

Corn researchers pit fungus against fungus

AMES, IA. — Even if you could say it. *Sphaeronaemella helvella* does not sound friendly, but it may turn out to be, according to Nader G. Vakili, research plant pathologist with the U.S. Department of Agriculture's Agricultural Research Service, Ames, Iowa.

Vakili was studying fungi that parasitize corn stalks when he was surprised to see one fungus

growing on another. The fungi didn't look much different from one another, and all the fungi in Vakili's culture material came from corn stalks, so it seemed reasonable to assume that they were all parasites of corn. However, that was not the case.

Through his microscope Vakili saw one fungus growing only where another one was growing

even inside the fungus's mycelium, a web-like filament that spreads through the tissue of the host plant, so small it is not usually visible to the eye.

He observed, what he later identified as *S. helvella*, growing to the end of the victim's mycelium, stopping its growth and destroying the spores of its victim.

He had found a mold-eating mold.

Since that day, four years ago, Vakili has been working to find ways to use *S. helvella*, and other friendly fungi that he has found, to control those that attack corn stalks, causing them to fall over before the ears can be harvested.

He now has a collection of seven mold-eating fungi that he believes can be used to complement the disease resistance that plant breeders are constantly adding to commercial corn varieties.

Such biological disease control systems can reduce field losses as well as the cost and environmental risk of applying chemical pesticides, Vakili says.

In six years of field tests to measure stalk rot damage on more than 200 commercial corn varieties, losses averaged 5.6 percent. That would equal a loss of about 500 million bushels each year for the United States.

Experiments have shown that some corn lines benefit more from treatment with Vakili's mold-eating fungi than do others, indicating that corn breeders should

be able to develop corn lines that provide a favorable environment for the mold-eating fungi.

"We should be able to breed fungi for greater virulence against destructive fungi. And, breed corn lines that are more compatible with the mold-eating fungi," Vakili says.

The mold-eating mold has a sexual stage in its life cycle, not all fungi do, and therefore genetic changes to increase the virulence against disease fungi should be easier to make, he says.

Vakili tested five of his mold-eating fungi against seven pest fungi. Six of the seven were inhibited by one or more mold-eating molds.

In addition to disease control, another advantage of using a fungus to control a fungus is safety, Vakili said. Seed corn is commonly treated with fungicides that are toxic to animals, so unused seed corn cannot be used and must be destroyed. If mold-eating fungi were used as a fungicide, unused seed corn could be safely fed to livestock.

Nominations sought for 'Conservation Teacher of the Year'

HARRISBURG — Nominations are being accepted for the national "Conservation Teacher-of-the-Year" awards program according to Pat Weiss, executive director of the Pennsylvania Association of Conservation District Directors, Inc. The competition is open to all full-time teachers working at the kindergarten through high school level who have developed an outstanding program of conservation education.

The National Conservation Teacher-of-the-Year will receive \$1,000 in cash and an expense paid trip to Reno, Nevada for the 1987 annual convention of the National Association of Conservation Districts. The national second-place winner will receive a \$500 cash award and the first place regional winner will receive \$200.

Co-sponsored by NACD and the

Deutz-Allis Corporation, the purpose of the awards program is to encourage the development of creative learning experiences in conservation for young people. "Any teacher in a public or private school in a conservation district who puts emphasis on conservation as a regular part of the instructional program is eligible for nomination," said Ms. Weiss.

Interested teachers can obtain additional information and nomination forms from the Pennsylvania Association of Conservation District Directors, Inc., telephone 717-236-1006. The awards program also honors the conservation districts judged to have provided the most effective stimulus and help for conservation education programs within the district.

Delaware receives \$50,000 for nitrate research

NEWARK, Del. — Dr. Donald L. Sparks, a soil chemist at the University of Delaware Agricultural Experiment Station, has received a \$50,000 matching grant from the U.S. Department of Interior, Geological Survey, to conduct a study of soil nitrate retention as it affects groundwater pollution in mid-Atlantic soils. The goal of this project is to find ways to manage nitrogen applications to these soils that will minimize water contamination and to determine the ability of these soils to retain nitrates.

Groundwater is the major source of water on Delmarva and along much of the East Coast. Nitrate leaching into groundwater is a problem in many coastal plain soils.

Although these soils are not usually thought to retain nitrate, several recent studies at other area experiment stations suggest that in some cases nitrate retention may be occurring, depending on fertilization practices. However, the mechanism for retention is not known.

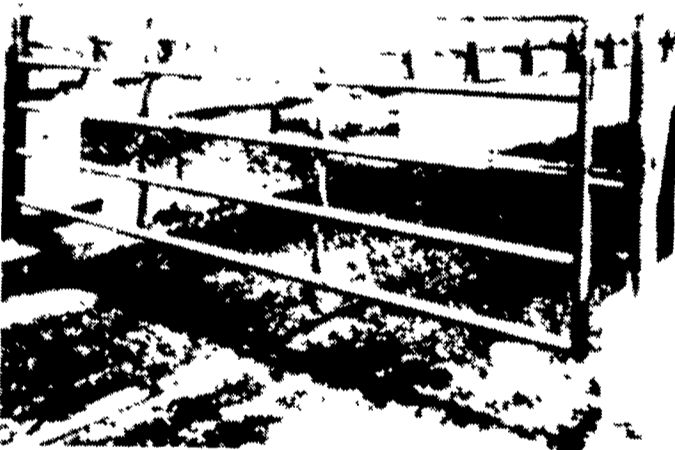
The fate of excess applied nitrogen is extremely important because of its potential effect both on groundwater quality and subsequent crop yield. It is also of great concern to those who land-spread organic wastes such as poultry manure, sludge and compost. The nitrogen in these materials is a potential fertilizer as well as pollutant and must be managed.

Understanding the soil's capacity to retain nitrate would make it possible to estimate the fertilizer potential and leaching hazards involved in land-spreading a nitrogen source.

Sparks' study will be the first to investigate nitrate retention behavior in mid-Atlantic coastal soils.

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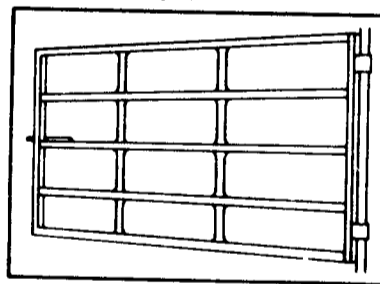
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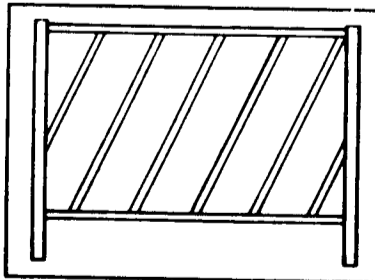
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