

Extension Education

T73 Utilizing the Penn State dairy herd to evaluate precision feeding and the effects on ammonia emissions. V. Ishler*, N. Brown, and G. Varga, *The Pennsylvania State University, University Park.*

A key factor in extension education is to take university research results and apply them in a practical manner to our dairy clientele. There are limitations to evaluating results using small number of animals and extrapolating the data to real world situations when conducting university trials. In the case of air quality and ammonia emissions, very different outcomes are possible based on feeding management practices and housing type. To address these concerns a large scale trial was conducted simultaneously to compliment a more intensive small scale study. The objective was to evaluate an alfalfa versus a grass silage based ration and corn particle size on animal performance and ammonia emissions in group housing. The alfalfa and grass silage made up 25% of the ration dry matter. The free stall barn at Penn State houses 120 cows divided into 2 groups of 60. For four months, the left side of the barn received the alfalfa based ration and the right side received the grass based ration. The only change was varying the particle size of the corn every four weeks. Milk production, components, energy corrected milk (ECM), milk urea nitrogen (MUN), dry matter intake, income over feed costs (IOFC) and ammonia emissions were monitored. The results of the large scale study have been incorporated into numerous educational programs to illustrate concepts related to precision feeding and that positive outcomes are possible related to profitability and the environment.

Table 1.

Month	Corn particle size	Milk kg	Fat %	Protein %	ECM kg	MUN mg/dl	IOFC \$/cow
Alfalfa based diet							
Feb	fine	42.3	4.00	3.00	44.4	12	10.74
Mar	coarse	42.6	3.97	3.16	45.0	10	11.60
Apr	fine	43.5	3.83	2.98	44.6	10	10.95
May	coarse	46.9	3.94	2.94	48.7	9	12.37
Grass based diet							
Feb	coarse	37.8	4.00	3.00	39.7	12	10.09
Mar	fine	37.8	3.85	3.09	39.2	11	10.15
Apr	coarse	38.9	3.69	2.91	39.0	11	9.66
May	fine	38.8	4.10	3.26	41.9	10	10.74

Key Words: Precision feeding, Ammonia emissions, Education

T74 Financial performance of dairies in Florida and Georgia in 2004. L. Ely*¹, R. Giesy², A. deVries², B. Broaddus², C. Vann², and A. Bell², ¹University of Georgia, Athens, ²University of Florida, Gainesville.

The Dairy Business Analysis Project (DBAP) includes an annual survey of the financial performance of dairies primarily located in Florida and Georgia. Its objective is to document the dairies' financial success using standardized, accrual accounting methods in order to calculate benchmarks and provide feedback on the dairies financial strengths and weaknesses. Twenty-six dairies submitted financial data in 2004. Twenty-two dairies were included in the summary results. Of these, 15 were located in Florida, and 7 in Georgia. The average herd size was 1,170 cows and 585 heifers with 18207 lbs. milk sold

per cow. The average culling rate was 31%. There was an average of 20 FTE workers per farm and 0.97 million lbs milk sold per FTE worker. Total revenue per cwt. was \$20.89 / cwt with \$18.98 / cwt milk income. The average total expense was \$19.39 / cwt. The largest expense items were purchased feed (\$8.13 / cwt), labor (\$3.17 / cwt), livestock (\$1.87 / cwt) and milk marketing (\$1.13 / cwt). Net farm income from operations was \$1.50 / cwt and net farm income was \$1.58 / cwt. The debt to equity ratio was -0.24, the rate of return on assets was 0.06, the rate of return on equity was 0.05, the operating profit margin ratio was 0.06. Total expenses decreased and returns increased with herd size in 2004. Herds ≥ 1000 cows had the lowest total revenue (\$20.78 / cwt) and the lowest expenses (\$18.12 / cwt) resulting in the highest net farm income (\$2.82 / cwt). The herds with the highest milk production ($\geq 19,500$ lbs / cow / year) had the lowest total revenue (\$18.86 / cwt) and the lowest expenses (\$18.28 / cwt) resulting in the highest net farm income (\$1.74 / cwt).

Key Words: Dairy, Financial, Management

T75 A team based approach: Development of a comprehensive program for identification of bottlenecks to profitability on dairy farms. L. Holden*, G. Varga, K. Griswold, T. Beck, B. Hilty, M. Douglass, R. Goodling, V. Ishler, and E. Hovingh, *Penn State University, University Park.*

Field-based and campus-based dairy extension educators collaborated to develop a program to identify bottlenecks to profitability on Pennsylvania dairies. Self-selected teams worked on key areas like udder health and milk quality, reproduction, and replacement management and milk production, while a larger team developed a comprehensive tool to identify bottlenecks. Working through both face to face and electronic communication, the team created the "Profitability Assessment for Dairy" (PADairy). The PADairy tool was developed to use a consistent method of whole farm evaluation and remove bias associated with individual areas of expertise. Each area in the tool is linked to an economic outcome so that bottlenecks and the associated loss in profitability are identified. Training for using PADairy included an on-farm evaluation with multi-disciplinary teams of extension educators. The training model allowed for experimentation with "old methods" of evaluation compared to the more team-based and comprehensive use of PADairy. Evaluations indicated that nearly 80% of the participants were likely to use the tool in the next year and nearly 75% would use the tool with a team of educators. Seventy-five percent of the participants found the team based and on-farm components to training "very effective" while the remaining 25% found the training methods "moderately effective." Following internal training and on-farm testing, PADairy was presented in educational workshops for both agribusiness consultants and dairy producers. The PADairy project provided a more coordinated and effective method for both educational program development and educator training.

Key Words: Team-based, Profitability, Dairy

T76 Changes in copper sulfate use on northeastern New York and Vermont farms between 2002 and 2005. S. A. Flis*, C. S. Ballard, M. A. LeVitre, R. M. Conant, and E. D. Thomas, *W.H. Miner Agricultural Research Institute, Chazy, NY.*

The use of copper sulfate (CuSO₄) in footbaths to maintain foot health has been a common practice on dairy farms for the last 10 years. Often

the waste material from CuSO₄ footbaths is added to manure storage facilities increasing the Cu content of manure applied to fields. The Cu concentration in the Miner Institute manure slurry was 4.8 g Cu/1000 L in 1996 and 88.6 g Cu/1000 L in 2000, before and after CuSO₄ footbaths were employed, respectively. Spreading of manure slurry with high Cu concentration may adversely impact crop growth and quality. Concern about the amount of Cu being applied to cropland initiated a survey of the use of CuSO₄ in footbaths on 17 Northeastern New York and Vermont dairy farms in 2002 and their continued practices in 2005. All farms utilized CuSO₄ footbaths in 2002, while 35% had decreased or discontinued the number of footbaths per month and the kg of CuSO₄ used per footbath in 2005. The kg of CuSO₄ imported yearly decreased on 29% of farms still using footbaths in 2005. The yearly import of Cu per hectare per year decreased on 65% of the farms in 2005 because of an increase in acres in which manure slurry was spread. Forage Cu content was measured on 15 surveyed farms. Concentration of Cu decreased in both corn silage and haylage from 2002 to 2005. In 2002, the Cu concentration in corn silage was 12.7 ±5.9 mg/kg and in 2005 was 5.1 ±0.8 mg/kg ($P < 0.001$). For haylage, the Cu concentration in 2002 was 19.0 ±8.2 vs. 10.2 ±2.4 mg/kg in 2005 ($P = 0.004$). The decrease in the kg of CuSO₄ imported per hectare per year on the majority of farms surveyed may have contributed to the downward trend in forage Cu content. Since data was not collected on crop yields, manure Cu concentration, manure application rate, or soil Cu content, it is difficult to accurately determine contributing factors for the decrease in forage Cu concentration. Research is currently being conducted to determine the effect of CuSO₄ concentration on manure microbial activity and corn and grass growth and quality.

Key Words: Copper sulfate, Manure, Dairy

T77 Record keeping on Idaho dairies. M. Chahine* and J. B. Glaze, Jr., *University of Idaho, Twin Falls.*

In order to ascertain the existing level of adherence to beef quality assurance (BQA) recommendations by Idaho dairies, and to determine the needs for BQA education, a survey of dairy farmers in Idaho was conducted. The survey was prepared and sent out to all 736 known dairies operating in the State of Idaho. A total of 273 dairies responded, resulting in an overall response rate of 37%. Recognizing that accurate record keeping is one of the requirements of BQA, the survey included a series of questions asking which animal health and production records were kept by each dairy, as well as the record format and the length of time records were maintained. Record keeping was similar between Idaho geographical areas. In northern Idaho, 100% of the respondents practiced some form of record keeping. In southwest Idaho, the percentage of responding dairies that maintained records was 96.4%, compared to south central Idaho and eastern Idaho where the percentage of dairies maintaining records was 97.3% and 93.7%, respectively. When the data were analyzed by dairy size, 93% of small dairies (less than 200 cows), 99% of medium-sized dairies (200-1000 cows), and 100% of large dairies (more than 1000 cows) indicated they maintained records. Results showed that large dairies were more likely to maintain a wider variety of records. Animal identification (number and description), calf birth records, and cow records (health, reproduction, and lactation) were the types of records most commonly maintained by the dairies. Dairies indicated they were less likely to maintain feed records, product supplier names, or BQA program records. The majority (58%) of respondents from dairies with less than 200 cows used some paper format to keep records, compared to respondents at medium- and large-sized dairies that used some type

of computer based record system (85 and 100 %, respectively). In all geographical areas and size classes, 50-60% of respondents indicated they maintained records for at least two years.

Key Words: Survey, Record keeping, Dairy

T78 Spanish language educational opportunities for Idaho dairy employees-raising healthy calves. M. Chahine*¹, R. Norell², S. Jensen³, J. Dalton⁴, R. Carranza⁵, S. Etter⁴, and R. Chebel⁴, ¹*University of Idaho, Twin Falls,* ²*University of Idaho, Idaho Falls,* ³*University of Idaho, Marsing,* ⁴*University of Idaho, Caldwell,* ⁵*Pfizer Animal Health, Meridian, ID.*

Cultural and language differences present significant communication challenges between dairy operators and their employees. According to the Department of Labor, 90% of the workforce on southern Idaho dairies is Hispanic. Language barriers directly affect the performance of calf raisers who are capable of doing a very good job if they are properly trained. Training Hispanic farm labor in dairy management is critical for minimizing the spread of disease, raising healthy herd replacements, optimizing production, and increasing farm profitability. In response to requests from the Cooperative Extension Dairy Advisory Boards and the Animal and Veterinary Science Department Advisory Board (composed of dairy producers and allied industry personnel); we developed a new course for Idaho's Hispanic dairy workers. The course was entitled 'Raising Healthy Calves'. It focused on calving area cleanliness, physiology of birth, calving assistance, basic neonatal management, colostrum feeding, calf health, calf nutrition, and calf housing. Power point presentations were developed in English and Spanish. A handbook comprised of chapters addressing each of these topics in detail, in both Spanish and English, was also developed to accompany the course. In 2005, the course was offered in Caldwell, Twin Falls, and Blackfoot. Over 120 Hispanic employees attended the calf raising program. The delivery of this Spanish language program provided an educational opportunity for a traditionally underserved group throughout the state of Idaho. Proper calf raising techniques should lead to improved quality of calf care and reduced incidence of death and disease. Future efforts will seek to identify actual adoption of proper calf raising procedures to better quantify actual economic impacts.

Key Words: Calf raising, Hispanic training, Workshop

T79 Spanish language educational opportunities for Idaho dairy employees-milker school. M. Chahine*, *University of Idaho, Twin Falls.*

The Idaho dairy industry relies heavily on a Spanish-speaking workforce. Department of Labor statistics indicate that in southern Idaho, the number of dairy workers that speak Spanish as their first language exceeds 90% of the workforce. The language barrier has created communication and training problems. The majority of dairy managers speak little or no Spanish and most Hispanic employees speak little or no English. University of Idaho Cooperative Extension faculty annually consult a dairy advisory board to identify critical issues to the Idaho dairy industry. Each year, one of the top identified needs is training and educational opportunities for Hispanic employees. In response to the identified need, a classroom/on-farm Spanish language milker's school for Idaho dairy employees was developed. The course included sessions on cow preparation and sanitation, milk letdown, milk removal, milking unit handling, mastitis, prevention of antibiotic residues in bulk tank milk, and cow handling. During the year 2004 and

2005, approximately 250 milkers attended the course. A test covering various aspects of milking management was given to a sample of 43 participants at the beginning and end of the class. The test was short (ten questions), and the presenter made sure to explain and read orally the questions and emphasized that the performance on the test would be confidential and in no way will affect the milker's job. The participants were assigned numbers on their name tag and were asked to record the number on the pre- and post- test so they were not identified by their names. The numbers were used to link the pre-test to the post-test and the grades were summarized in a computer spreadsheet. The test scores before (pre-test) and after (post-test) were compared using a paired samples t-test to determine if the milker school improved participants scores (knowledge). The test showed a 27.3% improvement in knowledge ($P < 0.0001$). Proper milking and cow handling techniques should lead to improved milking procedure, closer adherence to protocols, lower somatic cell counts and lower incidence of clinical mastitis.

Key Words: Milker school, Hispanic training, Workshop

T80 Identifying management areas that limit farm profitability using a combination of industry benchmarks and economic loss factors. K. Griswold, T. Beck*, D. Baver, M. Douglass, R. Goodling, B. Hilty, L. Holden, E. Hovingh, V. Ishler, M. O'Connor, J. Tyson, and G. Varga, *Penn State University, University Park.*

Assessing revenue generation opportunities on dairy farms helps producers identify specific areas to target for in-depth troubleshooting on the farm operation. The Profitability Assessment for Dairy (PA Dairy) Tool was developed for that specific task. Using a combination of financial information and DHIA data, the Excel spreadsheet based program generates twenty-one farm-specific values and assesses these values against a series of industry benchmarks. The tool then provides a broad view of a whole farm's profitability, and initially distinguishes whether profitability is limited by the farm's capital efficiency (i.e. use of capital) or operational efficiency (i.e. ability to generate milk revenue). Within the operational efficiency section, four management areas are further assessed for their potential impact on the dairy herd's productivity and whole-farm revenue generation. These four management areas are Milk yield and components, Reproduction, Udder health and milk quality, and Culling and replacements. Once these management areas are ranked on their potential to limit herd productivity, the tool attaches revenue loss estimates to each. These revenue loss estimates can be adjusted to reflect the industry benchmarks or the farmers own goals. The PA Dairy Tool was tested across Pennsylvania on dairy farms ranging in size from 53 to 1035 cows. Based on using industry benchmarks, the tool identified Reproduction as being the most limiting factor on herd productivity in 78% of the farms with Milk yield and components ranking as the second most limiting factor in 66% of the farms. However, when economic loss estimates were attached to these management areas, Milk yield and components was twice as likely to be the most limiting factor on whole farm revenue compared to Reproduction. These results suggest that using industry benchmarks alone may not always identify the largest potential source of revenue loss on the farm. The results of the tool provide an economically-based starting point for drill down investigations to determine specific causes of revenue loss on farms.

Key Words: Profitability, Dairy, Benchmark

T81 A multidisciplinary approach to address nutrient management in large dairy operations or a confined animal feeding operation (CAFO). C. N. Lee*, R. B. Valencia-Gila, G. Porter, R. Pattnaik, R. S. Yost, and C. I. Evensen, *University of Hawaii-Manoa, Honolulu.*

The tentative agreement between the US Environmental Protection Agency and the US Dept. of Agriculture for Animal Feeding Operations (AFOs) and Confined Animal Feeding Operations (CAFOs) imposed stringent regulations across geographic regions irrespective of climate. Hawai'i's sub-tropical/tropical climate has a year round growing season for all major agriculture districts. As an island state, she is further impacted by Clean Water Act, Coastal Zone Management Act, etc. Her isolation and cultural heritage make livestock operations important within the economic components. Hence, a multidisciplinary approach is needed for developing alternative measures to alleviate potential risks in violating the AFOs/CAFOs rules. The steps were: i) identify the potential problems, ii) develop an outreach/education program for the producers, iii) solicit the participation of colleagues with different skills and expertise, iv) implement the project and v) evaluate the outcome. Results of these efforts led to: a) participation/commitment of producers "in-kind" match; b) successful grants for education and implementation of project; c) a field trial on 4 species of tropical forages and 2 sub-surface irrigation was established on producer's site; d) data collected include plant tissue analyses, soil nutrients, percolation rate of affluent, nutrient uptake by forages and e) new expanded project to resolve wastewater management in dairies. The study showed that Bana grass (*Pennisetum purpureum*) could yield ~60 tons DM/ha/yr, with high nutrient uptake of N (>500kg/ha/yr) and P (100-300kg/ha/yr) without leaching or accumulation of such nutrients in the root zone. The elements contributing to the success of this project were: 1) commitment and follow through from all parties and 2) constant communication between parties. A multidisciplinary approach brought different skills and expertise to solve problems by further expanding the knowledge and awareness critical issues. The program yielded data that were successfully used to obtain USDA/EQIP grant for nutrient management in operations with limited land area.

Key Words: CAFOs, Multidisciplinary, Nutrient management

T82 DairyVIP: A user-friendly computer program to compare the economic consequences of management changes on dairy farms. A. de Vries*, *University of Florida, Gainesville.*

Dairy producers and allied advisors frequently need to estimate the economic consequences of proposed changes in management. Changes that affect the herd dynamics are not easy to evaluate. To support estimation, the user-friendly computer program DairyVIP (Value Iteration Program) has been developed. DairyVIP first determines optimal or user-defined breeding and replacement decisions for individual cows and then calculates numerous technical and economic statistics for herds or (sub)groups of cows. For example, the technical and economic consequences of changes in pregnancy rate, milk production, prices, or culling and replacement policy are easily evaluated. The user-interface is developed in Microsoft Excel. Five input sheets allow the user to enter data about milk production, reproduction, body weights, involuntary culling, and prices. Inputs may be seasonal. These data are then used by the dynamic programming module, which calculates the optimal or user-defined breeding and replacement decisions for each cow category. Cows are categorized by level of milk production (15 classes), lactation number (12 classes), months in milk (24 classes), pregnancy status (10 classes), and season

of the year (12 classes). A Markov chain module simulates a herd consisting of cows that follow the calculated breeding and replacement decisions over time. A user-defined starting herd may be simulated over time. DairyVIP also calculates results in steady-state. Numerous technical and economic statistics are presented on 3 sheets. The user-interface shows over 40 statistics such as profit per cow per year, average days to conception, cull rate, value of a cow etc. It also displays over 40 graphs showing statistics over time, by days in lactation, by season, etc. The optimal breeding and replacement decisions for each cow category, as well as their future value, value of pregnancy, and cost per day open can also be viewed. Two sets of inputs and their results can be compared simultaneously. The computer program may be obtained at <http://dairy.ifas.ufl.edu/tools>.

Key Words: Optimization, Economics, Management

T83 Advising model for the dairy farm development in Mexico. V. Mariscal-Aguayo^{*1}, H. Estrella-Quintero¹, A. Martinez-Cuevas², and S. Castro-Aguilar³, ¹*Universidad Autonoma Chapingo, Chapingo, Mexico*, ²*Asesor Independiente, Zapotlanejo, Jalisco, Mexico*, ³*Agropec Star, Guadalajara, Jalisco, Mexico*.

The objective of the work was to evaluate the impact of the CHAPINGO-AGROPEC Star Integral Advising and Consultancy Strategic Model in the development of a dairy farm in the state of Jalisco, Mexico from January, 2004 to December 2005. The model consisted in: 1. Advisor actualization. 2. Use of computer technology tools, AGROPEC Star software and Internet in the process; 3. Elaboration of an integral, cooperative diagnosis and strategic analysis. 4. Elaboration, implementation and following of a Strategic Plan of Re-engineering Processes (SPRP) for the identified problems. 5. Pursuit and integral evaluation of the farm and the adviser. 6. Training programs for the producer and personnel. 7. Permanent consultancy via Internet. 8. Entailment of the productive chain with universities. The farm has 105 cows and 80 heifers of Holstein breed. The cattle were confined, AI was used and their feeding was with corn silage, alfalfa and concentrates. It has advisory services as well. The results were: a) Actualization programs in five areas given to the adviser. b) Problems identified by the diagnosis (initial value) and monitor progress with the SPRP (final value): Age at first parturition (25.47 - 24.68 m), parturition-first service interval (80.82 - 75.39 d), parturition-conception interval (134.16 - 108.65 d), conception rate (41.74 - 48.24 %), milk production average (21.40 - 22.27 L), days in production (353 - 357), dry days (63.41 - 59.83); c) Elaboration of an organizational chart and a procedures manual. d) Training programs in three areas given to the personnel. e) Evaluation of the adviser performance considering farm progress. f) Involvement of a student and professors in the work. The advisory model improved the productive performance, administrative process and personnel attitude; the latter was the most important for the solution of the main problems. The use of a digitized platform by the producer, adviser and consultant facilitates the farms development.

Key Words: Farm management, Milk production, Software

T84 Development model for farms. H. Estrella-Quintero^{*1,2} and V. Mariscal-Aguayo¹, ¹*Universidad Autónoma Chapingo, Chapingo, México*, ²*Agropec Star, Guadalajara, Jalisco, México*.

The management complexity of a farm along with the fact that Mexico has a great amount of small and medium-sized farms implies that the only alternative for improving their productivity and competency is the access to the integral, qualified and professional advising services.

Given this fact, in the 80's, approximately 25,000 advisers were employed by the Mexican government for these purposes. Even though the program disappeared, other programs were implemented later on. These, however, were not effective. This is why from 2002 to the present; AGROPEC Star and the Universidad Autónoma Chapingo have created a methodology for the development of farms based on professional advising services in 20 farms. This methodology contemplates: 1. Actualization of the integral management of farms. 2. Transference of computer and communication technology to the advisers (Internet and AGROPEC Star software). 3. Elaboration of an integral, cooperative diagnosis and strategic analyses. 4. Elaboration, implementation and following of a Strategic Plan of Re-engineering Processes (SPRP) for the identified problems. 5. Implementation of a control, following and integral evaluation mechanism in the farms. 6. Specialized permanent consultancy by Internet. 7. Training programs for the producer and personnel. 8. Specialized consultancy in field. 9. Pursuit and evaluation of the performance of the advisers. 10. Entailment of the productive chain with the universities. The use of this methodology allows: updating for advisors, the generation and use of digitalized indicators of all the farms, development of research projects applied to the identified problems, and student participation to improve their professional performance in the advising market to enhance the productivity and competitiveness of the farms.

Key Words: Farms development, Animal and agriculture production, Software

T85 The Missouri Show-Me-Select™ Replacement Heifer Program. D. J. Patterson*, R. L. Weaver, M.F. Smith, D. C. Busch, and J. L. Parcell, *University of Missouri, Columbia*.

The Missouri Show-Me-Select Replacement Heifer Program was designed to improve reproductive efficiency of beef herds in Missouri and increase individual farm income. The program objectives include: 1) a total quality management approach for health and management of heifers from weaning to late gestation; 2) increased marketing opportunities for and added value to Missouri raised heifers; and 3) the creation of reliable sources of quality commercial and purebred replacement females. The program was initiated as a pilot project in two regions of Missouri in 1997 with 33 farms and 1,873 heifers. During the past 8 years, 554 farms enrolled 66,526 heifers in the program. Regional extension livestock specialists serve as coordinators of the program locally and work closely with the 179 veterinarians involved with the program state wide. State specialists provide program support to regional extension field staff and participating veterinarians. The reproductive goals for heifers enrolled in the program are aimed at improving breeding performance during the heifers' first breeding period, minimizing the incidence and severity of dystocia, with the resulting delivery of healthy, vigorous calves, and successful rebreeding of heifers during the subsequent breeding season. The marketing component of the program facilitated the sale of 15,725 heifers in 66 sales across Missouri from 1997 through the fall sales in 2005. These sales generated interest from 5,189 prospective buyers that formally registered to buy heifers, and 1,915 individuals that purchased heifers from the various sales. Heifers from the program have now sold to farms in AR, AZ, FL, IA, IL, IN, KY, KS, MO, NE, OK, SC, and TN. Collectively, 66 sales have generated \$16,393,797 in gross sales. The program is estimated to annually contribute \$3.5 million to Missouri's economy. The Missouri Show-Me-Select Replacement Heifer Program is the first statewide on-farm development and marketing program of its kind in the U.S.

Key Words: Heifer development, Reproductive management, Beef cattle

T86 Survey response of beef exhibitors to radio frequency identification device. J. W. Lehmkuhler*¹ and T. Quam², ¹University of Wisconsin, Madison, ²Wisconsin Cattlemen's Association, Sun Prairie, WI.

The Wisconsin Cattlemen's Association (WCA) was awarded funds to investigate the use of radio frequency identification device (RFID) technology for beef steers exhibited at the State and five county fairs. The University of Wisconsin Extension Livestock team assisted WCA in implementing the project. In total 1,142 steers were identified with RFID tags. Exhibitors were required to register their premises through the state's system. A brief one page, ten question survey was conducted by county Extension. The survey questions were either yes/no or scalar from 1 to 5. A total of 112 surveys were returned which was approximately a 50% return rate. Respondents indicated that the project tended to increase their knowledge of the electronic animal identification system. Responses regarding the premise registration form as being simple to understand and ease of registering their premise were between "Undecided" and "Agree". Exhibitor responses indicated the process did not appear to slow the check-in process. The

majority of the participants felt the tags did not negatively impact the appearance of their show animal either. Based upon the survey responses only, a total of 14 steers had lost the RFID device. The total number lost is unknown as not all steers that were identified at the check-ins were exhibited. Additionally, nine steers were reported by the survey respondents to have developed an infection around the site of administration. It is uncertain as to the cause and warrants further investigation. This project reports responses from neutral to acceptable regarding the device as an acceptable form of animal identification by the respondents. The project was reported by survey respondents to be important for the livestock show industry as a National Animal Identification System is developed. The use of RFID technology appears to be a plausible method for identifying cattle going to exhibitions but is not faultless. As the industry continues to make advances to the development of a national animal identification system, Extension will need to provide increased education to exhibitors regarding the system.

Key Words: Cattle, Electronic identification, Youth

Food Safety: Foodborne Pathogens in Beef and Dairy Cattle

T87 Effect of plant extract supplementation on digestive tract microbiota and carcass contamination in young Holstein bulls receiving a high-concentrate diet. M. Devant*¹, C. Adelantado², A. Anglada¹, A. Bach^{1,3}, and M. A. Calvo², ¹IRTA-Unitat de Remugants, Barcelona, Spain, ²UAB-Departament de Sanitat i d'Anatomia Animals, Barcelona, Spain, ³ICREA, Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain.

Ninety male Holstein bulls were used in a completely randomized design experiment to study the effect of a blend of plant extracts (PE: cynarin, ginseng and fenugreek) supplementation on digestive tract microbiota, and carcass contamination. Three treatments: control (CTR), monensin (MON, 32 mg/kg DM), and PE (2.8 g/kg DM) were tested. Bulls had ad libitum access to straw and concentrate during 108 d until slaughter weight (460 ± 30 kg). After sacrifice, samples from skin and carcasses before chilling at the brisket were collected to determine *Escherichia coli* O157:H7 and *Salmonella enterica typhimurium* presence. Also rumen, jejunum, cecum, and rectum grab-samples were collected to investigate *E. coli* O157:H7 and *S. enterica typhimurium* presence, and to count *E. coli*, lactic acid bacteria (LAB), aerobic mesophile bacteria (AMB), and fungi. Treatments did not affect rumen, jejunum, and rectum microbiota counts, and pathogenic bacteria studied. In the cecum, the percentage of LAB counts below 5 log cfu/mL was greater ($P < 0.01$) in MON (68.1%) than in CTR (34.6%) and PE (28.0%) treatments, the percentage of fungi counts below 3.5 log cfu/mL tended ($P = 0.09$) to be lower in CTR (26.7%) than in MON (66.7%) and PE (60.0%) treatments, and the percentage of the AMB counts below 8 log cfu/mL was greater ($P < 0.01$) in PE (46.7%) than in CTR (16.7%) and MON (16.7%) treatments. The prevalence of *E. coli* O157:H7 in the cecum tended ($P = 0.11$) to be lower in the MON (18.2%) than in the CTR (55.6%) and PE (57.2%) treatments. Skin and carcass contamination were not affected by treatment. Supplementation of bulls fed high-concentrate diets with monensin or plant extracts affected cecum microbiota; however, no differences in carcass contamination were detected.

Key Words: Beef, Plant extract, Carcass contamination

T88 Reduction adhesion of *E. coli* O157:H7 on CACO-2 cell by phage displayed peptides. C. J. Fu*, F. J. Schmidt, and M. S. Kerley, University of Missouri, Columbia.

Eighty phage clones, selected against pathogen *E. coli* O157:H7 by phage display technology, were tested to identify peptides adhesion to monolayers of CACO-2 cells. PEG/NaCl purified phages (10^{12}) and 10^5 bacteria from an overnight culture were inoculated into microtiter plate wells. Control experiments tested bacterial binding in the presence of phage clones from the unselected library or in the absence of phage. Inoculants (triplicate) were incubated in the same culture medium as CACO-2 cell for 45 minutes. Nonbinding bacteria were washed off (PBS), and the binding bacteria were dislodged with 2% tween-20 in DMEM medium for 10 minutes. Bacteria were serially diluted and plated on LB agar. Seven phage clones (PC23, PC41, PC43, PC61, PC62, PC77, and PC79) were found to reduce adhesion two-fold ($P < 0.10$) compared to both control incubations. This result suggests that specific peptides could influence adhesion affinity of gut bacteria, and thereby interfere with the establishment of chronic infection and subsequent shedding of pathogens such as *E. coli* O157:H7.

Key Words: Adhesion, CACO-2, *E. coli* O157:H7

T89 Effects of potassium lactate, sodium metasilicate, peroxyacetic acid and acidified sodium chlorite on physical properties of ground beef. S. A. Quilo*, F. W. Pohlman, A. H. Brown, P. G. Crandall, P. N. Dias-Morse, R. T. Baublits, and C. Bokina, University of Arkansas, Fayetteville.

Beef trimmings (90/10) that were left untreated (CON), or were treated with either 3% potassium lactate (KL), 4% sodium metasilicate (NMS), 200 ppm of peroxyacetic acid (PAA) or 1000 ppm acidified sodium chlorite (ASC) prior to grinding were utilized to evaluate antimicrobial chemical compound impact on bulk ground beef instrumental and sensory characteristics. After antimicrobial application, the trimmings were ground, weighed, packaged and evaluated during simulated retail