Interpretive Summary

Clarifying the Dairy Welfare Audit. Doyle. This project intended to clarify the differences in-between the certification standards and scope of the four major on-farm dairy welfare-auditing systems (American Humane, Animal Welfare Approved, Certified Humane, and the National Dairy Farm Program) for the benefit and enlightenment of producers, retailers, and consumers alike. Audits were completed on five Connecticut dairy farms, revealing distinct differences between individual auditing programs. Results ought to encourage auditing programs to further educate constituents concerning the standards and scope of individual auditing systems.

CLARIFYING THE DAIRY WELFARE AUDIT

Clarifying the dairy welfare audit

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ABSTRACT

Four major dairy welfare audit programs (American Humane, Animal Welfare Approved, Certified Humane, and the National Dairy Farm Program) are used to assess the treatment of animals used in US dairy production. The present objectives were to evaluate and compare these welfare-auditing programs in order to clarify the differences in-between each program's standards and scope. Data was collected though the auditing of five Connecticut dairy farms varying in size, housing style, and bedding type. Audits included similar criteria but differed greatly in terms of specificity and flexibility of standards. American Humane was the strictest program and offered little flexibility, Animal Welfare Approved and Certified Humane include strict environmentally based standards and flexible animal-based standards, although Certified Humane requires an approved herd health plan. The National Dairy Farm Program has strict animal-based standards but quite vague and lenient environmentally based standards. Observed trends indicated a lack of consensus concerning whether individual

or group calf housing was more appropriate, a lack of distinction between lactating lameness and non-lactating lameness, and a lack of flexibility in standards surrounding the relationship between bedding type and hock lesions and bedding type and hygiene. Of greatest concern were producers' frustration at not receiving detailed audit results from welfare auditing programs. Ultimately, dairy welfare-auditing programs would benefit from further educating producers, retailers, and consumer alike about their programs.

Key words: animal welfare, certification, welfare audit, dairy cattle

INTRODUCTION

The welfare of production animals has become an increasingly important concern of consumers (Stull et al., 2005). As a consequence, retailers and producers have been asked to ensure best practices in order to maintain consumer confidence (Swanson, 2003). Consumer confidence is assured through voluntary third party welfare audits, which measure a producer's level of compliance with animal welfare standards (Eicher, 2006).

Third party welfare audits are on-farm assessments preformed by auditors that are independently trained and contracted. Auditors are responsible for evaluating a farm's compliance or non-compliance with prescribed standards (Eicher, 2006). If a farm fails to meet welfare qualifications, there is commonly a period of time that the farm is given, often a period of 60 days, to resolve non-compliances and produce evidence that this resolution has occurred (Roe, 2011).

A number of livestock welfare auditing schemes have been developed in response to increasing pressures for compliance with welfare standards. In the US dairy industry, specifically, there are four widely utilized welfare assessment programs: American Humane (AH), Animal Welfare Approved (AWA), Certified Humane (CH), and the National Dairy Farm Program (NDFP). Although these assessment systems do cover similar topics, and all intend to evaluate welfare conditions on dairy farms, however, they contain significant differences in recommendations and standards (Stull et al., 2005). The concern, as a consequence, is that these programs, which are intended to offer assurance, may be confusing and possibly misleading to all stakeholders involved—producer, retailer, and consumer alike (Stull et al., 2005).

The objective of the current study was to assess the differences in scope and standards of the four main dairy welfare-auditing programs currently used in the US.

MATERIALS AND METHODS

Data Collection

The experiment was conducted with five dairy herds in Connecticut during the months of June and July of 2011. These herds were selected because they represented various housing styles (both tie-stall and free-stall), bedding types (mattress, compost-pack, sand, and pasture) and herd sizes (<50, <100, <150, <500, and <1000 cows). These selection specifications were chosen to maximize diversity of farm types audited, and thus encompass as many possible results as might be obtained from these auditing programs. This range of variables was an attempt to mimic the various types of operations represented in herds nationwide. National statistics from 2007 indicate that 39.3% of operations are tie-stalls and 37.7% are free-stall. In terms of bedding type, 17.7% of operations use sand bedding and 1.5% use compost-pack; mattresses were not mentioned specifically (NAHMS 2007).

Each farm was visited a single time, in which animal-based and environmental data was obtained in order to complete all four audits. No direct interaction with animals was necessary. Additional information needed to complete these audits, including management, nutritional, and herd health information was obtained through the herd veterinarian. Farm managers were informed of the time of this assessment one day prior to the assessment.

Analysis

A combination of descriptive and dimensional data analysis was utilized. Descriptive statistics were utilized to assess differences in-between audit standards by comparing individual data points from each farm in-between audit programs. Similarly, descriptive statistics was utilized to assess scope of the audit programs by comparing individual audit program results from different style farms. These comparisons allowed for the identification of emergent themes concerning audit systems.

Numerical analysis of select themes was preformed using Microsoft Excel and VassarStats.

RESULTS

An initial comparison of audit systems prepared prior to performing on-farm audits is presented in **Table 1**. This table presents the four major dairy auditing systems and indicates the differences in-between the major criterion in each system.

Descriptive

Although the four audits generally cover the same criteria, the differences between audit systems are many. There were two main themes that were present when collecting and comparing data: a lack of specificity and a lack of flexibility.

Dimensional

Farm compliance with core animal-based criteria and environmental-based criteria are presented in **Table 2** and **Table 3**. Body condition scores (BCS) range from 1-5, 1 being emaciated, 5 being grossly over-weight; hygiene scores range from 1-5, decreasing in cleanliness; lesion scores range from 1-3, increasing in severity; and lameness scores range from 1-5, increasing in severity. Individual farms are indicated by herd size. Percentages represent an average of all animals on a specific farm. Table data presented in red indicates that a particular farm did not pass one or more audit programs for that criterion. Table data presented in green indicates that a particular farm passed all audit programs for that criterion.

Table 2 presents how each farm fared on core animal based criteria. Two farms did not pass any audit programs in terms of animal based criteria. Three farms passed AWA and CH animal-based criteria. Farm A failed to pass NDFP and AH criteria due to high lesion scoring and a slight lameness problem. Farm B failed to pass NDFP and AH criteria due to high hygiene scoring and a body condition score percentage slightly out of range. Farm C failed to pass NDFP and AH criteria solely due to body condition scores outside of the required range.

The number and type of farms that passed the core environmental-based criteria are presented in **Table 3**. Only one farm did not pass any criteria. All other farms passed the NDFP. Farms failed to food bunk space,

water access, and pasture access. Select farms failed due to calf housing, bedding, or lying area. Farm A failed AWA simply because it was a tie-stall.

Difference between Herd Lameness and Lactating Cow Lameness. A wilcoxon paired sample test indicated significant difference in lameness rate in-between lactating cows and the rest of the herd (P=.0071). **Table 4** compares the percent (indicated as a decimal) of lameness for each farm, distinguishing in-between lactating and non-lactating cows.

Correlation between Hygiene Score and Bedding Type. **Table 5** presents % of hygiene scores above a score of 1 associated with bedding type on individual farms. Although not necessarily true for farms over 500 animals, hygiene score tends to vary with bedding style, with mattress style-bedding resulting in lower hygiene scores and compost-pack style bedding resulting in high hygiene scores.

Correlation between Lesion Score and Bedding Type **Table 6** presents % of lesion scores above a score of 1 associated with bedding type on individual farms. Given the small sample, lesion rates vary consistently across bedding systems with mattress style bedding resulting in the largest number of lesions and pasture, sand, and compost-pack resulting in the least.

DISCUSSION

Differences in scope and standards for each of the four dairy welfare audit programs are great, despite their seeming similarity. The challenge for each of the systems is to find the balance between specificity and flexibility.

Specificity

Farm compliance with standards is often due solely to a lack of specificity within audit standards. For example, although AH and the NDFP dictate acceptable and non-acceptable rates of lameness, CH and AWA do not set compliance rates. In fact, AWA standards are vague, stating that: “action must be taken to treat lameness and to remove any causes of lameness,” and that lameness must be addressed in the farm’s health

plan. This lack of specificity may allow farms with poor lameness standards to pass, given that they claim to address lames in their health plan.

Certain audits' exclusion of certain audit standards may also allow farms to succeed in passing an audit, despite welfare concerns. For example, AWA fails to mention hocks or lesions in its guidelines, despite general scientific agreement that hock lesions are a welfare concern (Cook, 2009; Fulwider et al., 2007; Linderoth, 2007; McFarland, 2010; Regula et al., 2004; Weary and Taszkun 2000).

Flexibility

Audit programs that succeed in specificity, often lack flexibility in standards. Although AH and the NDFP's specific rates of lameness allow for easy audit results, and prevent farms from evading standards, they may also disregard that specific farms may need tailored standards. For example, certain farms choose to retain older cows, despite their decrease in productivity. With older cows, and increasing lactation number, comes an increase in the prevalence of lameness (Well et al., 1993). Thus, a farm with older cows would be less likely to comply with strict lameness standards, despite potential efforts towards treating lameness. In such a case, it would behoove audit standards to be flexible. CH, unlike other audits does not dictate certain ranges of acceptance, it recommends using lameness scoring done annually as an "aid to assessing the status of lameness" and in order to help develop a foot care plan. Thus, acceptable levels of lameness are set based on a specific farm's needs.

Each system strives to set strict standards, in order to reduce auditing cost and time, as well as to avoid overlooking welfare problems. Yet, systems also strive to account for the fact that specific farms and specific management and housing styles often don't fit strict standards. Each system achieves this balance slightly differently.

American Humane (AH) chooses strict standards over flexibility. This system focuses on numerical standards that must be met in order to fulfill audit requirements. As a consequence, it is very difficult to achieve compliance with AH standards. This was illustrated, as all farms in this study failed to pass AH standards.

Animal Welfare Approved (AWA) is very strict in terms of environmental standards, requiring certain standards such as continual access to pasture and only allowing tie-stalls for milking or feeding prior to milking. Animal-based criteria, however, are more flexible, and often do not have strict numerical guidelines. Yet, although certain animal-based criteria are flexible and recommended to be dealt with in an animal health plan, certain criteria are not mentioned at all, such as hygiene.

Certified Humane (CH), as AWA, is strict in terms of environmental standards, specifically water supply and exercise corrals, but not as strict as AWA. CH allows for more flexibility in terms of lying area, pasture access, and use of tie-stalls. CH is also flexible in terms of animal-based standards, but with assurance that standards will be determined specifically for individual farms within their herd health plan.

The National Dairy Farm Program (NDFP) is the most lenient in terms of environmental-based criteria, and is often vague with terms, using words such as "sufficient," "adequate," and "proper," which Temple Grandin urges should be "eliminated from all standards and guidelines," due to the discrepancy with which they might be interpreted (2010). Yet, NDFP is quite numerically strict in terms of animal-based criteria, illustrated by the fact that none of the audit farms passed NDFP animal-based standards.

Even though each audit system reaches some sort of balance in-between specificity and flexibility, there were still concerns over standards during the process of auditing these five farms.

One criterion over which there appeared to lack consensus in terms of audit standards was calf housing. CH states that individual pens are preferable and mixing of calves should be avoided, whereas AWA permits no individual separation. Perhaps this is due to current lack of national consensus concerning calf housing. Many scientific studies indicate that isolation is extremely stressful for cattle (Eicher, 2006) and that cattle reared in groups show less fear and more social confidence than those raised in individual pens (Boe and Faerevik, 2003). In fact, in Europe individual calve housing was banned for calves over 8 weeks of age. Yet, in North America, the inclination is still toward individual housing, in an attempt to decrease disease risks, boost performance, and discourage cross suckling (Von Keyserlingk et al., 2007).

Additionally of concern was the lack of distinction concerning lameness scoring. Audits chose not to distinguish in-between the lameness of lactating cows and non-lactating cows. Scientific studies have clearly illustrated that lactating cows are those with the highest likelihood of lameness (Espejo et al., 2006; Quaife, 2011). Lactating cows tend to have less fat present on their footpads due to the energy used for milk production and thus are more susceptible to lameness (Quaife, 2001). This susceptibility only increases with lactation number (Espejo et al., 2006). Given these studies, and the data presented from the five farms in this study, indicating a significant difference in-between lactating and non-lactating lameness scores, welfare audits may benefit from distinguishing in-between lactating and non-lactating cows for locomotion scoring.

The greatest difficulty appeared to be finding a balance between specificity and flexibility concerning the relationship between bedding and hygiene scores and bedding and lesion scores. The results of the audits generally indicated that certain bedding-types caused increased lesion scoring and certain types of bedding caused increased hygiene scores. The relationship between bedding and hock lesions has been identified in other scientific studies, indicating that cows with softer resting surfaces, such as compost-pack, sand, or pasture, have fewer lesions, scabs, wounds, and lack of hair on their hocks (Cook, 2009; Fulwider et al., 2007; Linderoth, 2007; McFarland, 2010; Regula et al., 2004; Weary and Taszkun 2000). These studies also indicated that hard resting surfaces have increased lesions and lameness. According to Cook, the challenge is balancing cow comfort and manageable cow cleanliness (2009). Audits make this difficult. For example, if a cow has excellent hygiene, but has a terrible lesion due to a tie-stall mattress, the lesion score may cause the cow to fail. Alternatively, a cow may have poor hygiene due to compost-bedded pack bedding, but zero lesions as a consequence, and fail an audit due to the poor hygiene score. Audits attention to flexibility surrounding the relationship between bedding, lesions, and hygiene may alleviate these concerns.

The greatest concern of the auditing process, however, was producers' frustration with the welfare audit system. Regardless of their opinion of welfare auditing, producers all indicated that they didn't find audits useful unless the received detailed results. Producers often don't care if they would pass or fail an audit, but

they are often very interested in the strengths and weaknesses of their farms. In order to improve audit value to not only the producer, but also the retailer and the consumer, detailed audit results ought to be shared with the producer.

CONCLUSIONS

Despite the differences in audit focus and scope, each audit system generally has the same goal—to assure consumers of dairy cow welfare. Producers, retailers, and consumers seek clarification of these audit programs, yet the differences are often quite subtle. The information given here is only an introduction to the dairy welfare audit programs. Given the concerns of balance between specification and flexibility, audit programs would benefit from educating producers, retailers, and consumer alike about their programs. Most importantly, audit results out to be shared with producers to help improve animal welfare for the benefit of producer, retailer, and consumer alike.

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www.americanhumane.com

www.animalwelfareapproved.com

www.certifiedhumane.com

www.nationaldairyfarm.com

Table 1. Comparison of four audit programs

	American Humane	Certified Humane	National Dairy Farm Program	Animal Welfare Approved
Sub-Therapeutic Antibiotics or Growth Hormones	• Only therapeutic antibiotics	• Only therapeutic antibiotics	• Not mentioned	• Prohibited
Dehorning	• Disbudding before 4 months can occur without local anesthesia • Disbudding after 4 months must occur with anesthesia	• Disbudding before 4 months can occur without local anesthetic • After four months, anesthesia is required	• Disbudding recommended • Anesthetic recommended with other dehorning procedures	• Not allowed • Disbudding only before 2 months
Tails	• No damage	• No damage	• Shouldn't be used for transport	• Not mentioned
Body Condition[1]	• 98% of herd between 2-4.5	• No animals has a score less than 2	• 90% should have a BCS between 2 and 4 with no more than 5% below 2	• All animals must be a score of 2 or above • Breeding animals must not exceed a score of 4
Food/Feed Troughs	• Working, clean and free of stale food • At least 30" of bunk space before and after calving • At least 24" per cow at all other times	• Working, clean and free of stale food; free access to food each day; fed at or above floor level, no concrete lip on the floor	• Not restricted from feed for more than four hours at one time	• Clean, fresh feed • Diet must contain at least 70% roughage • Lactating cow diet must contain at least 60% roughage
Water	• Continuous access to clean, adequate supply • No more than 3 cows in line • One waterer per 10 head (1 for 6 head on dry ration) • 2ft of tank perimeter for every 10-20 cows	• Adequate supply of clean, fresh drinking water, daily • 10% of herd can drink at any one time • 75-100 gallons per cow per day • 2ft of tank perimeter for every 10-20 cows • 1 drinking bowl per 10 cattle (1 drinking bowl per 6 cattle if on dry ration)	• Prevent a dominant animal from limiting water to other animals	• Continual access to adequate supply of clean water without competition
Hygiene Score [2]	• 90% score of 1 or 2	• Not mentioned	• 90% score < 3	• Not mentioned
Lying Area	• Well drained, dry, and sufficient size to accommodate all cattle lying down in normal resting posture • 40-50 square feet per cow • 50-60 square feet per cow in earthen exercise pens	• Well drained, dry, and sufficient size to accommodate all cattle lying down in normal resting posture	• Well drained, dry	• Minimum indoor bedding area dependent on weight: ex) cows between 440-770lbs need 43 square feet
Lesion Score[3]	• 80% score of 0 or 1	• Not mentioned	• 90% score 1; 99% score 2 or less	• Not mentioned

[1]Scores ranging from 1-5 using Elanco Scoring Protocol
[2] Scores ranging from 1-5 using the NDPF Hygiene Scorecard
[3] Scores ranging from 1-3 using the NYSCHAP/Cornell Cooperative Extension Scorecard

Bald Spots	•	98% have none	•	Not mentioned	•	Not mentioned	• Not mentioned

Table 1 (Continued). Comparison of four audit programs

Lameness[4]	•	95% score of 1 or 2	•	Locomotion scoring should be included in health plan	•	90% should score 2 or lower	• Not mentioned
Tail Docking	•	Prohibited	•	Prohibited	•	Not Recommended	• Prohibited
Pasture Grazing	•	4-5hrs voluntary access per day, weather permitting, with access to water	•	4-5hrs voluntary access per day, weather permitting, with access to water	•	Management practices prevent animals standing in mud after it rains	• Continual access to pasture required • Management prevents 20% of pasture to be denuded
Calf Hutches	•	Sized so calves can stand up, turn around, lie down, rest, and groom without hindrance; can see other calves	•	Mixing of calves should be avoided • Individual pens preferable • Calves must be able to stand up, turn around, lie down, rest and groom without hindrance	•	Clean, dry area with adequate space to stand, lie down, and turn around without difficulty	• No individual separation • Calves should be reared by mothers (orphan calves fostered) • Can be reared in groups with milk replacers
Calve Weaning	•	No weaning before 5 weeks of age • Access to forage after 14 days	•	No weaning until calves are eating 1.5lbs/calf-starter/day • No weaning before 5 weeks of age • Access to forage after 8 days	•	May be done as early as 6-8 weeks of age • Forage after 8-12 weeks of age	• No weaning before 6 weeks • Access to forage after 7 days
Free-stall	•	1 cow per free-stall • Slope from rear to front is ~4% • 24" per cow; 30" per cow 24 days prior to calving	•	1 cow per free-stall • Slope from rear to front is ~4% • Constructed so as to avoid consistent elimination in back of stall & when lying, all of cow's body on bed	•	Bedding refreshed on a routine basis • Stalls appropriate in size for size/breed of animal; water, feed space, and shelter are provided for each animal, lunge space provided	• 5% more stalls than cows • Enough space to stand up, turn around, and lie down
Unbedded areas	•	Slatted or solid concrete and scraped at least daily	•	Slatted or solid concrete & scraped at least daily • Depth of mud not over ankle deep • 40-50ft^2 space/cow	•	Not specified	• Solid floors
Bedding	•	At least 3 inches deep	•	At least 3 inches deep	•	Dry, clean, and of sufficient quantity	• Deep • Clean, dry and mold free
Exercise Areas	•	4-5 hours per day, weather permitting	•	4 hrs/day access, weather permitting • Exercise corrals of 50-60 sq feet/cow are recommended for groups of 100	•	Turned out daily for exercise, weather permitting	• Not mentioned (included in pasture access)
Tie Stalls	•	Permitted	•	Permitted	•	Turned out daily for exercise (weather permitting) • Room to stand, lie down, stretch, eat, drink, and eliminate comfortably; manure removed on routine basis	• Only allowed for milking/feeding prior to milking

[4]Scores ranging from 1-5 using First Step Locomotion Scoring from the University of Wisconsin

Table 2. Core animal-based criteria

	Tie-stall		Free-stall		
Farm	A	B	C	D	E
Herd Size	<50	<100	<150	<500	<1000
Housing Style	Mattress	Compost-pack and Pasture	Pasture/Dry lot	Mattress, Sand, Compost-pack, and Pasture	Mattress and Sand
BCS[5] between 2-4.5[6]	98.40%	95.00%	88.00%	93.00%	87.00%
BCS <2	0.00%	0.00%	0.00%	0.05%	0.00%
Hygiene Score <3[7]	90.00%	84.00%	100.00%	75.00%	79.00%
Lesion Score 1[8]	50.00%	96.10%	95.20%	48.80%	60.80%
Lesion Score of 2 or less	88.00%	100.00%	100.00%	96.06%	98.02%
Lameness Score of 2 or less[9]	94.00%	95.00%	97.60%	91.60%	98.78%
Tail Docking	none	none	none	some	some
National Dairy Farm Program (Pass/Not)	N	N	N	N	N
Animal Welfare Approved (Pass/Not)	**P**	**P**	**P**	N	N
Certified Humane (Pass/Not)	**P**	**P**	**P**	N	N
American Humane (Pass/Not)	N	N	N	N	N

[5]Body Condition Score
[6]Scores ranging from 1-5 using Elanco Scoring Protocol
[7]Scores ranging from 1-5 using the NDPF Hygiene Scorecard
[8] Scores ranging from 1-3 using the NYSCHAP/Cornell Cooperative Extension Scorecard
[9]Scores ranging from 1-5 using First Step Locomotion Scoring from the University of Wisconsin

Table 3. Core environmental-based criteria

	Tie-stall		Free-stall		
Farm	A	B	C	D	E
Herd Size	<50	<100	<150	<500	<1000
Housing Style	Mattress	Compost-pack and Pasture	Pasture/Dry lot	Mattress, Sand, Compost-pack, and Pasture	Mattress and Sand
1 waterer/10 head	Yes	No	No	No	No
30" food bunk/cow	No	No	No	No	No
Weaning Age	8 weeks	12 weeks	8 weeks	8 weeks	1.5 weeks
Forage Access Age	Immediately	4 days	1-2 weeks	Immediately	Immediately
40-50 ft^2/cow lying area	No	Yes	Yes	No	No
At least 3 inches bedding	Yes	Yes	No	No	No
Pasture/exercise area Access (hrs/day)	12	12	16	16	Some have 0
Calf Housing	Social Groups	Individual Stalls	Social Groups	Hutches, then Social Groups	Huthces, then social groups
Tie Stalls	Yes	No	No	No	No
National Dairy Farm Program (Pass/Not)	**P**	**P**	**P**	**P**	F
Animal Welfare Approved (Pass/Not)	F	F	F	F	F
Certified Humane (Pass/Not)	**P**	F	F	F	F
American Humane (Pass/Not)	F	F	F	F	F

Table 4: Lactating Cow Lameness versus Herd Lameness

Farm	Herd Lameness	Lactating Lameness
A	0.12	0.16
B	0.06	0.1
C	0.09	0.18
D	0.21	0.31
E	0.07	0.16

Table 5: Hygiene Scores Based on Bedding Type

	Hygiene Score (% above a score of 1)				
Farm	Mattress (Tie-stall)	Mattress (Free-stall)	Compost-pack	Sand	Pasture
A	35.1%			46.2%	
B			75.7%		50.0%
C					33.6%
D		14.6%	100%	39.4%	39.5%
E		60.5%		94.5%	

Table 6: Lesion Scores Based on Bedding Type

	Lesion Score (% above a score of 1)				
Farm	Mattress (Tie-stall)	Mattress (Free-stall)	Compost-pack	Sand	Pasture
A	64.9%			7.7%	
B			0.0%		7.5%
C					4.9%
D		64.6%	5.4%	30.3%	23.3%
E		74.3%		25.5%	