121 Lactoferrin addition to an intensified milk replacer feeding regimen. K. Cowles*, R. White, N. Whitehouse, and P. Erickson, *University of New Hampshire*, *Durham*.

The objective of this study was to evaluate lactoferrin (L) addition to milk replacer (MR) on DMI, growth, and days medicated. Thirty three Holstein heifer calves were assigned to 4 treatments in a 2x2 factorial arrangement of treatments in a randomized complete block design. Treatments were: 586 g conventional MR (20% CP/20% fat) ±1g L daily (C1, C0 n=9, 8) or high protein MR (28% CP/20% fat) fed on an ME basis, 0.2 Mcal/kg $BW^{0.75}$, and from d10 to d42, at 0.27 Mcal/kg $BW^{0.75}$, ± 1g L (H1, H0 n=8, 8). Calves were fed starter (25 % CP) in 227.5 g increments beginning on d 2 and had free access to water. Weaning was as follows: 1X feeding on d 42 for 7 d (weaning), on d 49 calves were weaned. Calves were on the study for 14 d postweaning. DMI was determined daily. Growth measurements were taken weekly. Calves on C treatments ate more starter preweaning (402 g vs. 170 g, $P \le 0.001$) weaning (1256 g vs. 635 g, $P \le 0.001$), and postweaning (1927 g vs. 1585 g, $P \le 0.001$). Preweaning, H calves had higher DMI (1251 g vs. 951 g, $P \le 0.001$). Weights of H calves were greater at weaning (78 kg vs. 74 kg, $P \le 0.001$). H calves had greater ADG preweaning (753 g/d vs. 464 g/d, $P \le 0.001$) and overall (577 g/d vs. 497 g/d, $P=0.03$). H calves were more efficient preweaning (0.59 vs. 0.49, $P=0.003$), but C calves were more efficient during weaning (0.44 vs. 0.03, $P=0.04$). H calves had greater hip heights during weaning (94.9 cm vs. 91.9 cm, $P=0.04$) and postweaning (96 cm vs. 94 cm, $P=0.04$). H calves had greater heart girths preweaning (90 cm vs. 86 cm, $P=0.002$), weaning (98 cm vs. 93 cm, $P=0.001$) and postweaning (100 cm vs. 96 cm, $P=0.05$). Days medicated were higher preweaning (2.7 d vs. 1.4 d, $P=0.02$) and overall (3.2 d vs. 1.7 d, $P=0.05$) for calves fed H. There were no effects of L on any experimental variable. H calves consumed less starter but had higher ADG overall. H calves had larger frames and greater BW than C calves.

Key Words: Lactoferrin, Calves, Milk replacer

ADSA-SAD-Dairy Production (Undergraduate)

122 Shorter dry periods: A different approach to dry cow management. C. Lilly*, *Virginia Polytechnic Institute and State University*, *Blacksburg*.

The dry period length of 45-60 days has been much debated. This standard recommendation of 60 days was not based on research field trials but by analyzing DHIA records. When these records were analyzed the majority of farms used were already managing for a 60-day dry period. Under this system cows that fell into the short or reduced dry period were those whose dry period was compromised by abortion, incorrectly recorded calving dates, or calving unusually early. These factors may reduce a cow's performance in the lactation that follows. With cows producing more today than years ago, cows are being dried off producing more milk per day. Persistency of the lactation has also been prolonged with the use of bST. Recent studies are showing that a shorter dry period is possible. Wisconsin research examined six studies that looked at dry period length. Four of six studies reported no significant difference in milk production of cows with a short dry period as compared to cows with a long dry period. However, none of the studies included milk produced by short dry period cows during their extra days in the milking herd. The short dry period cows were equal to or greater in fat and protein production than the standard dry period cows. A Florida study reported short dry period cows lost 5% of their body score as compared to 11% of the standard dry period cows. Shorter dry periods would simplify feeding management as a far off dry group would not be required. This would help an expanding herd compensate for crowded dry cow facilities and would require only one ration to be formulated. In addition dry cows would only need to adjust rumen mircoflora twice as compared to a herd managed for a far off dry group and a close-up group. Under the right management conditions, shorter dry periods should be considered.

Key Words: Dry Period

123 Manure as Energy: Converting an abundant waste product to a beneficial energy source. A. Bush*, *University of Kentucky*, *Lexington*.

A growing number of dairy farms are incorporating methane gas recovery as a secondary source of income, as well as a practical means of waste disposal. After manure is washed form the parlor and freestall barns, it is fed into a digester that can recover the methane produced when bacteria break down the manure. The methane can be used to fuel a combustion engine for electrical energy, heat water, or be burned off and released as carbon dioxide. A dairy milking 300 cows can produce enough power to offset energy costs for its own operations, and sell the excess to a local electric provider. Because manure is broken down by methanogenic bacteria, the digester is held at 95-105° F. This temperature is high enough to kill many pathogens and weed seeds. This means any digested manure applied as fertilizer will be less hazardous to water sources, contain fewer active weed seeds, and could retain more nitrogen than typical manure. Anaerobic manure digestion also reduces odor by 97% and prevents the release of methane gas into the atmosphere. Installation of the system is still rather costly, but with a 5-10 year payoff, and thousands of dollars available in state and federal grants, methane gas recovery is something to be considered by the dairy industry.

124 Accelerated calf growth: You make the call. T. Bridges* and C. Williams, *Louisiana State University*, *Baton Rouge*.

The goal of a successful heifer rearing program is to provide the opportunity for the animals to develop full genetic potential for milk production at the desired age with minimal expense. The first and most important step is the development of the young calf. On most farms, calves receive colostrum for the first 24 to 48 hours, followed by milk replacer or whole milk. Conventional feeding programs typically consist of feeding 1 pound of milk replacer containing 20% protein and 20% fat daily along with free access to calf starter. In recent years, a new feeding system has become the buzzword in calf rearing programs. Accelerated growth programs, or intensified early nutrition, have been introduced to increase weight gain in neonatal calves. The goal of this feeding system is to capitalize on rapid early lean growth potential of young calves and allow greater lean growth without fattening. Accelerated feeding programs advocate feeding milk replacers containing 25 to 30% protein and 20% fat at the rate of 2 to 2.5 pounds per day. Because of potential problems, an accelerated feeding system must be carefully examined prior to implementation. Potential advantages of this program include decreased time to breeding and first calving, increased efficiency of body size gain, improved health and immune system, and enhanced milk production ability at calving. Conversely, disadvantages of this program include increased costs during the milk feeding period, increased scouring and rough-looking calves, delayed rumen development, and increased management. Dairies with intensive management systems would be the farms most likely to consider this system. If raising bigger, taller, longer heifers is the goal, then accelerated feeding programs make sense. However, if goals are economic and centered more toward animal health, then accelerated feeding programs must be carefully evaluated. In deciding whether to implement the intensified early nutrition programs, dairy producers must consider their goals. In a rapidly evolving industry, new management strategies for calf rearing continually appear. Dairy producers must make the call as to whether an accelerated calf feeding program is right for them.

Key Words: Calves, Growth, Accelerated

125 Prevention and control of the Bovine Viral Diarrhea virus. J. Sackmann*, *Washington State University*, *Pullman*.

The Bovine Viral Diarrhea (BVD) virus is an RNA virus of the *Pestivirus* genus of the *Flaviviridae* family of viruses. This virus, as a disease agent causes respiratory and reproductive problems in cattle that can be economically devastating. The BVD virus affects animals at various stages of life. Pregnant cowsâ•™ fetuses can become infected during the latter stages of gestation, resulting in an aborted calf, or a calf that is persistently infected, a carrier. Carrier calves fail to thrive and can die before maturity. Carrier animals shed the virus in their feces, blood, nasal mucus, saliva and urine. Testing is possible in blood and tissue samples. Once an animal has become infected, it must be removed from the herd, as there is no cure for the infection. However, there are methods of preventing BVD. Over 140 vaccines are available in the United States to help build an animalâ•™s resistance. These BVD vaccines are available as killed or modified live. Though there are various vaccination programs available for prevention of BVD, a vaccination program alone is not a herd health program. Strict screening processes, testing all calves, coupled with culling of positive calves and implementing a closed herd policy, are methods of limiting the exposure of unaffected cattle. Implementing a vaccination program for incoming cattle, as well as segregating them from the herd until determined to be BVD negative, is also a method of preventing spread. Although there are various methods of prevention and control for this disease, an alarmingly low percentage of dairies utilize prevention and control methodsâ•"as many as 75.5% of herds do not require testing of animals before incorporation into a herd. Only 10% of beef and dairy operations tested for BVD in purchased cattle in 2001. In summary, BVD is a viral disease decreasing the profitability of cattle; however, simple strategies for prevention and control of this disease are available. Therefore, it would be economically advantageous for producers to implement BVD prevention and control measures.

Key Words: BVD, Prevention, Control

126 The effects of heat stress on reproductive efficiency in dairy cattle. L. Buttles*, *University of Wisconsin*, *River Falls*.

Heat stress causes many negative effects within dairy cattle. These negative effects include, but are not limited to, decreased milk production, decreased reproductive efficiency, increased semen cost, and uneven calving intervals. Activity levels decline during estrus within periods of heat stress. Furthermore, the fertility of ova produced is also compromised. Synchronization protocols and embryo transfer offer options to combat reproductive problems related to heat stress but are associated with higher cost to the producer. Misters and fans are additional tools used to combat heat stress.

Key Words: Reproduction, Heat Stress

127 Management considerations with shortened dry periods. D. Maulfair*, *Penn State University*, *University Park*.

Recent studies have indicated that dry periods shorter than 60 d may be profitable. Research trials in Florida, Arizona, and Wisconsin have shown that although cows produce up to 4% less in the next lactation following a 30 d dry period, this is more than offset by the income from extra days added to the current lactation. Break-even milk yield based on production and expected calving date should be a primary determinant in shortening dry periods. Parity is another consideration because studies suggest that 30 d dry periods between the first and second lactation are not as economical; these cows show a larger drop in milk yield than older cows in the next lactation. Other management factors to consider include accuracy of breeding records, antibiotic use, feeding programs, and housing utilization. The importance of accurate breeding records is multiplied because there is much smaller margin for error with a shorter dry period. Because some dry cow treatments have withholding times longer than 30 d, their use must be carefully monitored. The dry cow ration also requires attention because these cows may be able to be fed a high energy ration for their entire dry period. Lastly, capacity of the parlor and cow facilities must be taken into account because shortening dry periods effectively increases milking herd size, possibly resulting in excessive overcrowding.

Key Words: Dry Period, Milk Production

128 National Animal Identification: What is its future? M. Aguiar* and E. Jaster, *California Polytechnic State University*, *San Luis Obispo*.

The subject of animal identification is not new to the dairy industry. However, with such recent events such as the outbreak of Foot and Mouth Disease in the United Kingdom and the detection of Bovine Spongiform Encephalopathy (BSE) in the U.S., the dairy and animal industry has been alerted to the potentially devastating effects of an outbreak in the United States. Dairy producers within the U.S. have voluntarily participated in the Dairy Herd Improvement Association (DHIA) Programs for over 30 years. Being enrolled in DHIA requires the dairy producers to have individual animal identification with attached readable tags. Although DHIA provides an identification and tracking program at present it is a voluntarily operation and does not include the entire dairy and beef industry. Therefore, a reliable program that would trace any possibly infected animals is necessary to reduce economic losses and minimize loss of consumer confidence in dairy and beef products. With the implementation of an effective National Animal Identification System (NAIS) any animal suspected of being infected could be traced to its point of origin. This information could be used to determine all animals that have been exposed to this suspected animal. This would allow for immediate quarantine of suspected populations and or recall adulterated products. This early detection and remediation would drastically reduce the negative effects on producers.

Key Words: National Identfication, Dairy Cattle

Breeding and Genetics: Sheep, Swine, and Dog Breeding

129 Assessing connectedness in across-flock genetic evaluations. R. M. Lewis*[1,3], R. E. Crump[2], L. A. Kuehn[1], G. Simm[3], and R. Thompson[4], [1]*Virginia Polytechnic Institute and State University*, *Blacksburg*, [2]*AGBU, University of New England*, *Armidale, Australia*, [3]*Scottish Agricultural Colle*, *Edinburgh, UK*, [4]*IACR-Rothamstead*, *Harpenden, UK*.

Reliability of across-flock genetic evaluations depends on the extent of genetic connections among animals in separate flocks. Our objective was to assess the relationship between connectedness and errors of prediction of differences in EBV ($a\hat{}_i$ - $a\hat{}_j$) between pairs of animals (*i,j*) in different flocks. Fifteen flocks of 40 to 120 ewes were simulated for a trait with heritability of 0.25 within-flock. Flock genetic means were drawn from a normal distribution with mean 0 and scaled variance 0.25. Flocks had opportunity to link by sharing rams from a team of 6 reference sires (RS). Selection ensued for 15 yr. Six scenarios producing from no (no RS used) to strong (3 RS each mated to 10 ewes) across-flock connectedness were used. Connectedness was measured as the average prediction error correlation (r_{ij}) between flocks. In simulation, true breeding values (a) are known and the statistic $L_{ij} = (a\hat{}_i - a\hat{}_j) - (a_i - a_j)$ was obtained with expectation zero. The average square of L_{ij} for all *i,j* quantifies the mean square error of prediction [$M(L_{ij})$]. For each of 25 replicates of each scenario, r_{ij} and $M(L_{ij})$ were obtained for lambs born in yr 25 and summarized by flock. As RS use increased, r_{ij} increased and $M(L_{ij})$ decreased (P<0.01). Their relationship was modeled as $Y = b + ce^{-kX}$ where Y was the value of $M(L_{ij})$, b was the asymptote, $b + c$ the intercept, k the rate parameter, and X the value of r_{ij}. The b reflects variance, and c the squared bias without connectedness, of prediction. The function fitted well (R^2=0.97) with values of b, c and k of 0.372±0.0161,