



Title: Integrating Feed Nutrient Management into a CNMP

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Theme: Animal Waste Management

Situation: USDA Natural Resources Conservation Service NRCS) and US Environmental Protection Agency (EPA) have identified feed nutrient management as one of six components of a Comprehensive Nutrient Management Plan (CNMP). Feed program decisions as well as animal performance has significant impact on the total nutrients that must be managed. However, planning tools do not currently exist for crediting feeding programs that reduce nutrient excretion or discounting feeding programs that increase nutrient excretion.

Objectives: A review and rewrite of ASAE Standard D384.1, Manure Production and Characteristics, was completed for the purpose of:

1. Development of equations that would accurately predict excretion of nitrogen, phosphorus, and dry matter (at a minimum) for primary livestock and poultry species based upon animal performance and dietary intake.
2. Review and modification of the existing ASAE D384.1 tables would define average characteristics of excreted manure.
3. Assembly of an as-removed summary of typical manure characteristics as removed from common animal housing and manure storage systems.

Based upon the availability of these standards, tools that estimate nutrient and solids excretion based upon dietary and animal performance estimates will be constructed to integrate animal management decisions into a CNMP.

Methods: A team of approximately 30 animal scientists (representing the Federation of Animal Science Societies-FASS) and agricultural engineers (representing the American Society of Agricultural Engineers-ASAE), was assembled to review the available literature and propose a revised standard. The team was divided into seven work groups, five of which focused on development of predictive equations for swine, dairy cattle, horses, beef cattle, and poultry. The remaining two groups focused on assembling an estimate of an average estimate of as-excreted and as-removed manure production and characteristics. Wendy Powers, Iowa State University animal scientist, and Rick Koelsch, University of Nebraska agricultural engineer provided overall project leadership and assembled the final proposed standard based upon reports from the seven work groups. The proposal was presented to ASAE for review and vote during the fall of 2003. In addition, the leadership team is assembling software for estimating excretion based upon the equations presented in the proposed standard and plans for expanding awareness of this effort assuming that the standard is approved by ASAE. This software will speed and simplify the use of these equations in a nutrient planning process.

Partnerships: The FASS provide financial assistance. FASS members (18 animal scientists) participated in the discussion and final development of the proposed standard. ASAE provided support for communications, review and final voting processes. ASAE members (12 agricultural engineers) also participated in the development of the proposed standard. In addition, 12 additional animal scientists and 12 additional agricultural engineers participated in the review and voting process. In addition, USDA NRCS and National Pork Board (NPB) provided financial and technical assistance to this effort. Finally, the National Center for Manure and Animal Waste Management (National Center) has provided financial assistance through a competitive grant process.

Research: To date, most efforts have focused on review of existing research and field data collection efforts into a proposed standard. An initial educational program on the proposal was hosted by ASAE at their 2003 annual conference. Financial assistance from the National Center for Manure and Animal Waste Management is targeted at supporting software tools for field application of the proposed standard and awareness efforts assuming that the proposal is accepted by ASAE. Most education and outreach activities will follow this proposed presentation. The proposed presentation is a first step to increase awareness of the proposal and its application in CNMP processes.

Resources: Five groups including FASS, ASAE, USDA NRCS, and NPB, contributed resources for review and revision of this standard. The National Center has provided resources to enhance the awareness and usability of the final products.

Results: This presentation will be a progress report summarizing the final proposed standard and the outcomes of the ASAE review and voting process (occurs fall 2003). The presentation will also share two approaches that integrate these proposed equations into CNMP processes.



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