



POULTRY

NUTRIENT MANAGEMENT

FOR ENVIRONMENTALLY RESPONSIBLE PRODUCERS

Poultry producers face many regulatory issues and challenges associated with the Federal Clean Water Act. Enacted by Congress in 1972 after several highly publicized water pollution events in the late sixties, the Act was amended in 1977, 1981, and 1987.

The Clean Water Act requires states to reduce pollution on the nation's waterways, both from point and nonpoint sources. These requirements affect many aspects of animal agriculture, including poultry operations.

The President's Clean Water Action Plan of 1998 is a target for restoring and protecting water quality across the United States. The plan identifies contaminated runoff as the nation's most important remaining source of water pollution and provides for the effort to reduce polluted runoff from a variety of sources.

The United States Department of Agriculture and the Environmental Protection Agency are mandated to develop a unified national strategy to minimize the water quality and public health impacts of animal-feeding operations.

Poultry Nutrient Management Issues

Although the Clean Water Act was enacted more than 25 years ago, the implications of some provisions have only recently unfolded. For example, the Total Maximum Daily Load (TMDL) provision sets maximum pollutant standards for impaired water. Once fully implemented, the TMDL provision could have an impact on all potential water-pollution sources.

More recently, the potential impact of nutrients such as phosphorus on water quality has heightened public awareness. Many agencies now are focusing on ways to address nutrient enrichment in water bodies. Nutrient management planning is a tool to address these issues. *The Natural Resources Conservation Service Conservation Practice Standard: Nutrient Management Code 590* is a framework for developing plans.

In addition, regulations not directly associated with water quality affect poultry producers. For example, minimum buffer zones are required between poultry houses, adjoining property lines, and occupied dwellings, and for litter application. Other siting requirements may apply to large operations.

Producers are encouraged to develop comprehensive nutrient management plans which detail land nutrient applications, nutrient storage, record-keeping, and other management aspects.

Regulatory issues that affect poultry and livestock producers encompass a wide area and often change without notice. Poultry producers are encouraged to keep abreast of these and other important issues through their county Extension office or local NRCS office.

Water Quality Concerns

Nitrogen, phosphorus, organic matter, sediments, pathogens, heavy metals, hormones, antibiotics, and ammonia are potential pollutants. Excess nutrients in water result in or contribute to low dissolved oxygen, eutrophication (over-enrichment), and toxic algal blooms. Decomposing organic matter may reduce oxygen levels and cause fish kills.

Conditions that may be harmful to human health are associated with microbes such as *Pfiesteria piscicida* and pathogens such as *Cryptosporidium* and *Giardia* linked to drinking water supplies. Nitrate nitrogen can cause groundwater contamination.

Nutrient Management Plans

Conservation Practice Standard: Nutrition Management Code 590 is the guide to comprehensive nutrient management plans (CNMPs) that the NRCS and other agencies or cooperators will use to help growers develop CNMPs. It offers technical guidance but does not establish regulatory requirements. Code 590 is not a sole source or reference for developing CNMPs but is a subset of a conservation plan unique to animal feeding operations.

Plans can be adjusted in the state. The NRCS develops guidelines for waste-management facilities using state specific guides. In the past, the agency operated under regional technical center guidelines. State-specific data from research, testing, and other inputs that can be quantified within the state now are decision criteria.

Animal-Feeding Operations

Agricultural enterprises where animals are kept and raised in confined situations are defined as animal-feeding operations (AFOs) for regulatory purposes. Initial definition is based on animal units (AU) approximately equivalent to one beef cow or equivalent numbers of other kinds of animals.

When animals are fed rather than grazed, the operations congregate animals, feed, manure and urine, dead animals, and production on a small land area. Two or more AFOs under common ownership are considered to be a single operation if they adjoin or if they use a common area or system for waste disposal. There are about 450,000 AFOs in the United States of which confined animal-feeding operations (CAFOs) are a relatively small number of operations regulated by the EPA.

A CAFO is a lot or facility where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period; and, where crops, vegetation, forage or postharvest residues are not sustained over any portion of the lot or facility in the normal growing season.

Under the National Pollution Discharge Elimination System (NPDES) program, an AFO is a CAFO if more than 1,000 animal units are confined at the facility, or from 301 to 1,000 animal units are confined at the facility and it also meets one of the specific discharge method criteria. An AFO can be declared a CAFO on a case-by-case basis if the NPDES authority determines it to be a significant contributor of pollution to waters of the U.S. CAFOs are point pollution sources subject to NPDES permits.

National Performance Expectations

The USDA and EPA national performance expectation is that all AFO owners and operators will develop and implement technically sound and economically feasible site-specific comprehensive nutrient management plans.

The planning process is both voluntary and regulatory. It helps achieve individual business and personal goals while protecting water quality and public health. The volunteer approach for most AFO owners and operators is to develop and implement site-specific CNMPs through locally led conservation efforts, environmental education, and financial and technical assistance. Certain high risk AFOs must be addressed through NPDES permits.

Three categories of CAFOs, identified for the regulatory program, must develop comprehensive nutrient

management plans. First is an operation that produces significant amounts of manure — greater than 1000 AUs. Second, is an operation creating unacceptable conditions in which discharge of animal waste to waters or animals coming in contact with waters running through the operation represent a risk to water quality and public health. Or, third, any operation which significantly impairs a waterbody or watershed and nonattainment of designated use is subject to regulation.

Animal feeding operations can benefit from three types of incentives. Smaller CAFOs that meet certain criteria may exit the regulatory program at the end of the permit term if problems are corrected. A good faith incentive is allowed for some AFOs if they have or are implementing CNMPs. And, tax incentives will encourage owners and operators to develop and implement CNMPs.

To learn more, check the Mississippi Department of Environmental Quality Office of Pollution Control World Wide Web Site: <http://www.deq.state.ms.us/newweb/opchome.nsf/pages/Regulations>

Look for these topics: OPC Regulations, Permits, & Guidance Documents \ Water Regulations \ Wastewater Regulations for National Pollution Discharge Elimination System (NPDES) Permits, Underground Injection Control (UIC) Permits, State Permits, Water Quality Based Effluent Limitations and Water Quality Certification (an Adobe Acrobat document)

If you do not have Internet access, visit your local office of the Mississippi State University Extension Service. Your county agent can help you download the document from the World Wide Web.

Phosphorus (P) Facts

P is chemical shorthand for the element phosphorus, which is essential for animal and plant growth. Supplemental P is often needed for profitable animal and crop production.

Increased P addition rates to surface waters may increase eutrophication which is the enhanced nutrition of aquatic growth. It lowers water quality by using up oxygen. Undesirables (algae and aquatic weeds) grow faster. Thus, desirable water use (fishing, recreation, industry, drinking) can be curtailed. In 1996, the Environmental Protection Agency named this increased aquatic growth as the main cause of impaired surface water quality in the United States.

Modern livestock production imports P onto the feeding farm. Most chicken litter is applied to pastures and forages at rates that supply sufficient nitrogen (N) to the crop. However, more P is provided in this case than plants can use.

Most P moves in the landscape through soil erosion. Conventional wisdom maintains that large amounts of over-applied P are stored in the soil forever. It now is known that P is more soluble/mobile if soil storage capacity is exceeded through very high application rates and/or use on sandy soils.

The Phosphorus Index is a process which assesses

the potential for P movement through the landscape. Higher P Index values indicate that the site's management system should be reviewed. Factors in the P Index include the following:

- 1) potential erosion for a particular soil, site, and slope
- 2) runoff class/permeability (based on soil texture and other soil characteristics)
- 3) distance to significant water stream
- 4) soil test P
- 5) inorganic P application rate and method
- 6) organic P (manure) application rate and method

To maintain lowest P-index on a litter-treated field

1. Minimize soil erosion and runoff.
2. Apply litter as far as possible from streams and use buffer strips.
3. Apply litter to growing crop at lowest possible rates.
4. Maximize nutrient uptake in high-quality hay.

Mississippi Regulations

Regulations governing poultry litter nutrient management in Mississippi are managed by the Mississippi Department of Environmental Quality. Key points for a grower to consider include, but are not limited to:

- ¥ Any facility for the housing of broiler pullets, broiler breeders, and broilers in a poultry operation that generates dry litter or waste constructed, enlarged or significantly altered after February 24, 1994, must be at least 600 feet from the nearest dwellings not owned by the operator or from any commercial establishment, and at least 150 feet from the nearest adjoining property line.
- ¥ Dry litter cannot be applied any closer than 25 feet from the nearest property line and must be at least 150 feet from any dwellings not owned by the operator.
- ¥ Issuance and reissuance of a wastewater treatment permit for concentrated animal feeding operations must, at a minimum, include All animal feedlots poultry operations with 9,000 or more birds which have been constructed, enlarged or signifi-

cantly altered after August 15, 1979, or any other causing pollution to waters of the state shall obtain a permit pursuant to these regulations.

- ¥ All facilities that do not meet the requirements of the Federal regulation 40 CFR 122.23 must submit an NRCS treatment design worksheet or other approvable waste disposal system design. The design and request for site inspection constitute application for an animal waste disposal permit or a general permit.
- ¥ An NPDES permit may be required for operations with 30,000 to 100,000 birds depending on the watering system and manure handling system.
- ¥ The NRCS Environmental Quality Incentive Program (EQIP) includes cost share options for operations with less than 1,000,000 pounds of birds. Broiler cost share, calculated on a 2.2 pound average, would account for 454,545 birds.

Any regulations referenced were in effect at the time of this publication. Regulations can and do change. Contact your local Extension or NRCS office or the MDEQ for the most current regulations.

Nutrient Management Planning

A nutrient management plan for poultry growers, users of poultry byproducts, and poultry processors is a win-win situation for the industry and the environment. Through careful planning, the poultry producer maintains control of his business decisions while satisfying the necessary regulations that protect the U.S. water supply.

Although management plans require well-thought-out details, they can be summarized as follows:

1. Obtain accurate soil information for each field or management unit on the farm:
 - soils maps that give the soil series
 - United States Geologic Survey maps
 - NRCS aerial photos
 - soil test for fertility levels and lime requirements
2. Estimate realistic yield potentials based on experience and management level.
3. Estimate plant nutrients required to reach the yield potential through soil test-based fertility recommendations and relevant crop nutrient use data.
4. Determine plant-available nutrients in broiler litter or other animal by-products.
 - best to use analysis of material to be used
 - test at a reputable laboratory
 - for planning purposes, table values are available and are updated regularly
5. Estimate nutrients still available from fertilizer or manures applied previously.
6. Apply nutrients when needed by crops using Best Management Practices.

Comprehensive Nutrient Management Plan Components

- Feed Management
- Manure Handling and Storage
- Land Application of Manure
- Land Management
- Record Keeping
- Other Utilization Options



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