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**COMPOSTING WITH PAWS AND APAWS**

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Farmers compost manure to produce a salable product, control odors, reduce fly populations, reduce the volume of material handled, change chemical forms, or a combination of these reasons.

Composting requires labor, equipment, space, and management. How these inputs are combined depends on the particular farm and its composting goals.

Composting to control odor during storage and spreading of manure requires less time and effort than composting to produce a completely stable and homogenous material for sale to homeowners or landscapers.

The Agricultural and Biological Engineering Department and Farm Operations unit at the Penn State College of Agricultural Sciences have been learning about low input Passive Aerated Windrow Systems (PAWS) composting. The goal is to provide sufficient composting to control odors and flies.

A windrow of well mixed compost ingredients is built over 10-foot-long, 4-inch diameter perforated pipes spaced about two feet apart. These pipes provide an air supply under the compost pile.

After the windrows are built, this system "takes care of itself." No labor, machinery, or additional space is required for regular windrow turning or mixing.

As the compost heats, hot air rises through the pile and fresh air is pulled to the bottom of the pile through the perforated pipes. Providing an air supply across the bottom of the pile keeps more of the pile active and eliminates hot or

cold spots that results from too little air.

The idea is to provide more complete and consistent composting throughout the pile without regular turning. Reports indicate successful composting without any additional turning of piles. If the raw material is left exposed, the surface of the pile will not reach optimum composting temperatures. If the entire pile is "blanketed" with a 6-16 inch layer of finished compost, more complete composting will result.

PAWS composting has been demonstrated around southeastern Pennsylvania in a cooperative project between Rodale and PSU under the leadership of Cary Oshins (Rodale) and Sally Pick (Penn State Extension, Montgomery County).

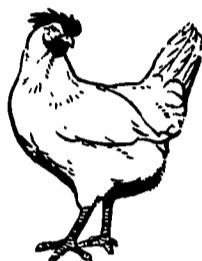
Working around the many pipes during pile construction and load-out can be a problem. After the

pipes are laid out, material must be carefully placed on top without moving or damaging the pipes. The pipes also interfere with efficient removal of the material. Schedule 40 or stronger pipes can be pulled out of the pile with a hook, chain, and tractor before loadout. Lightweight pipes must be removed individually as material is removed from them.

Last fall, as part of a project sponsored by the Pennsylvania Department of Agriculture, an alternative or modified PAWS method (APAWS) was compared to the traditional pipe method on the Penn State research farms. One windrow was built using perforated pipes and a second was built on a 6-12 inch layer of chopped corn fodder. The hope was that the corn fodder would remain porous enough to provide air across the bottom of the pile and also absorb excess liquid and nutrients.

When it was time to load out the compost, the fodder would be scraped up with the compost and spread. Both systems seemed to work satisfactorily. The cold, wet fall was not conducive to any outdoor composting method. This project will be repeated this summer to gain hot weather experience and to evaluate if flies are attracted to the piles. It was also demonstrated at Ag Progress Days in August.

If you want to learn more, contact the composters' researchers, Greta Martin, (814) 863-7710; Jim Hilton, (814) 863-1817; or Glen Cauffman, (814) 865-4433. To learn more about all types of composting, you can purchase the "On-Farm Composting Handbook," NRAES-54, for \$15. Send a check made payable to Penn State to the Publication Distribution Center, 112 Ag Administration Bldg., University Park, PA 16802.



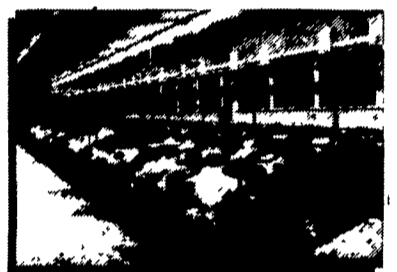
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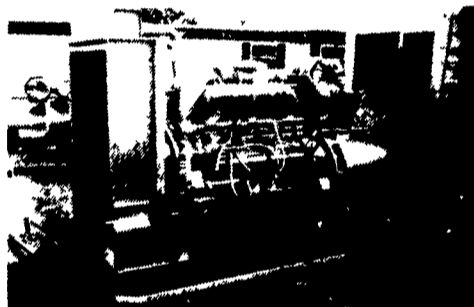
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