

Table 1. Mean ± S.E. of the Correlates Studied Across Age Groups

Age Group (Weeks)	N	Egg weight (g)	Egg length (mm)	Egg width (mm)	Shape Index (%)
A (22–32)	596	49.94±0.20 ^c	53.86±0.09 ^d	40.91±0.06 ^d	76.02±0.12 ^a
B (33–43)	599	56.35±0.18 ^b	56.17±0.09 ^c	42.53±0.05 ^c	75.79±0.12 ^{ab}
C (44–54)	564	75.79±0.12 ^b	56.65±0.11 ^b	42.77±0.07 ^{bc}	75.58±0.13 ^{ab}
D (55–65)	596	58.63±0.23 ^a	57.27±0.11 ^a	43.16±0.08 ^a	75.47±0.16 ^b
E (66–76)	596	58.05±0.19 ^a	57.43±0.10 ^a	42.90±0.05 ^b	74.81±0.13 ^c
Combined	2951	55.99±0.11	56.27±0.04	42.45±0.03	75.53±0.06

Key Words: Shape Index, Morphometric Measures, Egg

M67 Effect of vitamin D₃ supplementation on plasma and muscle calcium levels, tenderness and sensory characteristics of crossbred grazing steers in the tropics. J. Gutierrez, L. Machado, O. E. Moron-Fuenmayor, O. E. Araujo-Febres*, and S. Pietrosevoli, *La Universidad del Zulia, Maracaibo, Estado Zulia, Venezuela.*

Sixty large framed, *Indicus* × *Continental*, crossbred beef steers grazing in a tropical dry forest environment, were used to investigate the effect of supplementing diets with various levels of vitamin D₃ (VITD) to provide 0, 6, and 10 million IU/(steer×d) for 8 d before slaughter on plasma (PCa) and *Longissimus lumborum* muscle Ca²⁺ (MCa) concentrations, texture analysis (TX), and sensorial analysis of the organoleptic qualities, in which appearance (A), odor (O), flavor (F), juiciness (J), amount of connective tissue (CT), and tenderness (T). Steers were slaughtered using an approved humane technique. A randomly subsample of five steers of the three individual VITD treatments (n = 15) was chosen for meat quality and palatability analyses. Following a 24-h chilling period -4°C, carcasses (a randomly selected subsample n=15) were ribbed, one strip loin of *Longissimus lumborum* (LL) muscle was removed from each carcass. Steaks were vacuum-packed. The data were analyzed in a completely randomized design using the General Linear Models procedures. Warner-Bratzler shear force (WB) was measured on strip loin at 7 d postmortem. Steaks for WB and sensory evaluation were thawed to 2°C. Blood plasma Ca²⁺ and muscle Ca concentration of cattle treated with VITD were higher (P < .05) than controls. VITD supplementation did not (P >

.05) affect TX. Sensory traits of appearance, odor, flavor, juiciness, connective tissue, and tenderness were improved (P < .05) by all VITD treatments in LL steaks. Treatment with VITD will effectively improve tenderness in grazing zebu cattle in tropical conditions.

Key Words: Beef, Vitamin D, Tenderness

M68 Evaluation of freshness of egg yolks and shell eggs stored under the super chilled temperature through analyses of changes of volatiles and lipoprotein conformation. T. Yanagisawa*¹, C. Watanuki¹, M. Ariizumi¹, Y. Shigematsu¹, H. Kobayashi¹, M. Hasegawa¹, and K. Watanabe², ¹*Q.P. Corporation, Tokyo, Japan*, ²*Tokyo University of Agriculture, Kanagawa, Japan.*

This study evaluated freshness of egg yolks and shell eggs stored under the super chilled temperature range (-5-0°C) by analyzing changes in volatiles affecting their flavors and lipoprotein conformation affecting their emulsifying characteristics. As the samples, 10% salted egg yolks were stored at -30, -20, -15, -5 and 5°C, and shell eggs were stored at 0, 10, 20°C with different carbon dioxide concentrations in packages. To analyze volatiles, those samples were incubated and generated headspace gas was absorbed on solid phase microextraction (SPME) fiber and obtained volatiles were analyzed using gas chromatography-mass spectrometry (GC-MS). The analyses demonstrated that amount of volatiles such as hexanal considered to generate by lipids oxidation was the smallest in the samples stored at the super chilled temperatures for both salted egg yolks (-5 and 5°C) and shell eggs. Generation of volatiles in shell eggs was also suppressed at higher carbon dioxide levels. For salted egg yolk samples, conformational changes of lipoproteins were observed using ³¹P nuclear magnetic resonance (NMR) spectroscopy, as the changes of peaks of phosphorus atoms of phospholipids in the lipoproteins. The alterations of the peaks of the super chilled egg yolks were smaller than those of egg yolks stored at the lower temperatures. The results suggested that there are less conformational changes of lipoproteins at the super chilled temperature (-5°C). It has been also confirmed that the shell egg samples stored at the super chilled temperature range maintained high freshness from the Haugh Unit values and the pH values of their egg white. This study demonstrated effectiveness of super chilling storage for maintaining freshness of salted egg yolks and shell eggs by new analytical methods.

Key Words: Egg, Super Chilling Storage, Freshness

Extension Education - Livestock and Poultry

M69 StockPlan: Decision support tools for exploring management options for drought. M. J. McPhee*¹, G. Meaker¹, P. M. Graham¹, B. L. Davies¹, and M. B. Whelan², ¹*NSW DPI, Armidale, Australia*, ²*Southern Cross University, Lismore, NSW, Australia.*

StockPlan[®] is a suite of activities that can be undertaken during workshops and subsequently at home. It is highly recommended that StockPlan[®] is taken as a workshop. The StockPlan[®] resources include: StockPlan[®] Basics-Producer Manual; StockPlan[®] Extras – Home Study Guide; the Resources CD; StockPlan[®] CD and the StockPlan[®] User Manual. This study describes the 3 StockPlan[®] decision support

tools (DST; Drought Pack, Feed Sell Agist (FSA) Pack, and ImPack) that include the StockPlan[®] User Manual to assist producers and extension staff test out management strategies for sheep or cattle through a projected period of limited pasture or drought. **Drought Pack** can help producers or extension staff choose between different strategies when faced with a period of limited or severely reduced pasture supply. The DST assesses the likely financial consequences of various strategies and looks at the impact of each strategy by varying the length of time that pasture may be limited. The DST also estimates the likely cost to repurchase stock when the drought ends. **FSA Pack**

is designed to assist producers or extension staff select the best option: to feed, sell, or agist. FSA also provides the user with the opportunity to calculate the expected costs of each option available based on the probability of each event occurring. **ImPack** is designed to assist the producer or extension staff test breeding, selling, and buying strategies for any beef breeding herd or sheep flock. ImPack will evaluate what will happen to the herd or flock age structure, animal production, and cash flow on an annual basis over an 11-year period. The models implemented in ImPack were developed to explore the consequences of a drought-forced reduction. The DST can also cater for other management changes e.g., flock reductions due to disease. The ImPack models are designed to represent a year where flock or herd numbers are reducing followed by a recovery period over the next ten years. ImPack also illustrates the long-term consequences of a one-year herd or flock reduction. Drought Pack, FSA Pack, and ImPack are valuable management tools that can be used for drought risk management plans.

Key Words: Drought, Management, Risk

M70 Characterization of claw lesions associated with lameness in the University of Arkansas sow herd. C. L. Bradley*¹, J. W. Frank¹, C. V. Maxwell¹, Z. B. Johnson¹, J. G. Powell¹, S. R. Van Amstel², and T. L. Ward³, ¹University of Arkansas, Fayetteville, ²University of Tennessee, Knoxville, ³Zinpro, Inc., Eden Prairie, MN.

Claw lesions that have been associated with lameness were evaluated for three successive breeding cycles in 201 multiparous sows (Monsanto Choice Genetics: GPK348, GPK348 × GPK4, and GPK35) to characterize lesion frequency. Each sow was evaluated in a modified calf table and flipped on her side, where both claws of each foot were evaluated by the same technician. The lesions evaluated were: heel erosions, Fischer's Cracks, excessive growth of the soft tissue, axial (inner) and abaxial (outer) white line cracks or separation on the sole, horizontal and vertical wall cracks, hardship grooves in the hoof wall, hemorrhages, and abscesses of the soft and hard tissue. Lesions were evaluated on a scale of 1 to 3, with 1 representing a mild lesion, 2 representing a moderate lesion, and 3 representing a severe lesion. Overall, greater than 95% of sows had at least one type of lesion during the study. Heel erosions (43.8%) were the most common type of lesion, followed by abaxial white line cracks (17.6%), Fischer's Cracks (11.0%), vertical wall cracks (8.6%), hemorrhages (6.5%), and axial cracks (5.2%), with the frequency of each of the remaining lesion types at less than 2.2% of total lesions. The rear outer claws had the largest occurrence of a noted lesion (49.3% of total lesions), followed by the front outer claws (26.1% of total lesions). Of all the lesions noted, 57.0% were scored a 1, 28.5% a 2, and 14.5% a 3. The likelihood of an axial white line crack, a Fischer's Crack, heel erosion, or hemorrhage was related to sow parity ($P < 0.05$). Within lesions identified as heel erosions, parity 1 sows had the highest frequency (25.0%), followed by parity 3 (14.8%), parity 5 or greater (13.0%), parity 4 (11.1%), parity 0 (8.3%), and parity 2 (8.4%; $P < 0.05$). The majority of lesions observed in this herd were mild, with heel erosions being the most predominant. Our data also indicate that the rear outer claws had the greatest number of lesions associated with lameness in sows.

Key Words: Sows, Lesions, Lameness

M71 Maryland dairy producer education needs assessment study. R. R. Peters*, K. M. Wilson, M. R. Bell, R. A. Erdman, S. W. Fultz, J. E. Hall, R. A. Kohn, W. D. Lantz, J. W. Semler, and M. A. Varner, *University of Maryland, College Park.*

The number of Maryland dairy farms has been steadily declining over the last several decades as many areas of the state have made a demographic shift from rural to suburban. To identify current demographics, practices and potential educational needs of dairy producers in Maryland, a 15-page questionnaire was constructed. The questionnaire was sent to a sample of 629 licensed dairies in Maryland using a multi-wave mail strategy with a response rate of 49%. The objectives of this study were 1) to determine what program topics are of current interest to dairy producers and 2) to identify their preferential media type and informational sources. Statistical analyses were conducted using SPSS software. The survey indicated that the responding dairy producers often have dairy-production related questions and are moderately to very interested in obtaining more information about such topics. The topic areas that most interested dairy producers include mastitis and milk quality, reproductive management, nutrition and feeding, and transition cow management. Topics of least interest primarily included recent technologies and non-conventional dairying methods. Dairy producers tended to utilize local sources of information including veterinarians, local farm/feed suppliers and other dairy producers in the area. The most valued characteristics in these sources included individuals that had general knowledge about many topics, had quick access to a specialist when needed, could provide a quick response and were willing to visit their farms. Producers most frequently obtained information from dairy and cattle/farm magazines, observations of other producers and county extension newsletters. Respondents also indicated that University of Maryland Extension, industry sponsored events, dairy organizational events, and regional dairy trade shows were most useful for providing educational information. The survey helped Cooperative Extension to identify topics, media type and information sources that dairy producers value most for future educational programming.

Key Words: Dairy, Needs Assessment, Survey

M72 Trends in Maryland dairying and future prospects. R. R. Peters*, K. M. Wilson, M. R. Bell, R. A. Erdman, S. W. Fultz, J. E. Hall, R. A. Kohn, W. D. Lantz, J. W. Semler, and M. A. Varner, *University of Maryland, College Park.*

Maryland's dairy industry faces the constraints of urban growth and reduced milk prices currently affecting the dairy industry nationwide. To identify potential educational needs, practices and demographics of dairy producers in Maryland, a 15-page questionnaire was constructed and sent to a sample of 629 licensed dairies in Maryland using a multi-wave mail strategy, with a response rate of 49%. The objective of this study was to identify characteristics of Maryland dairy operations including, 1) strategies for remaining competitive, 2) constraints of growing the dairy operation and 3) the projected outlook of dairy producers. Statistical analyses were conducted using SPSS software. Respondents indicated their role in the farm business as sole proprietor (64%), business partner (11.4%), renting (9.8%), corporation (9.8%) and other (4.9%). The average herd size was 108 cows with 84 replacements and calves. Respondents reported having predominantly Holstein (92%), Jersey (19%) and crossbred cattle (15.6%). Most survey respondents indicated they operated the following type of dairy: whole herd (72%); free stall (68%); and grade cattle (59%) with an

average of 124 hectares of tillable cropland. Non-conventional types of dairy included grazing (31%), value added (4%), agro-tourism (4%), and organic dairy (3%). Respondents indicated that business management practices including keeping cost of production, up-to-date business records, herd health records and accurate production records as their top priorities. The five most important limiting factors to improving and/or growing the dairy operation were land costs, low profits, encroachment of development, labor availability and government regulations. Ninety-four percent of all survey respondents plan to be in the dairy business in 5 years with an average herd size of 127 cows. Results of this study indicate that some dairy producers in Maryland have adapted to a changing economy with non-conventional operations. Nearly all producers plan to stay in dairying in the next 5 years with larger size herds.

Key Words: Dairy, Needs Assessment, Survey

M73 Field evaluation of laboratory assays to assess starch and fiber digestibility in corn grain and silage. M. D. Tassoul*¹, R. D. Shaver¹, J. A. Barmore², D. Taysom³, and P. C. Hoffman¹, ¹University of Wisconsin, Madison, ²Five-Star Dairy Consulting LLC, Verona, WI, ³Dairyland Laboratories, Inc., Arcadia, WI.

Objectives of this field trial were to evaluate laboratory assays to assess starch digestibility in dry (DC) and high-moisture corn (HMC) and starch and fiber digestibility in corn silage (WPCS). Samples (n = 11, 16 and 29 for DC, HMC and WPCS replicate samples, respectively) were obtained from inventories fed on 25 dairy farms during two farm visits in summer. All samples were analyzed for nutrient composition, Degree of Starch Access (DSA), modified in vitro starch degradation (rumen fluid in vitro on 6 mm grind samples (MRSD) followed by enzymatic digestion (MPRSD) on the residue), and particle size. Kernel processing score (KPS) was determined on WPCS. In vitro NDF digestibility (IVNDFD) of WPCS was determined at 48- and 24-h. DM contents of HMC and WPCS were $73.7 \pm 3.7\%$ and $35.8 \pm 4.7\%$, respectively. NDF and starch contents of WPCS were $40.6 \pm 2.8\%$ and $31.6 \pm 3.6\%$, respectively. R-square value from multiple regression of DSA on DM content and mean particle size for HMC was 61% ($P < 0.0001$). For WPCS, DSA and MRSD were $93.7 \pm 2.3\%$ and $89.7 \pm 5.4\%$, respectively. Total-tract in vitro starch degradability (MRSD+MPRSD) varied minimally ($98.0 \pm 1.1\%$ of starch) for WPCS. DSA was positively ($r = 0.43$) correlated ($P < 0.05$) to KPS for WPCS. Whole-plant DM was unrelated ($P > 0.10$) to DSA or in vitro starch degradation parameters. Average 24-h IVNDFD was 19%-units lower than average 48-h IVNDFD (46% vs. 65% of NDF). R-square value from regression of 24-h on 48-h IVNDFD was only 33% ($P < 0.05$). Correlation ($P < 0.05$) between wet chemistry lignin (% of NDF) and IVNDFD was lower for 24-h than 48-h IVNDFD ($r = -0.28$ vs. -0.49). Results from this relatively small sample set indicate that 24-h IVNDFD was more variable and less related to lignin than 48-h IVNDFD, and that data from the two IVNDFD time points were not highly correlated. Recent assays to assess starch digestibility of corn grain and silage can aid our evaluation of these feeds in the field. More comparative research of these assays and research to validate their results relative to in vivo digestibility data is needed before they can be used with confidence in the field.

Key Words: Corn Silage, Starch, NDF

M74 Job satisfaction and interest in testing more cows: A survey of DHIA supervisors. J. C. Dalton*, University of Idaho, Caldwell.

Between 2003 and 2005, the number of dairy cows in Idaho increased by 45,000. During the same time period, twenty Idaho DHIA supervisors tested, on average, 114,784 cows (2003) and 119,120 cows (2005) and processed these records with a DRPC. In December 2005, Idaho had 472,000 dairy cows. To determine the level of interest of DHIA supervisors to test more cows, two surveys were conducted. DHIA supervisors (2003: n = 18; 2005: n = 17) in attendance at the 2003 and 2005 Annual Idaho DHIA Supervisor Conference were asked questions regarding length of time working as a supervisor, job satisfaction, number of cows tested per week, number of hours worked per week, and interest in testing more cows. For the years 2003 and 2005, respectively, 67% and 82% of supervisors reported being on the job greater than five years. When asked how satisfied they were with their job as a DHIA supervisor, the majority of supervisors responded that they were somewhat to very satisfied (56% and 65% for 2003 and 2005, respectively). Results showed that 72% and 75% of supervisors (for 2003 and 2005, respectively) tested more than 500 cows per week, while 100% and 86% of supervisors (for 2003 and 2005, respectively) reported working less than 60 hours per week. When asked if they were interested in testing more cows, 39% of supervisors responded yes, 28% responded no, and 33% were unsure according to the 2003 survey. In contrast, 17% of supervisors responded yes, 71% responded no, and 12% were unsure when asked in 2005 if they were interested in testing more cows. The results of these surveys suggest that although greater than half the supervisors expressed a high degree of job satisfaction, less than half the supervisors expressed an interest in testing more cows. Lastly, with continued dairy industry growth (Idaho had 500,000 dairy cows in December 2006 and was the fourth-largest milk producing state in the United States) and only 20 DHIA supervisors in Idaho, it is apparent that opportunities exist for current and future supervisors interested in testing cows.

Key Words: Dairy, DHIA Supervisor, Survey

M75 Use of real-farm case studies to teach nutrient management planners the value of feed management as part of whole farm nutrient management. R. A. White*¹, G. E. Erickson², R. K. Koelsch², R. E. Massey³, V. R. Bremer², M. Fox⁴, and J. H. Harrison¹, ¹Washington State University, Puyallup, ²University of Nebraska, Lincoln, ³University of Missouri, Columbia, ⁴KLA Environmental Services, Inc., Salina, KS.

Feed management is an optional component of a Comprehensive Nutrient Management Plan (CNMP) and may be a viable option to decrease excess nutrients such as N and P on animal operations. The National Feed Management Education Project has developed assessment tools to facilitate development and implementation of a feed management plan (FMP) into a CNMP. The two audiences for the education program are animal nutritionists and nutrient management planners (planners). In most cases, collaboration between these two individuals is needed for successful completion of a FMP. The focus of this paper will be on the planner. The project team has chosen real-farm case studies as a teaching aid to illustrate and document the benefits of feed management. These case studies are used in separate, four hour education workshops to teach nutrient management planners about the five step process for development and implementation of a FMP. The goals of the workshops are to educate planners on the value of

feed management, encourage incorporation of a FMP into CNMP, and facilitate collaboration with animal nutritionists. Two feed management case studies were developed for Kansas feedlots (35,000 and 59,000 animal capacities). Both feedlots utilize nutritionists and private nutrient management planners. The case studies were developed by their planners who had previous knowledge of the operations. The objectives of the case studies were to 1) test practical use of the assessment tools in the field, and 2) use completed case studies as an educational resource when conducting feed management workshops. Feedback from the planner was used to improve the assessment tools for ease of use. Case study information was evaluated with a new software tool for assessing the dietary impact on land application and nutrient distribution costs. The completed FMP were used in a CNMP feed management workshop to instruct participants on how to use materials, illustrate the value of FMP, and what could be completed by someone with a similar background and knowledge of the material.

Key Words: Case Study, Education, Feed Management

M76 Comparison of somatic cell counts from fresh and frozen milk samples using the DeLaval DCC. W. D. Gilson*, L. O. Ely, and S. P. Nickerson, *University of Georgia, Athens.*

Milk somatic cell counts and culture results are valuable tools in determining the infection status for making decisions regarding further therapy or culling. Samples are often frozen before analysis. Freezing is generally regarded as harmful to somatic cells. There are limited reports comparing the results from fresh and frozen samples. Previous research indicates that fresh and frozen samples analyzed using fluoro-opto-electronic principles compare favorably. New equipment has been introduced based on the same principles. Aseptic quarter and composite milk samples were collected for microbiological culturing and refrigerated at 5 degrees C until processing. The samples were warmed to ambient temperature and plated to determine the microbiological status. Samples were vortexed and analyzed for somatic cells using the DeLaval DCC. The samples were subsequently frozen at -20 degrees C for a minimum of 2 weeks. Samples were thawed, allowed to warm to ambient temperature, vortexed and analyzed using the DeLaval DCC. Statistical analysis was performed using SAS to compare cell counts before and after freezing. Natural logarithmic transformation of the data was also performed to approximate a normal distribution. The mean SCC and LN SCC for fresh and frozen samples was 466,564, 454,918, 4.68 and 4.75, respectively. Differences were not statistically different. The correlations between the fresh and frozen samples were .914 and .934 for actual and LN. The data were further grouped according to the relative time in the lactation cycle the sample was collected. The actual SCC's for samples collected during the first 3 days following parturition were statistically different ($P > .002$) while the LN was not significantly different. No statistical differences were found for any of the other groups. These results indicate that cell counts determined by the DCC from frozen samples may be useful in evaluating infection status. Log transformation normalizes the data resulting in more accurate information. Further research is necessary to confirm the relationship between cell counts on fresh and frozen milk samples.

Key Words: Somatic Cell Count, Milk Quality

M77 A milk quality management survey of Minnesota DHI dairies with consistently low somatic cell counts. J. K. Reneau*, T. Bartholomay, and J. M. Lukas, *University of Minnesota, St Paul.*

A milk quality survey was professionally designed to assess the milk quality attitudes and management practices among Minnesota DHI herds with the lowest average somatic cell counts. Seventy-seven of the 104 surveys mailed were completed and returned. Five were eliminated not meeting SCC criteria of $< 160,000$. For the remaining 72 herds the mean herd size was 107 cows with a range of 32 – 415 cows. Bulk tank Somatic cell counts (BTSCC) mean and variation was 118,000 & 19,700 respectively. The average was standard plate count was 3,400. Rolling herd average milk production was 10,412 kgs. Questions reflecting the seven habits of highly effective people were asked. Responses indicate: 87% are proactive, 79% have vision, 84% put first things first, 79% seek win-win relationships with employees and farm consultants, 53% try to understand then be understood, 73% value synergy, clear communications and teamwork, Only 50% indicate they value personal improvement for themselves and employees yet 92% report keeping up to date on latest SCC issues. 99% think that doing the job right is more important than getting done fast. 76% report that their milkers enjoy milking. By self assessment cow composite hygiene score (scale 1-5) for lower rear legs and udders was 2.12. 91% remove manure and soiled bedding at each milking; 76% using organic bedding re-bed daily and 64% use more than 1 inch of bedding; 83% using sand re-bed weekly 94% keeping sand at minimum level to curb; 72% use full 10-20 seconds per cow pre-milking teat prep; 75% fore-strip; 82% report they always or almost always achieve complete pre-dip coverage and 93% report achieving complete post dip coverage; 91% dry cow treat all cows all quarters and 67% use internal sealers for all dry cows; 78% provide formulated dry cow diets. Responses indicating need for improvement: 56% indicate milking machine checks only when needed or once per year and although 52% indicate they keep some clinical mastitis treatment records only 19% keep detailed treatment records.

Key Words: Milk Quality, Attitudes, Management Practices

M78 Poultry nutrition and disease knowledge in California exhibition poultry owners: A survey. B. A. McCrea*¹, T. Y. Morishita², and F. A. Bradley¹, ¹*University of California, Davis,* ²*Western University of Health Sciences, Pomona, CA.*

Survey responses from California exhibition poultry owners were collected using a set of questions developed in a previous study at Ohio State University. Our objective was to determine the perception and level of knowledge in this group with regard to poultry health management and nutrition topics. Surveys were given to adult and youth (i.e., 4-H and FFA) exhibitors. Surveys were handed out at exhibition poultry shows between October 2006 and March 2007. Show locations attended include the central valley, central coast, and north coast regions. In general, participants, both young and old, were more knowledgeable about poultry health management topics than nutrition topics. Our results indicate that there is a distinct lack of knowledge regarding antibiotic use and vaccination. Participants had little knowledge of poultry digestive anatomy. These topics may be more effectively communicated if the basic level of understanding can be determined. Poultry extensionists can use the information from this survey to develop materials and continuing education programs incorporating poultry health and nutrition.

Key Words: Exhibition Poultry, Health Management, Nutrition

M79 Cull cow and calf marketing methods employed by Idaho dairies. M. Chahine and J. B. Glaze, Jr.*, *University of Idaho, Twin Falls.*

To assess the awareness, knowledge, understanding, and implementation of beef quality assurance (BQA) principles on Idaho dairies, a survey of dairy farmers in Idaho was conducted. Each of the 736 known dairies operating in Idaho received copies of the survey. Two-hundred, thirty six dairies returned the survey for an overall response rate of 37%. One section of the survey inquired about the cull cow and calf marketing methods employed by Idaho dairies. The marketing questions offered auction market, order buyer, forward contract, and private treaty, as marketing options for cull cows and calves. An additional marketing option listed for cull cows was direct market to the packer. To determine which marketing methods were most used by dairies, survey participants were asked to select any or all of the marketing options used by their dairy. The selections were compiled and used to assign use percentages. As dairies market their cull cows, they use auction markets most often (64%), followed by order buyers (17%), direct to the packer (17%), private treaty sales (16%), and forward contract (1%). The most used calf marketing method was private treaty sales (52%), followed by auction markets (42%), order buyers (14%), and forward contracts (1%). When the selections were compiled based on dairy size, results indicated that large dairies (more than 1000 cows) used auction markets most often (62%) to market their cull cows, followed by order buyers (33%), private treaty sales (23%), and direct to the packer (23%). Medium-sized dairies (200-1000 cows) favored auction markets (61%) over direct to the packer (17%), private treaty sales (15%), and order buyers (14%) when marketing cull cows. Small dairies (less than 200 cows) chose auction markets (66%) to market their cull cows more often than direct to the packer (15%), private treaty sales (14%), and order buyers (13%). Regardless of size, dairies chose private treaty sales over auction markets, order buyers, and forward contracts to market their calves.

Key Words: Marketing, Cull Cow, Calves

M80 Financial performance of dairies in Florida and Georgia in 2005. L. O. Ely*¹, R. Giesy², B. Broaddus², C. Vann², A. Bell², and A. deVries², ¹*University of Georgia, Athens*, ²*University 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 2005. Twenty-one dairies were included in the summary results. Of these, 15 were located in Florida, and 6 in Georgia. The average herd size was 1,045 cows and 538 heifers with 18322 lbs. milk sold per cow. The average culling rate was 36%. There was an average of 19 FTE workers per farm and 0.93 million lbs milk sold per FTE worker. Total revenue per cwt. was \$20.73 / cwt with \$18.24 / cwt milk income. The average total expense was \$20.20 / cwt. The largest expense items were purchased feed (\$7.22 / cwt), labor (\$3.50 / cwt), livestock (\$2.01 / cwt) and milk marketing (\$1.22 / cwt). Net farm income from operations was \$0.53 / cwt and net farm income was \$0.07 / cwt. The debt to asset ratio was 0.39, the rate of return on assets was 0.04, the rate of return on equity was 0.02, the operating profit margin ratio was 0.02. Total expenses decreased and returns increased with herd size in 2005. Herds >670 cows had the middle total revenue (\$20.44 / cwt) and the lowest expenses (\$17.65 / cwt) resulting in the highest net farm income (\$2.79 / cwt). The herds with the highest milk production (>19,500 lbs / cow / year) had the middle total revenue (\$20.29 / cwt) and the lowest expenses (\$18.98 / cwt) resulting in the highest net farm income (\$1.19 / cwt).

Key Words: Dairy, Financial, Management

Food Safety - Livestock and Poultry

M81 Preventing *Salmonella* colonization in cement using Bio Deep Seal. K. S. Macklin*, J. B. Hess, and D. E. Conner, *Auburn University, Auburn, AL.*

Salmonella is an important foodborne pathogen that is often associated with poultry. Unfortunately, the ability to properly clean and disinfect an area to remove this pathogen and/or other bacteria can be difficult. This is especially true in a constantly wet environment, such as that typically found in a poultry processing plant. In this study a commercial product (Acon Bio Deep Seal) that claimed to kill, encapsulate or displace bacteria was tested. This product was tested on cement blocks that had been impregnated with *Salmonella typhimurin*. To test the product an experiment was designed to include four treatments that were tested in five blocks each. The four treatments were an unchallenged group (CON), a challenged untreated group (CHAL), a challenged/pre-challenged treated group (PRE), and a challenged/post-challenge group (POST). The PRE group was treated with the product according to the manufacturer specifications. After 1 h, the PRE, CHAL, and POST blocks were placed in a broth that contained approximately 5×10^9 cfu/mL of a *S. typhimurin*. After 24 h, the blocks were removed and the POST group was treated. After 6 h from removal from the broth, swabs were taken of the surface from each block. After the external swabs were taken, internal swabs were also

obtained. Swabs were taken in duplicate with one swab being placed in TTB Hajna and the other being used for direct plating onto XLT4. After 24 and 48 h of incubation, the XLT4 plates were examined for presence of *Salmonella*. The TTB blocks were incubated for 48 h before being streaked onto XLT4. *Salmonella* counts (cfu/cm²) for the XLT4 plates were transformed using log₁₀. The data were analyzed using the GLM procedures of SAS with $P < 0.05$ and the means were separated using Tukey's HSD. *Salmonella* was detected on the block's exterior from treatments CHAL and PRE, but not from the CON and POST treatments. *Salmonella* was detected on the interior of the blocks only from the CHAL group. The results showed that Bio Deep Seal is an effective cement treatment to eliminate *Salmonella* when it is applied either before or after the cement was exposed to the pathogen.

Key Words: *Salmonella*, Disinfection, Cement

M82 Effects of transport stress on subclinical infection in an *Escherichia coli*-*Listeria monocytogenes* challenge model. G. R. Huff*¹, W. E. Huff¹, V. Dutta², R. Nannapaneni³, and M. G. Johnson³,