PEER REVIEWED

Implementation of industry-oriented animal welfare and quality assurance assessment in Kansas cattle feeding operations

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Abstract

Consumer interest in production agriculture has prompted the beef industry to develop tools to increase accountability of producers for animal management practices. The Beef Quality Assurance Feedyard Assessment, developed by veterinarians, animal scientists, and production specialists, was used to objectively evaluate key areas of beef cattle production such as animal handling, antimicrobial residue avoidance, and cattle comfort in 56 Kansas feedyards. During the assessment, management protocols were reviewed, facilities and pens were inspected, and cattle handling practices were observed. Of the 56 feedyards, 19 maintained complete and current documentation of Best Management Practices for all management protocols required by the assessment. During assessment of cattle handling practices, 78.6% of feedyards met requirements for an Acceptable score for all measured criteria. An electric prod was used on only 4.0% of cattle during processing. In addition, 83.0% of feedyards scored Acceptable for all stocking rate, feed bunk, water tank, and mud score standards.

Key words: BQA assessment tools, audit, cattle, feedyard, quality assurance, welfare

Résumé

L'intérêt des consommateurs pour l'élevage de production incite encore l'industrie bovine à développer des outils afin d'accroître la responsabilité des producteurs dans les pratiques de gestion animale. Un programme d'évaluation de l'assurance de qualité du bœuf dans les parcs d'engraissement, développé par des vétérinaires, des experts en science animale et des spécialistes en production, a été utilisé pour évaluer objectivement des domaines clés de la production de bovins de boucherie tels que la manipulation des animaux, la prévention des résidus d'antibiotiques et le bien-être des bovins. Cinquante-six parcs d'engraissement ont participé à l'étude; ces parcs produisent 84% des bovins engraissés annuellement au Kansas. Durant l'évaluation, on a révisé les protocoles de régie, inspecté les installations, observé les pratiques de manipulation des bovins et inspectés les enclos. Sur l'ensemble des 56 parcs, 19 possédaient de la documentation complète et à jour concernant les meilleures pratiques de gestion pour tous les protocoles de régie requis pour l'évaluation. Pour l'évaluation des pratiques de manipulation des bovins, 78.6% des parcs rencontraient les exigences pour une note Acceptable. Un aiguillon électrique était utilisé pour seulement 4% des bovins durant le traitement. Une note Acceptable a été décernée à 83% des parcs pour leurs normes concernant la densité d'occupation, la mangeoire, l'abreuvoir et le score de propreté.

Introduction

Consumer interest in how food is produced, coupled with increasing access to information about production agriculture,[9] has prompted many sectors of the food chain to seek improvement in accountability of animal producers for animal welfare and quality assurance practices.[2,3] With increasing pressure from consumers and retailers, production standards and audits have been developed and utilized for dairy production, laying hens and broilers, and for beef and pork slaughter plants.[3,5] The effectiveness of animal care standards depends on establishment of auditing systems that ensure best practices and sets goals for improvement.[5]

The Beef Quality Assurance Program (BQA) was established by the National Cattleman's Beef Association (NCBA) in 1987.[8] The BQA program provides producers with production guidelines developed by experts

in the industry, including animal scientists, veterinarians, meatpackers, retailers, and regulators. The goal of BQA is to assure beef product quality and safety, as well as proper animal care. Guidelines and protocols are often modeled after Hazard Analysis Critical Control Point principles.[8]

Although the beef cattle industry has expended significant effort defining standards of care and best management practices, historically little has been done to evaluate implementation of standards through the use of assessment or auditing tools. The NCBA first introduced a BQA assessment tool in 2008, and currently feedlot, stocker, and cow/calf assessments are available.[7] A 2011 study reported that 95.1% of feedyard managers were familiar with the BQA program, and 90% indicated that BQA practices were somewhat or very important to their operation.[11] As a result, the industry-designed BQA assessment tool was chosen for this study as it most closely follows the standards of care adopted by the industry, and is endorsed by several groups outside of the industry.

Putting the assessment into action, while concurrently tracking outcomes and progress, can increase producer accountability for livestock management practices. On-farm auditing is considered essential to maintain consumer confidence in production practices.[10] At the same time, assessments can provide objective benchmarking of implementation of new standards of care in the future, and prepare producers for an audit. Because managers often only manage things they can specifically measure,[4] benchmarking the categories measured in this assessment can help improve overall management in feedyards. The objectives of this study were 1) to assess the extent of implementation of BQA standards within the feedyard industry in Kansas, 2) to identify production practices that exceed BQA standards, and 3) to identify areas needing improvement.

Materials and Methods

The BQA Feedyard Assessment was used to assess feedyards that volunteered to participate in the study.[7] For discussion and evaluation, the feedyard assessment was divided into 3 segments: 1) cattle handling, 2) pen conditions, and 3) documentation of Best Management Practices (BMPs).

Fifty-six Kansas feedyards volunteered to participate in the study, and 1-day assessments were scheduled with feedyard management based on response time to initial contact. Assessments were conducted by either a private-practice veterinarian or Kansas State University personnel trained in both BQA and how to conduct the assessment.

Capacity Groups

For purposes of comparison, feedyards were placed into capacity groups, either large or small. Feedyards with a 1-time capacity of $\geq$ 20,000 head were classified as large capacity feedyards, and those with a 1-time capacity of $<$ 20,000 were classified as small capacity feedyards.

Recording the Results of the Assessment

Forms provided in the BQA Feedyard Assessment list major categories, such as BMPs, and category points, which are specific components of a major category to be evaluated, such as training or the use of an electric cattle prod during processing. The "measure" specifies how a category point is evaluated. Once a category point is evaluated, the result is scored 1 of 4 ways:[7]

- Acceptable/Yes – the measure was satisfied;
- Requires Action – the measure was somewhat satisfied, but could use improvement;
- Unacceptable/No – the measure was not met satisfactorily;
- Not Applicable – does not apply in this feedyard.

Comments are required if a category point is scored Requires Action or Unacceptable. The assessment form provides detailed guidance on standards that must be met in order for a category point to be scored Acceptable. This guidance makes it possible for assessors to score observations objectively and consistently.

Animal Abuse or Neglect Assessment

Animal abuse and animal neglect are major concerns of consumers. To insure that animals were not abused or neglected, assessors observed cattle in home pens, hospital pens, various processing facilities, alleyways, and shipping and receiving areas for evidence of animal abuse or neglect.

Cattle Handling Assessment

Processing and animal handling practices were observed during routine processing while cattle were worked at each participating feedyard. The goal is to assess a minimum of 100 head of cattle being worked; however, if the pen did not contain 100 head, the assessor evaluated cattle handling for all cattle in the pen that day. The assessor was positioned in the processing barn to allow observation of cattle handlers moving cattle through the alleys, tub, and into the chute. The assessor scored and recorded cattle handling criteria for each animal using the Cattle Handling Observation Scoresheet included in the assessment document.[7] Category points measured included electric prod use, falling, tripping, vocalization, jumping or running when exiting the chute, and improper restraint (Appendix 1).

Standards for cattle handling defined in the BQA Feedyard Assessment were used for scoring.[7] For an Acceptable score, cattle handlers had to meet the following standards: use of electric prod ≤ 10%; cattle falling ≤ 2%; cattle tripping ≤ 10%; cattle vocalizing ≤ 5%; jumping or running while exiting the chute ≤ 25%; and improper restraint during processing = 0%. The number of cattle failing to meet the standard was divided by the total number of cattle observed to determine the score for cattle handling. Feedyards that failed to meet the cattle handling standard for a category point were given an Unacceptable score for that specific category point, and notes were recorded in the Comments section.

Pen Assessment

Ten pens were selected by the assessor at each participating feedyard to score pen conditions, using the Pen/Equipment Observation Scoresheet provided in the assessment document.[7] Because pen layout is not symmetrical in many feedlots, "pen blocks" were identified as needed within the feedlot, and pens were then selected randomly within blocks using a random number generator. Examples of pen blocks include pens separated from the main set of pens, and pens close to or far away from working facilities.

Stocking rate (space) is defined in the assessment as having ample space to stand up, lie down, and move freely without impedement by other animals. If all 10 pens had sufficient space, the category point was scored Acceptable. If stocking rate was inadequate in ≥ 1 pen, an Unacceptable score was recorded for the category point.

The assessor also observed and recorded pen mud scores, water tank maintenance, and feed bunk maintenance scores for each selected pen. Pen floor evaluation was determined by a mud score defined as cattle having a dry area to lie down and rest, and absence of mud more than 4 inches (10.2 cm) above the fetlock. In order for water tanks to be scored Acceptable, they could not have manure present in the tank or buildup of algae. Tanks with only sediment present were considered clean and scored as Acceptable. Feed bunks had to be accessible for the cattle, and free of spoiled, moldy, sour, or packed feed to be scored Acceptable. If less than 70% of pens had an Acceptable mud score, clean and accessible water tanks, or feed bunk maintenance, that particular category point was scored Unacceptable, and notes were recorded in the Comments section.

Assessment of Best Management Practices Documentation

The required Best Management Practices protocols are listed in the BQA Feedyard Assessment, and must be in written form and up-to-date. There must be documentation available to confirm that employees are trained to perform specific management tasks.[7] The assessors looked for documentation for BMP protocols required in the assessment guide. Specific category points for BMPs included residue avoidance and withdrawal compliance, employee training, pen maintenance, euthanasia,[1] handling of non-ambulatory cattle, animal health, biosecurity, disposal of carcasses, medication storage and use, broken needles, medicated feeds, feed quality, cattle processing, cattle shipping, emergency action plan, feed delivery, feeding of non-ruminant protein supplements, and a veterinary-client-patient relationship. If documentation for a specific BMP was missing or not updated to include current protocols followed at the yard, the deficiency was recorded as Unacceptable, and the manager was encouraged to implement standards established in the assessment. To receive a score of Acceptable for an individual BMP protocol, the feedyard was required to have documentation on file for the BMP. The definition for each BMP required by the BQA Feedyard Assessment is shown in Appendix 2.

Reporting Results

Results were recorded by the assessor, and pertinent observations were discussed with feedyard management immediately following the assessment, particularly observations and recommendations detailed in the Comments section of the assessment document. Anonymity was assured by assigning a unique feedyard identification number so that results could be recorded and reviewed at The Beef Cattle Institute without knowing the actual identification of the feedyard. Each manager received a copy of the assessment. Data were compiled and recorded in an electronic database.

Results and Discussion

Capacity Groups

Thirty-eight feedyards in the large capacity group were enrolled in the study, with a total capacity of 1,796,500 head of cattle (range 20,000 to 135,000 each). Eighteen small capacity feedyards were enrolled, with a total capacity of 189,000 cattle (range 2,500 to 17,500 each). A larger percentage of small capacity feedlots lacked adequate documentation of BMPs than did large capacity feedlots (Figure 1). Managers of small capacity feedyards stated they had insufficient time to complete paperwork necessary to develop BMPs due to time demands of managing a diversified operation; many owners of small feedyards had alternate sources of income. Some large capacity feedlot managers expressed the need for extra staff-time to develop and maintain paperwork required by the assessment, especially the BMP portion, as a reason for lack of acceptable documentation of BMPs.

Animal Abuse or Neglect

No animal abuse or neglect was observed at any time during assessments of participating feedyards.

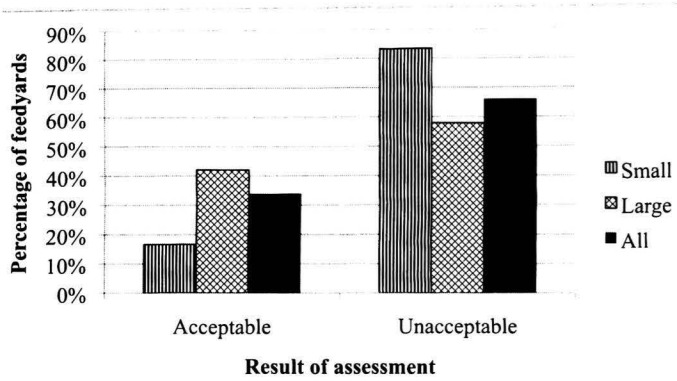

Figure 1. Documentation of Best Management Practices (BMPs) was examined; 18 management protocols are required by the assessment guide. This figure shows the percentage of feedyards that scored Acceptable for all 18 BMPs. Results are reported for small feedyards (< 20,000 head capacity, n=18), large feedyards (≥ 20,000 head capacity, n=38), and all feedyards (n=56).

Cattle Handling Observations

The assessment protocol recommends that 100 head of cattle to be observed during handling, but if a pen does not contain 100 head, evaluate all cattle in the pen.[7] At 1 feedyard only 71 head were observed during cattle handling due to a processing miscommunication; at another feedyard, 87 head were observed because no other cattle were scheduled for processing on the day of the assessment.

The only category point failing to score Acceptable was when cattle were improperly caught and restrained, and the miscatch not corrected prior to conducting processing procedures; this is a zero tolerance error in cattle handling. Thirteen head of cattle at 7 different feedyards were caught and restrained improperly, and not readjusted prior to processing. Feedyard employees were receptive to corrective recommendations, and many understood why it is a zero tolerance cattle handling measurement. The other category points measured for cattle handling at participating feedyards scored within the Acceptable standards range during the assessments (Table 1). When all 6 measurements of cattle handling were combined (driving aides, falling, tripping, vocalizing, jumping, and improper restraint) 79% of feedyards scored Acceptable for all category points.

Pen Observations

Assessments were conducted from July through April. On average, feedyards scored Acceptable in each pen condition category based on standards established in the assessment guide (Table 2). Average Acceptable water tank scores were lower than mud scores or feed bunk maintenance scores, but still met or exceeded the minimum score of 70% required to be Acceptable. When the measurements of pen condition criteria points were combined (feed bunks, water tanks, mud scores, unacceptable stocking rates), 83% of feedyards scored Acceptable for all combined category points. Because pen conditions are directly correlated with cattle comfort and care, and require efforts by both management and employees, pen conditions are useful measurements for demonstrating animal care and welfare in feedyards.

Documentation of BMPs

Nineteen of 56 (33.9%) participating feedyards had all 18 BMPs documented. When a BMP was absent or not current, an Unacceptable score was given for that category point or specific BMP (Figure 1). The primary reason cited by managers for not producing all required BMPs was the amount of resources required to generate and maintain them. Template BMPs are provided in the assessment, and were subsequently provided to all feedyard managers. Templates allow managers to fill in blanks unique to their operation, requiring minimal time to complete. Managers were encouraged to document at least a portion of the BMPs.

Findings of Significance

Eleven of 56 (19.6%) feedyards scored Acceptable for documentation of all BMPs, all cattle handling, and all pen observations (Figure 2). Ten of these feedyards were in the large capacity group, and 1 was in the small capacity group. Missing documentation of BMPs was the most common deficit in BQA implementation in participating feedyards.

Kansas has a 1-time feedyard capacity of 2,370,000 cattle, representing 16.8% of the total US feedlot capacity, while those participating in this study had a 1-time capacity of 1,985,500 cattle, or 83.8% of the cattle feeding capacity in Kansas.[6] Results of this study revealed 2 important points regarding the BQA Feedyard Assessment. First and foremost, the assessment allows documentation of accepted practices of care (category points) which exceed an industry accepted standard, as well as practices (category points) which need improvement. Secondly, the study demonstrated the successful implementation of the BQA Feedyard Assessment in the commercial cattle feeding industry. By implementing the assessment, implementation of BQA practices can be benchmarked.

The assessments in this study were conducted during late spring and early summer months, and pen and water tank scores may differ throughout the year. In addition, the presence of an assessor could have altered behavior of feedyard staff members processing cattle. Future studies should conduct assessments throughout the year, and seek alternate ways to observe processing procedures to gain more accurate representation of cattle handling; video taping is a possibility.

Table 1. Summary of cattle handling scores (percent) recorded for feedyards participating in the BQA Feedyard Assessment as an average percentage by capacity group (feedyard size), and across all feedyards. One hundred head of cattle were observed during processing at 54 feedyards, and 71 and 87 head were observed at 2 feedyards, respectively.

Category points	Small feedyards*	Large feedyards†	Across all yards‡	Maximum Unacceptable percentage§
	Percent Unacceptable			
Driving aides	6.7	2.7	4.0	10.0
Falling	0.1	0.3	0.2	2.0
Tripping	1.7	1.9	1.8	10.0
Vocalizing	1.1	0.8	0.9	5.0
Jumping	5.8	5.9	5.9	25.0
Miscatch	0.1	0.3	0.2	0.0

*Small feedyards had < 20,000 cattle capacity (n=18).
†Large feedyards had ≥ 20,000 cattle capacity (n=38).
‡All feedyards combined (n=56).
§Maximum percentage of Unacceptable observations made in each category is listed in this column. A feedyard scoring higher than the maximum percent listed in this column was given an Unacceptable for that category point. Scoring criteria are found in the BQA Feedyard Assessment available at: http://www.bqa.org/CMDocs/bqa/Feedyard_Assessment_062209_Blank.pdf.

Table 2. Summary of pen observation scores (percent) recorded for feedyards participating in the BQA Feedyard Assessment as an average percentage in each capacity group (feedyard size), and then combined across all feedyards. At each feedyard, 10 random pens were selected for assessment. For mud score, water tank, and feed bunk condition category points to be scored Acceptable, 70% or more of pens had to meet the standard described in the assessment forms. If 1 or more pens failed to meet the described standard for stocking rate, the feedyard was given an Unacceptable score for that category point (zero tolerance).

Category points	Small feedyards*	Large feedyards†	Across all yards‡	Maximum Unacceptable percentage§
	Percent Unacceptable			
Stocking rate, pens	10	0	0	0
Mud score, pens	20	20	20	30
Water tank, pens	18	16	17	30
Feed bunk, pens	10	0	0	30

*Small feedyards had < 20,000 cattle capacity (n=18).
†Large feedyards had ≥ 20,000 cattle capacity (n=38).
‡All feedyards combined (n=56).
§Maximum percentage of Unacceptable observations made in each category is listed in this column. Scoring criteria are found in the BQA Feedyard Assessment available at: http://www.bqa.org/CMDocs/bqa/Feedyard_Assessment_062209_Blank.pdf.

Conclusions

Only 19.6% of feedyards in the study received an Acceptable score in all categories of the assessment. The primary reason that a feedlot failed to receive a satisfactory score was the lack of BMP documentation. Results of this study identified specific areas of BQA that need improvement, thereby guiding future training and management emphasis. Continued use of the BQA Feedyard Assessment can measure and identify practices needing improvement, and can guide training necessary to meet BQA goals.

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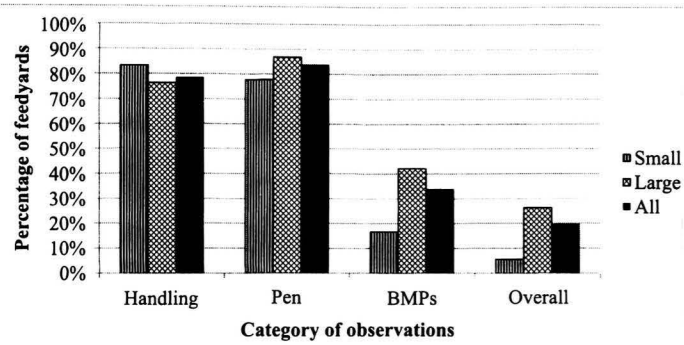

Figure 2. This figure shows the percentage of feedyards that scored Acceptable for cattle handling, pen management, and Best Management Practices (BMPs) categories. Feedyards that scored Acceptable in a portion of the assessment are included in that category. For feedyards that scored Acceptable in all 3 categories of the assessment, they are included in the overall category of Acceptable ratings. The feedyards were divided into the small capacity group (< 20,000 head capacity) or the large capacity feedyard group (≥ 20,000 head capacity) for reporting purposes.

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The authors declare no conflict of interest.

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Appendix 1. Definitions for cattle handling observations evaluated at each feedyard enrolled in the BQA Feedyard Assessment. At each feedyard, each category point listed was observed and recorded.

Category point	Definition
Driving aides	Use of electric prod with electric current discharged while prod is in contact with animal's skin.
Falling	Upon discharge from the working chute, the animal's torso or abdomen hits the ground.
Tripping	Upon discharge from the working chute, the animal's knee hit the ground.
Vocalizing	Animal vocalizes while being restrained in the chute, but prior to any procedure being performed on that animal.
Jumping/running	Upon discharge from the working chute, the animal reaches speeds greater than trotting or loping or the animal's 4 legs leave the ground.
Miscatch	Animal is caught by the temples or at any point along the body behind the shoulder and not readjusted before procedures are performed.

Appendix 2. Definitions for the Best Management Practices (BMPs) evaluated at each feedyard enrolled in the BQA Feedyard Assessment. At each feedyard, a BMP was required to be up-to-date for each of the 18 category points.

Category point	Definition
Residue avoidance	Management techniques ensure that protocols are in place to prevent the marketing of cattle that have not met proper preharvest withdrawal times.
Training protocols	Documented use of a training program for employees.
Pen maintenance	Documented protocol in place for pen maintenance.
Euthanasia protocols	Euthanasia protocol must follow guidelines published by the American Association of Bovine Practitioners and the American Veterinary Medical Association.
Non-ambulatory cattle	Protocols in place for dealing with non-ambulatory cattle.
Health	Documented health protocols in place that address disease, prevention, management, and treatment.
Biosecurity	Biosecurity protocol in place that addresses visitor logs, staff training, physical security, and a current biosecurity plan.
Animal disposal	Animal disposal protocol that meets federal, state, and local disposal regulations.
Medication receiving, storage, handling	Receiving, handling, and storing pharmaceuticals protocol.
Broken needles	Documented broken needle protocol.
Medicated feed	Documented protocol for medicated feed.
Feed quality	Documented protocol in place for feed quality which includes consultation with a nutritionist, the need to collect, store and analyze feed samples, especially related to potential quality issues such as aflatoxins and/or pesticide residues.
Receiving/processing	Documented protocol available for receiving/processing cattle including processing crew responsibilities, number of cattle received, proper use of implants, processing map, and animal or group identification.
Shipping	Documented protocol for shipping cattle including withdrawal verification, safe-to-ship documents, and staff-verified shipping records.
Emergency action plan	Emergency action plan in place and readily accessible.
Feed delivery records	Available and accessible feed delivery records.
Supplements	Documentation that no ruminant-derived proteins are being received or fed.
Veterinary/client/patient relationship	Documentation of a veterinary/client/patient relationship available.