

# Education & research are keys to Bay cleanup

ANNAPOLIS, Md. — Modern conservation practices on the farm — such as no-till planting methods — could reduce the amount of phosphorus running off farmlands and into the Chesapeake Bay basin. But scientists are dubious about those same methods reducing the amount of nitrogen flowing into the Bay.

These were some of the preliminary conclusions of scientists at a recent seminar in Annapolis on "The Movement of Agricultural Nitrogen and Phosphorus to the Chesapeake Bay," sponsored by the Maryland State Soil Conservation Committee.

Both elements — nitrogen and phosphorus — are essential for modern farming practices to guarantee high yields of corn and grain.

Both elements also are partially to blame for what the United States Environmental Protection Agency (EPA) calls "nutrient overenrichment" of the Chesapeake Bay.

Nutrient overenrichment has been blamed for several of the Bay's ills, most notably the disappearance of submerged aquatic vegetation where fresh water marine life spawn and their young spend a substantial portion of their formative months.

According to a panel of scientists at the seminar, good farm land management — called "best management practices," or BMPs — could go a long way toward reducing the flow of phosphorus from agricultural lands into the Bay.

One BMP recommended by the University of Maryland's Agricultural Experiment Station (UMAES) and Cooperative Extension Service (UMCES) is no-till planting methods.

It has been cited as a best management practice because it significantly reduces land erosion and, by implication, the runoff of fertilizer chemicals from farm land into bodies of water.

No-till probably could play its

biggest role in the control of phosphorus flowing into the Chesapeake Bay basin, since phosphorus tends to "tie up" with sediment eroding from poorly-managed lands during heavy rainfalls, according to Harry Pionke, a scientist with USDA's agricultural research service.

Nitrogen, however, poses a different problem for scientists. While conservation tillage such as no-till reduces the amount of nitrogen that can wash away from the surface of farm land, scientists point out that surface runoff from farm lands is not the major avenue for nitrogen escape.

According to J.J. (Jack) Meisinger, another USDA scientist, the two leading escape routes for nitrogen from farm land are leaching and denitrification.

Leaching is the process by which the chemical moves from the root zone of crop plants down into the soil subsurface where it can react with groundwater supplies.

Denitrification is a chemical conversion process in which fertilizer forms of nitrogen — such as ammonia — change to nitrates which are highly mobile and easily lost from the soil.

According to Meisinger, while no-till is good for control of phosphorus loss, it may not have much of an effect on controlling nitrogen loss.

At the same time, however, no-till practices "wouldn't hurt, either," he says

"The loss of unaccounted for nitrogen from farm lands is strongly related to over-fertilization, the point beyond which a crop can assimilate nitrogen," says Meisinger.

He recommends "education" as the most important method of improving the management of nitrogen by Maryland farmers.

"Something must be done to educate farm operators to improve their understanding of the principles, the practices and the economic benefits of efficient nitrogen management," Meisinger said

The economic benefits are crucially important to farmers who have seen the price of nitrogen fertilizers increase dramatically in the last 10 years.

"Farmers simply cannot afford to overfertilize," said W. Lamar Harris, director of UMAES and chairman of the Bay panel of agricultural scientists.

Questions that still remain for scientists include: What happens to elements like nitrogen and phosphorus when it moves into soil subsurfaces? How does it find its way into the Chesapeake Bay basin? How much of it comes from

which sources?

Members of the panel suggested that more research is needed in some critical areas before recommendations can be made to farmers, industry and local jurisdictions on how to proceed to clean up the Bay.

One member of the panel defended the need for more research, but advocated that state decision makers move ahead with recommendations based on information at hand.

"Research is always expensive and there are data gaps in what we know about the Bay. We need more

research," said Alan Taylor, UMAES scientist.

"We cannot go on researching forever, certainly, we've got to get moving.

"But we must be conscious of the fact that there is some territory that needs to be explored," he added.

The panel of scientists is charged with assembling and releasing a technical report that will help state officials identify the Bay's critical areas and recommend plans to reduce agricultural contributions to pollution of the Bay.

## Farm vacation list available

HARRISBURG — A wonderful way to spend your vacation is available this year, according to state Agriculture Secretary Penrose Hallowell. The new 1984 Pennsylvania Farm Vacation Directory offers 31 different vacation farms with something for everyone with a taste for the country.

The 1984 directory includes information on the 31 members of the Pennsylvania Farm Vacation Association, an organization of farmers who provide unique vacations for individuals and families looking for a chance to relax or get back to nature.

The association has enjoyed considerable success in recent years. Requests for directories are received from around the world.

A farm is a world in miniature. Everything happens all at once: crops are growing in the fields, animals are grazing at pastures and surrounding woodlands are alive with wildlife and plants never seen in the city.

"Farm vacations provide a great taste of rural life, from the clean country air to the smell of good old-fashioned country cooking," Hallowell said. "Children can see a farm in operation first-hand, and even lend a hand in feeding the animals."

Farms range from 30 acres to 1,200 acres with accommodations including cottages, large turn of the Century stone farm houses, log cabins and primitive camping in the woods.

The 31 farms feature a wide variety of locations, rates and meal plans. Recreational facilities vary from inground pools and macadam tennis courts to rippling streams and ponds.

Entertainment and excursion trips also vary...frontier quietness and serenity, flea markets, auctions, antique shops, country fairs, harvesting crops, historic areas, playhouses, wildlife, caves, hunting and water sports.

The directory includes farm listings, accommodations and

rates, and a map of the commonwealth showing the location of member farms and major access routes across the state is also included. All farms are inspected and approved by the Pennsylvania Farm Vacation Association.

More information and copies of the Farm Vacation Directory can be obtained by writing to FARM VACATION, Bureau of Agricultural Development, Department of Agriculture, 2301 North Cameron Street, Harrisburg, PA 17110, or by calling (717) 783-8460.



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