Survey of cow-calf producer perspectives on management strategies and industry challenges. Part 2. Marketing and selection decisions[1]

Miriam S. Martin,[†,2] Scott A. Grau,[‡] Burt W. Rutherford,[‖] Temple Grandin,[†] and Lily N. Edwards-Callaway[†]

[†]Department of Animal Sciences, Colorado State University, Fort Collins, CO 80525; [‡]Penton, New York, NY 10036; and [‖]BEEF, Irving, TX 75038

ABSTRACT: The objective of this study was to benchmark how cow-calf producers were marketing their calves, their priorities when selecting replacements, and if producers saw value in a quality assessment focusing on animal handling and care. A total of 1,414 responses from cow-calf producers in 44 states were collected through a survey conducted in partnership with *BEEF*. Thirty questions were asked of respondents to gather demographic information, establish at what age and through what avenue respondents were marketing their calves, and gauge respondent perspectives on selection decisions, pain management and a quality assessment outlining handling and care guidelines. The percentage of respondents who marketed their calves at certain ages varied by herd size ($P < 0.001$). Respondents with 50 head or less or more than 1,000 head most commonly retained their calves through finishing and respondents with 51 to 200 head and 201 head to 500 head more frequently backgrounded and then sold their calves. Respondents' top priorities when selecting bulls were calving ease, followed by growth and feed efficiency traits. When selecting females, top priorities were reproductive efficiency, followed by mothering ability. The percentage of respondents using pain management differed by whether a veterinarian had offered to administer a drug for pain management ($P < 0.001$). 13.5% of respondents answered yes, and a veterinarian had offered to administer a drug for pain management when castrating or dehorning. Of those 13.5% who responded yes pain management had been offered, and 54.55% of respondents chose to use a pain relief method. A higher percentage of respondents that precondition also more frequently indicated that they used a pain relief method when castrating or dehorning, though it was still a low percentage ($P = 0.006$). Overall, 46.3% of respondents saw value in handling and care guidelines and 54.9% of respondents saw value in a program including source and age verification, a vaccination plan, and handling and care guidelines. Respondents who were Beef Quality Assurance (BQA) certified had a beef cow inventory of 501 to 1,000 head, who preconditioned their calves and backgrounded them before selling, and who lived in the West most commonly saw value in a quality assessment outlining handling and care guidelines.

Key words: Beef Quality Assurance, value-added marketing

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INTRODUCTION

Consumer concern surrounding animal handling, livestock housing, and welfare is influencing

[1]This survey was funded by BEEF.
[2]Corresponding author: martinpork@gmail.com
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meat purchasing decisions (Olynk, 2012).The U.S. beef industry has responded to this movement through the implementation of welfare assessment programs primarily at beef processing plants and feedlots (American Meat Institute Animal Welfare Committee, 2017; National Cattlemens Beef Association, 2017). The Beef Quality Assurance (BQA) Cow-Calf Assessment is an educational tool that focuses on health and production records and best management practices, along with facilities and equipment (Beef Quality Assurance, 2017). This BQA Assessment tool is valuable for benchmarking handling practices and can be used by cow-calf producers to measure improvement over time.

Global Animal Partnership (GAP) Certification and Niman Ranch All-Natural Beef are two programs that have integrated welfare standards such as humane handling and environmental enrichment into cow-calf operations (Global Animal Partnership, 2018; Niman Ranch, 2018). However, a third-party verified, value-added cow-calf welfare assessment program that producers are willing to implement on a large scale is not established in the United States. Traceability becomes more challenging, operation facilities are more diverse in nature, and management styles vary greatly within the cow-calf sector when compared with feedlot operations (Simon et al., 2016). All of these factors make a cow-calf assessment program more challenging to develop than the standardized assessments currently used for feedyards and processing facilities. Further investigation into current management practices, cow-calf welfare issues, and marketing strategies is needed to create a program that increases consumer confidence in how cattle are raised throughout the supply chain while simultaneously providing value to the cow-calf producer. The purpose of this survey was to quantify producer willingness to implement handling and care guidelines along with other value-added programs.

MATERIALS AND METHODS

General

As referenced in Part I of Martin et al. (2019), survey questions regarding current management and marketing practices on U.S. cow-calf operations were developed by Colorado State University in partnership with Penton Research (Penton, New York, NY). The survey was constructed for electronic dissemination using Qualtrics survey software (Qualtrics, Provo, UT). Methodology, data collection, and analysis were performed by Colorado State University and Penton Research, the research branch of Penton (Penton, New York, NY). Penton was the parent company of *BEEF*, and *BEEF* has since been acquired by Informa (Informa, London, UK). *BEEF* Magazine serves as a source for business management and production information for the U.S. beef cattle industry, with subscribers in all 50 states with varying cow inventories and management styles. *BEEF* Magazine's purpose is to help readers build more efficient and profitable cattle production businesses with a focus on quality and the preservation of natural resources (BEEF, 2018). As a result, BEEF subscribers are likely to be cattle producers who are engaged in new industry practices and are more focused on improving their herd management than the industry as a whole. Due to this survey being distributed via email, cow-calf producers who only receive *BEEF* Magazine in print were excluded from the survey distribution. This survey was examined by the Institutional Review Board (IRB) at Colorado State University and deemed exempt from full IRB review (CSU IRB #122-18H).

On July 26, 2017, Penton Research emailed invitations to participate in an online survey to 41,191 *BEEF* subscribers who within the *BEEF* database had previously reported having any beef cows in inventory. By August 14, 2017, Penton Research received 1,414 completed surveys and the survey was closed to respondents on that date. To encourage prompt response and increase the response rate overall, the following marketing research techniques were used: a live link was included in the e-mail invitation to route respondents directly to the online survey, reminder e-mails were sent to nonrespondents on August 1, 2017, and the invitations and survey were branded with the property name and logo of *BEEF* in an effort to capitalize on subscriber brand affinity.

The survey response rate was 3.43%. The survey consisted of 30 questions divided into sections which included respondent demographic information, handling, management, marketing, and selection practices and challenges. Respondents could opt out of answering any of the questions, and the option to provide an answer labeled as "other" was included where applicable if respondents did not identify with any of the responses listed. Respondents could cease filling out the survey at any time; results from partially completed surveys were removed from that specific question analyses. The survey questions regarding respondent demographic information, management, marketing and selection decisions will be outlined here (Table 1).

The first section of the survey collected demographic information including beef cow inventory,

Table 1. Survey question categories and question topics

Survey question category	Survey question topics
Respondent demographic information	• Producer age • Producer BQA certification • Seedstock or Commercial producer • Beef cow inventory • Beef cow location
Management	• Preconditioning • Pain relief during castration/ dehorning
Marketing	• What age calves are marketed at • What avenue calves are marketed through • If sold through special sale, sale specifications • Openness to quality assessment for handling and care • Openness to total assessment for source and age verification, vaccination plan, and handling and care
Selection	• Feet and leg conformation • Priorities when selecting bulls • Priorities when selection replacement females

what state the respondent's cows predominantly occupy, what role the respondent fills on the cattle operation, if the respondent would describe his/her operation as seedstock, commercial, or both, respondent age, and whether the respondent had achieved BQA certification. Marketing questions included how respondents market their calves through what avenue and if that avenue is a special sale, what that special sale is specified for. Respondents were asked if enrolling calves in a quality assessment that provides guidelines for handling and care would add value to their program, and whether a program including source and age verification, a vaccination plan, and a quality assessment would add value to their program. Selection questions included how respondents felt about their breeding herd's feet and leg conformation, and their top priorities when selecting bulls and replacement females (Table 1).

Analysis

Data were entered into a spreadsheet (Microsoft Excel, 2017, Microsoft Corporation, Redmond, WA) and results from partially completed surveys were removed from that specific analysis. Data describing producer demographic information, selection, and marketing decisions were generated using means and frequency tables. Data were analyzed as the number of respondents within each category and as the percentage of the total number of survey respondents (1,414). Comparisons were performed using contingency tables with significance tested by chi-square analysis using R software (R Core Team, Vienna, Austria). Statistical significance was designated a priori as P values less than or equal to 0.05.

RESULTS AND DISCUSSION

Demographics

Survey demographic information is found in detail in the paired paper, Martin et al. (unpublished). Briefly, those who responded to the survey were most frequently aged 55 to 70, with beef cows in the Midwest region of the United States, with a beef cow inventory of 51 to 200 cows (Martin et al., 2019).

Marketing

The percentage of respondents who marketed their calves at certain production points varied by herd size ($P < 0.001$) (Table 2). Respondents with 50 head or less or more than 1,000 head most frequently retained their calves through finishing than other herd sizes (142; 23.7% and 14; 31.8%, respectively). Respondents with small herd sizes may be using niche marketing avenues or directly selling beef products in order to retain their cattle through finishing. Respondents with more than 1,000 head also most commonly sold their calves at weaning (7; 15.9%) and most commonly backgrounded and then sold their calves relative to respondents with smaller cow inventories. Respondents with 51 to 200 head and 201 head to 500 head most commonly backgrounded and then sold their calves (332; 40.4% and 140; 41.5%, respectively). At what stage in the cattle's life cycle respondents market their calves depends on marketing options and the level of risk they are willing to undertake. Respondents with smaller numbers of calves have less direct and video marketing options than those with larger groups of calves due to how cattle are purchased and transported in the United States via a standard cattle semitrailer load weighing 19,000 to 23,500 kg which is approximately 72 yearling calves. If producers cannot offer enough calves to fill a trailer load of this size, those calves must be mingled with others and typically direct marketing and video auction buyers do not purchase lots smaller than those large enough to fill a load of this size. If producers choose to retain ownership, they take on more price variability risk (Hall et al., 2003) due to changing market prices and input costs, which

Table 2. Percentage of respondents who marketed their calf crop at certain production points relative to herd size

	Production point respondent percentage[1]			
Inventory	Replacements	Weaning	Background	Finished
50 head or less	16.8%	28.8%	30.7%	23.7%
51–200 head	18.6%	25.8%	40.4%	15.1%
201–500 head	19.6%	24.6%	41.5%	14.2%
501–1,000 head	17.7%	28.2%	36.5%	17.7%
More than 1,000 head	18.2%	15.9%	34.1%	31.8%
Respondent count[2]				1,887

Respondents are permitted to select more than one answer if applicable (N = 1,887).

Base = All respondents.

Percents may reflect multiple answers.

[1]Percents may reflect multiple answers.

[2]The number of respondents who answered the question in the survey.

Table 3. Percentage of respondents indicating at what age they market their calf crop

Marketing age	Respondent percentage[1]
Background post-weaning, then sell	50.3%
At weaning	35.7%
As replacements	24.6%
Retain through finishing	24.6%
Respondent count[2]	1,396

Respondents are permitted to select more than one answer if applicable (*N* = 1,396).

Base = All Respondents.

[1]Percents may reflect multiple answers.

[2]The number of respondents who answered the question in the survey.

Table 4. Percentage of respondents indicating through what avenue they market their calf crop

Marketing avenue	Respondent percentage[1]
Local auction—normal sale	58.7%
Direct marketing	36.2%
Local auction—special sale	22.2%
Video auction	8.0%
Other	8.0%
Respondent count[2]	1,395

Respondents are permitted to select more than one answer if applicable (*N* = 1,395).

Base = All respondents.

[1]Percents may reflect multiple answers.

[2]The number of respondents who answered the question in the survey.

requires producers to surpass receiving a large part of their annual income upon weaning their calves, and continue to pay for expenses longer into the life cycle of their calves.

Overall, respondents were most frequently backgrounding their calves postweaning and then selling the calves (702; 50.3%), followed by marketing at weaning (498; 35.7%), with selling replacements and retaining through finishing (both 343; 24.6%) being less frequent marketing strategies (Table 3). A study performed by the National Animal Health Monitoring System (NAHMS) in 2016 indicated that more producers were selling their calves at weaning (41%) and less were retaining ownership postweaning (21%) (USDA-APHIS-NAHMS, 2016). The NAHMS study had a much higher percentage of producers with more than 200 cows, and less small producers which could explain why more producers were selling their calves at weaning. Risk aversion is an important factor in deciding whether cow-calf producers sell calves at weaning or retain ownership. The most risk averse producers have more than a 60% probability of selling calves at weaning, relative to the most risk tolerant producers having less than a 20% probability of marketing their calves at weaning (Pope et al., 2011). Producers who retain ownership of their cattle through the finishing process receive valuable feedback regarding yield grade and carcass quality parameters, allowing them to make production decisions that will ultimately improve carcass characteristics (Gillespie et al., 2004).

When asked through which avenues they market their calves, respondents indicated that they were predominantly marketing their calves through local auction markets (1,129; 80.9%), followed by direct marketing (505; 36.2%) and video auctions (112; 8.0%) (Table 4). Marketing avenue varied significantly by herd size ($P < 0.001$). Respondents with 50 cows or less (293; 50.8%) most commonly responded that they market through normal sales at auction markets when compared with respondents with larger herd sizes. Respondents with 201

to 500 head (65; 19.3%) most commonly indicated that they market through special sales at local auction markets. Respondents with 501 to 1,000 head and more than 1,000 head most commonly directly marketed their calves (28; 29.8% and 17; 36.2%, respectively) and marketed calves via video auction (26; 27.7% and 11; 23.4%, respectively). Direct marketing and selling via video auction are options that oftentimes result in less stress on calves from spending less time in the marketing chain; however, they seem to be options that smaller producers have less access to. Of those who responded that they market their calves through a special sale, preconditioning was what most special sales were specified for (200; 65.8%), followed by vaccination programs (131; 43.1%), source and age verification (103; 33.9%), breed-specific sales (75; 24.7%), and finally natural (38; 12.5%) and hormone-free (26; 8.6%) programs.

Part of the shift in the market towards rewarding cow-calf producers for calves enrolled in value-added verification programs is due to calves no longer solely being marketed through traditional livestock auctions. The largest auction market in the United States today is Superior Livestock Auction (SLA) (Zimmerman et al., 2012). Cattle are marketed nontraditionally through SLA via video auction, internet auction, or private-treaty internet listings. SLA markets large lots of more than 100 calves, with catalog and on-screen information, displayed outlining vaccination programs, source and age verification, preconditioning, and natural and hormone-free certifications. Video auction marketing creates the opportunity for cow-calf producers to profit from adopting additional management practices which are more easily highlighted through video auctions on the screen and in the sale catalog. Some drawbacks to conventional livestock auctions include a limited number of bidders, added value that is not visually verifiable such as specific vaccinations are less likely to bring a premium, commission fees, transportation costs to the auction market, and significant shrink from the calves being hauled and held prior to sale at the auction market (Gillespie et al., 2004). Some of these good management practices that are not visually verifiable include developing a good veterinary–client–patient relationship, preconditioning calves, and using pain management when performing painful procedures such as castrating and dehorning.

Respondents identified in this study that cow-calf operations varied in their use of veterinary services and that veterinarian–client–patient relationships may not be well established on every cow-calf operation in the United States. Use of herd health–related veterinary services has been found to increase with herd size (Waldner et al., 2013). In a study performed by Waldner et al. (2013), producers with more than 220 breeding females were more likely to seek veterinary advice in regard to treating sick calves than producers with less than 85 breeding females. Bovine respiratory disease (BRD) accounts for over 50% of all cattle treated for sickness in the United States (Krehbiel et al., 2016). Management practices for weaned calves such as vaccination, castration, dehorning, and adapting them to a feed bunk are collectively called preconditioning and help lower the risk of cattle encountering health problems (Krehbiel et al., 2016). If these practices are performed before the calves leave the ranch of origin, as opposed to when the calves enter the feedlot, the calves are likely to encounter less stress while adapting to the new feedlot setting. Calves who are sold through an auction market, who spend more time in the marketing chain and are likely experiencing more stress than calves transported directly from the ranch of origin to the feedlot, are at higher risk of developing clinical BRD (Krehbiel et al., 2016). Cattle who are sold through a traditional auction market often do not give the cow-calf producer the opportunity to receive information from the feedlot regarding whether any calves developed BRD. As a result, cow-calf producers who do not vaccinate or precondition often do not see the consequences of failing to implement those management practices.

Selection

Respondents' perception of their herd's foot and leg confirmation changed as herd size increased ($P < 0.001$) (Table 5). When asked if their herd's

Table 5. Respondents' perception of their herd's foot and leg conformation relative to herd size ($N = 1,399$)

	Conformation change respondent percentage			
Inventory	Improving	Not changing	Worsening	
50 head or less	41.7%	56.5%	1.9%	
51–200 head	45.1%	53.2%	1.7%	
201–500 head	49.4%	45.5%	5.2%	
501–1,000 head	58.1%	35.5%	6.5%	
More than 1,000 head	45.5%	45.5%	9.1%	
Respondent count[1]				1,399

Base = All respondents.

[1]The number of respondents who answered the question in the survey.

conformation was improving, worsening, or staying the same, respondents with more than 1,000 head most commonly thought their herd's feet and leg conformation was worsening (62; 6.5%) (there was no time period associated with this question). Respondents with 50 head or less or 51 to 200 head most commonly indicated that their herd's feet and leg conformation was not changing (267; 56.5% and 319; 53.2%, respectively). Respondents with 501 to 1,000 head most commonly indicated that their herd's feet and leg conformation was improving (36; 58.1%), with a much lower percentage indicating that their herd's conformation was not changing. Respondents with larger herd sizes seem to be showing clear improvement or decline in their herd's conformation, with a lower percentage indicating that feet and leg conformation is not changing. Larger producers are likely using a larger number of herd bulls and as a result introducing more genetic variation into their herd, as opposed to a smaller scale producer who keeps the same herd bull for a longer time period, thus being more likely to see slower change in herd conformation.

Respondent perception of herd conformation varied by operation type ($P < 0.001$); seedstock producers most commonly indicated that their herd's conformation was improving (70; 62.5%) relative to commercial producers (394; 40.7%). Likely seedstock producers are making conformation more of a priority than commercial producers due to their selection emphasis being on breeding stock instead of market animals and seeing more improvement as a result. Commercial producers most commonly indicated that their herd's conformation was not changing (552; 57.0%). Respondent perception of herd conformation differed by age ($P = 0.006$). Respondents under the age of thirty most commonly indicated that their herd's feet and leg conformation was improving relative to other age groups (26; 72.2%). Younger respondents may be more focused on traits such as feet and leg conformation that relate to how long animals will stay in the herd as opposed to older producers who may be less focused on long-term herd improvement due to them being closer to retirement. Respondents over the age of 70 more frequently indicated that their herd's conformation was not changing (153; 57.5%). Breed associations in the United States and Australia acknowledge that structural conformation is an ongoing challenge for cow-calf producers, and it is the responsibility of seedstock producers to make selection decisions that improve structural conformation (American Angus Association, 2015; Ashwood, 2011; Bertz, 2016). Structural conformation is a moderately to highly heritable trait and includes claw set, pastern angle, shoulder structure and angle, and hip and hock structure and angles (American Angus Association; Ashwood, 2011; Bertz, 2016). Sound bulls produce steers that spend less time lame and grow faster, and sound replacement heifers stay in the herd longer (Bertz, 2016). The American Angus Association began collecting feet and leg scores in 2014 and projects are ongoing to develop an Expected Progeny Difference (EPD) for a range of feet and leg conformation traits, with the hope of aiding producers in selecting sires that produce sounder progeny (Bertz, 2016; American Angus Association, 2017).

When prioritizing parameters for selecting which bulls to utilize in their herd, respondents ranked calving ease first, followed by growth and feed efficiency traits, physical appearance/phenotype, and feet and leg conformation (Figure 1). Selection emphasis is heavily placed on production traits such as live weights due to feeder calves being marketed on a live weight basis. In the past, less emphasis has been placed upon reproduction, animal health, and energy requirements as a consequence of selecting for growth when making selection decisions (Garrick and Golden, 2009).When choosing priorities for selecting females, reproductive efficiency was the top priority, followed by mothering ability, calving ease, and longevity (Figure 2). These traits all being maternal in nature, come as no surprise when selecting females. Respondents seem to be identifying traits that lead to less intensive management such as calving ease. Carcass trait selection that could improve upon the value of their calves further down the supply chain seemed to be much less of a priority. Milk production was also not identified as a top priority when selecting females which may be a result of producers having heavily selected for that trait in the past, and with less than ideal weather conditions and a lower plane of nutrition, the need for lower maintenance females has become evident.

Management

Cattle are routinely castrated and dehorned on ranches in the United States either prior to weaning or as part of a preconditioning program. Physical castration is the most common method practiced in the United States (Coetzee, 2013). Pain mitigation during castration and dehorning is not something that has become commonplace on U.S. cow-calf operations (Coetzee et al., 2010) but could become more prevalent in the future

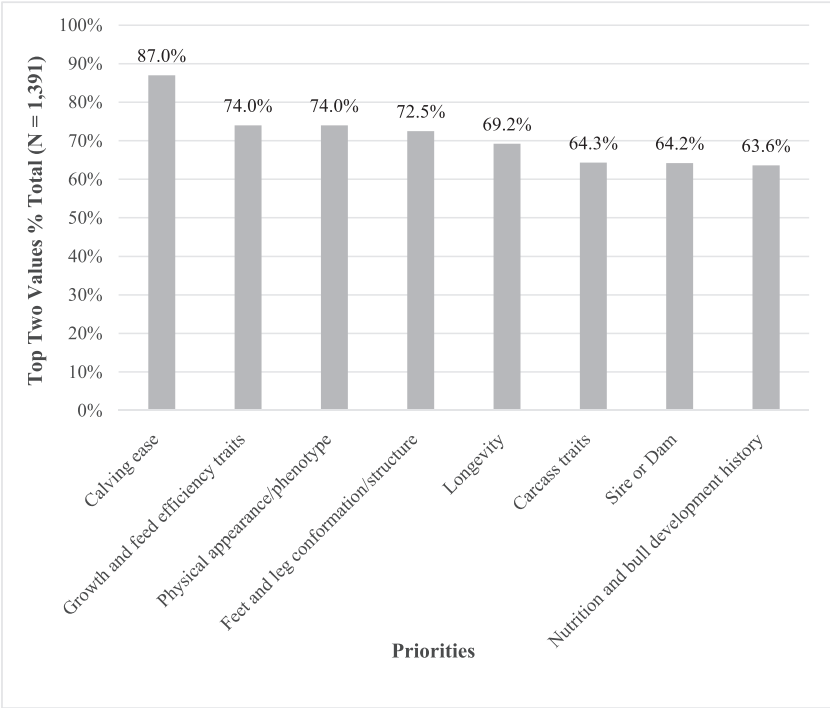

Figure 1. Priorities expressed as a percentage when respondents rated these priorities as very important or extremely important when selecting which bulls to utilize in their herd (N = 1,391).

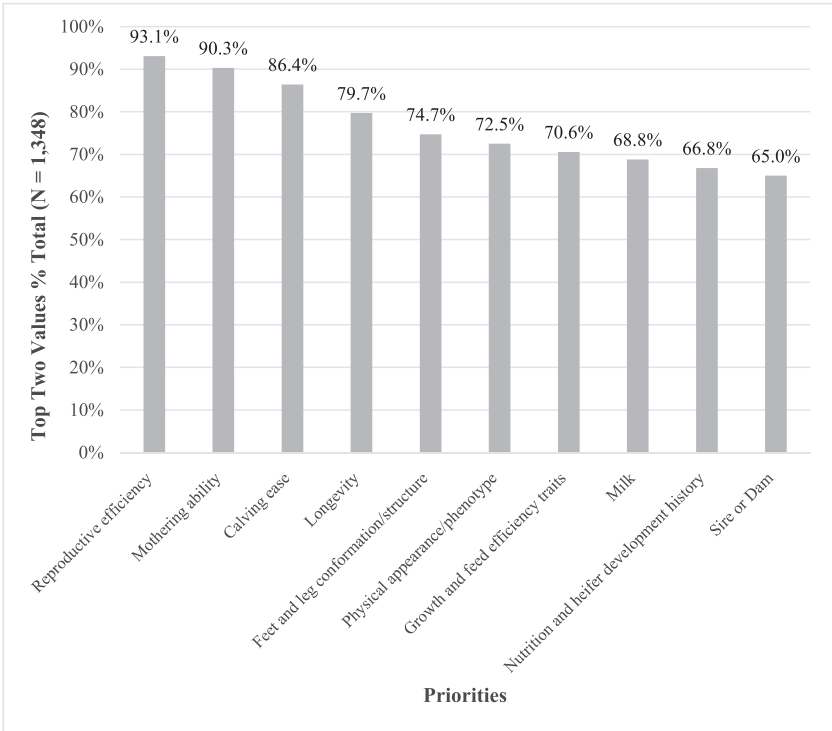

Figure 2. Priorities expressed as a percentage when respondents rated these priorities as very important or extremely important when selecting which replacement females to utilize in their herd (N = 1,348).

with increasing consumer concern with animal welfare. Of those who had never had a veterinarian offer to administer a drug for pain management (1,234; 86.5%), 96.4% had never used any method of pain management (1,149). Conversely, 13.5% of respondents identified that a veterinarian had offered to administer a drug for pain management when castrating or dehorning (186). Of those who had a veterinarian offer to administer a drug for pain management during castrating or dehorning, 54.6% of respondents chose to use pain management (102). Although a relatively low percentage

of producers overall used pain management during castration and dehorning, results suggest that if pain management is offered by a veterinarian, producers may be more likely to elect to use it during these painful procedures. This identifies that there is potentially opportunity to increase use of pain management during painful procedures like castration within the cow-calf sector with increased dialogue between veterinarians and producers. There are currently no analgesic drugs specifically approved for pain relief in livestock for pain associated with castration or dehorning by the U.S. Food and Drug Administration (Coetzee, 2013); Flunixin transdermal solution is approved for control of pain associated with foot rot and pyrexia associated with BRD (Merck Animal Health, 2018). However, a veterinarian can administer a local anesthetic, or a combination of a local anesthetic and a nonsteroidal anti-inflammatory drug which will also eliminate pain up to 12 h postcastration (Stafford and Mellor, 2005), via extra-label-drug-use covered under the Animal Medicinal Drug Use Clarification Act (AMDUCA) (Smith et al., 2008). Pain management in livestock is an issue of public concern; this study suggests that producer willingness to implement pain management into castrating and dehorning procedures is evident within a certain demographic if veterinarians will offer a method to manage pain.

The percentage of respondents who used a pain relief method when castrating or dehorning differed by herd size ($P = 0.004$). Those with 50 head or less (65; 13.8%) or more than 1,000 head (6; 17.6%) most commonly indicated that they used pain management. Smaller producers may be less affected by the additional time required during castration and dehorning to use pain management, and the largest producers may be willing to make that time sacrifice because they see production benefits to using pain management.

The percentage of respondents who use a pain relief method when castrating or dehorning differed by whether respondents precondition ($P = 0.006$) (Table 6); of the respondents who precondition, 12.2% indicated that they are using pain mitigation (127). Producers who have BQA training and precondition their cattle are already making good management practices a priority, and thus, they may be more progressive in regard to management techniques that are outside of the current industry standard. Management practices that reduce stress and add value such as pain management, vaccination programs, and preconditioning give producers who make the extra effort, the opportunity to enroll their calves in third-party verified programs. Some practices such as castration and dehorning are visually verifiable by cattle buyers and are still the most frequently used value-added practices since they do not require third-party verification to be verified (Williams et al., 2012). However, using pain management, vaccinating and/or bunk training are attributes that are not visually verifiable by observing the cattle (Williams et al., 2012). One method of ensuring that producers can receive a premium for these attributes is through third-party verification of production practices. Certifications through Global Animal Partnership and Certified Humane encourage the use of pain management during castration and dehorning through recommendations based on the age of the calf, whether not a veterinarian is performing the operation, and the knowledge level of the producer (Global Animal Partnership, 2009; Humane Farm Animal Care Scientific Committee, 2014).

Table 6. Percentage of respondents who used a method of pain relief when castrating or dehorning relative to the percentage of respondents who precondition their calves ($N = 1,394$)

	Respondent percentage who used a method of pain relief		
Respondent percentage who preconditioned	Used pain relief	Did not use pain relief	
Preconditioned	12.2%	87.8%	
Did not precondition	5.6%	94.4%	
Respondent count[1]			1,394

Base = All respondents.

[1]The number of respondents who answered the question in the survey.

Value-Added Programs

Two survey questions served to measure respondent willingness to enroll in a third-party–verified program that outlined handling and care guidelines and could possibly be integrated into a source and age verification and vaccination program. Overall, 46.3% of respondents saw value in an on-farm quality assessment outlining handling and care guidelines (643) and 54.9% of respondents saw value in a program including source and age verification, a vaccination plan, and handling and care guidelines (764). The percentage of respondents who saw value in a quality assessment outlining handling and care guidelines differed by BQA certification ($P < 0.001$) (Table 7). Those who are BQA-certified more frequently indicated that yes, a quality assessment outlining handling and care

Table 7. Percentage of respondents who saw value in a quality assessment relative to BQA certification (N = 1,363)

	Respondent percentage who saw value in a quality assessment	
BQA certification status	Yes	No
Certified	55.1%	44.9%
Not Certified	40.6%	59.4%
Respondent count[1]		1,363

Base = All respondents.

[1]The number of respondents who answered the question in the survey.

guidelines would add value to their program (301; 55.1%), relative to those who were not certified (332; 40.6%). Percentage of respondents who saw value in a quality assessment outlining handling and care guidelines differed by herd size (P = 0.006). Those with cow inventories of 501 to 1,000 most commonly indicated yes, a quality assessment would add value (41; 66.1%) and those with more than 1,000 head most commonly answered no, to whether a quality assessment would add value to their program (20; 60.6%). Respondents with larger cattle inventories likely had more marketing options which could allow for more leverage in gleaning a premium for calves enrolled in a quality assessment. Percentage of respondents that found value in a quality assessment varied by the point in the calves' life cycle that they sold their calves (P < 0.001). Respondents who backgrounded and then sold their calves most commonly found value in a quality assessment (357; 51.8%) relative to those who retained their calves through finishing (126; 37.1%). Respondents who sell their cattle after backgrounding are more likely to profit from a value-added program such as a quality assessment than those who retain through finishing and are focused on carcass characteristic premiums. Percentage of respondents who saw value in a quality assessment differed by whether they precondition (P = 0.002). Those who precondition their calves more frequently saw value in a quality assessment outlining handling and care guidelines (593; 48.9%) than those who do not precondition (136; 39.0%). Those who preconditioned are already adding value to their calves and would be more likely to see the value in a program that highlights those good management practices. The percentage of respondents who saw value in a quality assessment varied by region (P = 0.015) (Table 8). Respondents in the West and Southeast more frequently saw value in a quality assessment (120; 53.6% and 147; 51.4% respectively). This may be linked to midrange and larger cow inventories in these regions giving producers more opportunities to capitalize on a quality assessment through selling larger lots of calves.

Table 8. Percentage of respondents who saw value in a quality assessment relative to region (N = 1,386)

	Respondent percentage who saw value in a quality assessment	
Region	Yes	No
Midwest	42.9%	57.2%
Northeast	41.2%	58.8%
Southeast	51.4%	48.6%
Southwest	42.4%	57.6%
West	53.6%	46.4%
Respondent count[1]		1,386

Base = All respondents.

[1]The number of respondents who answered the question in the survey.

Table 9. Percentage of respondents who saw value in a total herd assessment relative to herd size (N = 1,392)

	Respondent percentage who saw value in a total herd assessment	
Inventory	Yes	No
50 head or less	51.7%	48.3%
51–200 head	52.0%	48.0%
201–500 head	62.0%	38.0%
501–1,000 head	81.0%	19.0%
More than 1,000 head	53.1%	46.9%
Respondent count[1]		1,392

Base = All respondents.

[1]The number of respondents who answered the question in the survey.

The percentage of respondents who saw value in a program including source and age verification, a vaccination plan, and a quality assessment differed by BQA certification (P < 0.001), with 63.7% of those BQA certified answering yes, such a program would add value to their marketing plan (349). Percentage of respondents who saw value in the total assessment outlined above differed by herd size (P < 0.001) (Table 9). Respondents with 201 to 500 head and 501 to 1,000 head most commonly answered yes, the all-inclusive program outlined above would add value (142; 62.0% and 51; 81.0%, respectively). The largest producers are likely selling at a premium due to size and enrolling their calves in such a program could be a large undertaking. The smallest producers would likely have difficulty finding a marketing avenue that would pay a premium for a small group of calves enrolled in such a program.

The percentage of respondents who saw value in an all-inclusive program showed a trend towards differing by producer age ($P = 0.064$). Respondents under the age of 30 found the most value (26; 70.3%). Younger producers are likely more open to trying new programs than older, more established producers. Percentage of respondents who saw value in a total assessment also differed by whether they precondition ($P < 0.001$). Respondents who precondition their cattle more frequently saw value in such a program (606; 58.7%) relative to those who do not precondition (156; 44.6%). If respondents are already adding value to their calves through preconditioning, adding value through a total assessment would likely fit into their marketing strategy. With many different value-added programs available to enroll feeder calves in, a total assessment might make enrollment simpler for producers who are currently using multiple programs. Percentage of respondents who saw value in a total assessment also differed by region ($P = 0.010$). Respondents in the West most commonly answered yes, an all-inclusive program would add value (144; 64.6%), and producers in the Northeast most commonly answered no (28; 54.9%). Western respondents indicated that they had larger herd sizes relative to other regions, and Northeastern respondents had proportionally smaller herd sizes than any other region. This could explain why respondents in the West saw more value in an all-inclusive assessment than respondents in the Northeast, who likely had less marketing avenues available as a result of a smaller calf offering and their distance from western feedyards. Respondents with mid-level cattle inventories, who were young, and already preconditioning their cattle saw the most value in an all-inclusive type of program.

Cow-calf producers use less risk mitigation tools such as forward contracting and hedging than crop producers, which could be attributed to beef producers finding risk mitigation tools inadequate, or that producers lack the training to use the tools effectively, or the motivation to adopt them (Hall et al., 2003). This survey suggests that value-added marketing is a risk mitigation tool that a certain demographic of producers are open to adopting. Ensuring that this tool adequately provides value for the producers who utilize it and that producers have the training to use the tool properly is something the beef industry must continue to improve upon. A need for a value-added welfare program in the cow-calf sector exists for producers to better account for risk. Consumers' expectation for their food to be produced with respect to the welfare of the animals has resulted in private and public standards designed to assure good animal husbandry (Webster, 2009).

Rushen et al. (2011) describes how to successfully develop standards for handling and care and then implement those standards into production in the following statement: "Successful integration of best animal care practices into the farming community begins with a set of well-researched, scientifically and ethically valid, and practical set of standards that meet the approval of producers and expectations of the public, and it ends with accurate characterization and reporting of on-farm compliance" (Rushen et al., 2011). Further research is needed to achieve the next step of developing a quality assessment for handling and care guidelines on cow-calf operations that is approved by producers and meets consumer expectations, due to this survey establishing that certain producers do see value in such an assessment. BQA certification is one education tool that needs to be more widely implemented across the United States with the ability to track and maintain certification status. The combination of certified producers, verified calves who are enrolled in a program outlining handling and care, and a well-accepted traceability program has the opportunity to improve the demand for U.S. beef. Many countries such as Australia have already implemented a traceability system that gives them more access to export markets as a result (Tonsor and Schroeder, 2006). A growing beef export market provides assurance for producers that their product is valuable and could potentially help encourage producers to enroll their calves in a value-added traceability program.

CONCLUSION

The diversity of cow-calf operations across the United States was identified in this survey, as producers market their calves differently and make selection and replacement decisions based on differing criteria. Respondents who utilize one good management practice are apt to be using multiple good management practices, such as using pain management during castration and also preconditioning calves 45 d prior to marketing them. Overall, respondent willingness to implement good management practices and enroll in value-added programs seems positive, particularly with younger, BQA-certified producers who are already making good management decisions. Cow-calf producers see value in a quality assessment including handling and care guidelines. Respondents who were

BQA certified, had a beef cow inventory of 501 to 1,000 head, who preconditioned their calves and backgrounded them before selling, and who lived in the West more frequently saw value in such a program. Respondents who were already adding value to their calves, with large enough inventories to capitalize on premiums from a quality assessment, saw the most value in enrolling their calves in such an assessment. A similar survey benchmarking producer perspectives in the future would be beneficial to measure changes in decision making over time. Producers are willing to implement the steps needed to ensure that the United States will remain competitive in the global marketplace, but without the certification, verification, and traceability programs in place for producers to implement, the U.S. beef industry will not realize its export potential. Producer willingness to become better educated and implement management practices such as pain management is evident, but the resources to reward producers with different herd sizes and marketing options for value-added practices need to be further developed.

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