the Cox model in all periods. Modal estimates (and standard errors) of heritability from the Weibull and Cox models in the BW, WY and BY periods were 0.21(0.07) and 0.19(0.12), 0.15(0.05) and 0.16(0.06), 0.18(0.12) and 0.12(0.05), respectively. These estimates indicate potential for effective selection for increased lamb survival, enhancing sheep production and welfare.

Key Words: Sheep, Frailty, Cox and Weibull

295 Effect of duration of feeding on variance component estimation for ADG of lambs. G. D. Snowder*[1] and L. D. Van Vleck[2], [1]*USDA, ARS, USSES, Dubois, ID,* [2]*USDA, ARS, USMARC, Lincoln, NE.*

Variance components were estimated from Targhee data collected from 1978 to 1984 on a total of 1,047 ewe and ram lambs at the U.S. Sheep Experiment Station, Dubois, ID. Lambs were fed for 14 wk with ADG recorded every 2 wk. Lambs were provided ad libitum access to a commercial pelleted feed of barley grain and ground alfalfa. ADG for the entire 14-wk period across all years was 249.3 ± 56.5 g. Variance components for ADG were estimated from a single trait animal model using REML for sequential combinations of duration of time on feed (n = 9) with a range of 4 to 14 wk. The model included fixed effects for year (1978 to 1984), sex of lamb (ewe or ram), and genetic line (selected or control), and two covariates (age on test and initial weight at beginning of feeding). Phenotypic variances for ADG decreased with extended time on feed: 0.54 and 0.14 g^2 at 4 and 14 wk on test, respectively. Estimates of direct heritability increased with extended time on feed; 0.20 ± 0.06 and 0.35 ± 0.07 at 4 and 14 wk on test, respectively. There was little increase of direct heritability estimates after 8 wk on feed (0.33, 0.33, 0.38, and 0.35 for 8, 10, 12, and 14 wk, respectively.) Genetic and environmental correlations among duration of feeding combinations (n = 16) were estimated from a two-trait model. All genetic correlations among duration of feed groups were greater than 0.82 and infer that all measures of ADG were genetically similar. However, environmental correlations among duration of feeding groups ranged from 0.41 to 1.00 with the smaller environmental correlations occurring between 4 or 6 wk and 12 to 14 wk on feed. These results indicate that a period of 8 wk or greater is sufficient to observe differences among animals for ADG due to direct genetic effects under this environment.

Key Words: Gain, Heritabilities, Selection

296 Genetic parameter estimates for prolificacy, growth and wool characteristics of Rambouillet sheep. K. J. Hanford*[1], G. D. Snowder[2], and L. D. Van Vleck[3], [1]*University of Nebraska, Lincoln, NE,* [2]*USDA, ARS, USSES, Dubois, ID ,* [3]*USDA, ARS, USMARC, Lincoln, NE.*

Heritabilities and genetic correlations for prolificacy, growth and wool traits were estimated from Rambouillet data collected from 1950 to 1998 at the US Sheep Experiment Station, Dubois, ID. Number of records ranged from 39,816 to 44,211, 34,114 to 35,604, and 3,574 to 39,821 for prolificacy, growth and wool traits, respectively. Direct heritability estimates from single trait animal model analyses using REML were .09 for litter size at birth (LB), .06 for litter size at weaning (LW), .09 for litter weight weaned (LWW), .27 for birth weight (BW), .20 for weaning weight (WW), .16 for fleece grade (FG, visual spinning count), .51 for fleece weight (FW) and .58 for staple length (SL). Maternal heritability estimates were .19 for BW and .10 for WW. Estimates of genetic correlations among prolificacy traits were positive (.76 for LB-LW, .72 for LB-LWW, .95 for LW-LWW). Between BW and WW both the direct and maternal genetic correlations were positive (.60 for direct and .36 for maternal). FG was negatively correlated genetically with both FW (-.47) and SL (-.52); FW was positively correlated with SL (.46). Estimates of genetic correlations were low to moderate between BW and the prolificacy traits (.24, .00, .37 for LB, LW, and LWW) and moderate between WW and the prolificacy traits (.49, .56, .64 for LB, LW, and LWW). Estimated genetic correlations were small between fleece characteristics and prolificacy traits: for FW (-.08, -.04, .09), for FG (-.11, -.10, -.11) and for SL (-.16, -.04, -.07) with LB, LW and LWW, respectively. Growth traits were positively correlated genetically with FW (.21, .27 for BW and WW); negatively correlated with FG (-.15, -.14 for BW and WW) and positively correlated with SL (.14, .09 for BW and WW). These estimates can be used for multiple-trait, multi-flock genetic evaluations and for deriving selection indexes to optimize profitability of genetic selection.

Key Words: Heritabilities, Genetic Correlations, Selection

ASAS/ADSA Extension Education and PSA Extension and Instruction: Dairy, Swine, and Poultry

297 BASECOW: An Excel add-in specific for the dairy production consultant. DT Galligan*, H Groenendaal, R Munson, JD Ferguson, and H Aceto, *University of Pennsylvania, School of Veterinary Medicine.*

Basecow is an Excel add-in containing over 100 functions that are useful in animal production medicine consulting and modeling. Basic function categories currently include: epidemiology, nutrition, statistical, reproduction, production, and management. Once installed in Excel as an add-in, the functions can be used in any opened work book. Like any Excel function, Basecow functions require the user to enter a call name and a list of arguments appropriate to a given function: Function Name (argument1, argument n). Example (1) If 30 cows all test negative to a test with a sensitivity of 45% and specificity of 98%, what is the probability that at least 1 or more of the 30 are infected if the underlying prevalence of the disease is estimated at 5%? = **Grouppos(sensitivity, specificity, prevalence, number tested negative)** = Grouppos*(.45, .98, .05, 30)* = 58%. Example (2) What is the optimal economic order quantity (EOQ) for a feed additive costing $800/ton, used at 40 tons/year, with an ordering cost of $20/order and holding cost at 5%/year? = **EOQ(demand, order cost, holding cost/unit/year)** =EOQ*(40,20,.05*800)* = 6.3 tons/order. Example (3) What is the water intake of a cow weighing 1400 lbs, milking 80 lbs of milk at 3.6% fat? =**Waterlb(weight, milk, fat %, status)** =Waterlb*(1400,80,3.6,L)*= 289 lbs. The add-in is available for downloading at http://CAHPWWW.NBC.UPENN.EDU web site. The program is continually updated with new functions. An on line help system is available for many of the commands. The help menu describes command use through an example application and includes reference sources.

Key Words: Spreadsheet, Functions, Excel Add-in

298 Helping the dairy producer make decisions 1: evaluating dairy herd production records. L. O. Ely*[1], J. W. Smith[1], W. D. Gilson[1], A. M. Chapa[2], C. Ramakrishnan[1], S. Chellapilla[1], and W. D. Potter[1], [1]*University of Georgia, Athens,* [2]*Mississippi State University, Starkville.*

A web-based program, Dairy MAP(Dairy Management Analysis Program), has been developed to assist the dairy producer in the analysis of dairy herd production records and to help set priorities for areas of improvement. The system utilizes DHIA benchmark production parameter values which are specific for region and herd size. General herd information entered by the user includes herd size, state, SCC and component sampling options and percent AI sire usage. The DHI-202 herd summary report is the source of management data including rolling herd average production, summit milk, stage of lactation milk production, standardized milk and management information related to SCC, feed costs, reproduction and genetics. The first output table shows herd input values and percentile rankings of similar size herds in the same region. The percentile rank of the herd value is highlighted. The second output table compares herd inputs for summit milk, stage of lactation milk production and standardized milk to expected mean values by rolling herd average. Herd input values are highlighted by production level. More extensive analysis of SCC, production, genetics and reproduction are accessed in succeeding stages if the dairy producer wishes to proceed. Management input values are compared to expected mean levels by rolling herd average with deviations expressed as percentages. Output tables showing deviations from expected values as a series of asterisks ranging from 1 = poor to 6 = excellent assist in identifying areas for improvement.

Key Words: dairy management, decision making, web

299 Helping the dairy producer make decisions 2: an expert system makes recommendations. L. O. Ely*[1], J. W. Smith[1], W. D. Gilson[1], A. M. Chapa[2], C. Ramakrishnan[1], S. Chellapilla[1], and W. D. Potter[1], [1]*University of Georgia, Athens,* [2]*Mississippi State University, Starkville.*

A dairy producer can analyze his dairy herd production records with a web-based program (Dairy MAP) and receive a list of areas for improvement. Often other information not available from the dairy herd production records must be utilized in order to make recommendations for improvement of the area under consideration. The second phase of Dairy MAP, a web-based expert system, will ask the dairy producer for additional information in order to make a recommendation. The expert system will have separate modules for SCC (Mastitis), Production, Genetics and Reproduction. Questions asked will partially depend upon previous analysis of dairy herd production records and the determination of areas of improvement. The SCC module is functioning and development of the other modules is on-going. The grouping of questions for SCC includes milking procedures, type of housing (milking herd, dry cow and/or heifers), cow groups, cleaning, treated cows, dry cow management and bacterial testing. For example, if the analysis of the dairy herd records shows that all cows had a high SCC in the first 40 days of lactation, the grouping of questions would begin with housing for dry cows and heifers, milking procedures and treatments. Recommendations could include dry cow treatment, a change of bedding, more frequent cleaning of housing, predipping or use of paper towels during milking depending on the answers given by the dairy producer. The questions and recommendations were developed by group of dairy scientists and veterinarians.

Key Words: dairy management, decision making, expert system

300 Dairy Farm Sustainability Check Sheet. C. A. Wells[1], J. A. Pennington*[2], D. W. Kellogg[2], D. E. Daniel[2], R. E. Morrow[1], W. K. Coblentz[2], D. Onks[3], T. A. James[4], C. Whiteside[4], and R. Crawford[5], [1]*National Center for Appropriate Technology/Appropriate Technology Transfer for Rural Areas,* [2]*University of Arkansas, Little Rock and Fayetteville, AR,* [3]*Middle Tennessee Experiment Station, Franklin, TN,* [4]*USDA-NRCS, Fayetteville and Harrison, AR,* [5]*University of Missouri Southwest Research Center, Mt. Vernon, MO.*

A dairy farm sustainability check sheet was developed as a joint effort by personnel from NCAT/ATTRA, the University of Arkansas Cooperative Extension Service and Experiment Station, NRCS, the Middle Tennessee Experiment Station, and local dairy producers. The objective in developing the check sheet was to produce an assessment tool which allowed producers to assess profitability and sustainability of their dairy operations plus environmental conditions and social impact of the dairy operations. Sections in the check sheet included an introduction, inventory of farm resources and management, sustainability, farm planning and goals, farm management (records, farm planning), facilities (livestock housing, milking parlor, calf raising, and other), livestock and forage program (herd health and reproductive management, breeding, genetics, selection program, and nutrition management), assessment of individual pastures, assessment of soils, assessment of watershed, nutrient management, alternative dairy farming (minor dairy species, seasonal dairies, and organic dairies), marketing, and summary. The dairy farm check sheet was initially patterned after a version of a beef farm sustainable check sheet and was revised following numerous dairy farm visits where representatives from each of the various agencies were present. Overall, the check sheet was designed to stimulate critical thinking when analyzing the dairy operation.

Key Words: Dairy, Sustainability, Check Sheet

301 The economic benefits of reducing age at first calving in dairy heifers. Barry Steevens*, R.L. Randle, Roger Bennett, D.K. Hardin, V.L. Pierce, and Joe Horner, *University of Missouri.*

Problem The Missouri dairy industry experiences a substantial annual loss due to extended age at first calving. This problem can be corrected or at a minimum reduced through management practices. However, these management practices may increase the cost of development of these heifers. Producers need a methodology to evaluate their specific loss and potential gain from increased effort and expense in a modified management program.
Objectives The objective of this project is to identify and quantify the economic benefits to specific producers available to fund management programs necessary to reduce problems associated with extended age at first calving. These changes may include programs such as implementation of grouping and culling strategies that will provide for uniform groups to insure adequate access to feed.
Data and Methods Eight Missouri dairy producers were selected to participate in the project and submit data on their heifers. Schedules were developed and heifers were weighed, body condition scored and the wither height measured. In addition, udders and teats were evaluated for normality. The participating herds were evaluated every 8-10 weeks. The growth data collected from the participating farms was compared to industry benchmarks derived from the scientific literature. The cumulative growth data for all participating herds is compared to the benchmarks and used as a baseline in developing a profile of potential economic gains from reducing age at first calving. There were 1008 records collected in the program and used to develop the economic profiles in the participating herds. Enterprise budgets coupled with partial budgets were used to estimate potential gains from management changes.
Conclusion: Minimum requirements for weight and height were established according to the guidelines mentioned above from the scientific literature. Heifers were categorized by age and evaluated to determine whether minimum weight requirements were met. As few as 35.5 percent of the heifers at 12 months of age met the standard for weight. The decision tool reports the benefit to a specific producer in managing heifers to optimum age at first calving thus allowing for analysis of the costs and benefits of a management program designed to accomplish this improvement.

Key Words: Dairy Heifer, Economics, Calving

302 The Dairy Employee Education Program of the Michigan State University Extension Dairy Team. D. J. Bolinger*, C. S. Mooney, D. K. Beede, and H. F. Bucholtz, *Michigan State University, East Lansing, MI.*

The Dairy Employee Education Program was developed by the Michigan State University Extension Dairy Team with a grant from Michigan State University. The mission of the Dairy Employee Education Program is to strenghten the Michigan dairy industry by improving the husbandry and management proficiency of employees currently working on Michigan dairy farms. Program instruction emphasizes technical skill training of people not traditionally targeted by extension programs. The Program consists of nine educational modules that target the employee who works directly with the cows. The nine modules are: Feeder Training Program, Milker Training Program, Breeder Training Program, Introduction to Management Skills, Herd Health Skills for Calves and Cows, Heifer and Dry Cow Skills, Milking Herd Skills, Calf Care School, and Hoof Health Clinic. There also is an informational program for employers that discusses "Value Added Employees" and advertises the Dairy Employee Education Program. Students are taught practical skills and technical concepts during one or two day modules. Generally, the morning portion of the programs is lecture and the afternoon portion is laboratory. These modules are hosted by local Extension Dairy Agents and are team-taught by dairy agents, university faculty, and local industry personnel. From the Dairy Employee Education Programs beginning in 1998 through mid-February 2001, 28 modules have been presented across Michigan. Data from 24 of the sites shows a combined participation with limited duplication of 311 dairy farm employees representing 193 dairy farms and 52,260 cows. Dairy Employee Education Program schools, clinics, workshops have been credited with providing employees with the information and skills to not only maintain, but improve animal performance and profitability on their respective farms. Participants and their supervisors also report improved worker morale.

Key Words: extension, education, employee

303 The importance of best management practices and quality assurance programs in development of animal production food safety training/teaching modules. G.M. Jones*[1], B.R. Eastwood[2], M. Opperman[3], and J.M. Mattison[3], [1]*Virginia Tech, Blacksburg, VA,* [2]*USDA/CSREES, Washington, DC,* [3]*The ADDS Center, Verona, WI.*

A set of teaching and training modules in animal production food safety has been developed for training Cooperative Extension System field staff and for their use with animal producers. The project's steering committee of Extension specialists and agents recommended that the modules emphasize management practices known to enhance food safety and then highlight the various commodity quality assurance programs. Since HACCP provides the basis for most animal commodity quality assurance programs, one module describes HACCP compatible practices and why they are important to producing a competitive and safe food animal. These practices include: animal or premise identification, record keeping, residue avoidance, zoonotic and human pathogen disease prevention, maintenance of good sanitation practices in food animal production, and certification or verification by a third party. The modules elucidate good animal production and culling practices that prevent zoonotic and other animal diseases from entering the food supply and promote food safety. The module on best management practices describes sources of hazards and stressors, animal health (immune system, nutrition, environment), management precautions, risk assessment, and pathogen reduction. Another module shows the relationship between animal feedstuffs and food safety: contaminated feed, importance of feed quality, quality assurance in feed mill, biological agents transmitted by feed, and aflatoxin. The value of farm advisory teams and why's, who's, and how's of forming and utilizing effective teams to advise farmers/producers of management practices or problem-solving specific to that operation is explained. There is a description of quality assurance certification programs and why it is advantageous for producers to adopt one. Information is provided for the following commodity quality assurance programs: beef, dairy, pork, sheep, goats, veal, chick and poultry, egg, turkey, and aquaculture.

Key Words: Animal Production Food Safety, Management Practices, Quality Assurance Programs

304 Frequency of the porcine stress gene in show pigs and its effects on meat quality. J.A. Sterle*, C.L. Skaggs, and D.B. Griffin, *Texas A&M University, College Station, Texas.*

Class winning barrows (n = 97) from two major stock shows in Texas (eligible for the carcass contest) were tested for the presence of the porcine stress gene. Carcass variables such as backfat thickness, loin eye area, muscle pH and Hunter color values were also recorded. The primary objective of this study was to determine the frequency of the porcine stress gene in this population of heavily muscled, extremely lean show barrows. An additional objective was to evaluate the effects of this gene on meat quality. Blood was collected at exsanguination and shipped to a laboratory for analysis. Animals were classified at each show as Berkshire (B), Duroc (D), Hampshire (H), Yorkshire (Y), Poland China/Spot (PCS), Chester White/Landrace (CWL) or crossbred (XB). Frequency of normal (NN), heterozygous (Nn) and stress positive (nn) genotypes were 52.58%, 42.27% and 5.15%, respectively. Heterozygous animals were found in every breed. Genotypes by breed were: B barrows: 3 NN, 1 Nn, 2 nn; CWL: 5 NN, 5 Nn, 0 nn; D: 11 NN, 7 Nn, 0 nn; H: 7 NN, 9 Nn, 0 nn; PCS: 0 NN, 9 Nn, 3 nn; Y: 10 NN, 1 Nn, 0 nn; XB: 15 NN, 9 Nn, 0 nn. Each genotype was represented in B barrows, while every PCS barrow possessed at least one copy of the stress gene (no normals). Average loin eye area was 7.40 sq. in. and average 10th rib backfat thickness was 0.52 in. Hunter a values were 6.73 0.54, 6.00 0.38, 6.52 0.29, 7.81 0.30, 7.86 0.40, 7.98 0.63, and 7.74 0.26 for B, CWL, D, H, PCS, Y and XB barrows, respectively (P = .03). Loin muscle pH values were 5.63 0.04, 5.66 0.03, 5.72 0.02, 5.54 0.02, 5.66 0.03, 5.60 0.05, and 5.58 0.02 for B, CWL, D, H, PCS, Y and XB barrows, respectively (P = .03). Correlations between genotype and Hunter a values were .11, and between genotype and muscle pH were .003. Additional samples will be taken in subsequent years to analyze trends in the frequency of this gene. These results will be utilized to educate youth and adults involved in the show pig industry about the porcine stress gene.

Key Words: porcine stress gene, meat quality, PSS

305 Outreach video - Avian Influenza: Preventing the spread of disease. P. H. Patterson*[1], D. C. Kradel[1], R. M. Hulet[1], and J. H. Schwartz[2], [1]*Penn State University, University Park, PA,* [2]*York County Cooperative Extension, York PA.*

Between 1983-1997 there were three introductions of Avian Influenza (AI) in Pennsylvania with the spread of disease resulting in depopulation of over 18 million birds. These experiences established the inseparable link between production flocks and the live bird markets (LBM) of NY and NJ, with these markets serving as a constant reservoir of AI viruses. AI has the potential to become highly pathogenic, devastating a poultry industry, disrupting national and international trade, and becoming a real or perceived threat to public health. The public health issue was highly publicized in 1997 when an H5N1 strain of AI found in the Hong Kong LBM caused human illness and several deaths. For these reasons it is essential that all concerned with the poultry industry understand the risks of AI and what might be done to reduce such risks. Therefore, a grant was submitted for USDA/CSRESS Smith-Lever Special Needs funds for emergency situations within a state or region, and awarded in 1998. The objectives of the grant were to: 1. Increase awareness and understanding of the potential seriousness of AI to a state or regions poultry industry, and the real or perceived risk to public health. 2. Develop educational tools, and 3. Encourage procedures, testing and other actions necessary to participate in an AI prevention program. The ultimate goal is to break the cycle of AI infection within the poultry LBM and production facilities. Every effort should be made to reduce the risks of LBM interactions with the larger commercial poultry industry. A 25-minute video was produced documenting: 1. Details about the virus that causes AI. 2. The importance of keeping AI out of flocks. 3. Some of the signs or changes seen in birds with AI. 4. Common diagnostic laboratory tests for AI, and 5. Important steps that can be taken to prevent AI. The video is being distributed as part of the Mid-Atlantic Cooperative Extension (MACE) Poultry Health and Management Units biosecurity training efforts in the region. MACE members are partnering with the USDA/APHIS Live Bird Market Working Group in an education campaign with poultry growers, dealers, haulers, and markets, as well as city government and the press in efforts to break the cycle of AI infection between the LBM and production facilities.

Key Words: Avian Influenza, Video, USDA/CSREE Special Needs funds

306 Urban peafowl: the Rancho Palos Verdes Peninsula pattern. F.A. Bradley* and C.V. Gallagher, *University of California, Davis.*

The Blue Peacock (*Pavo cristatus*) has long been an introduced fixture on American estates and the sprawling ranchos of the west. With the demise of the birds' original owners and subdivision of the large properties, uncontrolled flocks started to roam. The Palos Verdes Peninsula covers roughly 22,000 acres south of Santa Monica Bay and north of San Pedro Bay in Southern California. In 1999 the City of Rancho Palos Verdes (PVE) entered into an agreement with the University of California at Davis (UCD). UCD staff were to assess the peafowl population in RPV and develop a management plan. Our research documents the advent and spread of peafowl on the peninsula. Frank A. Vanderlip, Sr. was one of the first developers of the peninsula. He acquired the peninsula's first peafowl (6-16) during the period between 1913 and 1937. The peafowl were managed, along with an extensive avian collection, on his estate within RPV. By 1960, the peafowl were roaming off the estate's northern edge and into Johns Canyon. Between 1960 and 1965 some of the peafowl were introduced into Palos Verdes Estates (PVE) by the City's mayor. By 1974 PVE birds had crossed the municipal boundary into the RPV neighborhood of Vista Grande. Residents of the RPV community of Portuguese Bend, report that the Vanderlip estate peafowl first moved from the estate south into Portuguese Bend in 1978. By 1988 peafowl were visible in the Crestridge region of RPV, having spread from adjacent Johns Canyon. PVE realized that they had a peafowl problem and in 1982 adopted a management plan. The plan has met with many difficulties and has not been successful. Our surveys documented 157 peafowl on the peninsula and the spread of peafowl off the peninsula and into San Pedro. No one claims ownership of the birds, therefore, they are constantly trespassing or traversing public property and thoroughfares. Extensive property damage, including damaged roofs, autos, and landscaping, is caused by the peafowl. Their chilling loud calls disrupt otherwise tranquil communities. A management plan that includes ongoing trapping and relocation by all the peninsula communities has been presented. As more large ranches and rural properties are subdivided, the problem of uncontrolled flocks of domestic fowl will repeat itself.

Key Words: Peafowl, Rancho Palos Verdes

307 Women's participation in livestock production in Bangladesh: Proshika Experience. Md. Nuru Miah and Md. Nuru Miah, *Proshika Manobik Unnayan Kendra*.

Women's participation in livestock production in Bangladesh: Proshika Experience * Md. Nuru Miah
Livestock provides an employment and income generation opportunity for the poor. Womens are traditional rearers of cattle and poultry in Bangladesh and posses most of the livestock population in the rural areas. The ownership per household of cattle, goat and poultry are 1.6, 1.03 and 6.8 respectively. Proshika, a national largest Non Govt. Organization (NGO) in Bangladesh has been operating a comprehensive livestock development programme consisting of milch cow, beef cattle, heifer/calf, sheep/goat, commercial poultry (layer and broiler), duckery production through direct participation of about 0.3 million women beneficiaries who are landless, destitute and divoced. The goal of the programme is to increase the productivity of poor's livestock resources which contributes substantially to poverty alleviation efforts by raising their income. Extension support like vaccination, deworming, treatment, artificial insemination, fodder production is provided to the involved farmers through well trained vaccinators, paravets, artificial inseminators etc. belong to Proshika target groups. Technical training of farmers on particular skill, credit, follow-up, monitoring and marketing support is provided from Proshika through its 950 technical workers. A central team of 17 livestock experts are providing planning, technical guidance & supervision of the programme. Five poultry breeder's farm alongwith five hatcheries and feed mills are in operation to supply 100000 day old chicks and 80 MT. feed weekly to the beneficiaries. Adaptive research activities are implemented at the farmers level to disseminate appropriate technologies on livestock. The impact of these activities showed that mortality reduced from 10 percent to 3.5 percent incase of cattle and from 20 percent to 5-8 percent incase of poultry in the project areas, farmers have been able to raise their income by 150 percent through livestock raising, women's status increased in the family and society.

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Key Words: Milch cow, Duckery, NGOs

ASAS/ADSA Production, Management, and Environment: Temperature Effects, Production Schemes, and Housing Influence

308 Effect of summer water application on mound microclimate, performance, and body temperature of feedlot steers. M. S. Davis*[1] and T. L. Mader[1], [1]*University of Nebraska, Northeast Research and Extension Center, Concord.*

Ninety-six Bos taurus (Angus, Angus x Charolais) steers (avg. BW = 477 ± 3 kg) were randomly assigned to one of twelve pens to which one of three treatments (TRT; 4 pens/TRT) were applied: no water application (CON), water applied between 1000–1200 h (AM) and 1400–1600 h (PM). Water was applied via ground (mound) sprinklers when predicted average temperature-humidity index ≥ 74. Water flow rate (34 l/hd/d) and area sprinkled (2.4 m2/hd/d) were controlled using an in-line meter and valves. On days 30–33, thermistors attached to data loggers recorded hourly tympanic temperature (TT). Concurrent with TT, temperatures were recorded 1 cm below the surface (Ts) and .15 and 1.52 m above the mound. Relative humidity was recorded at .15 and 1.52 m. Water (WI) and DMI were recorded daily and BW was recorded on days 0, 34 and 82 (termination of trial). Panting (0 = normal, 2 = heavy panting) and bunk scores (0 = ≤ 10% feed remaining, 2 = ≥ 50% remaining) were assigned to individual animals and pens, respectively at bi-hourly intervals from 900–2100 h under thermoneutral (avg THI ≤ 74) and hot environmental conditions (avg. THI ≥ 74) accompanied by sprinkling. Sprinkling did not affect BW, ADG or DMI, however feed efficiencies of AM steers were greater (P ≤ .10) than PM steers from days 34–82 (.190 vs .178 ± .004) and 0–82 (.180 vs .168 ± .004). Day 0–34 WI was greater (P ≤ .01) in AM vs PM steers (38.29 vs 35.29 ± .21 l/d). During water application, Ts was higher (P ≤ .05) for CON vs AM and PM mounds at all times, with PM mounds lower (P ≤ .05) than AM at 730 and 1500–2000 h. Tympanic temperature of AM steers was lower (P ≤ .05) than CON and PM steers from 800–900 and 2300–700 h, and lower than PM steers from 1200–1300 h. From 1600–1900 h, PM steers had lower (P ≤ .05) TT than CON, with AM intermediate. Sprinkling feedlot pens under hot environmental conditions lowers TT and mound temperatures. Morning water application maximized animal efficiency relative to afternoon application.

Key Words: sprinkling, microclimate, feedlot

309 An evaluation of different types of commercial fans with or without misters in cooling high producing cows in the summer months in the sub-tropics. CN Lee*[1] and KS Baek[1,2], [1]*University of Hawaii-Manoa, Honolulu, HI 96822*, [2]*National Livestock Research Institute, Namwon, S.Korea.*.

In Hawaii, data collected from dairies on Oahu showed tha when THI increases milk production decreases. The THI can exceed 81 in the hot months. Milk production could decrease by 25% with in high production herds and by 10% in low production herds. However, the use of fans and misters could alleviate this summer slump. This study evaluated the efficacy of 4 types of fans with/out misters in cooling cows under heat stress :- Gp.A-Korral-Kool(2hp)+Schaffer fan (n=111), Gp.B-Universal Foggers(1hp)(n=144), Gp.C-Universal Foggers(1.5hp)(n=135)and Gp.D-Schaefer fan(1/2hp) w/o misters(n=103). Cows were housed in open lot under shade. Temperature and humidity readings were taken prior to the start of monitoring respiration rate (RR) and at the end of the each collection period not exceeding 30 min. The avg. THI(n=16) were 77 for am and 78 for pm. No differences in mean RR were observed in Gp. A, B, and C in am; 66.7, 65.2, 63.8 respectively. Gp.D had higher RR, 73.3(p<0.05). Higher RR were observed in pm period for Gp. A,B,C but there were not different between groups; 76.1, 72.7, 73.9. Gp.D had RR of 88.0 (p<0.05). The avg. wind speed (kmh) at 4.8m from the fan and 76 cm from the ground for Gp.A,B,C,D were 3.8, 4.2, 6.3, 4.9 respectively. The data suggest that wind speed and misters are important to cool cows. Milk production slump was alleviated in Gp.A,B and C. Energy cost per fan was evaluated.

Key Words: Respiration rate, Heat stress, Milk production

310 Impact of Fan Location upon Milk Production, Feed Intake and Respiration Rates of Lactating Dairy Cattle Housed in a 4-row Freestall Barn. M.J. Brouk*, J.F. Smith, and J.P Harner,III, *Kansas State University*.

One hundred mid-lactation Holstein cows averaging 173 DIM and producing 44.25 kg/c/d of milk were blocked by milk production and DIM and randomly assigned to one of 4 pens of a 4-row freestall barn. Two replicates, north and south halves of the barn, contained 2 pens each. Fan treatments were 91.4 cm fans mounted every 6.1 m on the feed line (F) or 91.4 cm fans mounted every 6.1 m on the feed line and over the center of the head-to-head freestalls (F&S). All pens were equipped with feed line sprinklers that operated on a 15 min cycle (3 on and 12 off) when temperatures were above 23.8°C. All fans operated when the temperature was above 21.1°C. A switch back design with 5 two-wk periods was utilized to evaluate fan placement. Cows and treatments were switched at the start of each period within each replicate. Cows were milked 2x and milk production was measured every two weeks throughout the 10 wk trial. All pens received the same diet. Amounts of feeds offered and refused were measured and recorded daily. Dry matter content of the diet and refusal of each was determined twice weekly. Cow respiration rates were measured on three separate days under heat stress. Fifteen cows were randomly selected from the 25 study cows in each pen and respiration rates were measured in the morning (0700-0800 hr), afternoon (1500-1600 hr) and at night (2200-2300 hr) on each of the three days. Cows exposed to treatment FS produced more (P<.01) milk (38.8 vs 36.2 kg/c/d) during the trial than those exposed to the F treatment. Respiration rates were lower (P<.06) in the morning (71.7 vs 79.3