

Changing Attitudes Through Welfare

Science backs welfare movement in cattle industry.

by *Kasey Brown*, senior associate editor, and *Troy Smith*, field editor

Producers and academia gathered in Manhattan, Kan., June 8-10 to discuss and improve animal welfare in the cattle industry. The fifth International Symposium on Beef Cattle Welfare (ISBCW), hosted by the Beef Cattle Institute on campus at Kansas State University (K-State), provided opportunity for the cattle industry to consider challenges to cattle welfare and possible solutions. Topics ranged from preconditioning to long-distance transportation to flooring considerations for confinement cattle.

Angus Media was on hand to cover the event. What follows is a sampling of presentation summaries from the symposium. More meeting coverage is available in the October 2016 *Angus Journal*, and a comprehensive listing of summaries from the conference is provided at www.api-virtuallibrary.com/meetings_other_news.html.

Summary of past ISBCW symposia

Joe Stookey admits that he once had a more “cavalier” attitude toward animal welfare. Several years ago, the University of Saskatchewan professor of animal behavior was most interested in how maternal and social behavior among cattle, sheep and swine affected the animals’ productivity. He said his attitude is different now.

“It has changed me,” stated Stookey, recounting the subject matter addressed during the four previous cattle welfare events, hosted biennially since 2008. “I think it has influenced the attitudes of a lot of people.”

Stookey credited Dan Thomson, K-State veterinary science professor for organizing the first welfare symposium hosted on K-State’s Manhattan campus. Stookey said Thomson and his team advocated for further discussion of animal welfare as a global issue and an essential part of growing concern over the sustainability of food animal production systems and management practices.

A second symposium was hosted in Manhattan in 2010. The international focus was reinforced and off-site viewing was



PHOTOS BY TROY SMITH

► “I would have thought that the economics of animal welfare would have been discussed more [in past symposia],” said Joe Stookey, University of Saskatchewan professor of animal behavior. “Maybe it should be in the future.”

provided via the Internet when the 2012 symposium was hosted in Saskatoon, Sask., Canada. Iowa State University hosted the 2014 event in Ames and the 2016 symposium returned to Manhattan.

According to Stookey, the welfare of feedlot animals was the focus of many early symposia discussions, because the feedlot segment was most often targeted by critics. Focus broadened to include the cow-calf and stocker segments, with attention given to specific issues, including compromised cattle, environmental stress, lameness, pain mitigation and weaning.

“Discussion of beta-agonist and antibiotic use were added, and those became hot topics,” said Stookey. “Dairy animal welfare was included because of that industry’s contribution to beef production, and because consumers don’t necessarily recognize the distinction between dairy and beef operations.”

Stookey noted how past symposia discussions coincided with — and contributed to — related discussions by organizations representing veterinary professionals, cattlemen’s associations in the United States and Canada, as well as the

World Trade Organization and the World Organization for Animal Health (OIE).

“During this time, Canada also developed its *Code of Practice for Care and Handling of Beef Cattle*,” added Stookey. “Released in 2013, it gives [Canadian beef producers] ‘social license’ to conduct recommended animal management practices.”

Stookey said welfare issues will continue to emerge and evolve with changes in beef production influenced by scientific advances and the perceptions of both consumers and producers.

“I would have thought that the economics of animal welfare would have been discussed more [in past symposia],” added Stookey. “Maybe it should be in the future.”

— by *Troy Smith*

Value of good stockmanship

About 20% of people involved in the care and handling of beef cattle are “naturals.” Stockmanship comes easily for them, compared to the 70% of people who always seem to need supervision. The remaining 10% just should not be handling animals at all. Such was the opinion voiced by animal behavior specialist and Colorado State University Professor Temple Grandin.

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“Actually, cattle handling has improved immensely since the ‘bad old days,’” allowed Grandin. “That’s good, because stockmanship matters.”

Grandin said people want to know the magic thing that makes handling cattle easy, whether it’s state-of-the-art facilities or something else. She tells them there is no “silver bullet” and advises them to “just think” and apply good management. Grandin believes successful stock handling often boils down to attitude. Handlers who approach the job with a bad attitude are likely to have trouble.

“A good attitude toward animals improves both productivity and handling practices,” said Grandin, noting that stockmanship training can improve handler attitude.

Training can affect animal attitudes, too, advising producers to acclimate cattle to their surroundings. Grandin said allowing cattle to become acclimated to people, equipment and working facilities will make cattle easier to handle subsequently. From the standpoint of economics, acclimation helps reduce stress that can hinder weight gain and lower reproductive rates.



► “A good attitude toward animals improves both productivity and handling practices,” said Temple Grandin, professor of livestock behavior and welfare at Colorado State University, noting that stockmanship training can improve handler attitude.

“Research — old and new — shows that acclimation enhances cattle performance,” stated Grandin.

According to Grandin, cattle have memories, but can still be surprised by novel experiences.

Exposing animals to a variety of stimuli, including humans on foot, on horseback

and in vehicles; and putting them through gates, alleys and chutes (without actually performing any processing tasks) can help prevent future surprises and negative responses.

“A first experience needs to be a good first experience,” Grandin emphasized.

Reminding her audience that it’s easier to manage that which can be measured, Grandin recommended audits of the cattle-handling practices of feedlot and ranch personnel — not a big, burdensome paperwork audit, but an evaluation using an objective numerical scoring system. Scoring on the basis of observable things such as the percentage of animals that, because of handling practices, bump into fences and other cattle, slip and fall, or run when exiting a squeeze chute can show if handling practices are problematic.

“Attention to directly observable things that are outcomes of bad practices or bad facilities can prevent bad from becoming normal,” stated Grandin.

She said genetics has played a role in improving cattle handling, to the extent that selection for calm temperament has resulted

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in increased docility across populations.

Grandin expressed concern, however, that it has coincided with increased cattle conformation problems. She has observed higher incidence of faulty foot and leg conformation, in particular, which portends problems from the standpoint of production and animal welfare.

“We need to head this off at the pass before it becomes a real problem,” Grandin warned. “Be careful of the new ‘power tools’ for genetic selection, so that you don’t

inadvertently select for structural problems. We still need to use visual appraisal.”

— by Troy Smith

Welfare research update

Understanding better the pain animals may experience and how best to provide relief are the objectives of cattle welfare studies in Canada. Ed Pajor, professor of animal behavior and welfare at University of Calgary Veterinary Medicine, reported on ongoing research.

Pajor said studies of how age and handling by humans influence pain assessments and mitigation are part of a five-year project involving both beef and dairy cattle. Researchers are assessing pain experienced by animals of different ages and the effects of treatment with anti-inflammatory medication (Meloxicam) administered through different methods.



► “Some ranchers are not waiting for the science. More and more are going ahead with pain mitigation,” said Ed Pajor, professor of animal behavior and welfare at University of Calgary Veterinary Medicine.

“Researchers want to identify the method and age at which castration causes the least pain and stress, comparing banding versus surgical castration, by looking at various physiological and behavioral indicators,” explained Pajor. “[Researchers] also will be looking at rates of wound healing following castration with different knife incisions — scalpel versus Newberry castrator.”

Other studies are exploring pain and inflammation associated with dystocia, and relative effects of interventions. Pajor said researchers will assess whether administration of anti-inflammatory medication would be helpful to calves stressed as a result of difficult delivery.

“Also being studied is suckle reflex as an indicator of calf vigor. Preliminary data says, ‘yes,’” said Pajor, adding that, whether assisted or unassisted, a newborn calf with a weak suckle reflex exhibits less vigor and may be

less likely to consume colostrum in a timely manner.

Also discussed was a survey-type benchmarking study to assess cattle producers’ opinions regarding pain management for practices such as C-section, dehorning, castration and branding. Pajor said results suggest that a majority of producers believe some degree of pain is associated with those procedures. Few cattle producers reported the use of pain mitigation for branding or castration, but more apply pain mitigation to dehorning. Increasingly, producers are seeking training from veterinarians in order to apply local anesthetic to block pain when removing horns.

Pajor said producer interest is growing, relative to pain mitigation for castration, with postoperative administration of anti-inflammatory medication being the primary method recommended by veterinarians. He called it evidence that producers are concerned about the welfare consequences of production practices.

“Some ranchers are not waiting for the science. More and more are going ahead with pain mitigation,” concluded Pajor.

— by Troy Smith

Preconditioning impacts health and welfare

What is preconditioning? It’s a broad term, and many operations have their own definition of what it entails. Brad White, professor of production medicine at Kansas State University’s College of Veterinary Medicine and interim director of the Beef Cattle Institute, said preconditioning is the preparation for change in environment, exposure to novel procedures or alteration in wellness status.

“If we properly prepare animals for the next segment of life, it helps welfare, health and performance,” he told attendees.

The cow-calf owner is in possession of the cattle at the most opportune time to precondition, yet they may not own the cattle when the benefits of preconditioning are realized, he admitted. The decision to precondition calves is based on both potential added value and the marketing methods to capture that value. It depends on accurate records and transfer of information between seller and buyer to increase the value of those calves. Vaccinations and stress management are important aspects of a preconditioning program.

There are economic and performance consequences associated with the number

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of treatments in the feedlot, he said. White shared net returns on calves that were never treated for bovine respiratory disease (BRD). Those never treated earned \$39.41 additional profit. Those treated once earned \$29.49; those treated twice earned \$16.56; and those treated three times or more lost \$33.00.



► Brad White, professor at K-State's College of Veterinary Medicine and interim director of the Beef Cattle Institute, said preconditioning is the preparation for change in environment, exposure to novel procedures or alteration in wellness status.

White questioned whether the small difference between no treatment and one treatment was caused by cattle with subclinical BRD, thus needing treatment, that just weren't found. Diagnosis is critical. Treatment cost has increased by 87% in the last 12 years.

In a meta analysis to analyze whether vaccines are actually protecting against what they say they do, White shared that commercially available viral vaccines for bovine herpes virus 1 (BHV-1), bovine viral diarrhoea virus (BVDV), bovine respiratory syncytial virus (BRSV), and parainfluenza-3 (PI₃) reduced morbidity by more than 50% and mortality by 80%.

However, he added, vaccines won't fix everything. They are a tool to be combined with an overall preconditioning program that includes a low-stress weaning program. The timing of a vaccination program is critical to allow for active immunity before disease exposure, he noted.

Preconditioning is more than building immunity; it also helps control the disease challenge. He added that cattle flow upon sale can affect calves' immunity, saying that calves with a strong immune system can be overwhelmed by those without simply by sheer numbers.

— by Kasey Brown

Flooring effects on welfare and performance

The European Union (EU) imposes more

regulations regarding animal welfare than the United States does, but for beef industries that rely upon export, those regulations are important to follow. Bernadette Earley, principal research officer for the Animal and Bioscience Research Department at the Irish Agriculture and Food Development Authority (Teagasc) Animal & Grassland Research and Innovation Centre, said the Irish beef industry exports 72% of its production.

One of the regulations says the minimum space required is 3 meters squared [about 32 feet (ft.) squared] per head for animals expected to reach about 1,100 pounds (lb.), plus or minus half a meter squared (5 ft.) for each 220 lb. [400 kilograms (kg) to 800 kg]. She said there is no clear scientific basis in the literature to justify the plus or minus aspect.

She shared several studies that compared spatial allowances ranging from 1.5 meters squared (about 16 ft. squared) up to 4 meters squared (43 ft. squared), which looked at behavior, performance, stress and immune response. Restricted space, less than 2 meters squared, showed adverse effects in all three areas. More time was spent lying down and eating in larger spaces, with less aggressive behavior. Earley concluded that space at least 2 meters squared was the optimal allotted space when housed indoors based on average daily gains and lying behavior.

Concrete slatted floors are used predominantly in Ireland for winter bedding, and straw bedding isn't prevalent because there isn't sufficient supply. Earley said the perception has been that concrete slatted floors are uncomfortable underfoot, and there have been calls to phase out fully slatted concrete floors. Due to the prevalence of these floors, that would leave Irish cattlemen two options: double the amount of housing space or reduce the cattle by half, which are both unsustainable options because of already low profit margins.

She shared data from a study looking at the standard space allowance of 2.5 meters squared (27 ft. squared) and comparing concrete slatted floors and straw bedding. Welfare and performance were optimized at 3 meters squared per head, but straw had no effect on animal production or immune function, she reported. Lying down was increased on straw, but not a significant amount.

Her last study compared new and old concrete slats, and those covered with rubber mats. Hoof condition was negatively affected with the rubber mats, and cleanliness and hematology showed no effect by floor type. Rubber mats did improve live weight gain



► Based on average daily gains and lying behavior, one study reported by Teagasc's Bernadette Earley indicated space of at least 2 square meters per head was the optimal allotment when cattle were housed indoors.

and carcass gain. The type of the slats showed no effect on welfare or performance.

She concluded that she hoped these studies would help inform policy makers, especially on underfoot conditions.

— by Kasey Brown

Long-distance transportation

Long-distance transportation is a facet of the beef industry, and it can be a stressful event for cattle. Karen Schwartzkopf-Genswein, researcher at the Lethbridge Research and Development Centre for Agriculture and Agri-Food Canada, shared highlights of eight years of research on long-distance transportation.

There are many potential stressors in transportation — handling, novel environments, auction, commingling, restrictions of feed and water, environmental condition on the trailer, loading density, energy used to maintain balance during the trip, transport duration and potential for injury.

In each study, cattle were assessed non-invasively on both behavior and physiology, she noted. Additionally, infrared thermography and heart rates were used, plus 45 data loggers per truck.

"For every 1° Celsius (33.8° Fahrenheit) rise in ambient temperature, shrink increased 0.04%," Schwartzkopf-Genswein noted.

Shrink reached 8% of body weight when cattle were on the truck up to 30 hours, and she recommends keeping time on the truck less than 30 hours. She added that delays, caused by border stops, unloading, driver rest, mechanical issues, traffic and weather averaged about 1 hour to 3 hours each, but maximums went up to 15 hours on top of normal transport time. She said that's where

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experienced and forward-thinking drivers can help alleviate stress to avoid delays.

There is a relationship between driver experience and shrink, she said, sharing the following data.

Table 1: The relationship between driver experience and shrink

Driver experience	Avg. cattle shrink
0-2 years	5.09%
3-5 years	5.11%
6-10 years	4.79%
> 10 years	4.86%

Drivers with more than three years experience delivered cattle with considerably

fewer welfare issues, such as lameness, nonambulatory cattle or dead cattle. Calves and cull cows were the most vulnerable to become compromised. Again, she recommend maximum truck time being less than 30 hours because more compromised cattle were observed when ride times exceeded 28 hours.

Ventilation is another concern. Comparing total humidity index on trailers with a punch hole pattern with 10% porosity and a duffy pattern with 12% porosity, it was found that the duffy pattern had a higher humidity index. The importance is how the air flows through the trailer, regardless of the size of the holes, she noted.

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► For every 33.8° F rise in ambient temperature, shrink increased 0.04%, Karen Schwartzkopf-Genswein, researcher at the Lethbridge Research and Development Centre for Agriculture and Agri-Food Canada, noted.



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Ride quality differs through the trailer compartments. Vertical motion was similar in all compartments, while lateral motion was felt greatest in the back. Horizontal motion is greatest in the nose, back and the top of the back (called the doghouse in Canada and the jailhouse in the United States), she said.

Most welfare issues are exacerbated when transport exceeds 30 hours, and longer journeys at higher temperatures increase shrink and poor welfare outcomes. In terms of stocking rates or density, she noted that cull cows and calves have an increased chance of being underloaded in the doghouse and nose compartments, thereby increasing injury.

“Even the best transporters and conditions cannot compensate for poor loading decisions,” she concluded.

— by Kasey Brown

Hire the right driver

For truck drivers charged with the transport of livestock, Ron Gill thinks driver training has been woefully inadequate. The Texas A&M Extension livestock specialist said it is not because driver training is unavailable. It’s because too few people take advantage of it.



▶ “We need to place more emphasis on transportation training, said Ron Gill, Texas A&M Extension livestock specialist, adding that most drivers will be receptive.

“There is the [Beef Quality Assurance] Master Transporter Program, plus other transportation training and educational material that is available,” said Gill, explaining how drivers can obtain training in the areas of biosecurity, animal handling, loading and unloading, weather-related issues, and truck and trailer maintenance.

Gill emphasized that drivers trained in the proper handling and transport of cattle can help reduce stress and sickness in cattle, prevent bruises, and improve the quality of the meat from these animals. By using best practices, transporters can help the beef industry save millions of dollars annually, as well as enhance animal welfare. He referred

the audience to the Beef Cattle Institute’s Animal Care Training (ACT) website for more information about available online training programs focused on transportation and other areas of quality assurance management.

Gill also referenced the Canadian Livestock Transport (CLT) Certification Program, a beef industry-driven initiative that began in Alberta, spread to other provinces and evolved into a national program. CLT participants also learn emergency response procedures and are educated regarding Canadian regulations pertaining to livestock transportation. CLT Verified is an online tool through which anyone can verify whether a driver is certified. Increasingly, Canadian meat processors have required that drivers delivering livestock to their facilities be certified. Many trucking companies have made certification mandatory for their employees.

“It’s something we need to look at in the U.S.,” opined Gill. “We need to place more emphasis on transportation training, and most drivers will be receptive. We probably need mandatory certification.”

— by Troy Smith

Field metrics for packing plants and feedlots

“There have been light-years of improvement in packing plants,” said Temple Grandin, professor of livestock behavior and welfare at Colorado State University. “The 1980s and 1990s were truly horrible.”

She said a USDA baseline study looking at the percentage of beef plants that stunned 95% or greater with the first shot in 1996 showed only 30%, but it improved drastically and by 1999 reached 90%. In 2009, it was 100%. The USDA survey in 1996 was prior to industry-wide auditing, but then individual restaurants like McDonald’s started auditing, and now major customers continue audits. Continuous auditing for measurable traits maintains good performance.

Her main points of measurement include stunning, electric prod use, vocalization, and slipping and falling. Even the worst plants have improved, and she even noted she didn’t think her clients could get so good at meeting the requirements. How have these changes come about? Major drivers of change, she noted, are video auditing, USDA Food Safety and Inspection Service enforcement, more audits and inspection by meat buyers, and smartphones with video capabilities. Many plants needed just small changes to make a big impact.

Handling has also improved at the feedlot level. Stockmanship matters, and

she’s observed that about 20% of people are natural stockmen, about 70% require continuous supervision, and 10% should not be stock people. Never overstaff and overwork employees, and top management needs to be committed to good handlings, she recommended.



▶ “We must measure things to prevent bad from becoming normal,” warned Temple Grandin.

She has noted that more beef welfare issues now must be fixed in breeding or management. There are higher death losses in fed cattle arriving at plants, and lameness is increasing. Additionally, cattle are coming into feedlots with greater flight zones due to the cattle not being exposed to people on foot, or having been bitten by dogs before.

The biggest issues she sees coming up are feet and leg issues, which really go back to the cow-calf producers. She is seeing more collapsed ankles, post-legged cattle and corkscrew feet. This was a big issue in the 1980s in the pig industry.

“We need to head this off at the pass. It’s not an issue yet, but it could be,” she asserted.

In a survey of leg conformation in cattle arriving at Colorado and Texas Feedlots, which looked at 2,886 cattle, 86% had sound mobility. It was noted that cattle originating from northern areas had more scissor-claw abnormalities compared to Texas cattle from small ranchers and auctions. These issues were noted before they were being fed, so concentrate in diets had no factor on these feet and leg issues.

“We must measure things to prevent bad from becoming normal,” she warned. She noted that another graduate student looked at four major bull semen websites, and only 19% of bull pictures had fully visible feet and lower legs. Cow-calf producers need to be looking at feet and legs, she said, recommending the use of leg conformation charts.

— by Kasey Brown

Editor’s Note: Troy Smith is a cattleman and freelance writer from Sargent, Neb.