



OSU Extension Positive Impacts on the Illinois River Watershed

**Claude Bess
Oklahoma State University
Cooperative Extension Service**



Comprehensive Poultry Waste Management Laws Passed - 1998

Applies to:

- Poultry producers
- Poultry waste applicators

Requirements

Keep land application records

Apply for
nutrient management plan

Register with state

Attend OSU Extension
Poultry Waste Mgmt. Education classes



Extension Education



Attend an initial 9 hour training course
Attend continuing education

Topics

Soil Fertility

BMPs

Nutrient
Management

Litter Commerce

Water
Quality

Regulations

Air Quality

Mortality
Management

Alternative Treatment Technologies

Classes

Over 400 producers participate in annual continuing education

Classes available statewide

At least 62 hours of education presented annually

Taught by Specialists from OSU and other universities



Classes

Annual Grower Symposiums
and Trade Shows

OSU and U of A
collaborative field days



Educational Resources

Videos

Poultry Litter Waste Management Training

NUTRIENT MANAGEMENT



Websites

Poultry Waste Management

Welcome

Thank you for visiting the Poultry Waste Management website, developed by the Oklahoma Cooperative Extension Service.

This site was created to assist poultry producers, and poultry waste applicators by providing convenient access to poultry waste management education schedules, regulatory information, publications, information resources and local Extension contact information.

Josh B. Payne, Ph.D.
State Poultry Specialist
Cooperative Extension Service
Oklahoma State University

Spring 2016 class schedule now posted

Class Schedule

visit the **PWMT CLASSES** page for complete Poultry Waste Management Education (PWMT) class information. Classes are scheduled each spring and fall and the website will be updated as quickly as possible with the locations, dates and times.

For more information about Oklahoma's poultry waste management regulations.

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Welcome to the Oklahoma Litter Market

OSU EXTENSION

The Oklahoma Litter Market website serves as a communication resource among buyers and sellers of poultry litter. Highlighting poultry litter as waste disposal method and nutrient source for the further processing effect are included in the other website about environmental and high-nutrient areas. The Oklahoma Litter Market participant listings are sorted and transformed throughout the year on the website.

A Litter Market calculator is also provided for help website users determine the suitability and value of the product.

Please contact Market Manager by phone (918) 686-7800 or email market.manager@okstate.edu to add your listing to the site.

Educational Resources

Extension Fact Sheets

OKLAHOMA COOPERATIVE EXTENSION SERVICE BAE-1521

Phosphorus and Water Quality

M. D. Smolen
Water Quality Specialist, Biosystems and Agricultural Engineering

The 2004 Integrated Water Quality Assessment Report by the Oklahoma Department of Environmental Quality showed 18,341 miles of Oklahoma streams and 225,421 acres of lake impaired. The pollutant of concern in many of these impairments was phosphorus, an essential plant nutrient found in fertilizer and human and animal wastes.

Phosphorus is the plant nutrient most often responsible for impairment of surface water. It is essential for healthy, productive crops, and most agronomic systems call for application of commercial fertilizer or animal manure to correct soil phosphorus deficiencies. For both economic and environmental reasons, application of phosphorus is not recommended, however, where soil tests show phosphorus reserves are adequate for the intended crop.

Phosphorus is typically not considered a ground water pollutant. Further, most soils have the capacity to retain phosphorus in the upper layers, protecting the ground water.

Concerns about Phosphorus in Water

Excess phosphorus is a concern for most aquatic ecosystems. Under background conditions, where human activities do not dominate the landscape, phosphorus is generally in short supply. Its absence limits the growth of algae and aquatic plants. When additional phosphorus becomes available to the aquatic system, it stimulates growth of algae and other aquatic plants. This condition of nutrient enrichment and high plant productivity is referred to as eutrophication.

Under eutrophic conditions, recreational values of lakes and streams may suffer. In the early stages of eutrophication, fishing may improve as productivity increases the food supply. But when these algae and aquatic plants die, their decomposition consumes oxygen causing fish kills and disagreeable conditions.

Another undesirable effect of eutrophication is the growth of bluegreen algae. These algae gain a competitive advantage and tend to dominate the algal community where phosphorus is in excess. They are a particular concern because they release odorous and even toxic compounds. Their presence at high concentrations (called "boom" conditions) generally results in odor and taste problems in drinking water and algal and even toxic effects for those who come in contact with them. In Oklahoma bluegreen algae blooms have caused cattle death.

Improving water quality in a lake impaired by excessive phosphorus is difficult because phosphorus accumulates in the sediments and biota. Consequently it may take years after phosphorus sources have been reduced or eliminated for conditions to improve. It is, therefore, important to take preventive steps to limit phosphorus movement into surface waters.

Particulate and Dissolved Phosphorus

In the environment, phosphorus may be in dissolved or particulate forms. Dissolved phosphorus is readily available to aquatic organisms. It may result from leaching of fertilizer, crop residues, or human or animal wastes. A small amount of dissolved phosphorus exists naturally in soils. This may be transferred to runoff water by exchanges with the top layer of the soil. Recently applied fertilizer or manure will be on the surface.

Eutrophication

Lakes and ponds naturally support a healthy population of aquatic life. But if nutrient levels, especially phosphorus, become too high, production of algae and aquatic plants increases and the following undesirable changes can occur:

- Excessive algae growth
- Reduced water clarity
- Unpleasant odor and taste
- Low dissolved oxygen
- Changes in fish populations or fish kills
- Toxins from bluegreen algae

The publications were adapted from the Kansas State University Extension fact sheet, MP-2463, by Daniel L. Ulevin, David A. Whitney, and Kent A. McKay

Division of Agricultural Sciences and Natural Resources • Oklahoma State University

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Issue
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PoultryPractices
Oklahoma Cooperative Extension Service
A newsletter for poultry producers and poultry litter applicators...

This issue

Poultry Litter vs. Commercial Fertilizer Study P.12
The Facts About Hormones and Beef P.43
Bermudagrass Recovery Following Drought P.44
Poultry Litter Tax Credit Reinstated P.5

Editor's Column

This issue focuses on current OSU research projects, including a 5-year study comparing commercial fertilizer to poultry litter and a new study with some interesting initial findings related to Bermudagrass recovery after a drought. We also explore some facts about hormone use in beef production, a secondary enterprise for many poultry producers. Finally, we share an update on an Oklahoma litter transfer incentive.

For publications, regulatory information, and upcoming poultry waste management classes, visit your local County Extension Office or poultrypractices.okstate.edu where you can also obtain an electronic version of this newsletter.

Josh Payne

Poultry Litter vs. Commercial Fertilizer Study
Josh Payne, Ph.D., Area Animal Waste Management Specialist

Questions exist regarding whether poultry litter or commercial fertilizer result in better forage yields and soil quality. To help answer these questions, a recent study was conducted by Oklahoma State University researchers and Extension specialists comparing equal rates of broiler litter and commercial fertilizer on mixed grass plots, predominantly common Bermudagrass. The study was conducted at the Eastern Research Station located in Haskell, OK, from 2007-2009. The objectives were to measure potential changes in soil quality and compare forage production between the two nutrient sources.

Methodology

Both poultry litter and commercial fertilizer were applied each year in May at four different fertility levels (A, B, C, and D). For each fertility level, the same amount of N, P, and K was applied for litter and commercial fertilizer (Table 1). Soil quality characteristics and forage yields were determined annually.

Table 1. Poultry litter and commercial fertilizer application rates.

Treatment	Tons/acre ¹	Total N	Total P ₂ O ₅	Total K ₂ O
Litter A	1	60	60	45
Litter B	2	120	120	90
Litter C	3	180	180	135
Litter D	4	240	240	180
Commercial A	-	60	60	45
Commercial B	-	120	120	90
Commercial C	-	180	180	135
Commercial D	-	240	240	180

Continued on page 2

Biannual Newsletters

Informative Guides

E-1027

Poultry Litter Nutrient Management: A Guide for Producers and Applicators

Oklahoma Cooperative Extension Service
Division of Agricultural Sciences and Natural Resources
Oklahoma State University

Results

Certified more than 2,700 program participants

**Over 1.5 million website hits and
over 250,000 file downloads**

Outcomes

- Increased producer awareness of animal manure management practices through 18 years of education
 - ~ 90% of poultry litter is now exported outside of nutrient sensitive watersheds in NE OK
- 31% reduction in P loading to Beaty and Spavinaw Creeks, located within the nutrient sensitive Eucha Spavinaw watershed in NE OK
 - Decrease in NE OK Illinois River phosphorus concentrations based on recent research



Other Activities

Hosted national and regional
conference tours of Illinois
River

Water well testing

- Oklahoma* A* Syst
- Oklahoma Farm
& Ranch* A* Syst

Other Informative Fact Sheets

4-H Stream trailer

4-H Youth Water Fairs

- Over 600 youth

4-H water camps

Waste water kit &
other models