ARPAS Symposium: Feed Management: ARPAS, NRCS, and the National Project

393 Feed management from perspective of national feed management project. J. H. Harrison*[1], R. A. White[1], G. Erickson[2], R. Koelsch[2], A. Sutton[3], T. Applegate[3], R. Burns[4], and G. Carpenter[5], [1]*Washington State University, Puyallup*, [2]*University of Nebraska, Lincoln*, [3]*Purdue University, Lafayette, IN*, [4]*Iowa State University, Ames*, [5]*USDA-NRCS, Washington, D. C.*

In 2006 a Feed Management Education Project was implemented for the species of beef, dairy, poultry and swine. The project is national in scope and funded by the USDA - Natural Resources Conservation Service (NRCS) Conservation Innovation Grant program. The project is designed to encourage adoption of the NRCS Feed Management Conservation Practice Standard 592 and feed management practices that can have a positive impact on soil, water, and air quality. A goal of the project is to assist NRCS staff and agricultural professionals increase their understanding of Feed Management, its impacts on environmental sustainability of livestock and poultry operations, and inclusion of a Feed Management Plan (FMP) as part of a comprehensive nutrient management plan (CNMP). The Feed Management curriculum is organized in a four-hour format for both technical service providers and nutrition consultants. Information is provided that links the FMP to the CNMP and the requirements for certification to write a feed management plan. Real farm case studies are used to provide training in use of on-farm assessment checklists for assessing the opportunity of a Feed Management Plan to impact whole farm nutrient balance; and, develop and implement a FMP. Electronic decision aid tools include: whole farm balance, manure excretion estimator, and the relative economics of a ration change vs. transporting manure. The manure excretion estimator tool and economics tool are both linked to feed nutrient use. Species specific and practice specific fact sheets are provided to assist with evaluating the relative merit of feed management practices listed in the on-farm assessment checklists. Examples of a FMP template are provided, as well as a completed example FMP.

Key Words: dairy, feed management, environment

394 Update on feed management from the perspective of USDA NRCS at the national and state levels. G. Carpenter*, *USDA NRCS, Beltsville, MD.*

The USDA Natural Resources Conservation Service (NRCS) has been interested in feed management as a means of decreasing manure nutrients since the early 2000s. NRCS sees feed management as a major tool in helping the animal industries to control water and air pollution possibilities. In 2001, NRCS assembled a Feed Management Action Plan and brought in a visiting scientist to begin actions to support feed management. A national dialogue on feed management was held in 2002, with over 100 scientists and industry nutritionists. In 2003 a series of focus group sessions was held with industry nutritionists to establish areas in which NRCS could further the role of feed management in manure nutrient control. NRCS adopted a feed management conservation practice standard in 2003 that allows NRCS to supply technical and financial assistance to producers for adopting the practice. NRCS entered into a Memorandum of Understanding with ARPAS in 2004 for ARPAS to train and certify animal nutritionists to work with producers on feed management for manure nutrient reduction. In the NRCS Conservation Innovation Grants program a number of projects have been funded that are feed management related. Feed management is one of the six core elements of the Comprehensive Nutrient Management Plan (CNMP) the NRCS tool for nutrient management planning that has been designated by USEPA as satisfying its permitting requirements for a nutrient management plan, in its Concentrated Animal Feeding Operations (CAFO) rule. Since 2004, NRCS has approved EQIP contracts for CNMPs with feed management that cover over 58 thousand animal units. Not-to-Exceed payment rates for feed management for FY 2009 were set at five dollars per animal unit, and not to exceed six thousand dollars per contract. At the time of this writing, eleven individuals were registered with NRCS as Technical Service Providers (TSPs) certified to write the feed management section of the CNMP. One nutritionist is registered as a TSP to formulate diets for manure nutrient reduction.

Key Words: feed management, nutrient management, CNMP

395 The Virginia feed phosphorus monitoring project. C. C. Stallings*, K. F. Knowlton, R. E. James, and M. D. Hanigan, *Virginia Polytechnic Institute and State University, Blacksburg*.

To reduce the potential for phosphorus (P) runoff into streams, a project was undertaken to use feed management as a tool to reduce P excreted by dairy cows. A survey was sent to all Virginia dairy farms (806) asking for information related to nutrient management practices, and assessing potential interest in an incentive-payment project to reduce overfeeding of P. Interested farms were contacted, visited, and signed to the project. The program provides free feed testing for major nutrients and minerals every two months for three years, ration consultation on request, educational materials and updates via a newsletter, and educational meetings for both producers and nutritionists. In addition a P Report is provided to producers after each set of samples are submitted and analyzed. This report includes calculated amount of P fed and calculated P requirement for cows in that herd. The P requirement and dry matter intake are calculated according to NRC based on producer-reported body weight, milk yield, and fat test. The result is expressed as P consumed as a percent of required. 215 herds signed up for the project. By 2009, 160 herds had completed enough samplings (5) to have a year end summary prepared calculating eligibility for payment. Ten herds fed P within 5% of required and qualified for the highest year-end payment ($12/cow), 37 herds fed P at 105 to 115% of required for a $6/cow pay rate, 38 herds fed P at 115 to 125% for a $3/cow pay rate, and 75 herds fed more than 125% of required P and did not qualify for payment. The remaining herds have not completed their first year or submitted enough samples for a summary. The Virginia P Feeding Incentive Program has engaged producers and their advisors in an ongoing dialogue about herd feeding practices. More than 50% of producers completing sufficient sampling for year 1 evaluation have earned an incentive payment, and average dietary P consumed in all 160 herds declined by 3.3 grams/cow/day with a total calculated reduction of 32.6 tons P per year from 24,522 cows.

Key Words: phosphorus, incentive, feed management

396 Feed management: Northeast perspective on workshops, ARPAS certification and relationship with national feed management project and NRCS. V. Ishler*[1], C. Stallings[2], and R. Kohn[3], [1]*The Pennsylvania State University, University Park*, [2]*Virginia Polytechnic and State University, Blacksburg*, [3]*University of Maryland, College Park*.

Land Grant Universities in Delaware, Maryland, Pennsylvania, Virginia and West Virginia and USDA's Cooperative State Research, Education and Extension System (CSREES), working with EPA Region III, formed a partnership to advance water quality protection and restoration efforts in the Mid-Atlantic Region by providing water quality science support, training and education. In the winter of 2006, University specialists in dairy nutrition were invited to participate in the Mid-Atlantic Regional Water Program that until then was predominately comprised of engineers and agronomists. Penn State, Virginia Tech and the University of Maryland represented the dairy nutrition component. Specialists from these three Universities decided the greatest opportunity to positively affect water quality was to implement the national initiative: Development and Integration of a National Feed Management Education Program and Assessment Tools into a Comprehensive Nutrient Management Plan, which was being lead by Washington State University. The goal of the dairy nutrition group was to cater the national program to issues affecting the Mid-Atlantic Region. Collaboration with the local NRCS specialists was an essential component in getting the certification process initiated. In November 2007, the first training on how to become a certified feed management planner was held in Grantville, Pennsylvania with 105 consultants in attendance. More training followed that included both feed industry and NRCS personnel. The Mid-Atlantic group felt that for nutritionists to buy into the concept of becoming a certified feed management planner through ARPAS, off-setting the cost of the exam would be a positive incentive. As of January 2009, ARPAS lists a total of 65 certified feed management planners and 56 are in the northeast and would have attended trainings provided by the Mid-Atlantic dairy nutrition group.

Key Words: feed management, mid-Atlantic region, certification

Beef Species: Symposium: Population Data Analyses to Evaluate Trends in Animal Production Systems

397 Enhancing management decisions in modern animal agriculture using population data and appropriate analytical methodology. P. D. Matzat*[1], J. Bargen[2], and W. J. Platter[1], [1]*Elanco Animal Health, Greenfield, IN*, [2]*AgSpan, Overland Park, KS*.

Improvements in data capture and analytics in animal protein production industries has reflected the change and opportunity observed in many manufacturing and value creation segments of the global economy. Imagination and cost are the only things that limit the amount and type of individual or unique data captured, analyzed and reported in modern animal protein production systems. As the result of mountains of data being accessible, large production systems struggle with how to best capture, analyze, evaluate, interpret and act on information that emanates from daily downloads of production related measurements. Management decisions based on scientific methodology for analysis of population information is sometimes difficult and misleading based on system bias and the appearance of significant effects simply based on the volume of data or observations involved. Furthermore, the economic impact of small differences in efficiency or production output often times outweigh science based evaluation or analysis. A decision making constraint that the food animal production industry must grapple with is the difference between controlled research results reported in peer reviewed scientific publications compared to commercial production outcomes. Additionally, conclusions with regard to treatment efficacy reported in scientific journals often do not match up with optimal economic outcomes or return on investment when evaluated in commercial production enterprises. Large commercial operations have the capability of replicating treatments across entire systems, allowing replication of treatments by barns or houses in the case of pork, broiler and layer production or pens in the case of feedlot cattle. Individual measurements are also accessible in the case of daily dairy cow output, as well as carcass metrics in pork and beef production. Linking this information to treatments, seasonal changes in environment and the impact of specific management decisions can have a dramatic impact on system profitability, long range planning and financial sustainability of animal agriculture.

Key Words: population data, management, analysis

398 An animal breeding approach to the estimation of genetic and environmental trends from field populations. D. Garrick*, *Iowa State University, Ames*.

Selection of parents from candidate individuals that outperform their contemporaries is the basis for the genetic improvement that leads to long-term trends in the performance attributes of populations. Theoretical formulae to predict the genetic trend or response to selection are well known and are functions of population parameters including heritability, intensity of selection, phenotypic variation and generation interval. Field data produced from successive generations of selected individuals do not always reflect expected gains, in part because phenotypic changes result from both genetic and environmental causes. Estimating realized trends from field data, and partitioning them into various causes, is therefore of critical interest. Prior to the 1980's, control populations were the basis for separating genetic from environmental causes of change. The development of mixed model theory, notably by Dr Henderson and colleagues, led to recognition that in certain circumstances phenotypic observations from a selected population could be decomposed into their underlying genetic and environmental components without recourse to a control population. This controversial suggestion has, over the last 2-3 decades, been accepted throughout the world as the routine approach to predict trends in populations with known parentage. It is now also frequently applied to wild populations, with molecular techniques rather than pedigree used to infer parentage. The philosophical basis that underpins the method involves a model equation that accounts for performance as the sum of various unobservable fixed and random effects. It is widely applicable to the analysis of appropriate field and experimental data.

Key Words: mixed models, BLUP