

Female Tobacco Budworms Offer Pest Control Service

WASHINGTON — Female tobacco budworms have been tricked into performing a scientific first — sterilizing all their male descendants. U.S. Department of Agriculture entomologists go their "femme fatales" by mating male budworms (*Molothrus virescens*) with females of a related, harmless insect (*Molothrus subflavus*).

The resulting hybrid produces not only sterile sons but female descendants that continually pass on the male sterility trait, said Marion L. Laster of the department's Agricultural Research Service.

He said hybrids could save farmers millions of dollars lost to the crop-damaging budworm, which resists chemicals almost as fast as researchers can create them.

This ability to develop chemical resistance caught farmers in Northeast Mexico and the lower Rio Grande Valley of Texas off-guard in the 1960s and destroyed much of the cotton industry there, said Edgar G. King, Laster's colleague at the Southern Field Crop Insect Management Laboratory in Stoneville, Miss.

Already this pest of cotton,

tobacco, tomatoes and other vegetables is showing resistance to the most effective chemicals registered for use against it — the pyrethroids.

"When resistance is widespread, probably in about three years, we expect to be ready with this new genetic control technology," said King.

Laster and King, in cooperation with other agency scientists, tested the new hybrids with a natural budworm population on St. Croix in the U.S. Virgin Islands. Sterility infiltrated the male population there — enough to reduce the number of insects by 75 percent. "A sterile male can keep females busy two of the three nights they're looking to mate — that's a lot of eggs kept unfertilized," King said.

Theoretically, the male sterility could go on indefinitely, Laster said. But in a real situation, yearly release of hybrid females might be necessary, because hybrid insects could migrate away, as normal wild ones come in, possibly even from Mexico or South America.

Using sterile males to control insects isn't new; what is new is that now females do the male sterilization usually done with

radiation in a lab. Radiation weakens budworms and makes them poor competitors for female attention, so until now sterile release was impractical for this pest.

Also, first generation hybrid females wouldn't be used, because they are too much like their sub-female cousins to be sexually attractive to males. Scientists cross hybrids with normal budworm

males until the females become more "themselves" again; only then are sons and daughters carrying the sterility released into the wild.

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