NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

Feed Management

(**No. of Systems and Animal Units Affected**)

Code 592

DEFINITION

Managing the quantity of available nutrients fed to livestock and poultry for their intended purpose.

PURPOSE

- Supply the quantity of available nutrients required by livestock and poultry for maintenance, production, performance, and reproduction while reducing the quantity of nutrients, especially nitrogen and phosphorus, excreted in manure by minimizing the over-feeding of these and other nutrients.
- Improve net farm income by feeding nutrients more efficiently.

CONDITIONS WHERE PRACTICE APPLIES

Confined livestock and poultry operations with a whole farm nutrient imbalance, with more nutrients imported to the farm than are exported and/or utilized by cropping programs.

Confined livestock and poultry operations that have a significant build up of nutrients in the soil due to long-term land application of manure.

Confined livestock and poultry operations that land apply manure and do not have a land base large enough to allow nutrients to be applied at rates recommended by soil test and utilized by crops in the rotation.

Livestock and poultry operations seeking to enhance nutrient efficiencies.

CRITERIA

General Criteria Applicable to All Purposes

Follow all federal, state and local laws and regulations.

The diets for specific species of animals shall be developed in accordance with recommendations from one of the following:

- Standards outlined in the most current recommendations of the National Research Council (NRC).
- Recommendations of Purdue University.
- Standards developed by the professional nutritionists of livestock and poultry production companies, feed companies, and/or feed suppliers.

Laboratory analysis shall be conducted to determine the nutrient content of a formulated diet, or on the feed ingredients used for the initial formulation of diets or to make adjustments to existing formulations.

Diets and feed management strategies shall be developed by professional animal scientists, independent professional nutritionists or other comparably qualified individuals.

Diets shall be formulated to provide the quantities and correct relative ratios of available nutrients required by the animal species to meet the goals for which the plan is being developed.

Adjustments to nutrient levels shall be provided to meet specific genetic potential, environmental demands, and/or requirements to insure health, well-being and productivity.

One or more of the following feed management practices and/or diet manipulation technologies

shall be used to reduce N, P and other excreted nutrients while maintaining the health, well-being and productivity of the animal.

- Formulating diets closer to animal requirements.
- Reducing protein and supplementing with amino acids (non-ruminants).
- Manipulating the crude protein and energy (carbohydrate and fat) content of the diet to enhance the availability of amino acids (ruminants).
- Using highly digestible feeds, as appropriate, in the diet.
- Using phytase and reducing the supplemental phosphorus content of the diet (non-ruminants)
- Reducing the phosphorus content of the diet of ruminants when it is being overfed.
- Using selected enzymes or other products to enhance feed digestibility or feed use efficiency.
- Using growth promotants as allowed by law.
- Implementing phase feeding.
- Implementing split-sex feeding.
- Using other feed processing, management or diet manipulation technologies that have demonstrated the ability to reduce manure volume and/or nutrient content.

A laboratory analysis of excreted manure or manure from storage facilities shall be completed to determine the manure nutrient content and to estimate the impact of the feeding strategy. Refer to the Indiana NRCS FOTG Standard (633) WASTE UTILIZATION.

CONSIDERATIONS

Consider nutrient requirements for production based upon stage of growth, intended purpose of the animal and the type of production (e.g., meat, milk, eggs) involved.

Use management practices described in the NRCS Nutrient Management (Feed Management) Technical Notes for the specific animal species.

Analyze the drinking water consumed by the animals to determine its nutrient content, and adjusting the diet to account for this source of nutrients.

Consider different feed ingredients (e.g. by - products) and their potential impacts on the nutrient content of excreted manure.

Consider the potential impact of feed management on the volume of manure excreted and on manure storage requirements.

Consider the impact of feed management practices, animal management practices, and diet manipulation on pathogens, animal health and well-being.

Consider using concentrates and forages grown on the farm to minimize the quantity of nutrients imported to the farm, and to maximize the recycling of nutrients on the farm.

Consider switching some or all of the operation to a grass based operation for ruminants.

Diet composition of animals greatly impacts the emissions of odors, gases and dust from production facilities and often the health and well being of the animal. Changing the formulation of animal diets and use of new feed management technologies can reduce the intensity and composition of gas emissions and odors, and the amount of dust emitted from buildings, feedlots and manure storage facilities. One of the following feed management practices and/or diet manipulation technologies shall be used to reduce gas, odor and/or dust emissions.

Reducing ammonia emissions:

- Reducing protein and supplementing with amino acids (non-ruminants).
- Manipulating the crude protein and energy (carbohydrate and fat) content of the diet to enhance the availability of amino acids (ruminants).
- Using fiber in swine diets.
- Using dietary supplements that acidify manure or bind ammonia in manure.

Reducing hydrogen sulfide emissions:

- Reducing the sulfur amino acids closer to the animal requirements.
- Using non-sulfur mineral sources in the trace mineral premix instead of sulfur-based minerals.

Reducing dust:

- Using higher levels of fat or vegetable oils in the diet.
- Pelleting the ration.

- Using a roller mill or steam flaking instead of a hammer mill for processing grain.
- Using high moisture feeds.

PLANS AND SPECIFICATIONS

Plans and specifications for feed management shall be in keeping with the requirements of this standard. They shall describe the specific feed management practices and/or technologies that are planned for the operation.

The following components shall be included in the feed management plan:

- The type of technology, or technologies, and/or feeding practices that will be used on the operation.
- Feed analyses and ration formulation information prior to and after implementation of feed management on the operation.
- The estimated, or measured, nutrient content of the manure prior to the implementation of feed management on the operation.
- The estimated impact that feed management will have on manure nutrient content.
- Guidance for how often the feed management plan shall be reviewed and potentially revised.
- The quantities and sources of nitrogen and phosphorus that will be fed.
- Identification of the qualified feed management specialist who developed the plan.

OPERATION AND MAINTENANCE

The producer/client is responsible for the operation and maintenance of the feed management plan. Operation and maintenance activities address the following:

- Periodic plan review to determine if adjustments or modifications are needed.
- Routine feed analysis to document the rates at which nitrogen and phosphorus were actually fed. When actual rates fed differ from or exceed the planned rates, records will indicate the reasons for the differences.
- Maintaining records to document plan implementation. As applicable, records include:
  - Records of feed analysis and ration formulation, including the record of ration formulation used prior to implementing the feeding strategy.
  - Records of the initial estimate of the impact the feeding strategy was expected to have on reducing manure nutrient content and/or volume.
  - Records of any manure analysis and volume that was done after the feeding strategy was implemented to determine manure nutrient content and/or volume.
  - Dates of review and person performing the review, and any recommendations that resulted from the review.

Records of plan implementation shall be maintained for five years, or for a period longer than five years if required by other Federal, state, or local ordinances, program, or contract requirements.

REFERENCES

NRCS Nutrient Management Technical Notes (2003):

- *Effects of Diet and Feeding Management on Nutrient Content of Manure*
- *Feed and Animal Management for Beef Cattle*
- *Feed and Animal Management for Swine (Growing and Finishing Pigs)*
- *Feed and Animal Management for Poultry*
- *Feed and Animal Management for Dairy Cattle*

Purdue University Cooperative Extension Service

- *Phytase: Basics of Enzyme Function,* 2004 (AS-560-W)
- *Tri-State Swine Nutrition Guide*, 1998 (The Ohio State University, Bulletin 869-98)

Council for Agricultural Science and Technology, IP 21, *Animal Diet Modification to Decrease the Potential for Nitrogen and Phosphorus Pollution,* 2002, Ames IA.