effect of on-farm BQA training on welfare- and BQA-related traits in dairy cows, including locomotion score (**LS**) and BCS, and (2) determine practices in place on dairy farms that negatively affect dairy cow welfare and BQA.

MATERIALS AND METHODS

An employee-focused training program was developed to teach core components of the dairy BQA program (NDHIA, 2009), which was facilitated using Spanish-language materials. Topics covered included injection techniques, humane handling, residue prevention, lame cow identification, body condition and locomotion scoring, and management of nonambulatory cows. The training program included a PowerPoint presentation (Microsoft, Redmond, WA), printed information, and a video. The presentation covered how to identify lame cows using a 5-point locomotion scoring system (Sprecher et al., 1997); score the body condition of dairy cows (Wildman et al., 1982; Ferguson et al., 1994); properly handle dairy cows; and properly administer injections. Printed material included the Spanish version of the Idaho dairy BQA manual (Idaho BQA, 2008), the Guidelines for Responsible Antibiotic Use poster in Spanish (MBC, 2013), and the Beef Quality Assurance for Dairy and Beef Farmers poster in Spanish (MBC, 2013). The video that participants watched was the Spanish version of "Prevention and Management of Non-ambulatory Dairy Cows" (WDA, 2010). To determine whether on-farm dairy BQA training had an effect on dairy worker knowledge of BQA and welfare-related practices, pre- and posttraining exam scores were compared for dairy personnel who participated in the training; results of which have been reported (Adams et al., 2016).

A survey was designed to collect information regarding management and housing practices on each dairy that could have an effect on dairy cow welfare and BQA. Questions included lame cow management, euthanasia practices, injection techniques, employee training, sick cow management, and culling practices. Additional questions were included to obtain basic dairy information, including herd size, housing type, and general management practices.

Dairy farms in Colorado and Idaho with a history of collaborating with Colorado State University and the University of Idaho were contacted by extension personnel to participate in this pilot project, with all of those contacted agreeing to participate. Six commercial dairies in each state ($n = 12$), chosen based on size, agreed to participate. Of the 6 dairies in each state, 2 dairies were chosen to represent each of the following size categories: small (1 to 199 cows); medium (200 to 1,499 cows); and large (1,500 cows or more). In each state, one dairy from each size category was randomly chosen to receive BQA training ($n = 6$), and the remaining 6 dairies did not receive training. All dairies were visited twice during the study: the pretraining visit occurring in June or July 2013 and the posttraining visit occurring in September or October 2013. The survey was administered to participating dairy producers during both pre- and posttraining visits, with the goal of determining the effect of training on various dairy management practices pertaining to dairy cow welfare and BQA. All lactating cows were observed for LS and BCS during both the pre- and posttraining visits. Cows were scored for LS and BCS by an experienced scorer as they exited the milking parlor using the same systems taught during BQA training sessions. A 5-point LS system was used (Sprecher et al., 1997; 1 = sound, 5 = severely lame), and scores were noted to a whole number. Body condition was scored using a 5-point system (Wildman et al., 1982; Ferguson et al., 1994), where 1 = emaciated and 5 = obese, and scores were noted to the half score. Time constraints did not allow for all lactating cows to be observed on 2 of the dairies during the pretraining visit. For those 2 dairies, the same pens of cows that were observed during the pretraining visit were observed again during the posttraining visit. On dairies that received training, training sessions were conducted with all dairy personnel (including management) concurrent with the pretraining cow evaluation visit.

Data were analyzed using SAS (version 9.3; SAS Institute Inc., Cary, NC). Survey frequency and mean data were calculated using the SURVEYMEANS and SURVEYFREQ procedures. The Wilcoxon Signed Rank and Kruskal Wallis tests for nonparametric data were used to identify differences in participant responses by operation size and by training, as well as to determine the effect of training on LS and BCS, and the prevalence of lame (LS ≥ 3), severely lame (LS ≥ 4), overconditioned (BCS ≥ 4), and underconditioned (BCS ≤ 2) cows, with the EXACT option for small sample sizes being specified in the NPAR1WAY procedure. Descriptive statistics for cow evaluation data were obtained using PROC UNIVARIATE in SAS and reported as the estimate $\pm$SE.