ASSESSING ANIMAL WELFARE AT THE FARM AND GROUP LEVEL: A UNITED STATES PERSPECTIVE

J A Mench

Department of Animal Science, University of California, One Shields Avenue, Davis, CA 95616 USA
Contact for correspondence and requests for reprints: jamench@ucdavis.edu

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The United States has traditionally lagged behind Europe in the adoption of voluntary or legislated standards for the care and treatment of animals on farms. US federal legislation of farm animal practices is minimal, confined to aspects of livestock transport and slaughter. Although some of the livestock and poultry producer (commodity) groups wrote guidelines, codes of practice, or statements regarding the humane treatment of animals in the 1980s, these were usually very general statements of current industry practice, developed with little consultation with independent experts and involving no mechanism for encouraging or ensuring compliance by producers. However, this has changed dramatically in the last few years, with an increasing trend among US retailers to require their suppliers to adopt minimum animal welfare standards. The major chain restaurants and supermarkets are working through their trade organisations, the National Council of Chain Restaurants and the Food Marketing Institute respectively, and with the commodity groups, to develop a uniform set of standards and a national auditing program. Standards and auditing programs have already been approved for dairy cattle, laying hens and meat chickens, and for slaughter, including ritual slaughter (kosher and halal). The process of setting auditable standards is complicated by the lack of legislative underpinning, the scope of the auditing that will be required because of US farm sizes and the large distances between farms, and the varying levels of expertise of potential auditors. For these reasons, 'engineering-based' auditing criteria that are relatively easy to measure and to standardise are more common. There are both strengths and potential weaknesses of retail-driven rather than legislatively driven animal welfare standards. Regardless, the recent changes in the US possibly pave the way for increasing dialogue between Europe and the US on farm animal welfare issues.

Keywords: *animal welfare, auditing, legislation, retailers, standards*

Introduction

The topic of this volume, measuring and assessing animal welfare at the farm and group level, is a particularly timely one for the US. After decades of neglect, or perhaps disinterest, farm animal welfare is now emerging as an issue of serious public concern. This increased concern has been fuelled at least in part by various campaigns by animal protection groups, which in turn has led to an increasing sensitivity among producers and retailers to consumer concerns about the social sustainability of animal agriculture. The retailers' response has been to work with the animal agriculture industries to develop scientifically based guidelines,

with retailers assuring themselves (and their consumers) that the standards have been met by requiring third-party audits. The process of establishing auditable standards and auditing programs in the US has been complicated by several factors. These include farm size and industry structure, and the lack of legislative underpinning and precedent for on-farm standards and inspections. In this paper, I will discuss these factors, as well as the structure, limitations, and prospects for the standards and auditing programs currently under development.

Farm size and industry structure

There has been a progressive reduction in the number of producers and an increase in the size of units in all developed countries, but this trend is particularly apparent in the US. For example, there used to be hundreds of integrated (hatch-to-slaughter) companies producing broilers, but there are now only about 50, and the top five companies account for 50% of all production (Aho 2002a). There are fewer than 1000 egg-producing companies in the US, and around 60 of these companies own 78% of the hens. More than 30% of farm sites contain more than 100 000 hens (NAHMS 1999), and a modern US hen complex can contain as many as four million birds (Bell 2002). Similar trends are also apparent in the US swine industry, where a substantial majority of pigs are raised in operations housing more than 5000 pigs, with 40% of individual farm sites housing more than 2000 pigs (NAHMS 2000). Dairies are also increasing in size, especially in the western US where multiple-thousand-head dairies are not uncommon, with the cows housed either in feedlots or large freestall barns. Beef and sheep production, however, are still typically small-scale and extensive, although most beef cattle, and some sheep, are transported to feedlots where they are finished on grain-based diets prior to processing.

Vertical integration is proving to be the most cost-effective model of production, at least for poultry and swine. Vertical integration is the rule in broiler production, and the layer and swine industries are moving rapidly toward integrated systems; approximately a third of US swine are produced in operations where the nursery, grower-finisher, gestation, and farrowing phases are integrated (NAHMS 2000). As overall production becomes more integrated, production scale needs to continue to increase to maintain competitiveness. It is estimated that to reach the 'break point' for economic efficiency on a commercial broiler farm in the US, a company must now process 65 million birds per year (Aho 2002b). Increasing efficiency of mechanisation also drives further increases in concentration. High-speed-egg processing machines, for example, can process 144 000 eggs per hour, which means that a very high egg output is needed to keep the machine operating at capacity at a laying unit (Bell 2002).

Due to variations in climate, regional costs of production, and other factors (including differences in the stringency of environmental regulations in different states), the US animal industries have also become very concentrated regionally. Broiler chickens are produced mainly in the Southeastern states, laying hens mainly in the Midwest (where most of the corn and soybeans are grown) and California, and swine mainly in the Midwestern and Southeastern states. Beef cattle are mainly grazed in the Western states where there is abundant rangeland, but are often shipped long distances (for example to Texas) to feedlots located near the major livestock processing plants.

Legislation

In stark contrast to Europe, there is no national legislation in the US that sets minimum standards for housing and care of animals on farms. In fact, there are only two federal laws

pertaining to the welfare of farm animals, both of which are enforced by the US Department of Agriculture (USDA). The first is the 28-hour law, which was first passed in 1877 but repealed and re-enacted in 1994. This law stipulates that livestock that are transported for more than 28 h across state lines by a "rail carrier, express carrier, or common carrier (except by air or water)" be unloaded for at least 5 h of rest, watering, and feeding, provided that the vehicle in which they are transported does not already contain food, water, and sufficient space for resting. This law is rarely enforced, and indeed there is some ambiguity about whether or not it applies to animals transported in trucks (Wolfson 1996), the primary mode of livestock transport in the US.

The second law is the Humane Slaughter Act (HSA), which was passed in 1958, although amended more recently. The HSA stipulates that livestock processed in federally inspected packing plants be rendered insensible prior to being killed, with an exemption for ritual (eg kosher and halal) slaughter. Poultry are excluded from the HSA, and recent attempts by animal protection advocates to have them included were unsuccessful. Regulations under the HSA are developed and enforced by the Food Safety and Inspection Service (FSIS) of the USDA; the traditional focus of the FSIS inspectors has been to ensure the safety of the food supply by preventing diseased animals from entering the food chain. Current regulations under the HSA cover the handling of livestock at slaughter facilities; the condition of pens, driveways, ramps and stunning areas; and handling methods during slaughter. In addition, the Grain Inspection, Packers, and Stockyards Administration of the USDA has the authority to regulate the care and handling of livestock at stockyards, although only within the framework of protecting the "quality and value" of the animals to ensure "fair competition and fair trade" (USDA 1999).

The recently finalised National Organic Standards Act regulations (USDA 2003) also contain some very general animal care provisions. They state that producers must "establish and maintain livestock living conditions which accommodate the health and natural behavior of the animals", for example by providing access to the outdoors (and specifically pasture for ruminants), appropriate bedding, and shelter designed to allow for natural maintenance, comfort behaviors, and opportunity to exercise. The regulations do allow "temporary" confinement for various reasons, including the animal's stage of production.

There are also laws pertaining to farm animals at the state level, although the coverage and content of these laws varies enormously (Wolfson 1996). No state currently has a comprehensive set of regulations covering all farm animal commodities or all production phases, although one state (New Jersey) is in the process of promulgating such regulations. Each state has an anti-cruelty statute protecting animals, but in many states these statues do not apply to farm animal housing, production, or slaughter methods that are considered to be 'generally accepted' or 'normal' agricultural practice (Wolfson 1996). The meaning of 'generally acceptable' or 'normal' is of course debatable, but successful cruelty prosecutions of farm animal producers have been rare except in cases of obvious physical abuse.

Although polls indicate that there is strong public support in the US for additional laws to protect farm animals (Fraser *et al* 2001; Gallup Organization 2003), the legislative structure and opposition from agricultural interests have made passing laws extremely difficult. Because of this, there is now a trend among animal advocacy groups to try to pass laws to regulate the treatment of farm animals at the state level by gaining enough popular support to place a voter referendum on the state ballot. The voters in the state of Florida, for example, recently banned the use of gestation crates for sows by referendum. Given that such laws cannot be enforced outside state borders, however, their likely effect at present is probably

simply to cause relocation of these practices (and producers) to other states with fewer restrictions.

Industry response to welfare concerns

The response of the industry to animal welfare concerns has often been ambivalent, with producers viewing animal welfare as an issue that could have a negative impact on their lives and livelihood. This concern probably has its foundation in a disparity between producers and the public in their attitudes towards animals (Te Velde *et al* 2002), with producers emphasising the health and productivity aspects of welfare, while the public is more concerned about issues such as confinement rearing and pain during slaughter. Producer ambivalence about this issue probably also reflects a perception (correct or not) that the public is not very knowledgeable about how animals are reared, that public interest in farm animal welfare issues waxes and wanes, and that most US consumers are unwilling to spend more (or at least not much more) for changes in animal production practices. Consumer interest is difficult to gauge, since there is no consistent product labelling system that US consumers can use to determine how the animals were housed, transported, and processed. 'Alternatively produced' animal products (such as 'cage free' eggs) are the fastest growing market segment, but their increasing sales could be due, at least in part, to the fact that these products are also usually marketed as 'natural' or 'organic' foods.

Although some of the US commodity groups wrote animal welfare codes or guidelines in the 1980s, these often just consisted of relatively brief descriptions of current industry practice and their development typically involved little input from outside groups. However, pressure from the public and retailers to critically examine current practices continued to mount. A campaign by the animal protection group United Poultry Concerns resulted in the trade group for the egg industry, the United Egg Producers (UEP), receiving thousands of negative letters about the practice of induced moulting of hens. In response, the UEP took the unusual and proactive step of assembling a committee of independent experts, including animal welfare scientists and a representative from an animal protection group, to review the scientific literature with respect to the welfare of caged laying hens and to make recommendations that could be formulated by a committee of egg producers into a set of UEP guidelines.

The UEP scientific committee focused upon several of the more controversial issues, including stocking density, air quality, beak trimming, induced moulting, and handling and euthanasia. The resulting guidelines (UEP 2002) called for an increase in space allowance in existing houses to 67–87 in^2 (432–561 cm^2) per hen from the current industry standard of 48–54 in^2 (309–348 cm^2) per hen (phased in over six years), development of alternatives to the use of feed restriction or withdrawal for moulting, improved air quality standards (maximum ammonia levels of 25 ppm), and a move toward the use of genetic strains that do not require beak trimming. Producers certifying that they have adopted these guidelines can display a "UEP Certified" logo on their egg cartons. More than 80% of US egg producers indicated that they would voluntarily comply, and the egg industry is now working with retailers on an auditing program to ensure that compliance. Given that producers will incur costs to make these changes, this represents a striking commitment on the part of the egg industry. The UEP process served as a model for efforts now underway in North America for commodity groups to develop science-based animal welfare standards for all livestock and poultry species, for use by retailers.

Response of multinational retailers

National and multinational retailers are playing an increasingly critical role in the development and implementation of animal welfare standards. The Compassion in World Farming Trust (2002) recently surveyed ten supermarkets in the UK, and found that eight of them had written animal welfare policies and three had a board member or executive with specific designated responsibility for farm animal welfare issues. Retailers have the economic power to have an enormous influence on animal production practices. Producers are typically paid only about 55% of the retail price for their products (Bell 2002), so retailers have the pricing flexibility to promote particular product lines. Retailers also can demand that certain standards be met for animals reared for sale under their own labels or in their own restaurants, and supermarkets can use their purchasing power to require minimum standards from all of their suppliers, regardless of the label on the product.

In the US, there has been increasing pressure for retailers to deal with farm animal welfare issues. This is part of a growing trend for social-cause activists to use the market to accomplish political ends, brought about by frustration over the congestion of traditional legislative channels. As discussed by Schweikhardt and Browne (2001), this trend has been facilitated by a number of factors, including the fragmentation of traditional large agricultural interest groups into smaller groups with competing interests, consumer affluence, and the concentration of food markets into just a handful of firms.

For animal welfare issues, the pioneering proponent of this approach in the US was Henry Spira (Singer 1998), the head of Animal Rights International, an organisation that worked to develop coalitions among the animal protection organisations to work for the abolition or modification of particular practices. Spira was enormously successful in minimising the use of the Draize eye-irritancy test by launching a public-relations campaign against Revlon cosmetics and by raising concerns about the blinding of rabbits at Revlon's shareholder meetings. Ultimately, Spira's campaign led the cosmetics industry to fund the Center for Alternatives to Animal Testing at Johns Hopkins University in Baltimore, and to a continuing movement nationally to refine testing procedures and develop non-animal alternatives. Spira then turned his attention to animal agriculture, and among other actions opened a dialogue with McDonald's, eventually indicating that he would introduce a shareholder's resolution asking McDonald's to endorse minimum animal welfare standards related to housing, slaughter, and veterinary care. McDonald's responded by issuing a statement to their suppliers about McDonald's commitment to the humane treatment of animals. The events that followed are chronicled in detail elsewhere (Singer 1998), and by 1998 McDonald's was spearheading the retail movement to adopt farm animal welfare standards in the US.

McDonald's first began implementing their program by auditing packing plants to ensure that the cattle supplied to them were handled and killed humanely, a program that led to significant improvements in techniques and practices for moving and stunning livestock in those plants. For example, in a 1996 USDA-sponsored survey of packing plants, Grandin (1998, 2002) found that only 30% of the plants were able to stun 95% or more of the cattle with one shot of the captive bolt pistol, despite the fact that these plants were inspected under the Humane Slaughter Act. By 1999, after McDonald's and other retailers began auditing plants, 90% of the plants were able to achieve 95% first-shot accuracy; in 2000 the average first-shot stunning efficacy in McDonald's plants was 98% (Grandin 2000). There were also marked improvements in swine and cattle handling in plants overall (Grandin 1999). These goals were achieved principally through training, auditing, and selection of the best plants as

continuing suppliers. In addition, in response to some of the concerns raised by these audits, in 2001 USDA increased its veterinary inspection staff to improve enforcement of the HSA.

McDonald's then appointed an animal welfare committee comprising outside experts (including animal scientists and a representative of an animal protection organisation), and established minimum standards and an auditing program for their shell egg suppliers. These standards closely paralleled the guidelines adopted by the UEP, but with an immediate phase-in of the new space requirement (a minimum of 72 in^2 per hen) and the immediate elimination of induced moulting by means of feed withdrawal. Other fast-food retailers and supermarkets followed suit. It quickly became apparent that this could lead to multiple standards and multiple auditing systems that could become burdensome for suppliers and confusing for consumers. In 2000, therefore, the trade associations of the supermarkets and the fast-food industry respectively, the Food Marketing Institute (FMI) and the National Council of Chain Restaurants (NCCR), joined together and consolidated their recently established animal welfare expert committees to provide a coordinated national retail response to animal welfare issues.

There were several goals of this joint FMI and NCCR activity. These were to ensure consistency across the US retail sector, to urge the government to strictly enforce animal welfare laws, to implement attainable guidelines based on science and incorporating measurable welfare criteria, to establish a credible third-party process for auditing suppliers, to improve communication across the supply chain on animal welfare issues, and to maintain an advisory council of independent animal welfare experts (FMI-NCCR 2002). To begin achieving these goals, FMI and NCCR initiated discussions with the major commodity groups in the US, including the Milk and Beef Dairy Quality Assurance group (DQA), the UEP, the National Turkey Federation (NTF), the American Meat Institute (AMI), the National Chicken Council (NCC), the National Cattlemen's Beef Association (NCBA), and the National Pork Board (NPB), emphasising the need for the industry to take the initiative in developing practical and scientifically based animal welfare guidelines.

The first task of the FMI-NCCR animal welfare expert committee was to develop an informational document for the commodity groups to use in writing their own guidelines (FMI-NCCR 2002). This document prescribed a process for guidelines development that included identifying societal concerns about animal welfare, gaining input from independent experts (including veterinarians, animal scientists with animal welfare/behaviour expertise, animal advocates, and producers), and conducting a thorough review of the relevant scientific literature. The committee also identified issues that needed to be covered in most standards (eg veterinary care, husbandry, behavioural management, emergency preparedness, transportation and slaughter, employee training) as well as a range of commodity-specific issues that needed to be addressed (eg castration, dehorning, and branding of beef cattle). It was emphasised that the standards presented in the commodity guidelines needed to be auditable; that is, that they had to provide a clear 'performance standard' (eg animals must have enough room to turn around freely) and/or a clear 'engineering standard' (eg animals must have 'x' square feet of space each). The importance of transparency in guidelines development was emphasised, as was the need for a reasonable timetable for implementation of major changes and a regular review (at least every five years) of the guidelines and of new research and developments in housing, management, and handling. At the time of writing, the FMI-NCCR has endorsed the guidelines of the UEP, the AMI, the DQA, and the NCC, as well as guidelines for ritual slaughter. However, these commodity guidelines have not necessarily been endorsed exactly as written. For example, for broiler chickens, FMI-NCCR specifies a maximum stocking density of 6 lbs ft^{-2} (29.3 kg m^{-2}) rather than the 8.5 lbs ft^{-2}

(41.5 kg m^{-2}) recommended by the NCC, requires two-legged rather than one-legged catching, and requires that the birds be provided a daily period of darkness of at least 4 h rather than kept under 23 h or 24 h of light (FMI-NCCR 2003a). The various exceptions were developed and approved by the FMI-NCCR expert advisory committee after review of the relevant scientific literature.

Potential disruption of market supply is a critical issue for both retailers and their suppliers. Thus, the current guidelines are primarily meant to set standards for best management practices within the most common current US production systems. The UEP guidelines, for example, apply only to hens in conventional cages, since the overwhelming majority (more than 98%) of hens are housed in such cages. In parallel with the commodity standards, labelling programs designed to reassure consumers that the animals are treated humanely are also being launched. One example is the "Certified Humane Raised and Handled" label, a label supported by the American Society for Prevention of Cruelty to Animals, the Humane Society of the United States, and other regional and local humane societies. The program is modelled on the Royal Society for the Prevention of Cruelty to Animals (RSPCA) Freedom Foods program, and incorporates annual third-party assessments of participating farms to ensure their compliance with guidelines developed by an expert committee (HFAC 2003). The USDA's Agricultural Marketing Service verifies the assessment process. As in the RSPCA program, the guidelines are based on the Five Freedoms, and therefore require that the animals be housed in production systems that allow them to perform most of their normal behaviors. So, for example, only non-cage systems are permitted for housing laying hens. The Food Marketing Institute has recommended the "Certified Humane Raised and Handled" labelling programme to their participating supermarkets that wish to sell humane certified 'natural foods' products.

Auditing, transparency and consumers

Ultimately, the effectiveness of retailers in ensuring standards will depend upon the establishment of auditing systems that ensure best practices and set goals for improvement. FMI and NCCR have developed an auditing system for the approved standards, and auditors are presently being trained to conduct the annual audits (AWAP 2003). It is important to realise, however, that these audits are not designed to provide information to consumers directly, but instead will provide information to retailers about compliance among their suppliers. Interested consumers can access the auditing checklist and auditor evaluation criteria (AWAP 2003). In some cases consumers can also access the commodity guidelines on which an audit is based; for example, the AMI (AMI 2003) and ritual slaughter (FMI-NCCR 2003b) guidelines can be downloaded and the DQA guidelines are available for purchase (DQA 2000). However, the UEP guidelines are currently only available to the public in a condensed format that provides few specifics about the standards (UEP 2003).

Auditing standards and documents can serve several purposes. One important purpose is to collect information about the prevalence of particular animal welfare problems on farms. This information, along with information about other aspects of housing and husbandry on those farms, can then be used to model risk factors in order to develop improved management and breeding strategies for decreasing the incidence of those problems. At present, although we have a great deal of knowledge about many of the specific factors that contribute to many welfare problems, we have very little information about how those factors interact.

In the US, standards are usually characterised as being either engineering-based or performance-based. Either type of standard in turn can be either 'resource-based' or

'animal-based'. For example, air quality (a resource) can be evaluated by determining the number of air changes per hour or the concentration of ammonia (engineering-based standards) or by assessing relevant aspects of the health of the animals, including eye condition and lack of respiratory disease (animal-based performance standards). The choice of which kind of standard to use depends first upon the purpose of the standard (eg is the purpose of the standard to act as an educational tool for producers, to enforce regulations, to serve as the underpinning for a certification system, or to provide a pass–fail system for auditing purposes?) and second upon the training and qualifications of the individuals on the farm who will have to take measurements and of the auditors. Engineering standards have the advantage of being relatively easy to measure and to standardise from one facility to another, which promotes uniformity, but are inflexible. Performance standards are considerably more flexible and allow producers more latitude to be creative in their approach to managing their animals, but can be challenging to measure, often requiring an investment of time, the evaluation of multiple measures, detailed examination of records, and/or a high standard of professional judgment. The audits being developed under the FMI-NCCR program are largely engineering-based (AWAP 2003). This is a necessary first step because of the scale of production (which means that detailed assessments of individual animals of the kinds discussed elsewhere in this volume are difficult to achieve) and wide geographical distribution of farms, which necessitates large numbers of auditors to complete the required annual audits. Simply because of the size and scope of the audits, it is inevitable that the auditors will have varying levels of expertise with auditing in general and also with the requirements of specific species.

Potential strengths and limitations of retail-driven standards

Although retailers have an enormous ability to influence animal welfare standards, there are some limitations. The first is the potential for conflict between producers and retailers with regard to the costs associated with animal welfare improvements. While some improvements are cost-neutral or even reduce production costs, others, such as decreases in stocking density, can clearly lead to increases in per-unit production costs. Whether or not producers and retailers are willing to absorb these costs, and over what time frame, is still uncertain, as is the possible effect of such changes on prices to consumers. It is likely that the cost of the auditing programs themselves will generally have to be borne by producers. If producers cannot recover any additional costs via the pricing or niche marketing systems, smaller producers will be disproportionately affected.

Because retailers are also in competition with one another for consumer dollars, a retailer-driven program could still result in a patchwork of standards, with some retailers preferring to purchase less expensive products produced using minimal standards while others adopt more stringent standards. Adoption of the FMI-NCCR-approved standards and the AWAP program by retailers is of course voluntary, and because the program is so new the extent and uniformity of retailer participation in the process is not yet clear. Although the FMI-NCCR committee provided guidance about which auditing points they thought were sufficiently important to be considered major points within the program, the AWAP audit is not a pass–fail audit, and it is ultimately up to each individual retailer to decide which non-compliances they will consider serious enough to warrant corrective action, re-auditing, or even termination of the retailer–producer relationship. Unless products are labelled or identified in some way, differing implementation of standards and auditing could lead to confusion among consumers and ultimately affect their confidence in retail-driven programs.

For these reasons, retail-driven standards are less likely to create a 'level playing field' for producers and consumers than is legislation. Conversely, retail-driven standards are likely to be more flexible than legislation, allowing them to be relatively easily changed or reinterpreted when new information about animal welfare becomes available.

Even given uniform action among chain restaurants and supermarkets, there will be limitations to the application of any non-legislated standards. Many of these limitations revolve around the 'point of purchase' for the retailer. For example, an increasing proportion of eggs is sold not as shell eggs, but as broken eggs that are dried or frozen and used in further processed foods (Bell 2002; Eurogroup/RSPCA 2002). It will be difficult for supermarkets to 'trace back' all animal ingredients in further processed foods to their sources of origin. It also seems unlikely that retail auditing programs or guidelines will be extended to animals that are not the primary producers of the products. Thus, for example, pullet producers are not likely to be audited, since they often are independent (and geographically separated) from the companies producing the eggs. Even cow–calf operations represent an auditing problem, since the 'point of purchase' for the retailers is not the farm but the packing plant, where animals often arrive from multiple sources and often after having passed through intermediary channels such as auction yards and feedlots. Similarly, even though selection for production traits can make a significant contribution to animal welfare problems (eg Kjaer & Mench 2003), retailer influence on primary breeders to deal with these problems can only be indirect, via producers. Legislation still probably remains the strongest method for setting standards for these and similar aspects of production.

One intriguing possibility, however, is that retailer-driven standards could foster more dialogue between the US and Europe on farm animal welfare issues than has the legislative approach. Many of the constituent companies of the FMI and NCCR are multinational corporations, and as such may consider how their standards can be harmonised across their operations. McDonald's, for example, already has global animal welfare standards for poultry production, swine production, and slaughter, and audits farms and plants in Europe, Canada, and Australia. It will be interesting to see how the concerns and programs of the multinational retailers will play out in the international arena, where there may be legislative standards in certain countries that lead to increased production costs, such as those in the EC that will soon require hens to be produced in non-cage systems or in modified cages (Eurogroup/RSPCA 2002). During this process, however, it will be very important that the ethical and scientific bases for any proposed standards be made explicit (see Fraser 2003, pp 433–443, this issue), so that the differences in attitudes toward animal welfare, and the ways in which they influence the selection of standards and auditing criteria, can be fully understood.

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