405 The use of Conservation Reserve Program land for grazing cattle. S. L. Boyles*, M. L. Mohler, B. W. Stoll, and J. Hoorman, *The Ohio State University, Columbus*.

The Conservation Reserve Program (CRP) is a voluntary program under which landowners enter into contracts with USDA to remove highly erodible and other environmentally-sensitive cropland from production. A three year project was done to evaluate intensive, rotational cattle grazing as an alternative for this land when it is removed from CRP. A 16.2 ha area was divided into 28 cells for grazing. Cattle were moved to a new cell in a daily basis. Stocking rates were 80, 60, and 40 animals years 1, 2, and 3, respectively. Yearling cattle (269 $\pm$ 3.6 kg) were placed on grass in the spring. Average daily gain was .7 $\pm$ .03 kg/d. The amount of bare ground did not change over time ($P < .05$) even with clover seed application. There was an increase in the population of weeds over time ($P = .06$) with grazing. However, net energy gain (.12 $\pm$ .032 Mcal/kg) and crude protein (23 $\pm$ 4.7%) did not change over years ($P > .05$). The Ohio Environmental Protection Agency (EPA) must notify area residents when water nitrate nitrogen levels are greater than 10 ppm. Only once during the three year period did water run-off nitrate nitrogen levels exceed the 10 ppm level. This was due to a nitrogen fertilizer application just prior to precipitation. Maintaining forage on what was CRP land and using it for grazing should meet the EPA conservation compliance demands to participate in other USDA programs.

Key Words: Forage, Pasture, CRP

406 Buyer survey to determine desired production practices for a Value-Added Program for beef calves in California. V. M. Castro*, G. M. Veserat*, and J. W. Oltjen*, *University of California, Davis*.

Increasing the value of newly weaned California calves depends, in part, on implementing production practices prior to and at weaning which cattle buyers desire. Cattle buyers were surveyed to determine which pre-weaning production practices they attributed to increased revenues and asked if buyers would be willing to pay more and how much more for these preconditioning procedures. A list of fifty-six buyers was provided by the California Cattlemen's Association. The buyers were contacted by telephone to complete an oral survey and if they were unavailable, the brief one-page survey was faxed to them. Twenty-eight buyers responded; 63% were California residents and 37% were from other states; 47% of the buyers purchase 1,000 to 10,000 calves and 50% of the buyers purchase over 10,000 calves per year, with 46% of the calves being purchased in the fall. Based on a 1 to 10 scale with 10 defined as most important and 1 as not at all important, the buyers were asked to rate the importance of the following practices (mean $\pm$ SD): respiratory injections (10.0 $\pm$ 0.0), clostridial vaccines (8.62 $\pm$ 2.02), booster injections (8.79 $\pm$ 2.13), weaning (8.60 $\pm$ 2.58) an average of 4.38 (SD = 1.82) weeks, dehorning (7.79 $\pm$ 2.53), records of certification (7.56 $\pm$ 3.25), deworming (7.04 $\pm$ 3.06), and trace mineral supplementation (5.44 $\pm$ 2.44). Buyers responded that a calf preconditioning program required certification (8.19 $\pm$ 2.32), preferring that the rancher (8.72 $\pm$ 2.37) or veterinarian (6.41 $\pm$ 3.59) certify. Buyers preferred that calves be individually identified (6.00 $\pm$ 3.30), preferably by ear tag. The final survey question asked the buyer if they would be willing to pay more for value added (preconditioned) calves and if so how much more? Ninety-two percent of the buyers indicated that they would pay more, and on average \$3.18 (SD = 1.54) more per hundredweight. Results of this survey were used to develop an industry sponsored value-added calf program in California.

Key Words: Preconditioning, Beef Cattle

407 Patterns in interstate feeder cattle movements: An exploration of the availability of state level movement data. K. Forde*, A. Hillberg-Seitzinger, D. Dargatz, and N. Wineland, *Colorado State University, USDA:APHIS:VS-CEAH, Fort Collins, CO*.

Knowledge about the patterns of animal movement, particularly feeder cattle movement, within the United States is necessary to anticipate how diseases might be spread geographically. Understanding the potential patterns of animal disease may help to decrease the economic and clinical impacts associated with disease outbreaks through knowledgeable emergency preparedness. In addition, such information may be useful in defending trade regionalization schemes and in targeting industry quality assurance efforts. This study was conducted to explore the availability of interstate level movement data which might be employed to develop a more coherent national picture of interstate feeder cattle movement. State Statistical Offices of the National Agriculture Statistics Service (NASS) and Departments of Agriculture in all 50 states were contacted to determine the type of collected information for import/export of feeder cattle. Eighteen of the 50 states contacted did record import and export information. Based on the requested movement information, profiles of import and export data from Kansas, Texas, Colorado and Iowa, primary receivers of 1995 imports, totaling 51%, were developed. These four states received at least 50% of their cattle imports from less than nine different states. As a result, approximately half of the nation's movement, in regards to imports, can be explained by a total of 13 states and Mexico, excluding duplicates. Greater than 50% of the exports from Kansas, Texas, Colorado, and Iowa go to three or fewer states. This import and export information allows us to confirm the conclusions of others that cattle tend to move toward the center of the United States. However, if more states kept comprehensive, up-to-date records of movement information, knowledge about cattle movement patterns in the United States would be significantly increased. The lack of specific notations on certificates of veterinary inspection can only lead to perceived trends and thus, the present records have limited value in tracking animal movement.

Key Words: Feeder Cattle, Movement, Emergency Preparedness

408 Boxed beef value and percentage yield of steers in the Oklahoma Steer Feedout program. B. A. Gardner, S. L. Dolezal*, H. G. Dolezal, and C. W. Shearhart, *Oklahoma State University, Stillwater*.

The OSU Boxed Beef Calculator was used to generate close trim boxed beef value (VALUE) and percentage yield (YIELD) on 2,208 steers fed in the Oklahoma Steer Feedout program from 1990 to 1997. Wholesale prices reflected a two-year average (1995 to 1996) for the 19 boxed beef items. Nonconforming carcasses (i.e., YG 4.0 or >) were priced separately. VALUE and YIELD were evaluated for differences in season and breed type. Data were analyzed using a model that included effects of year, season, year x season, sire type and dam type. Year, season of production and the year x season interaction were significant ($P < .05$) for VALUE and YIELD. Fall-born steers had higher VALUE than spring born (\$110.49 vs. \$109.05/45.4 kg) for all years except 1995, despite a higher YIELD for spring-born steers. Seasonal differences may be attributed to the higher percentage of U.S. Choice carcasses from fall vs. spring-born steers (63.8 vs. 55.2%, respectively). Categorization by sire breed type (Angus, ANG; other British, BRIT; Continental, CONT; Continental (milk), MCONT; Brahman Influence, BRAH) revealed that CONT and MCONT sired steers had a higher YIELD ($P < .01$) than ANG, BRIT or BRAH. VALUE did not differ ($P > .05$) among ANG, CONT or MCONT, but all had higher ($P < .01$) VALUE than BRIT and BRAH sired steers. Results indicate that season and breed type affect boxed beef value and yield. Breed performance reflects trends in the OK Steer Feedout program and may not represent national breed differences.

Sire Breed Type	Carcass Weight (kg)	Marbling Score[a]	Choice (%)	Yield Grade	YIELD (%)	VALUE (\$/45.4 kg)
Angus	330.5^{c}	433^{b}	72.9	2.7^{b}	68.6^{c}	110.54^{b}
British (other)	317.2^{d}	400^{cd}	58.3	2.7^{b}	68.7^{c}	107.84^{c}
Continental	341.3^{b}	395^{d}	44.0	2.3^{c}	70.1^{b}	111.03^{b}
Continental (milk)	333.6^{c}	404^{cd}	49.3	2.4^{c}	69.8^{b}	111.01^{b}
Brahman influence	320.6^{d}	410^{c}	52.5	2.7^{b}	68.8^{c}	108.45^{c}

[a]300 to 399 = slight, 400 to 499 = small. ^{bcd}Means in the same column with a common superscript are not different ($P > .05$).

Key Words: Beef Cattle, Carcass, Value

409 Performance of goats grazing on sericea lespedeza (*Lespedeza cuneata*), a noxious weed in Kansas. E. N. Escobar*, *Cooperative Extension Program, Langston University, Langston, OK.*

Sericea lespedeza *(Lespedeza cuneata,* fam. Fabaceae, 14.65% crude protein) has been regarded as a noxious weed in Kansas, because it is aggressive and persistent. Bovines do not have a particular appetite for sericea lespedeza and do not graze it. Early state surveys indicate that pasture invasion in Kansas reaches at least 30% of the area used for cattle grazing. Demonstrations were conducted using goats to manage sericea lespedeza for three consecutive years (1995 to 1997) in a 7.2-hectare pasture and in a 128-hectare pasture (1997 only). In 1995, two groups of Spanish goats grazed the plot. In 1996 three types of goats grazed the plot for 90 days. And, in 1997, 66 Boer x Spanish female yearlings grazed the trial plot for 157 days. Also, mature Spanish castrates grazed sericea lespedeza in a 128-hectare pasture. Annual plant counts in the trial plot indicated disappearance of mature sericea lespedeza plants after three years of goat grazing. Goat body weight gains show that goats utilized sericea lespedeza. The results from the three-year demonstration, shown in the table, are encouraging to Kansas ranchers because the income that meat goats could bring to the ranch while eating sericea lespedeza.

YEAR	Type of Goats (N)	Days Grazing	Ave. Gain/ head (kg)
1995	Spanish (12)	116	9.43
1995	Spanish (37)	37	3.64
1996	Alpine (15)	90	4.67
1996	Angora (33)	90	3.36
1996	Spanish (19)	90	4.52
1997	BRxSP Fem (66)	157	4.53
1997	Spanish (80)	179	10.01

Key Words: Goats, *Sericea Lespedeza*, Noxious Weeds

410 Nutrient comparison of goat, cow and human milk: An update. S. S. Zeng, *Langston Univeristy, Langston, OK.*

Goat milk is consumed by a larger proportion of the world's population than cow milk. Goat milk not only provides a vital part of the complete nutritional requirements to people in developing countries but is also used as an alternative for the people in the whole world who are allergic to cow milk. Recently, the Nutrient Data Laboratory of USDA's ARS published USDA Nutrient Database for Standard Reference (Release 11-1) covering thousands of food items. The data regarding goat, cow and human milk were compiled from published and unpublished sources around the world. In this paper, goat, cow and human milks are compared specifically in their profiles of major components, fatty acids, amino acids, minerals and vitamins. The merits of goat milk in nutrient values are also discussed. It is obvious that goat milk is a wholesome, natural, traditional and nutritious food commodity. The unique composition of goat milk and its nutrient values in human requirements make it extremely valuable for infants who are allergic to cow milk, for children who have general food allergies, for adults who are recovering from illness and for the elderly who have digestion difficulties. Goat milk may be favored as a staple food source by more individuals in the coming decade.

Key Words: Goat Milk, Nutrient Comparison

411 The Idaho Dairy Pollution Prevention Initiative (IPPI). D. Falk, E. Fiez, and R. Norell, *University of Idaho, Moscow.*

The IPPI was developed to be a proactive, results-oriented program to protect surface and ground water, and allow dairymen to maintain a sustainable role in Idaho's economy. The IPPI is an agreement signed by the U.S. Environmental Agency (USEPA), Idaho Division of Environmental Quality (DEQ), Idaho Department of Agriculture (ISDA) and Idaho Dairymen's Association (IDA). The objectives of the IPPI are to define roles of the agencies regulating the Idaho dairy industry and to recognize ISDA lead role to insure compliance with federal and state requirements. The IPPI was developed based on the recognition of the agencies involved and interested public parties for the need to formalize an ongoing effort to conserve resources, more effectively and efficiently use personnel, reduce duplicative inspection services, and insure Idaho dairymen comply with the Clean Water Act and Idaho Water Quality Standards. A meeting of local, state, and federal agencies, farm groups, and others was held in January 1995 to explore ways to resolve Idaho dairy waste issues. A task force was established to develop the concept of transferring the inspection program from USEPA/DEQ to ISDA. Legal authority to transfer dairy waste design, construction, approval, and inspection from USEPA and DEQ to ISDA was through two legislative bills, rule promulgation and support of the Governor. The rules set forth standards for construction and operation of dairy waste systems and provide penalties for violations. Over 5,700 inspections on 1,100 dairy farms were conducted during the first 2 years of the program. Significant non-compliance condition situations decreased from 50% to less than 5%, and surface discharges 24% to less than 1% during the first 2 years of the program. Milk permits have been revoked on 61 dairies in non-compliance. University of Idaho (UI) faculty were involved in the development of the rule documents, ISDA training sessions and provided assistance to meet compliance standards. Commitment from UI faculty, NRCS, and IDA is the key to the success of the program. This partnership allows dairymen to attain reasonable solutions to waste problems.

Key Words: IPPI

412 Impact of the Idaho Pollution Prevention Initiative on Eastern Idaho Dairies. R. J. Norell* and J. H. Packham, *University of Idaho, Idaho Falls.*

The Idaho Pollution Prevention Initiative (IPPI) transferred inspection of dairy waste systems to the Idaho Department of Agriculture (ISDA). Inspections of waste systems begin in 1995. Approximately, 50% of eastern Idaho dairies (175/377) were declared out of compliance with Idaho waste management guidelines. Non-compliance issues were improper runoff containment (175/377), improper containment of parlor waste (53/175), or both (110/175). The need for education on waste management was paramount for producers. Extension, ISDA, and NRCS (Natural Resource Conservation Service) played key roles in a cooperative educational effort for producers. Educational efforts included mock dairy inspections, producer meetings, dairy tours, and on-farm consultations with individual producers. Solutions to waste issues were emphasized in educational meetings. On-farm visits emphasized site specific solutions to waste management issues and preliminary sizing calculations on proposed storage facilities. Engineers from ISDA and NRCS performed final system design for producers receiving cost share assistance. Waste system modifications on ninety-three operations included: runoff containment (73%), runoff storage (57%), parlor waste storage (95%), solid waste storage (33%), and gravity flow solids separation (30%). Storage facilities for liquid waste averaged 41,209 cu ft in volume and were earthen lagoons (77%), concrete tanks (23%), or combination structures (1%). Liquid wastes are transported to storage by gravity flow (58%), pump station (17%) or a combination of gravity flow and pump station (25%). Cost estimate data for new waste systems was summarized from NRCS records (n=75). Total project cost averaged $19,939 per operation and $280 per cow. The end result of the IPPI effort is improved surface and ground water quality in eastern Idaho.

Key Words: Waste Management

413 Using farmer selected consulting teams to improve dairy farm sustainability. L. A. Holden*, C. W. Heald, and L. J. Hutchinson, *The Pennsylvania State University, University Park*.

The project objective was to study the formation and functioning of dairy farm consulting teams with emphasis on assessing changes in income over feed costs or reduction of mastitis measured by SCC. Consulting teams mostly consisted of agricultural professionals previously working independently with producers. Fifteen Pennsylvania dairy farm businesses were selected to participate in early 1997 and to date 13 of the 15 still have teams in operation. Team size, meeting frequency, objectives, and coordinator varied according to the management, goals, and specific needs of the farm. Farm owners, with the help of the consulting team, wrote annual goals and developed a monitoring plan to measure progress. All team members received training in the process of coordinated, multi-disciplinary problem-solving. Evaluation of the impact of the first year of using consulting teams is in progress and includes measurement of changes in milk yield, income over feed costs, and other parameters as well as an assessment of the attitudes of farm managers about the use of consulting teams. Initial observations suggest that the use of consulting teams are beneficial and that decision making and implementation of positive changes happen more quickly than without a team in place. Off-farm coordination and team experience appeared to contribute to team success.

Key Words: Consulting Teams, Dairy, Sustainability

414 Development of a national dairy heifer grower assocation. R. A. Cady*, *Washington State University, Puyallup*.

Specialization in the dairy industry appears to be increasing. One indication of this trend is the increased number of people specializing in growing dairy replacement heifers. Anecdotal information indicates that the number of heifers grown by custom heifer raisers has increased 4 times in the past 7 years. This increase appears to be related to several factors. These factors include: the desire to spread financial risk; the desire of retired producers and feedlot managers, who retained facilities at retirement, to put those facilities to productive use; improved ability to effectively use human labor in larger herds; and the number of people unable to secure sufficient financing to build heifer facilities needed to supply replacements to an expanding herd. To date, there has been no way to track, monitor, or form communication networks within this segment of the dairy industry. As a result, the Professional Dairy Heifer Growers Association (PDHGA) was conceived. The first step was the development of a mission statement at the first Professional Dairy Heifer Conference in Atlanta, GA in April 1997. At this meeting a 15 member Task Force was installed. At the second PDGHA Conference, held in Reno, NV in April 1998, by-laws were adopted and a board of directors installed. Successful development of PDHGA has been dependent on a productive 3-way partnership of heifer growers, university faculty, and allied agribusiness. Primary goals of PDHGA members are: to grow high quality heifers; provide educational programs; develop and maintain a communication network for heifer growers, dairy producers and allied industry; establish business and ethical standards for the profession; and to enhance the profitability of member growers and the dairy industry they serve.

Key Words: Dairy Replacement, Heifer, Custom Grower

415 Multi-State Programming: The Western Dairy Management Conference. J. F. Smith*[1], D. V. Armstrong[2], and M. J. Gamroth[3], [1]*Kansas State University, Manhattan,* [2]*University of Arizona, Tucson, and* [3]*Oregon State University, Corvallis*.

In 1992, a group of Extension dairy specialists met to plan the Western Dairy Management Conference. The planning committee was made up of 10 Extension dairy specialists and an editor from a dairy magazine from the states of Arizona, California, Washington, Idaho, Oregon, New Mexico, Colorado and Texas. The first conference was held April 22–24, 1993 in Las Vegas, NV. Six hundred twenty-six producers, educators and agribusiness members attended this conference. The conference was held a second time in 1995. In 1995, 1,447 people from 43 states and 8 foreign countries attended. The planning committee was expanded in 1997 to include specialists from Oklahoma, Kansas, and a second editor from a dairy magazine. In 1997, the conference was attended by 1,802 participants from 44 states and 11 foreign countries. Eight hundred and ninety of the participants were dairy producers representing 506,961 dairy cows. Funding for these conferences have been generated from industrial donations and registration fees. The Western Dairy Management Conference is an example of how Extension specialists can cooperate across state lines and with allied industry to accomplish educational goals.

Key Words: Regional, Dairy, Extension

416 Development of the Maryland Dairy Industry Associaton. R. R. Peters, S. W. Fultz, and M. R. Bell, *University of Maryland, College Park*.

On February 17, 1992 senior administrative officers for agriculture at the University of Maryland and the Maryland Department of Agriculture appointed and co-chaired a 26 member Dairy Task Force. The members of the Task Force included producers, processors, marketing cooperatives, allied industry, and University of Maryland representatives. In April of 1993 the Task Force released a 34 page report. One of the 14 recommendations in the report was to establish a Maryland Dairy Producer Association. After failing to pass state dairy pricing legislation in 1994 and 1995 using traditional support from Maryland Farm Bureau and milk marketing cooperatives, an ad hoc committee of dairy producer leaders and University of Maryland representatives organized an effort to form a dairy industry association. An open meeting with a formal program was held on November 26, 1996 to discuss the formation of the Maryland Dairy Industry Association (MDIA). Over 100 dairy producers were present at the meeting and unanimously passed a motion to form the Association and a suggested set of by-laws. An interim board of directors volunteered to serve and meet monthly until the organization formally elected permanent board of directors and officers, approved by-laws, and designated the desired committees at the first annual meeting on November 18, 1997. Formation of MDIA has been a positive development for dairy extension education and advancing the legislative agenda of dairy producers. For example, MDIA unified dairy producers and greatly increased the political force for a dairy initiatives in 1997. In addition, MDIA is a strong supporter of extension education and demonstration projects. At the first annual meeting, for example, industry and extension worked to develop an excellent educational program with 175 people attending. It is anticipated that continued extension participation in MDIA will mutually benefit producers and the effectiveness of extension educators.

Key Words: Extension, Dairy

417 Producer evaluation of dairy diagnostic teams. D. Weinand* and B. J. Conlin, *University of Minnesota, St. Paul.*

The Minnesota Dairy Diagnostic team project was designed to network local dairy expertise to deliver education targeted to the specific needs of individual farms, and provide follow-up assistance to help farms achieve their goals. Local dairy diagnostic teams were active on 39 farms from 1992–1995. County extension educators provided leadership for recruiting, organizing, training, and team coordination. Production and management impacts based on DHI records were reported earlier. The results of the personal interview survey conducted with 34 of the participating farms in the post project period in 1997 reported perceptions of their project experience. They reported; 74% improved positive attitude,72% quality of life improvement, 72% financially better off, 64% improvement in ability to pay off debt, 61% increase in discretionary income, and 15 farms knew their net worth improved by more than $100,000 over the last 4 years. Cooperating farms credited teams for increased milk per cow, improved milk quality, implementing a plan to transfer the farm, and or restructuring the farm business. Teams were viewed as correctly identifying the problems, developing creative solutions, cooperating well together, and providing positive consultations. More than 83% of the respondents expressed they would participate in the project again. More satisfied producers placed higher priority on implementation, followed recommendations more closely, and were in greater agreement with the recommendations. Major limitations to implementing the recommendations in rank order were; time, money, facility constraints, different priority, and available labor. Suggested ways for improving the project included; teams should meet at least quarterly, more follow-up on recommendations, recommendations should be consistent with family goals, and teams should include members who are not current service providers for the farm to minimize bias and offer fresh perspectives.

Key Words: Diagnostic Team, Personalized Education, Problem Solving

418 Using local data to reinforce established management practices. W. L. Shockey[1]*, T. D. Rexroad[1], and J. S. Hauser[2], [1]*WVU Extension Service and* [2]*Natural Resources Conservation Service, Kingwood.*

Preston County, WV is a rural region characterized by many (799) small farms (average 174 acres and $12,592 annual gross farm sales) that contribute $10,061,008.00 annually to the county's economy. Managers of part-time animal production operations, with less time to focus on agricultural issues and management practices, do not adapt proven management practices. To reinforce the impact of forage quality on farm economics and to provide local proof, forage samples were collected from 4 farms that were separated by at least 10 miles. Four samples were taken from a single, predominately grass, hay field on 9, 16, 23, and 30 June 1997. Stage of maturity was early head (9 June) to seed stage (30 June). Quality as measured by crude protein (CP), acid detergent fiber (ADF), neutral detergent fiber (NDF), total digestible nutrients (TDN), and relative feed value (RFV) declined as maturity increased. Means (standard deviations) were: CP = 15.8 (5.1), 11.9 (1.7), 11.0 (2.3), and 10.3 (2.7); ADF = 36.7 (5.0), 41.8 (1.7). 43.0 (3.7), and 44.1 (3.9); NDF = 59.6 (11.0), 68.5 (4.5), 67.5 (3.5), and 64.8 (3.6); TDN = 61.7 (5.3), 56.0 (1.9), 54.5 (3.9), and 53.7 (3.9); and RFV = 99 (26), 77 (7), 77 (8), and 79 (9), for 9, 16, 23, and 30 June, respectively. Relationships to dairy and beef production were calculated and showed that a harvest delay of one week (9 to 16 June) could result in annual economic differences of $3,375 to $15,552 for a 50 cow dairy herd and $80 to $2,000 for a 20 cow beef herd. Program evaluation forms indicated good understanding and receptivity of data presented. Local, part-time producers learned and are now implementing the principle that the time of harvest of forage crops has a direct and measurable effect on the economic productivity of ruminant livestock operations.

Key Words: Forage Quality, Hay, Ruminant

419 Local environmental task forces and environmental stewardship courses developed to achieve environmental compliance. D. D. Mullinax* and D. Meyer, *University of California Cooperative Extension Stanislaus and Merced Counties, and Department of Animal Science, UC Davis.*

Local groups of dairy operators, allied industry, trade organizations, and regulatory agency staff were assembled to assess the needs for attaining compliance with water quality regulations. Task force groups were established by geographic region. Targeted milksheds encompassed 32 km in diameter area. Task forces were designed to improve information dissemination and understanding of water regulatory requirements and to assist operators who are out of compliance. The Environmental Stewardship Short Course 1 was developed to educate producers on manure management issues: regulations, risk assessment, pond sizing and design, pollution prevention and emergency plan development, and manure nutrient utilization. Three 2-hr classes and homework are required for course completion. Homework assignments included: completing of four risk assessment documents, determining necessary manure storage capacity and developing pollution prevention and emergency plans. Task force members would serve as educated local contacts within the community to whom producers could seek information and guidance. In addition, task force members would work with producers when citizen complaints are filed with the regulatory agencies. A task force member (dairy operator) would approach the offender to discuss the complaint. The offender then has the option to work with the task force member to attain compliance, to attain compliance without assistance or to ignore the task force and face legal repercussions. Task force involvement would cover discussions of legal requirements and methods needed to obtain compliance would occur. An implementation plan and time line would be developed and shared with the regulatory agency to seek input and approval. Adequate funding from outside sources has been secured.

Key Words: Manure, Management, Education

420 Inducing inference rules for predicting mastitis using personal computers and herd data. C. W. Heald[1]* and T. Kim[2], [1]*Dept. of Dairy and Animal Science, Penn State U, USA,* [2]*Dept. of Industrial Eng., Kyungsung U, Pusan, Korea.*

The objective of this research was to compare computer induced inference rules to predict mastitis in dairy herd data bases with other statistical methods. Inductive inference is the process of going from specific observations about objects and an initial inductive hypothesis to an inductive assertion that accounts for the observations. In this research, we applied the concept of ID3 (Interactive Dichotomizer 3) to create decision rules for diagnosing mastitis. ID3 is the technology for inducing decision trees from given examples for classification task. The basis of induction task is a universe of objects that are described in terms of a collection of attributes. Each attribute measures some important feature of an object and will be limited here to taking a set of discrete, mutually exclusive values. The attributes adopted for ID3 was lactation, days in milk, persistency of milk production, cases of high somatic cell count, and average somatic cell count during lactation. The selected attributes were data downloaded from dairy record processing center computer. The mastitis classification categories were divided into four groups: no growth, contagious, environmental, and others. The culture data were results from quarter milk samples collected from 30 herd visits. Software named UNIK-INDUCE was adopted to automate the generation of rules. The established rules were implemented for randomly selected groups with 50 and 250 cows. The prediction of mastitis using induced rules ranged from 55% to 60%. The quality of the results was evaluated by comparing them to those generated by neural network and discriminant analysis. The results from neural network showed 61% to 65%, and those of discriminant were 50% to 57%. Though the results of induced rules did not outperform those of neural network, induced rules showed a good potential for practical uses in predicting mastitis based on dairy records since diagnostic rules can be easily implemented and utilized in computer analysis.

Key Words: Induction, Rule, Mastitis

421 Variation in milk urea nitrogen taken from daily bulk tank samples. G. E. Higginbotham*[1], N. G. Peterson[2], W. R. VerBoort[3], R. Bealer[4], and S. L. Berry[5], [1]*UCCE, Fresno/Madera Counties* [2]*UCCE, San Bernardino County* [3]*California DHIA* [4]*Southern Counties DHIA, and* [5]*U. C. Davis*.

Information on the amount of variation in daily bulk tank milk urea nitrogen (MUN) values among six dairy herds was studied. Daily bulk tank milk samples were collected from six dairies located in Southern California. Data was collected from September 1, 1996 until August 31, 1997. All dairies were milked 2× with both milkings commingled before daily milk pick-up. At time of milk pick-up, milk tank drivers were provided with an additional vial for milk sample collection. Once collected, Bronopol liquid preservative was added and milk samples were refrigerated and stored at each dairy for a once weekly pick-up. Samples were delivered to Southern Counties DHIA and analyzed for fat, protein, solids-not-fat, SCC, and MUN. Mean MUN (mg/dl) for dairies 2, 3, 4, 5, and 6 were 15.0, 15.5, 16.5, 15.0, and 12.7. Coefficient of variation (CV) for the various milk components measured were as follows:

Item	Dairy #2	Dairy #3	Dairy #4	Dairy #5	Dairy #6
			% CV		
% Fat	5.0	4.9	5.8	6.2	8.2
% Protein	2.5	3.0	2.0	3.1	3.1
% SNF	1.5	1.3	1.1	1.4	4.7
SCC	26.7	36.0	55.6	23.8	24.4
MUN	15.2	15.4	19.4	21.6	18.9

Using a pooled S.D. of 2.99 with a 95% confidence level, the calculated MUN error terms for sampling a bulk tank 1 and 20 d is ± 5.9 and 1.3 mg/dl, respectively. Under conditions of this study, bulk tanks should be sampled for at least 10 to 15 continuous days to accurately reflect the MUN status of the dairy herd.

Key Words: MUN, Milk Tank, Variation

422 Methods and results of a New York dairy herdsperson skill training. E. A. Claypoole* and N. A. Spanski, *Cornell University, Ithaca, NY.*

Cornell Cooperative Extension conducted a 30 h training program in northwest NY consisting of classroom and on farm practice sessions to increase skills of dairy farm employees. Training needs were identified through survey of supervisors and participants. Sessions included feeding, calf delivery and care, communication, improving reproductive efficiency, milking procedures, computerized record keeping, and hoof care, among others. Teachers for the program included dairy farm managers, agriservice representatives and extension educators. Partial funding was provided through the NY Empire State Development Corporation. Evaluation of participants' skills was completed by participants and their supervisors before and after the training. Eighty-six participants have completed the course. Perceived skill level increased in most categories and participants have shown increased interest in farm operations and their individual responsibilities. Neither wages nor formal responsibilities increased as a result of the training.

Key Words: Dairy Herdsperson, Training

423 Effects of feeding rumen protected methionine and modest reduction in dietary protein in a Florida dairy. H. H. Van Horn* and M. B. Hall, *University of Florida, Gainesville*.

In trial 1, two groups of 180 early-lactation Holstein cows (110 DIM) in a large North Florida dairy were utilized to evaluate supplementation of rumen-protected methionine provided via 17 g/d per cow of Mepron® M85 (Degussa Corp.). Feeding was from Aug 5 to Sep 6, 1998. Milk weights were obtained from the Afikim electronic milk recording system utilized by the dairy and milk fat and protein percentages from DHI. The TMR were 18.6% CP, 36% NDF, 35% roughage mostly from corn silage and alfalfa, and contained many byproducts. Milk production for the final 20 d and milk fat and protein percentages from samples at end of trial were analyzed statistically with model including either 10-d average production preliminary to start or preliminary fat or protein, lactation number, and DIM as continuous independent variables. Feeding Mepron significantly increased milk yield (36.5 kg/d vs 35.3) and milk protein percentage (3.06% vs 2.97). Milk fat percentages were not different and averaged 3.0%. A follow-up trial compared performance from the control 18.6% CP TMR with lower CP (17.6%) after removal of 0.2 kg/d apparent excess RDP. No performance differences were detected which prompted a second study with rumen protected methionine in Dec 1997 in which Mepron was added to the lower CP (17.6%) diet and compared with the control (18.6%) CP diet. The design was similar except that the 180 multiparous cows selected to be equal to the control group were in a larger group of cows, all of which were fed Mepron at a rate of 18 g/d per cow. Milk yield and composition differences were not significant; milk yield averaged 41.0 kg/d, milk fat 3.1%, and milk protein 3.17%. Data show maintenance of production with modest reduction of dietary CP and potential for response to methionine supplementation when cows are fed in excess of 18% CP.

Key Words: Amino Acids, Protein, Milk