# Practical approach and outlook regarding animal welfare concerns related to beef feedlot production

**Michelle S. Calvo-Lorenzo,** PhD, MS
Elanco Animal Health, 2500 Innovation Way, Greenfield, IN 46140, Phone: (786) 252-6411,
Email: mcalvo-lorenzo@elanco.com



**Abstract**

The topic of animal welfare resonates strongly with the general public today as interest in the quality of life of food animals continues to grow. New tools to address, prevent, and assess animal welfare on farms will likely incorporate novel approaches due to the direct role and influence that livestock caretakers have on animal welfare. Addressing worker welfare as part of animal welfare is a complex subject area that must incorporate multiple components such as occupational psychology, safety and comfort, training and education, and cultural barriers of a diverse immigrant workforce. Addressing these factors also requires acknowledgement that each is interdependent with one another and with animal welfare. Very little metrics are available to quantify feedlot worker performance, comfort, and job satisfaction; however, the need for a skilled, stable, and satisfied workforce in feedlots is increasing. Veterinarians and stockpeople are regarded as the most influential and critical individuals for animal welfare and productivity. Therefore, a unique opportunity exists for feedlot veterinarians and owners/managers to proactively address the needs of feedlot workers and positively influence the feedlot culture for improved work performance and animal welfare outcomes.

**Key words:** cattle welfare, feedlot, workforce management, leadership, culture

**Résumé**

Le sujet du bien-être animal interpelle très fortement le grand public de nos jours car l'intérêt pour la qualité de la vie des animaux de production ne cesse d'augmenter. De nouveaux outils pour aborder, prévenir et évaluer le bien-être animal à la ferme vont probablement incorporer de nouvelles approches en raison du rôle direct et de l'influence du personnel prenant soin du bétail sur le bien-être animal. Aborder le bien-être des travailleurs dans le contexte du bien-être animal est un sujet complexe qui demande l'intégration de multiples composantes telles que la psychologie du travail, la sécurité et le confort, la formation et l'éducation et les barrières culturelles d'une main-d'œuvre immigrante diversifiée. Aborder ces facteurs demande aussi la reconnaissance que chacun d'eux dépend des autres et du bien-être animal. Il y a peu d'indicateurs disponibles pour quantifier la performance du personnel dans les parcs d'engraissement, le confort et la satisfaction au travail. Toutefois, le besoin d'une main-d'œuvre qualifiée, stable et satisfaite ne fait qu'augmenter. Les vétérinaires et les préposés à l'élevage sont considérés comme les individus les plus influents et essentiels pour le bien-être animal et la productivité. Par conséquent, une opportunité unique se présente aux vétérinaires des parcs d'engraissement et aux propriétaires/gérants d'aborder d'une façon proactive les besoins du personnel du parc d'engraissement et d'avoir une influence positive sur la culture dans les parcs d'engraissement afin d'améliorer la performance et les résultats en matière de bien-être animal.

## Introduction

The topic of animal welfare, particularly for livestock animals raised for food production, resonates strongly with the general public today as both consumers and livestock caretakers demonstrate growing interest in the quality of life of such animals. In a recent online survey of 1,000 Americans, respondents indicated that animal welfare was the number one cause they supported (41%), followed by children's education (38%) and hunger (33%).[36] Another recent web-based survey evaluated consumer perception on food production-related topics in 1,001 US respondents, and found that the treatment of animals raised for food was the fourth most searched topic online (35% of respondents), and only 25% of respondents believed that US meat is derived from humanely treated animals.[12] Numerous other surveys have also published the increased public concern of farm animal welfare both in the US or internationally.[13,19,21,48] From the standpoint of livestock caretakers such as producers and veterinarians, it is reported that they have a direct role in affecting animal welfare and are responsible for the implementation of practices that improve animal welfare on farms. In a national survey where US cow-calf producers and consumers were asked about their views on cattle welfare, both groups acknowledged the importance of improving cattle welfare in beef herds and viewed the practices of providing (1) fresh, clean feed and water and (2) adequate comfort and assuring clean, dry environmental conditions as effective and practical for improving the welfare of beef cattle.[39] Sumner et al[49] reviewed the perspectives of dairy farmers and veterinarians on cattle welfare, and reported that while dairy farmers and veterinarians can differ on their perspectives on animal welfare, both groups shared concerns about disease and pain management. In addition,

the authors stated that improved cooperation and communication between farmers and veterinarians is key to mediating welfare issues while addressing welfare priorities. Thus, as interest in farm animal welfare continues to grow over time, the tools available to address, prevent, and assess welfare on farms will continue to develop. However, these tools likely will include new approaches considering the direct role and influence that livestock caretakers have on animal welfare.

Progress in beef cattle welfare is tied to the growing discussion and efforts in beef sustainability. The Global Roundtable for Sustainable Beef (GRSB) *formally* defines sustainable beef as a socially responsible, environmentally sound, and economically viable product that prioritizes the planet, people, animals, and progress.[24] However *practically,* beef sustainability is about beef farmers and ranchers being caretakers to the animals, the land and water, being a good neighbor and community member, maintaining profitability while farming, and leaving their operation better than they found it.[42] Specific to animal welfare concerns and needs in beef feedlot systems, numerous priorities for beef cattle welfare research have been identified and considerable research is known to inform best practices (i.e. risk factors and management strategies for respiratory disease or lameness); however, there are still barriers in the implementation of scientific knowledge and industry-wide adoption of practices that benefit cattle welfare.[50] The social pillar of sustainability is inclusive of animal welfare, but it also incorporates the people dimension of farming including the well-being of owners, managers, and hired labor on farms. Currently, there is a disconnect between the value placed on ensuring the welfare of stockpeople on beef and dairy operations, and this subject is not often proactively addressed on farms.[18,29] Although scientific information is essential for identifying and managing the factors that pose risks to animal welfare, the understanding of challenges related to how worker welfare impacts animal welfare is as essential.

Addressing worker welfare as part of animal welfare is a complex subject area that incorporates multiple components such as safety, leadership, training, psychology, language and cultural diversity, and workplace culture, to name a few. This complex subject area, however, is important for the beef feedlot industry to prioritize from a social sustainable perspective because the impact of a stockperson's attitude and behavior on the welfare and productivity of livestock has been reported in the pig, dairy, and poultry industries. When the effects of stockperson behaviors and attitudes towards pigs was examined, researchers found that stockperson behaviors provoked fear responses in pigs[15] and poor attitudes resulted with increased use of the electric prod when handling pigs in abbattoirs.[16] Dairy cow behavioral responses indicative of fear towards dairy workers was negatively correlated with milk production[10] and behavioral interventions targeting improvements in the attitudes and behaviors of stockpeople resulted in improved milk yield, protein, and fat, and reduced levels of fear in dairy cows.[31] Similar findings have also been reported in the poultry industry, where negative correlations resulted between a bird's fear of workers and productivity in the egg layer industry[4] and broiler industry.[32] Although very little work in this area has been conducted in the beef industry, new research by Ridge et al[43] has examined the impact of job roles on feedlot employee attitudes and perception toward cattle, euthanasia, and workplace environment. Overall, the researchers found that regardless of job role, feedlot employees displayed empathy towards cattle, positive co-worker relationships, and positive job satisfaction; however, opportunities exist to improve the perception of euthanasia on feedlots, fill gaps of knowledge related to role-specific responsibilities of feedlot employees, and educate further on cattle breed differences and care.[43] For feedlot cattle veterinarians and owners/managers, the complexity and challenges of addressing worker-related issues can have a profound impact on their ability to influence, train, or directly make on-farm improvements for animal welfare. Workers on farms are the 'boots on the ground' stewards of food animals, after all, and their direct impact on animal welfare requires a long-term investment in the well-being of feedlot employees.[18] The areas of occupational psychology, safety and comfort, training and education, and cultural barriers are discussed in the present article to review challenges and opportunities to advance awareness and promote efforts on new perspectives and approaches to addressing beef cattle welfare.

## Occupational Psychology

Establishing standards that ensure positive human-animal relationships between stockpeople and their cattle is essential to safeguard how cattle are cared for as they interact with workers on a daily basis.[18] Creating such standards requires an understanding of how workers are treated and how that translates into their actions with animals. Ajzen[1] presents the *Theory of Planned Behavior* as a conceptual framework for understanding the complexities of human social behaviors, and discusses central concepts such as attitudes toward a behavior, subjective norms with respect to a behavior, and perceived control over a behavior. The author states that attitudinal psychology directly indicates the outward actions of an individual because (1) the intentions to perform different behaviors can be predicted from attitudes toward the behavior, subjective norms, and perceived behavioral control with high accuracy and (2) such intentions, together with perceptions of behavioral control, account for considerable variance in actual behavior.[1] Generally speaking, one behaves in favorable ways towards likeable things and people, and one behaves in unfavorable ways towards unlikeable things and people. Thus, positive attitudes render positive behaviors and negative attitudes render negative behaviors. Collectively, perception and attitude are the ultimate causes of human actions and this theory can be applied to feedlot worker behaviors and animal treatment based on

the level of worker satisfaction for their job and the animals in their care.[18,43]

Job satisfaction is the extent to which people like or dislike their jobs and is defined as how people feel about their jobs and the different aspects of their jobs.[45] The study of job satisfaction has typically utilized 2 research approaches where (1) the "person-environment fit" is assessed to determine how well-being is connected to the presence of appropriate requests to the individual by the organization or (2) assessing the relationship between performance and quality of life of people with the presence of positive emotional states and satisfying relationships within the work environment.[9] Three major gaps between human resource (HR) practices and the scientific research in employee attitudes and job satisfaction have been identified: (1) the causes of employee attitudes, (2) the results of positive or negative job satisfaction, and (3) how to measure and influence employee attitudes.[44] Closing these gaps of knowledge will be critical, especially at a time when employees are increasingly important for a feedlot's success and performance. Job dissatisfaction may be associated with absenteeism, poor health, turnover, and complaints,[45] and studies have reported that dissatisfied workers are more likely to quit their jobs or be absent than satisfied workers.[44] When Biggio and Cortese[9] assessed influencing factors and the role of individual psychological characteristics on employee well-being in the workplace, they found that workplace well-being does not exclusively depend on external conditions of the working environment. Rather, the following individual characteristics were identified by participants as capable of influencing workplace well-being: being positive, communication, management of difficulties and conflicts, socio-emotional skills, and values.[9] Positive affection (which can be presented in the form of respect and acknowledgment towards employees) has been shown to encourage the pursuance of work objectives in the workplace; the promotion of self-confidence (which can be presented in the form of empowerment and recognition towards employees) was beneficial on the morale of both individual employees and the entire workplace.[9,18] Therefore, achieving job satisfaction depends on establishing multiple interdependent factors on a feedlot, which includes a positive workplace culture, employee participation in a company's mission, positive emotions, and an individual sense of belonging within an organization.[9,18]

Overall, organizations need leadership and/or HR personnel who (1) understand the research on occupational psychology in order to develop effective and research-based employee attitude measures, (2) can comprehend and derive valuable insights from the data, and (3) can use the results to improve employee attitudes, job performance, and help lead organizational change.[44] Although there are increasing demands on the time and responsibilities of an organization's leadership and HR personnel, an investment in occupational psychology for the betterment of employee well-being and job satisfaction may prove to strengthen the overall attitude, job performance, and morale of the whole workforce.[18] Saari and Judge[44] propose that increased involvement with professional HR organizations (e.g. Society for Human Resource Management (SHRM) and Agricultural Personnel Management Association (APMA)) may be an excellent way to gain more knowledge on occupational psychology, as these organizations increasingly offer ways to access summarized information on research and methods for evaluating practices implemented. Furthermore, the authors offer the following questions[44] for an organization's leadership or HR personnel to ask themselves about the practices implemented in order to understand or improve employee attitudes and job satisfaction:

- "Do we have an employee attitude survey that measures areas important for employee job satisfaction as well as organizational success? How do we know this and make this case to line management?"
- "Is the employee attitude survey routinely used as a part of decision making?"
- "Is the employee attitude survey a respected source of information about the people side of the business?"
- "Am I at the table with line management using the employee attitude survey insights for needed action and organizational change?"
- "Can I discuss these measures in light of other key business measures?"
- In the end, the evaluation of implemented practices should consider the following 2 points:
  1. "Are measures of employee attitude used as important information for the business?"
  2. "Ultimately, do employee attitudes and job satisfaction move in the desired direction?"

### Worker Safety and Comfort

There are numerous challenges that feedlot employees confront during their daily job responsibilities, many that may increase worker safety risks and impede the execution of expected practices. In regards to worker safety on feedlots, a Feedyard Safety Roundtable was convened in 2015 to lead efforts and collaboration with feedlot owners, managers, and allied service organizations for the improvement of worker safety in feedlots.[20] The goal of this roundtable was to identify the challenges and positive aspects of current safety efforts in US feedlots to develop measurable methods of intervention and educational/outreach programs. The Roundtable reported multiple challenges of current safety practices on cattle feedlots in their 2015 summary document,[20] and an overview of these challenges is outlined below:

- Challenges associated with common unsafe practices on feedlots
  - Feedlot work environments often have loud noises and harsh weather conditions

    - Feedlot workers must handle cattle that are larger today than ever, which increases safety risks to workers
    - Heavy workloads may make workers feel rushed and increase the risk for injuries
    - Fatigued workers are at greater risk for injury
- Challenges with training materials
    - Resources and educational materials may not be at the appropriate language or literacy level
    - There is a lack of competency-based training
    - There is a lack of understanding of the effective utilization and execution of safety programs
    - There are concerns that Occupational Safety and Health Administration (OSHA) compliance training will replace practical and relevant feedlot safety training
- Challenges relative to feedlot workforce diversity
    - Older employees with feedlot knowledge are leaving and being replaced with younger/newer people that may lack core knowledge, including workers with urban backgrounds
    - There are language and culture barriers
    - Feedlot understaffing and competition with the oilfield labor can put constraints on the availability or retention of the labor force
    - Generational differences are reflected in work priorities
- Economic challenges
    - Feedlots may have financial constraints on spending the money and time required to conduct thorough and effective safety training
    - Workers may not understand the link between injuries and profitability

In addition to the list above, the Roundtable listed many positive aspects of current safety efforts on feedlots today, which included: organizations are having high-level discussions about safety, more feedlots have a designated safety person on staff, increased new-hire trainings are taking place and organizations are implementing thorough hiring processes, and there have been increased discussions and implementation of low-stress cattle handling.[20] These efforts are applauded and encouraged for wider adoption among feedlots. However, barriers that impede effective safety training on feedlots still exist and these barriers must be addressed by the industry. Such barriers were identified as: "too many [training] materials that are not effective, with little organization or standardization", "the limited size of some operations may result in having limited resources available for training", "lack of simple 'Feedyard 101' training materials", "lack of incentives or recognition for good practices", "new processes being implemented in old facilities", "many feedyards don't have a proper venue for conducting safety training", "production and facility changes may not always be aligned with safety needs", "lack of understanding regarding costs and benefits ("what's in it for me?")", "Culture: cowboy mentality, cultural differences and generational concerns", and "ineffective hiring processes are a concern".[20]

Within the dairy industry, similar challenges on worker safety and comfort have been reported as modern dairy operations expand their capacities and production.[29] Like feedlots, dairy farming is among the most dangerous occupations and is increasingly reliant on larger numbers of immigrants with little dairy experience.[28,29] In general, many challenges of current safety efforts on dairies include: HR management challenges that impede employee performance (such as carrying out employee performance evaluations, establishing and achieving worker performance goals, effective worker training, and identification/recruitment of qualified workers),[40] language barriers that result in inadequate safety education and instruction,[38] greater focus is invested in ensuring animal welfare rather than worker health and well-being,[23,52] more effective training tools are needed that are both visual and hands-on (defined as materials that maximize learning comprehension and retention in adult learners in their respective language and at their level of comprehension),[28] and research addressing HR management practices relative to worker safety behaviors and performance is scarce.[29]

Researchers from New Mexico State University have investigated these challenges relative to cattle welfare on dairies.[27,29] At the 2018 Dairy Cattle Welfare Symposium, Dr. Robert Hagevoort highlighted the dairy industry's achievements in utilizing cattle performance and welfare metrics to measure cow comfort, but noted a lack of human performance metrics available and/or used to determine worker comfort on the dairy and how worker comfort affects cow comfort or welfare.[27] The researcher highlighted specific examples such as the ergonomic variability across milkers and AI service workers, and how milking or handling cows can affect worker comfort when workers have differing heights and must conform their posture for these job roles. Significant language and cultural differences across dairies were also presented, requiring a better understanding of worker demographic factors and developing tailored approaches to facilitate positive and comfortable working environments within the language and cultural microclimates of dairies. There are currently no metrics available to assess many of these factors and human-based outcomes,[27] which are needed to improve the comfort of workers and reduce the possibility of injury or fatality in the work environment. Developing these metrics is also critical from the context of cattle welfare, because domesticated cattle rely on their human caretakers who constitute the most influential factor affecting animal handling, welfare and productivity.[14] Therefore, the important questions posed to address these knowledge gaps was presented by Dr. Hagevoort[27] as:

- "How do on-farm factors affect worker performance and how does that affect cow welfare?"
- "Dairies are designed around cow comfort, but do we consider maximizing worker comfort (and performance) in the process?"

- "To what extent do worker conditions affect worker performance? How does this relationship affect cow welfare and the operation's bottom line?"

Altogether, many US feedlots and dairies adopt general safety programs and policies as part of their framework for on-farm worker safety. However, the specific challenges discussed above demonstrate that there is still a growing need to identify, address, and monitor specific hazards unique to those industries to reduce worker injuries/fatalities and increase workplace comfort. Addressing the feedlot-specific challenges and barriers of worker safety and comfort provides a great opportunity for feedlot owners/managers and veterinarians to positively impact worker performance and motivation for optimal cattle care.

### Training and Education

In order to appropriately manage, handle, and care for feedlot cattle, workers require a wide range of well-developed husbandry skills and knowledge. Newly-hired farm workers are typically itinerant and unskilled in animal agriculture, requiring managers to invest significant resources and time into training and managing the development of skilled employees on the farm.[18] Due to the lack of qualified applicants and increasing employee turnover, there continues to be a need for effective and practical training of personnel, as understimating the role and impact of workers may significantly affect the welfare and productivity of livestock.[14,18] Therefore, effective training of personnel that considers worker language and literacy variability is critical for worker performance success, as many agricultural workers are immigrants with limited language skills and educational attainment.[2]

Coleman and Hemsworth[14] review that there are 3 main factors that contribute to a stockperson's work performance: capacity, willingness, and opportunity. The 'capacity' factor includes variables such as skill, health, ability, and knowledge. Thus, workers must acquire the basics of livestock behavior, health, and welfare requirements of animals, in addition to a wide range of general husbandry skills needed to effectively manage the animals in their care. Because many experts have defined good stockhandling and stockmanship skills,[11,26] the 'capacity' variables of worker performance relative to effective training is better understood and implemented.[14] For example, experts encourage the US beef industry to utilize Beef Quality Assurance (BQA) resources to provide an operation's framework with the materials needed for formalized training and monitoring of best management practices of beef cattle.[7,47] National Beef Quality Audits (NBQA)[8] have been conducted over the past 20 years to provide an industry-wide score card on significant improvements and shortfalls for the beef industry to achieve its goals of increasing value across the beef supply chain. While it was found that significant advancements have been made in overall animal welfare and handling in the most recent NBQA, additional emphasis on educational approaches and programs was recommended to further improve practices that reduce animal welfare concerns (i.e. culling timeliness) and prevent carcass condemnation.[8] Thus, effectively training stockpeople must also involve an understanding of behaviors, perceptions, and attitudes of workers, rather than focusing on skills training alone. This is where the 'willingness' and 'opportunity' factors of a stockperson's work performance are critical and complementary to the 'capacity' factor. Because veterinarians are a key component in the implementation of educational programs (like BQA) and efforts on best management practices,[47] they have a unique opportunity to positively influence feedlot employee work performance beyond the 'capacity' factor.

The 'willingness' factor of the work performance model[14] includes variables such as motivation, job satisfaction, attitude towards animals, and work attitude; whereas the 'opportunity' factor involves working conditions, actions of coworkers, and organizational policies and rules.[14] As mentioned previously, numerous field studies have demonstrated that worker attitudes and beliefs relative to interactions with their animals are related to their behaviors towards those animals, and are correlated with the resulting quality of the human-animal interaction. Thus, to improve a stockperson's attitudes and beliefs about managing and handling their animals, new approaches and techniques centered on human-animal interactions need to be developed for the beef industry's training and education framework. One example to consider is cognitive-behavioral training, which has been successful in the dairy and swine industries. Cognitive-behavioral training is a training/retraining approach in which the attitudes and behaviors of workers are targeted by (1) focusing on the beliefs that underlie general behaviors (attitudes) and behaviors in question, and (2) maintaining the changed beliefs and behaviors (for more information on cognitive-behavioral training, see Coleman and Hemsworth[14] and Hemsworth and Coleman;[30] industry application of cognitive-behavioral training in the swine and dairy industries can be found at Australian Pork[3] and Ohio Dairy Industry Resources Center,[41] respectively). This approach is based on scientific research and intervention studies, and has promising results for improving the human-animal interaction, which may have positive impacts on overall worker motivation, attitude, and job satisfaction.

The 'opportunity' factor of the work performance model[14] is maximized when an operation's organizational policies and HR management is focused on the influential characteristics of workers, as well as the operation's management style and workplace conditions. This includes ensuring that workers are well equipped to effectively care for their animals, have a work environment where stress is minimized, have a positive farm culture towards animals and animal management tasks, and have jobs that involve a variety of skills, meaningful tasks, autonomy, and delivery of feedback.[14] Thus, to provide the workforce the opportunities needed to enhance working conditions, animal production may need to shift toward a professional model,[22] whereby an investment

is made to professionally build both hired labor and owners/managers to foster high worker performance. Daigle and Ridge[18] stated that substantial resources, husbandry guidelines, and legislation have been invested or developed for the betterment of livestock welfare and agricultural sustainability, but there has been a lack of focus on the stockpeople primarily responsible for the well-being and productivity of livestock. The authors recommend that greater, long-term investments in stockpeople should be a national priority in animal agriculture, both at the compensatory and societal level, for stockpeople to be regarded as professionals and boost workforce morales to have positive impacts on the welfare, productivity, and sustainability of animal agriculture. Recommendations for such efforts include acknowledgement and treatment of stockpeople as professionals, appropriate compensation to reflect the level of skill required and resulting impact on animal welfare and productivity, incorporation of stockmanship skill development and training in higher education curriculum, development of educational opportunities that specifically address a worker's occupational requirements and teach both the "*what*" and "*why*" of each job task, and increasing occupational awareness of stockmanship positions to boost the talent in application pools and positively transform society's perception of stockmanship as a respectable profession.[17,18,28] Furthermore, research on effective leadership transitions (i.e. promotion of workers into managerial roles) indicates that ineffective supervisory performance can result when new managers are not appropriately identified nor provided with adequate leadership skill development.[28,55] Identifying individuals with the right skills and traits to be successful managers is key, and such attributes include: individuals that are open to feedback and change, supportive of others' development, open to innovation, good communicators, have good interpersonal skills, and are supportive of organizational changes.[55] However, identifying these individuals *before* they are promoted and developing their supervisory skills *prior* to promotion will better prepare an operation's leadership for enhancing supervisory performance of the larger workforce and optimize the long-term opportunities of workers.[28,55]

Animal welfare guideline and assessment programs will likely continue to be a key driver for on-farm improvements in animal welfare. However, the impact of such programs may only be realized by recognizing the limitations of workers and providing specific training that targets key aspects of stockmanship.[14] Thus, new strategies developed to provide effective training and education should not only account for worker capactiy and limitations on language and educational attainment, but also the willingness and opportunity factors that contribute to a stockperson's work performance.

## Cultural Barriers

Beef producers and veterinarians have a direct role in affecting animal welfare, but they can also have a direct role in positively influencing the farm culture, which can have positive indirect effects on animal welfare. Regarding the perspectives of dairy farmers and veterinarians on dairy cattle welfare, Sumner et al[49] reviews how dairy producers believe that veterinarians are influential in improving animal welfare,[54] whereas veterinarians believe producers are the most important stakeholder for improving welfare.[53] The authors discuss how dairy cattle welfare can be improved with enhanced dairy producer-veterinarian cooperation to identify shared concerns, reframe differing perspectives as complementary roles, and improve communication about the economic priorities and goals of an operation.[49] Thus, producers and veterinarians have a critical role in setting and achieving an operation's targets on cattle productivity and welfare, which enables them to set a positive workplace culture relative to cattle welfare and human-animal interactions. However, approaches to establishing a positive workplace culture (considered as a positive emotional culture with employee participation and individual sense of belonging)[18] requires knowledge about the cultural, linguistic, literacy, and education barriers among workers.

Workplace diversity is considered complex and powerful, which can be advantageous for business productivity and employee morale.[6,46] The US agricultural workforce is prominently comprised of migrant and seasonal farm workers, making agriculture increasingly diverse in language, culture, and education across all industries.[2,25] The majority of the workforce on US feedlot operations can be very diverse, and hired feedlot workers typically speak English as a second (or third) language.[51] Modern dairies have become increasingly reliant on the diverse immigrant workforce to perform milking and other critical responsibilities of cattle care, particularly as dairy businesses and productivity expand.[29] Surveys and research have indicated that the primary language spoken by dairy workers is Spanish, however the primary native language of some Latino workers can stem from an indigenous language, in which these workers have limited or no Spanish-speaking or -reading abilities at all.[2,29] Because stockpeople assigned with animal care and management roles are highly influential in improving animal welfare on farms, efforts to communicate with these foreign workers, particularly for those that are learning about animal husbandry for the first time, must account for the barriers of language and literacy levels. Solving the language barrier is a challenge, and managers must understand the various workplace cultures to avoid misunderstandings of important job-related responsibilities and interpersonal problems.[29,37] Language barriers may also limit a worker's ability to be trained for more advanced positions within the farm,[37] potentially impeding long-term investments in employees for professional growth that can negatively affect retention rates. Therefore, overcoming language and literacy barriers requires an effective assessment of the feedlot workforce to fully understand the different cultures of hired foreign workers and aid in the development of training and monitoring

tools. A lack of English skills among hired workers means a considerable commitment is needed to provide workplace instructions, training, and critical conversations (i.e. problem solving and performance reviews) in the appropriate language with the use of translators or consultants.[37] Providing a variety of training and communication formats (i.e. visual, hearing, hands-on) is recommended to maximize the communication of concepts and practical information, and help account for different learning styles, language, education, and literacy levels of individual workers.[2]

In addition to the language and literacy barriers that workers face in the feedlot, there are many other challenges that workers encounter on and off the farm that can have direct and indirect impacts on the care and attention they provide to cattle. For instance, there may be internal farm challenges and external personal challenges that can influence worker performance in the workplace, affect the animals in their care, and contribute to the high turnover rates typically seen in the agricultural sector. Internal farm challenges can include: workers' concerns about being paid by the head versus by the hour, farms growing in scale/size, increased number of animals per employee, understaffing and time constraints, and bonus incentives based on animal productivity; whereas external personal challenges of workers can include: the personal pressures of living within a low-income family, consideration of competing jobs in the oilfield industry, documented/undocumented status and fears of being picked up by immigration officials, foreign workers may have their spouse or family residing in their home country, and limited access to health care.[2,18,28,37] Other factors that likely contribute to limited applicant pools and high turnover rates of employees are the fact that animal husbandry jobs are occupations with low-paying salaries, high physical labor demands, high number of work-related injuries, and the workforce is made up of an aging agricultural population.[17,18,29] Because continuous changes in personnel can have direct and indirect impacts on animal welfare (in addition to other factors important to the farm such as productivity, economics, safety, and efficiency), there is a critical need for the US livestock industry to invest in high-quality, well-trained, and appropriately compensated stockpeople.[18]

Establishing a positive workplace culture with a diverse, dispersed and often transient population of workers across cattle operations is challenging, and the willingness of workers to use recommended/required practices is also known to be affected by the culture, experience, attitudes, and beliefs inherent to agricultural worker cultural characteristics.[2,14] Therefore, the leadership styles used to set the workplace culture are critical and can have positive or negative effects on worker adoption of training and expected husbandry practices. Hagevoort et al[29] reviews the literature on passive and active leadership styles on dairies, which are linked to organizational outcomes, commitment, performance, and employee satisfaction. A passive leadership style involves leaders that lack positive leadership skills and do not achieve desired outcomes, and such leadership is associated with increased safety events and injuries.[29,35] On the contrary, active leadership is often characterized as a transformational leadership style comprised of leaders that possess and exhibit the following characteristics: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration.[5,29] This form of leadership has been shown to have positive effects on organizational commitments, business unit performance, employee job satisfaction with leadership style, employee performance, improving safety-related behaviors, and reducing the incidence of injuries.[29,33,34,36] Thus, feedlot decision makers and influencers may benefit from adopting transformational leadership styles that enhance employee motivation, morale, and performance to establish a positive workplace culture with worker willingness to accept and use on-farm training. This approach, together with consideration for workers' cultural barriers and on-farm/personal challenges, may enable feedlot veterinarians and owners/managers to be highly effective in positively influencing the feedlot culture, and ultimately cattle welfare, across a diverse workforce.

## Conclusions

As a result of the emerging interest and science of animal welfare, cattle caretakers will continue to adopt and invest in tools that optimize livestock welfare, productivity, and the sustainability of animal agriculture. Given the increased need and dependency of a skilled and stable workforce to carry out cattle management needs in feedlots, new tools must account for the physical and mental well-being of owners, managers, and hired labor, all which are not often proactively addressed on feedlots today. New methods of addressing animal welfare-related issues may require a shift in leadership skills, approach, or training, because most efforts to optimize cattle welfare have primarily focused on cattle rather than the workers that tend to cattle and their link to cattle welfare. There are little to no metrics available to effectively quantify or evaluate feedlot worker performance, comfort, job satisfaction, and related impacts on cattle welfare and productivity. Therefore, more work is needed to develop metrics that feedlots can incorporate into their unique programs to evaluate approaches in the following areas: establishing and maintaining strong employee relationships, onboarding employees for success, identifying opportunities for professional growth and development of employees, reducing workplace stress and safety hazards, increasing employee retention, fostering meaningful recognition and empowerment of employees, and helping employees internalize a feedlot's organizational principles. Newly developed tools to overcome worker challenges must also address the cultural, linguistic, illiteracy, and educational barriers associated with a diverse immigrant workforce. The issues associated with managing a diverse workforce are complex, and addressing each of the factors outlined in this

paper requires acknowledgement that each is interdependent with one another and with animal welfare.

Veterinarians and stockpeople are highly influential individuals on the farm, thus having a critical role in welfare and productivity. Veterinarians are specialized and trained to provide care and comfort to cattle; given the extensive level of training and education they have to offer on cattle welfare, they are well positioned to find new, effective ways to transmit this important information and enhance the "*why*" aspect of feedlot job roles. Veterinarians are also considered a key component to helping producers implement BQA and other programs on beef operations. This further emphasizes the importance of the veterinarian's collaboration with their nutritionist and feedlot managerial colleagues to improve the coaching needed to strengthen the capacity, willingness, and opportunities of workers. The leadership styles of feedlot decision makers and influencers are related to safety events and injuries in the horticulture and dairy industries, demonstrating the need for more qualitative research and outreach in feedlot worker safety and well-being issues. If decision makers and influencers need assistance with a feedlot's worker performance program, experts recommend employing an HR specialist from within animal agriculture or an outside industry to supply tools to evaluate efforts, quantify progress, and track success. Therefore, many opportunities exist for feedlot veterinarians and owners/managers to have a positive impact on proactively addressing the needs of workers and coaching for improved work performance. Assessment of feedlot-specific challenges is key to determining individual operational approaches or industry-wide development of worker performance programs and metrics to positively impact cattle welfare and productivity.

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