Regional production differences. L. O. Ely*, J. W. Smith, and G. H. Oelgling, University of Georgia, Athens, GA.

DHI records from 37 states were grouped into North, Midsouth, and South regions and six herd sizes (20-49, 50-99, 100-149, 150-249, 250-449, and > 449 cows). Data was analyzed by region and by herd size for the year 1998. The North region had higher IOPC, milk, fat and protein rolling herd averages, summit milk, standardized 150 day milk and % cows in milk than the other regions. These variables declined for the Midsouth and were lowest for the South. Cost/cwt., days open, days dry and SCC were lowest in the North and highest in the South. Large herds had higher total feed cost, IOPC, milk, fat, and protein rolling herd averages, summit milk, standardized 150 day milk, % cows entering and % cows leaving the herd than smaller herds. For the period 1990 to 1999, the data were analyzed for the trend in change over time for each of the regions. Milk production per cow, total feed cost, feed cost/cwt. of milk, IOPC, days open and herd sizes increased in the period from 1990 to 1999. The percentage of cows in milk did not show significant variation and SCS decreased. Different rates of change over the last decade have made differences among regions larger for milk production, total feed cost, feed cost/cwt., milk, IOPC, days open and herd sizes constantly changed over time. Feed cost/cwt. of milk, IOPF, days open, % cows in milk, and herd size changes had a similar rate of change during the decade keeping differences among herd sizes constant over time. The SCS decreased at a more rapid rate in small herds than in larger herds, resulting in smaller differences between them.

Key Words: Dairy production, regions, trends


When dairy cattle are subjected to heat stress reproductive efficiency declines. Dairy cattle under heat stress have reduced duration and intensity of estrous cycles and impaired fertility and insemination success. The most common avenues to ameliorate the effects of heat stress have been to provide cooling in the form of shades, fans, or evaporative coolers. Estrous synchronization tools have been developed which eliminate or greatly reduce the need for estrous detection. Researchers have found that pregnancy rates were more consistent over time when estrous synchronization programs were used compared to no differences in either the rate of change for days open or percentage of cows in milk among regions. Milk production per cow and total feed cost increased at higher rates in larger herds, making the gap between these and smaller herds larger over time. Feed cost/cwt. of milk, IOPC, days open, % cows in milk, and herd size changes had a similar rate of change during the decade keeping differences among herd sizes constant over time. The SCS decreased at a more rapid rate in small herds than in larger herds, resulting in smaller differences between them.

Key Words: Reproductive Efficiency, Heat Stress


The Southern US climate provides opportunities and problems for manure management. The extended growing season provided by a warm-temperate and humid climate allows multi-cropping, such that manure can be applied to growing forages throughout most of the year; potentially improving nutrient uptake per land area and decreasing the amount of manure in storage. Multi-cropping allows land and equipment to be utilized throughout the year, improving the economics of ownership. On the contrary, rainfall increases the potential for movement of potential pollutants in runoff and percolation. Streams and wetlands are also usual features. High temperatures are less conducive to the production of some high quality forages than more moderate climates, and pest and disease pressures are often high. These factors limit the locations and the selection of crops available for managing manure, and may also lower the economic returns to cropping programs. Double- and triple-cropping systems can produce in excess of 30 Mg/ha/yr. of forage DM and recover 600 kg of N and 100 kg of P/ha/yr. Crop- ping systems which include a deep rooted perennial often provide better protection from undesirable leaching than do systems with only annual crops. Forage quality can be higher for annual crop systems, but they usually have greater input costs. The potentially competing objectives of environmental protection, forage quality, and net returns may require site-specific resolution. Increasing awareness of the water quality protection benefits of buffers and riparian zones demands that they be considered as part of the cropping/nutrient management system.

Key Words: Manure, Forages, Water quality

Rearing dairy herd replacements in the Southeast. R. E. James*, Virginia Polytechnic Institute and State University.

DHI data from Dairy Records Management Systems and the NAHMS surveys of 1991 and 1996 provide information to describe the dairy heifer enterprise in the Southeast. Heifers in the Southeast are larger but produce less milk/cow annually than herds in other regions of the U.S. Peak yields and lactation yields are lower, 1st calving body weight is smaller and age at first calving is higher than in other regions of the U.S. The nationwide NAHMS surveys of 1991 and 1996 revealed a strong positive relationship between heifer growth and rolling herd average milk yield. Heifers were largest in the Midwest, intermediate in the West and Northeast and smallest in the Southeast. Differences were attributed to feeding strategies. A retrospective analysis of survey data revealed death losses were 8.5% of live births in the Southeast as compared to 10% in the West, 8.3% in the Midwest and 6.9% in the Northeast. These data suggests the need to develop management systems to enhance neonatal health and foster improved growth in the more extensive rearing systems common in the Southeastern US.

Key Words: Heifers, Southeast


The objective of this study was to evaluate the economics of dairy production in the southeastern US (SE) in comparison to other regions in the US. Data was available from the Florida/Georgia Dairy Business Analysis Project (FL/GA), the North Carolina Dairy Farm Financial Performance Pilot Project (NC), the New York Dairy Farm Business Summary > 300 cows (NY), Milk Production Costs on Selected Wisconsin Dairy Farms (WI), all by universities, and Dairy Farm Operating Trends by Moore Stephens Frazer and Torbet, LLP (Southern California (Scal), San Joaquin Valley (SJV), Arizona (AZ), Idaho (ID), and New Mexico (NM)). For 2000, the average total revenues / cwt were $18.03 (FL/GA), $17.37 (NC), $15.58 (NY), $11.76 (ID), $12.39 (NM), $12.33 (AZ), $12.28 (SJV), and $12.34 (Scal). The average total cost / cwt were $17.03 (FL/GA), $15.08 (NC), $14.92 (NY), $13.20 (WI), $10.65 (ID), $11.46 (NM), $12.21 (AZ), $11.33 (SJV), and $11.24 (Scal). The average total feed cost / cwt ranged from $4.76 (ID) to $7.35 (FL/GA). The average rate of return on assets (ROA) was highest in FL/GA with 5.02, 3.92, 1.80, 1.61, 1.57, respectively. The reported data is not necessarily representative of the ROA in all regions.

DHI data from Dairy Records Management Systems and the NAHMS surveys of 1991 and 1996 provide information to describe the dairy heifer enterprise in the Southeast. Heifers in the Southeast are larger but produce less milk/cow annually than herds in other regions of the U.S. Peak yields and lactation yields are lower, 1st calving body weight is smaller and age at first calving is higher than in other regions of the U.S. The nationwide NAHMS surveys of 1991 and 1996 revealed a strong positive relationship between heifer growth and rolling herd average milk yield. Heifers were largest in the Midwest, intermediate in the West and Northeast and smallest in the Southeast. Differences were attributed to feeding strategies. A retrospective analysis of survey data revealed death losses were 8.5% of live births in the Southeast as compared to 10% in the West, 8.3% in the Midwest and 6.9% in the Northeast. These data suggests the need to develop management systems to enhance neonatal health and foster improved growth in the more extensive rearing systems common in the Southeastern US.

Key Words: Heifers, Southeast

Potential for Dairying in the Southeast–Challenges and Opportunities. R. K. Hubbard, J. R. Allison, and G. Vellidis, University of Georgia, Athens, GA.

Multi-cropped forages which include a deep rooted perennial often provide better protection from undesirable leaching than do systems with only annual crops. Forage quality can be higher for annual crop systems, but they usually have greater input costs. The potentially competing objectives of environmental protection, forage quality, and net returns may require site-specific resolution. Increasing awareness of the water quality protection benefits of buffers and riparian zones demands that they be considered as part of the cropping/nutrient management system.

Key Words: Manure, Forages, Water quality

473  The effects of supplementing yeast culture during the transition period on performance of Holstein cows during hot humid weather. J. D. Ward*, LSU AgCenter Southeast Research Station.

During the summer and early fall of 2000, 32 multiparous Holstein cows were used to investigate the effects of yeast culture supplementation during the transition period on performance during hot humid weather. Cows being supplemented with yeast culture received 56.7 g of yeast culture for 3 wk prior to expected calving date and then received 113.4 g of yeast culture for 21 d after parturition. All cows were component fed and the yeast culture was top dressed onto the pellet portion of the diet. Prior to calving cows were offered 4.5 kg (as fed basis) of a commercially available pellet once per day, given ad libitum access to bermudagrass hay, and allowed to graze bermudagrass pasture. After parturition, cows were offered 5.0 kg (as fed basis) of the same pellet twice per day. They were given ad libitum access to a partial mixed ration (PMR) consisting of (DM basis) 32.7% alfalfa hay, 20.9% whole cottonseed, 28.5% corn silage, and 17.9% ryegrass haylage. Grain was offered individually in a stanchion barn and PMR was offered behind Calan® gate doors. Daily milk production and DMI were recorded for the first 60 d of lactation. Plasma β-hydroxy butyrate (BBHBA) was determined every 10 d during the 60 d trial. Milk fat and protein were determined 20, 40, and 60 d after parturition. Milk production, DMI, milk component, and BHBA data were analyzed using the mixed model procedures of SAS. Peak milk production and days to peak milk production data were analyzed using the general linear models of SAS. Peak milk production (48.1 kg) and days to peak milk (40.5) were not affected (P > 0.05) by yeast culture supplementation. Yeast culture supplementation did not (P > 0.05) affect grain refusals but did increase (P < 0.03) PMR consumption (12.7 vs 12.2 kg of DM per d). Therefore, total DMI was increased (P < 0.03) by yeast culture supplementation (21.5 vs 21.0 kg of DM per d). Milk production was also increased (P = 0.08) by yeast culture supplementation (39.5 vs 38.3 kg per d). However yeast culture supplementation had no effect on milk fat (P > 0.05) or protein (P = 0.19). Plasma BHBA was not affected by treatment. The results of this experiment indicate that feeding yeast culture during the transition period was beneficial and increased DMI and milk production.

Key Words: Yeast Culture, Transition Cow, Heat Stress

474  Comparison of nutrient content and digestibility of traditional versus genetically modified whole cottonseed. J. A. Bertrand*1, T. C. Jenkins1, and M. Calhoun2,1 Clemson University, 2 Texas A&M University.

The objective of this study was to determine if the in vitro dry matter digestibility (IVDMD) and nutrient and gossypol contents of genetically modified whole cottonseed (WCS) differed from traditional varieties. Varieties included traditional (no genetic modifications) (TRAD), and those with the following gene insertions: Round-Up Ready (RR/Bt), Bacillus thuringiensis (Bt), and both gene insertions (RR/Bt). Samples from 1998, 1999, and 2000 were analyzed for IVDMD, dry matter (DM), crude protein (CP), neutral detergent fiber (NDF), acid detergent fiber (ADF), gossypol, and fat content. Fatty acids and amino acids were determined on samples harvested in 2000. Only ADF content was different by type of seed. ADF content of RR/Bt, 45.4%, was significantly higher than that of TRAD, 42.6%, and there was a trend, P = 0.06, for ADF of RR/Bt to be different from TRAD, 43.4%. There was a significant type by year interaction for CP content. The overall effect of year was significant for all variables. Gossypol content was not significantly different by type but was significantly different by year and increased from 0.485% in 1998 to 0.509% in 1999 to 0.743% in 2000. This was quite high and should be monitored. There were no differences in fatty acid or amino acid content by type for seed produced in 2000. In conclusion, IVDMD of traditional versus genetically modified WCS was not different and nutrient content differences were minimal.

<table>
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<th>Nutrient content</th>
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<th>TRAD Bt</th>
<th>RR Bt/RR SE</th>
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Key Words: DairyMetrics, Dairy Breeds, Herd Size

475  Use of DairyMetrics to compare Jersey and Holstein dairy herds of different herd sizes in the southern U.S. J.A. Pennington*1, J.S. Clay2, and C.N. Vierhout1, 1University of Arkansas Cooperative Extension Service, Little Rock, AR, 2Dairy Records Management Systems, Raleigh, NC.

DairyMetrics from Dairy Records Management Systems was used to compare 72 traits of Jersey and Holstein herds in the southern states by different herd sizes. Holstein herds had greater days in milk, % cows leaving the herd, % herd bred to non-AI bulls, milk production, calving interval, days to first service, and somatic cell counts than Jersey herds; Jersey herds had greater % cows identified by sire and % heats observed compared to Holstein herds. Larger Holstein herds had greater increase in herd size and less % cows identified by sire than smaller Holstein herds but had only a slight increase in % cows leaving the herd compared to smaller herds. There were smaller differences in other parameters for these herds with less than 1000 cows.