

'Pillars Fall to Poison Pill

Packaging a natural virus in an otherwise appealing "poison pill" tricks destructive caterpillars into eating themselves to death. The trickery offers a natural way to control larvae of beet armyworms, cabbage loopers, and other moth pests. Normally, farmers combat them with chemical insecticides. But ARS scientists envision killing them with a natural insect pathogen. The *Anagrapha falcifera* nuclear polyhedrosis virus liquefies the pests' tissues, while posing no threat to beneficial insects, humans, or wildlife. Researchers want to ensure that the pests get a lethal dose, so they are testing combinations of virus and feeding stimulants. One concoction contains cottonseed oil, sucrose, and other goodies irresistible to caterpillars like beet armyworms that pester corn, cotton, and cole crops.

In the greenhouse, scientists sprayed collards with virus alone and mixed with a feeding stimulant. Virus alone killed 57 percent of the larvae, but adding the feeding stimulant doomed more than three-fourths. In other tests, scientists sprayed formulations containing fluorescent brighteners. These help prevent light from degrading the virus and improve its capacity to infect the pests. Only one-fourth of armyworms survived on foliage collected from outdoor collard plots sprayed with virus and brightener. Twice as many survived when the brightener wasn't used. The scientists plan tests combining all three ingredients—virus, feeding stimulant, and brightener. *Robert Farrar, Jr., USDA-ARS Insect Biocontrol Laboratory, Beltsville, Maryland; phone (301) 504-5689, e-mail rfarrar@asrr.arsusda.gov.*

With New Tomatoes, More Is Beta (Carotene)

Three new tomato breeding lines from ARS hold 10 to 25 times more beta carotene than typical tomatoes. An ARS plant geneticist bred the new tomatoes—named 97L63, 97L66, and 97L97—for

use in processing into paste, juices, and sauces. High-beta-carotene cherry and beefsteak tomatoes for the fresh market are also on the way. The body converts beta carotene to vitamin A. This essential vitamin helps with vision, bone growth, tooth development, and reproduction. Content of beta carotene averages 57.6, 55.1, and 55.5 micrograms per gram of fresh fruit for 97L63, 97L66, and 97L97, respectively. This compares to only about 2 to 5 micrograms per gram for typical tomatoes. Lines 97L63 and 97L66 are adapted for California and Eastern and Midwestern states; line 97L97, for the East and Midwest. A major food company is using material derived from the ARS germplasm to develop nutritionally enhanced products. *John Stommel, USDA-ARS Vegetable Laboratory, Beltsville, Maryland; phone (301) 504-5583, e-mail jstommel@asrr.arsusda.gov.*

Corn Fungus Also Has a No-Good Cousin

ARS scientists have discovered a cousin of the fungus that causes gray leaf spot of corn. This means breeders must now ensure that new corn hybrids resist both forms of *Cercospora zea-maydis*. A severe infection can reduce corn yields by 25 percent or more. The fungus first turned up in this country in about 1925 in Illinois. But it didn't become a serious and widespread problem until the mid-1980s, when more and more farmers switched to tillage systems that leave crop residue on the soil surface. That's because *C. zea-maydis* can overwinter in this residue. In spring, the fungus produces spores called conidia. Blown by wind or splashed by raindrops, the conidia land on leaves of newly emerged corn plants, invade, and attack the plants' tissues. The invasion may also make the plants weaker and more susceptible to infection by other pathogens. Once a problem only in the eastern part of the Corn Belt, gray leaf spot now occurs as far west as Kansas and Colorado. An ARS plant pathologist found the new form of *C. zea-maydis* in

the eastern part of the country. Scientists are probing its genetic makeup to learn more about its virulence. *Larry D. Dunkle, USDA-ARS Crop Production and Pest Control Research Laboratory, West Lafayette, Indiana; phone (765) 494-6076, e-mail dunkle@btpy.purdue.edu.*

New Lure Could Take the Sting Out of Some Wasps

An ARS entomologist has devised the first effective lure for the German yellowjacket, golden paper wasp, European hornet, and other yellowjackets. Commercial traps could be available in about a year. Yellowjackets and wasps are occasional nuisances for most people, but they represent an occupational hazard for fruit orchard workers during the picking season. Besides hurting, the



stings can cause potentially dangerous allergic reactions.

The new attractant may provide a way to monitor and control the insects. It uses compounds that bacteria and fungi make as byproducts of sugar consumption. ARS has applied for patent protection. Other baits—made with sugar or meat—have drawbacks. Sugary baits attract beneficial species, such as honey bees. As for meat, it rots too quickly to be practical in a lure. Of 17 yellowjacket species in the United States, 5 are significant, aggressive pests. The new lure is the first to attract most of them, including the German yellowjacket. It is also the first chemical lure to attract paper wasps. The scientist and Sterling International, Inc., of Veradale, Washington, are collaborating to develop a delivery system. The work is being carried out through a cooperative research and development agreement. *Peter J. Landolt, USDA-ARS Yakima Agricultural Research Laboratory, Wapato, Washington; phone (509) 454-6551, e-mail landolt@yarl.gov.*

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