

Composting Promises Poultry Industry Effective Waste Disposal

NEWARK, DE — A study conducted by Drs. J. Thomas Sims of the University of Delaware and Dennis Murphy and Thomas Handwerker of the University of Maryland suggests that composting is an effective means for poultry producers to stabilize manure and dispose of dead poultry. Sims presented the results of his research at the annual meetings of the American Society of Agronomy, the Crop Science Society of America, and the Soil Science Society of America, held last month in Las Vegas, Nev.

According to Sims, professor of soil science at the University of Delaware, "The poultry industry on the Delmarva peninsula currently faces two critical waste management issues — environmentally safe management of poultry manure to avoid nitrate contamination of groundwaters and disposal of poultry carcasses resulting from disease or environmental stress."

An on-farm composting pro-

cess developed by Murphy at the University of Maryland/Eastern Shore uses poultry manure and various carbon sources to successfully and rapidly dispose of dead poultry.

"The end result is a compost much like that produced in any backyard compost pile. It may be used in the production of corn, small grains and horticultural crops," Sims says. "Composting could provide the poultry industry with a relatively inexpensive solution to the growing waste disposal problem."

The composting process appears to stabilize the manure. The process reduces the rate of nitrogen release and the potential for groundwater contamination from excess nitrogen levels associated with the rapid decomposition of poultry manure in soils.

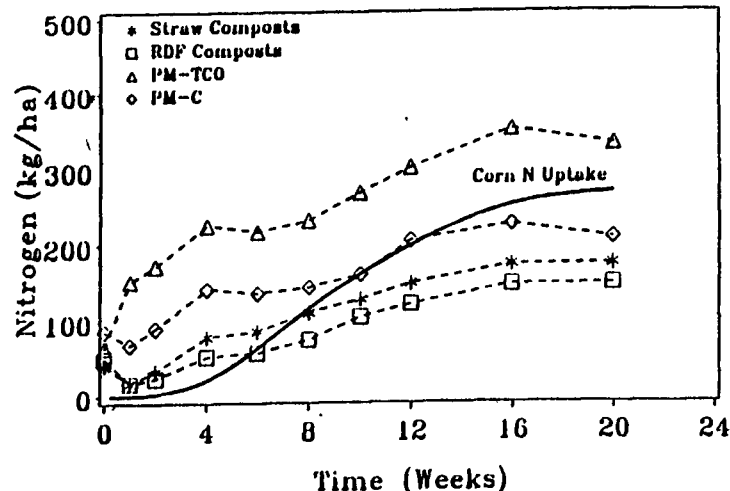
The researchers conducted a 40-week study to determine the rate and extent of nitrogen release from 24 poultry composts. The composts were prepared using

three carbon to nitrogen ratios.

"Carbon to nitrogen ratios, important in the control of compost decomposition in soils," says Sims, "were similar for composts and manures, ranging from 16:1 to 23:1."

The study indicates that composting reduces the percentage of organic nitrogen converted to a plant-available form to less than 30 percent, which is 20 percent less converted nitrogen than that produced by manure.

The study also indicates that the amount of nitrogen released can be controlled by the choice of carbon sources. Researchers measured levels of nitrogen produced using barley straw and recycled wastepaper as carbon sources. The percentage of nitrogen released from wastepaper composts averaged 20 percent, compared with 27 percent for straw composts and an average of 45 percent for the two manures tested.



The graph indicates how the amount of nitrogen released from manures can be controlled by the choice of carbon sources. Much of the nitrogen in excess of the corn uptake may eventually find its way into groundwater. Nitrogen produced by compost using poultry manure from total clean out (PM-TCO) as a carbon source is consistently excessive. The amount produced by crusted poultry manure (PM-C) compost is excessive for about the first 10 weeks. Excessive nitrogen released by compost using wastepaper (refuse-derived fuel or RDF) or straw is minimal and limited to the first six or seven weeks.

Penn State Exhibits Crop Management

The Pennsylvania Crop Management Association is dedicated to developing, coordinating and promoting the crop management activities of the state's crop management associations. These associations assist farmers in implementing economically sound and environmentally safe crop production practices.

Farmers require a great deal of information to make sound crop management decisions. Obtaining the right information at the right time and interpreting it correctly is critical to growing crops efficiently for a profit. Crop management associations hire personnel to scout members' fields for insects, weeds and diseases; sample soil, manure and plant tissue; provide

management recommendations and evaluate and plan management practices.

"Crop management associations have been promoting sound management practices for over 10 years," said Jan Pruss, state coordinator of the program. These associations have helped more than 400 member farmers with more than 71,000 acres, increase profits and reduce unnecessary fertilizers and pesticides.

Pruss said, Penn State provides a number of services to the associations, including workshops and technical training for crop management personnel. The College of Agriculture also provides technical manuals, newsletters, weekly seasonal crop pest summaries

and computer hardware and software.

"Most recently the college has developed crop management record keeping and database systems for CMA members to document field observations and cultural and chemical cropping practices," said Pruss. "Easy to understand reports, generated from the database, summarize by acre, field and crop, the pounds of

nitrogen available, purchased inputs applied, soil test data and net profit."

The summaries suggest possible crop rotation plans, nutrient management plans and fertilizer, lime, plant varieties, tillage and pesticide recommendations for the new crop. Members also receive shopping lists and cost of inputs required for new crops.



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