SCIENCE & EDUCATION
Impact
Benefits from USDA/Land-Grant Partnership

Integrated Pest Management

Reduced chemical use protects yields and the environment.

Consumers don't want bugs in their homes, on their food or in their yards. Chemical pesticides control insect pests and give us blemish-free produce, but there's a price to pay. When overused or misused, pesticides can pollute our environment and leave unwanted residues in food and feed. Repeated spraying can backfire when pests develop resistance to certain chemical controls. Integrated Pest Management (IPM) and Integrated Crop Management (ICM) programs help protect the environment, save producers money and preserve crop yield and quality. IPM strategies focus on scouting for pests and reducing pesticide use. ICM combines those practices with improved fertilizer management and farming methods. Land-Grant universities and the U. S. Department of Agriculture (USDA) offer IPM and ICM programs for farms, homes and industries.

Payoff

- **Cleaner cotton.** Using **Arizona** Extension IPM methods, cotton farmers reduced insecticide spraying in 1999 to the lowest levels in 20 years. Cotton insecticide applications per season in Arizona dropped from more than 11 in 1990 to just one or two in 1999, reducing costs by more than 66 percent. **Tennessee** IPM efforts helped cotton producers in two counties reduce pesticide use an average of 31 percent, saving about $2.5 million. Insecticide applications in cotton typically account for about half of all U.S. insecticide use.

- **No bad apples.** Pesticide applications on apples dropped by 33 percent to 50 percent, thanks to **Vermont** Extension IPM efforts. Through **Kentucky's** apple IPM program, growers saved $120 per acre through reduced and more effective pesticide use. IPM is used on 58 percent of Kentucky's apple acres. After four years of **Arkansas** Extension IPM, peach producers cut insecticide use as much as 50 percent. **Utah State** and **Minnesota** also offer fruit IPM programs.

- **Shorter trees.** Researchers at **North Carolina State** evaluated techniques for producing high-yield dwarf apple trees that need 50 to 75 percent less pesticide because they are smaller. **Oregon State's** research on pears shows IPM can cut pesticide use on pears up to 80 percent. **New Hampshire** researchers introduced a

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predator mite to help control the European red mite, a major apple pest. Pesticide use in New Hampshire's apple orchards has declined roughly 40 percent. Nearly 85 percent of **Wisconsin's** cranberry acreage is now managed under an extension cranberry IPM program that has reduced insecticide applications on marshes by about 40 percent, protecting sensitive wetlands.

- **Vegetable victory.** Combined efforts of **Delaware** Extension, agribusinesses and private consultants led to using multiple IPM strategies on 75 percent of the state's processing vegetable acreage and 94 percent of its fresh market vegetable acres. In Delaware, 13 potato producers used a statewide late blight monitoring program to time fungicide applications, reducing fungicide costs by $60,000 on 3,000 acres.

- **Educating homeowners and landscapers.** The EPA estimates that more than 260 million pounds of pesticide are applied annually to golf courses and industrial, commercial, governmental and home landscapes. Thanks to **Florida** Extension's precedent-setting School IPM program, only 40 percent of the school districts in Manatee County conduct routine landscape spraying, compared to 75 percent before the training. Most of the remaining districts plan to adopt IPM when their current pest control contracts expire. Nearly 90 percent of **Virginia Tech's** IPM for Urban Homeowners participants report they plan to adopt environmentally sound practices to Chesapeake Bay water quality. IPM programs at **Maryland**, **Georgia, Tennessee** and **Virginia Tech** are helping homeowners and landscape professionals reduce pesticide use.

- **Greenhouse gains.** In 1999, IPM practices were used on all of Mississippi's greenhouse tomatoes, resulting a 30 percent yield increase, or 6.5 more pounds of fruit per plant, which brought growers an additional $828,000 in income. That's thanks to **Mississippi State** Extension's ongoing IPM education for greenhouse tomato producers.

- **Bug-free Christmas trees.** Forest entomologists at **Michigan State, Purdue** and the USDA's Forest Service developed a precedent-setting IPM program for Christmas trees that uses just one pesticide application. After the program's first year, no beetles or damage were found on participating growers' trees. **North Carolina State** IPM programs enabled participating Christmas tree growers to reduce chemical fertilizer and pesticide use by about one-third.

- **Keeping the worms out.** In Accomack County, Virginia, less than 1 percent of the soybean crop was sprayed for corn earworm in 1999, thanks to **Virginia Tech** Extension's IPM field scouting. Just 26 percent of the state's soybean acreage was treated with insecticide in 1999, compared with 40 percent in 1995. And **Ohio State's** monitoring program ensured that fewer soybean fields in northwestern Ohio required insecticides. Eliminating unnecessary pesticides saved farmers up to $15 per acre or a total of up to $16 million. **Cornell's** ICM programs helped corn growers rotate their crops using 35 percent less fertilizer and saving $15,000 in reduced insecticide applications. **Penn State** researchers used IPM on specific sites within fields and reduced insecticide application for green peach aphids by 66 percent and cut fungicides for early blight by 71 percent.

- **Fire ants.** Pesticide applications for fire ants dropped 75 percent and treatment costs fell 80 percent after **Texas A&M** Extension offered public IPM programs in the state's largest cities.

- **The whole enchilada. Connecticut** IPM full-season training programs for sweet corn, field corn, peppers, squash, tomatoes, turfgrass, bedding plants and poinsettias have reduced annual pesticide use by nearly 14 tons on 1,270 acres. This is a 43 percent reduction in pesticide use by the 77 IPM program participants.

Cooperative State Research, Education, and Extension Service
United States Department of Agriculture

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