

money each year, many have found a second income by selling the excess power they produce. But the production of electricity is by no means the only benefit of using a methane digester. Along with making dairy farms self-sufficient on energy, it also solves one of the industry's biggest problems- odor. Because of this problem, many restrictions are placed on the location and size of a dairy. Since manure placed into the digester is sealed off from the outside air, it reduces odor by an incredible 97% and prevents the release of methane gas into the atmosphere. The high temperature in which the digester is held also kills many pathogens and weed seeds and any digested manure applied as fertilizer will be less hazardous to water sources and retains more nitrogen than typical manure. Although installation of the system is rather expensive, state and federal grants as well as possible tax credits provide help in initial set-up costs allowing for a 3-10 year payoff. With such benefits available, methane digestion should be strongly considered by the dairy industry as both a manure management system as well as a secondary source of income.

**Key Words:** Digester, Manure, Energy

**141 Why crossbreed dairy cattle?** J. Yoder\*, *Virginia Polytechnic Institute and State University, Blacksburg.*

In the last several years crossbreeding has reappeared as a management tool for dairy farmers. Historically, crossbreeding dairy cattle has not been as popular as it is in other species, because it did not appear to be economically useful. Producers have focused on increased production as the primary economic factor in breeding programs. In most cases this focus favors pure Holsteins. Recently, producers have begun to expand their focus to add management traits (such as health and fertility traits), to breeding programs to control costs. Purebred breeds are growing increasingly inbred, as producers heavily use a small number of elite bulls. Inbreeding impacts many traits negatively, especially the management traits. Crossbreeding seeks to form beneficial heterozygous gene combinations, along with the benefit of heterosis. Heterosis raises performance above the average of the two parents. Three studies have looked at performance of crossbreds in commercial herds. A Wisconsin study surveyed producers who had crossbreds in their herds. The producers gave high scores to crossbreds for traits such as components, survivability and fertility compared to Holsteins, while citing conformation to facilities, value of selling stock and production as negatives. A USDA study found that while Holsteins produce more fluid milk, crossbreds are competitive on a Net Merit or Cheese Merit basis. A University of Minnesota study compared

purebred Holsteins to crosses of Scandinavian Red, Montebeliarde, and Normande sires on Holstein dams. The study shows that crossbreds may be competitive with Holsteins for production, particularly combined fat and protein, while improving fertility, calving ease and survival rates. Crossbreeding could be an effective tool for dairy managers. The trade-off in many cases will be giving up some production while cutting the costs of managing the herd. Crossbreds will be most beneficial in high stress climates and in areas that favor higher components. Crossbreeding programs do not eliminate the need for good management. It is critical to use high quality breeds and to select intensely within the breeds utilized. It will also be important to have accurate record-keeping to insure the success of the program.

**Key Words:** Crossbreeding

**142 The effect of selenium source on the health and performance of dairy cattle.** R. J. Mast\* and E. H. Jaster, *California Polytechnic State University, San Luis Obispo.*

One of the trace minerals that has gained recognition in animal nutrition, specifically dairy cattle, is selenium because of the role that it plays in immune, reproductive, and cellular function. Research has indicated that the source of selenium can have an affect on the health and performance of dairy cattle. Recent studies have demonstrated that there are increased benefits to feeding organic forms of selenium compared to inorganic forms. These studies have focused on the concentrations of selenium in whole blood, milk, and colostrum, as well as whole blood glutathione peroxidase (GSH-PX) activity that can be achieved by feeding various forms and amounts of selenium. Selenium status is determined by the level of selenium in blood, milk, and tissue, and by enzyme activity of glutathione peroxidase. The bio-ability of the cow to transfer selenium to the calf is essential for calf health and reduced mortality. The majority of this research points to the conclusion that organic sources of selenium are more easily absorbed and able to be utilized more fully than inorganic sources by the dairy cow. Such findings make this topic important for further study in order to determine how to achieve the highest level of herd health and productivity. Comparison of the results from studies that have measured the effects of supplementing organic versus inorganic selenium to dairy cattle is important in evaluating the feeding value of this mineral in dairy cattle rations.

**Key Words:** Selenium, Dairy cattle

## Women and Minority Issues in Animal Agriculture Luncheon

**143 Mutual mentoring: A strategy for success in academia and industry.** M. Lederman\*, *Virginia Tech, Blacksburg.*

Those who attend this session will have the opportunity to hear about mutual mentoring, a strategy by which individuals come together to support each others efforts to succeed in the academy and in industry. We will present several examples of mutual mentoring groups whose members have been successful in achieving the goals they set for themselves. The strengths and weakness of these groups and the mechanics of how they operated will be discussed. During this meeting, we will offer the opportunity for those present to form new mutual

mentoring groups, based on whatever criteria (discipline, geographical proximity, seniority) the participants deem appropriate. We ask the participants to articulate their personal and professional goals for a time period they select, define the topics appropriate for group discussion, set up the procedure(s) by which they are accountable to each other, and decide how they will communicate. The sub-groups will report back to the whole and develop strategies by which they will continue to be in contact with each other.

**Key Words:** Women in agriculture, Minorities in agriculture, Mentoring