First plum pox turns up in North America

The U.S. Department of Agriculture is weighing whether to declare an official emergency in response to the first recognized North American outbreak of a dreaded fruit-tree virus.

Plum pox attacks much of the genus *Prunus*, including plums, peaches, nectarines, apricots, and almonds. Initially, the virus renders fruit too spotted or misshapen to sell. As the infection progresses, trees stop bearing any crop at all. Ornamental trees as well as those grown for fruit may catch the virus.

All orchardists can do is bulldoze and burn sick trees in hopes of slowing pox spread. The virus doesn't affect people's health but plays havoc with their pocketbooks.

Described early this century in eastern Europe, plum pox has spread through much of Europe and also turned up in India, Egypt, and Syria. In 1992, growers found it in Chile, but North America escaped—until this fall. On Oct. 20, USDA and the Pennsylvania Department of Agriculture announced finding plum pox in Adams County, which includes Gettysburg.

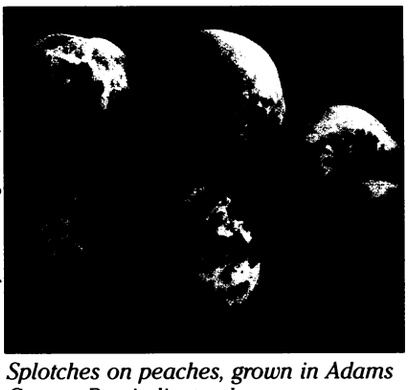
"We're looking at the number-one disease of stone fruits—it's devastating," says Gary Clement, plant-health director for Pennsylvania in the federal Animal and Plant Health Inspection Service (APHIS) office in Harrisburg.

The disease spreads when people graft or move infected plants and when any of a dozen or so aphid species pick up virus on their mouth parts and inject it into the next plant they probe. Aphids carry the virus for a few hours at most, and it doesn't stick to other insects. So, Clement says he suspects plum pox reached the United States on a smuggled plant.

The virus has probably been in Adams County for several years, notes John M. Halbrendt, a pathologist for Pennsylvania State University in State College. A grower had noticed spots on a few peaches last year but couldn't find the cause.

This fall, a fruit-packing operation alerted Ruth Welliver, a state plant pathologist, to spotted peaches. She tested leaf samples against an array of antibodies that react to any of the huge group of nightmare pathogens called potyviruses. Several hundred bedevil crops from potatoes to papayas, but plum pox is the only one known to attack stone fruits.

Welliver's potyvirus test gave the first positive result she'd ever seen for a stone fruit. She sent a picture of the suspect peaches to one of the few U.S. scientists who's worked with plum pox. Seeing the ominous splotches, "I just about died," remembers Laurene Levy of APHIS in Beltsville, Md.



Jerry Frecon/Rutgers Cooperative Extension

Splotches on peaches, grown in Adams County, Pa., indicate plum pox.

She, Welliver, and USDA's Vern D. Damsteegt at Fort Detrick, Md., worked around the clock running confirmatory tests. Levy identified the outbreak as strain D, which she explained doesn't attack cherries and doesn't spread through seeds. "That was the only good news I could give them," Levy says.

Plum growers may also take comfort from a resistant tree, C-5, that a few forward-looking breeders have been developing for more than a decade. Its resistance comes from a bit of the virus' genome that researchers inserted into the tree's genetic material.

The big question, whether growers caught the pox virus early enough to eradicate it, remains unanswered. However, Clement says, "I'm optimistic." —*S. Milius*

Traffic may worsen hay fever and asthma

As roads grow ever more congested, commutes lengthen. Even though individual vehicles spew less pollution, the air remains choked with combustion byproducts. Now, urban denizens have yet another reason to hate traffic: It pollinates their air.

A new study finds that cars and trucks stir up a lot of dust, much of it laden with allergy-causing plant pollens and molds.

Over an 8-month period, Ann G. Miguel of the California Institute of Technology in Pasadena and her colleagues vacuumed dust from paved roads at three Southern California sites—a relatively rural road in Riverside, a residential street in Long Beach, and a highway running through an industrial portion of downtown Los Angeles. Each thoroughfare was chosen because it ran directly in front of a pollution monitor measuring the quantity of particulate matter in air.

From earlier studies led by atmospheric chemist Glen R. Cass, also of Caltech, he and his colleagues knew how to calculate what share of the particles measured at a monitoring station come from road dust thrown into the air. In laboratory tests, they determined how much of the vacuumed dust could trigger an allergic response. Their new data, reported in the December ENVIRONMENTAL SCIENCE & TECHNOLOGY, indicate that up to 12 percent of the allergenic particles in air at the tested sites came from road dust kicked up there.

Some 40 to 70 percent of the particles in this road dust measured 10 micrometers in diameter or smaller, and so are known as PM-10. These are small enough to be inhaled into the lungs—or remain airborne long enough to travel miles.

Assays showed that the PM-10 fraction was every bit as allergenic as larger particles. This may surprise many pollution chemists and allergists, Cass says, "because people think of pollen grains as being larger." In fact, most pollen in the road dust was broken, but the fragments retained their potential to cause an allergic reaction.

However, Cass points out, even particles bigger than PM-10, which remain airborne for only a few hundred feet, can still travel far enough from the road to reach local homes. Moreover, the share of pollens and molds in road dust could be higher in sites where rainfall and vegetation are more abundant than in the arid sites the team studied, Cass observes.

The researchers conclude that the dust raised by traffic may trigger hay fever symptoms, such as runny nose, watery eyes, and sneezing. Inhaled more deeply, they say, these particles can cause the tissue swelling in lungs and shortness of breath that mark allergic asthma.

Traditional pollutants in vehicular exhaust, such as nitrogen dioxide, can also trigger asthma. David V. Bates of the University of British Columbia in Vancouver finds this article to be an "interesting contribution"—especially because breathing a very low concentration of nitrogen dioxide can exaggerate the asthmatic effect of subsequent exposure to an allergen, he says.

M. Eric Gershwin, chief of allergy at the University of California, Davis School of Medicine considers especially notable the new study's failure to detect latex in road dust. He says, "There had been theories that latex from tires [SN: 4/22/95, p. 244] was responsible for the increasing incidence of asthma."

The new data may also help explain reports that living near a busy road can exacerbate asthma symptoms, says Douglas W. Dockery of the Harvard School of Public Health in Boston. "We've been postulating that this might be due to diesel exhaust," he says, "but the [new study] suggests it may instead be due to the resuspension of road dust." —*J. Raloff*