

# Green Manure May Help Control Orchard Virus Problem

UNIVERSITY PARK (Centre Co.) — Many agricultural pests immigrate to the United States from other places and attack native crops. But a plant pathologist in Penn State's College of Agricultural Science is tackling a pest problem that developed when imported fruit trees were exposed to native pests.

"Fruit trees imported from Europe and Asia to North America are very susceptible to a plant virus native to North America, tomato ring spot virus," said Dr. John Halbrecht, who studies this problem at the college's Fruit Research Laboratory in Biglerville. "The pathogen is transmitted to plants by dagger nematodes.

"Peach and nectarine growers

can lose entire orchards to the tomato ring spot virus. It kills all commercial rootstocks for nectarine and peach trees, as well as many common plum, apricot, and cherry rootstocks. Infested orchards usually lose up to 10 percent of their trees.

"The virus and the nematodes co-evolved with a group of weeds," said Halbrecht. "The weeds aren't harmed by the virus, but when dagger nematodes feed on an infected weed, they tap into a reservoir of virus. The nematodes then infect healthy fruit trees when they pierce cells to feed.

"Because the rootstocks for these trees are derived from European and Asian plants, they have no resistance to the virus. And

since nematodes are good at spreading the virus, it doesn't take many of them to cause fruit growers a lot of grief.

"Orchards must be periodically replanted, either because the trees lose productivity or because the grower wants to use a new variety," he said. "If the soil isn't treated for nematodes, new trees are likely to acquire tomato ring spot virus. When that happens, they're as good as dead."

The best way to replant infested sites is to purge nematodes first, Halbrecht said. "Fumigation is the most effective method, but many nematicides are expensive or have been restricted recently. There's a critical need for alternatives to manage this virus."

Crop residues from cruciferous plants such as rapeseed, mustard, and kale may offer an environmentally sound alternative for

nematode control. "Live plants contain nontoxic chemicals called glucosinolates," said Halbrecht. "When the plant decays, these glucosinolates combine with a plant enzyme to create toxic by-products in the same chemical family as some of the most effective soil fumigants.

"Growing a stand of these plants for a year or two before replanting an orchard may control nematodes while improving soil structure and growth conditions, allowing plants to maximize their natural defenses against disease."

A cover crop that is plowed under to add organic matter to the soil is called "green manure." While green manure has been used to control nematodes before, using it in rotation with fruit trees is new.

Halbrecht's initial studies confirm that green manure reduces

nematode populations, but its effectiveness depends on factors such as plant species and age, soil pH, temperature, and the availability of sulfur. "There's a window of time when glucosinolates reach their peak and the plant is most effective as a green manure treatment," he said.

"Nematode mortality also may be affected by how deeply green manure is incorporated into the soil, so I'm evaluating two different techniques," he said. "Nematode assays are taken before and after treatment to determine the effectiveness at various depths. Within a few years, we should have enough data to make recommendations about the best plants to use for nematode control in orchards."

**MILK AMERICA'S HEALTH KICK**

## Mt. Joy Cooperative Holds Banquet Meeting

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torships with Atlantic Processing Inc., the Pa. Dairy Council, and the Lebanon County Farmers Association.

Dum is in partnership with his father Samuel on a 150-acre farm where they milk 104 cows and keep about 80 young stock. He is a graduate of Penn State University and holds a bachelor's degree in agricultural engineering. He also serves as a secretary for the Manheim Young Farmers and is a member of the state and national Holstein associations and the Pennsylvania Farm Bureau.

It was also announced that Paul Hostetter, cooperative manager is retiring and his duties are to be taken over by Earl Dehmey, who is to continue to perform his oversight of field operations, but discontinue driving truck on a regular basis.

Hostetter, who is to celebrate his 80th birthday in July, has worked in the dairy industry for 62 years.

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| <b>March 2nd LEWISBURG, PA</b>   | <b>Country Cupboard Restaurant</b>   |

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9:30-3:30

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