

## **Food Security— New Tools, New Teamwork**

Agricultural pests—insects, weeds, and diseases—cost food and fiber producers and consumers around the globe tens of billions of dollars each year. To protect the supply of our nation's food and fiber, producers must have effective pest controls.

The main tools have traditionally been chemical pesticides. Generally, they are effective and relatively inexpensive. But their excessive use has raised concerns. These include toxicity to nontarget organisms, potential damage to the environment and water quality, pesticide residues in foods and feeds, and health risks to pesticide workers.

Integrated pest management (IPM) is an approach to farming that avoids depending solely on pesticides. Simply put, IPM relies more on nature and natural processes for safer, cost-competitive methods of pest control.

Ideally, producers in an area band together to apply IPM systems. They monitor pest levels, going on the offensive instead of reacting, perhaps late, to an onslaught. Where feasible, they recruit the pest's own natural enemies. They plant a crop variety that repels or tolerates it. They take other actions that, for example, lower the pest's chances of reproducing.

IPM producers may use chemical pesticide—but judiciously. When possible, they select a chemical that affects only the target and quickly biodegrades.

The Agricultural Research Service, along with the rest of the agricultural community, is taking new steps aimed at putting IPM tools in growers' hands. This issue's feature article [page 4] tells how ARS is leading a unique test of IPM technologies in the Northwest.

The target, the codling moth, threatens apples and pears. The test is

a new ARS pilot project for areawide pest management. An areawide system calls for concerted action throughout a growing region rather than separate, field-by-field approaches.

ARS will, as resources permit, begin new areawide pilot projects. Targets will include corn rootworm, pink bollworm and tobacco budworm, and Colorado potato beetle. All show signs of resisting chemical controls. But they have also been shown to be vulnerable to nature-based IPM strategies from ARS laboratories.

The U.S. Environmental Protection Agency (EPA) early in 1995 approved commercial use of three new biocontrols. All three resulted from cooperative working relations between ARS and industry. One product, Mycotrol-WP, is a fungus that kills silverleaf whiteflies [See "Whitefly Fungus on Its Way to Growers," *Agricultural Research*, May 1995, pp. 16-17.]. Hard to control with chemicals, these pests have severely damaged U.S. cotton, vegetables, and other crops in recent years.

The other products, Bio-Save-11 and Aspire, are the first postharvest fruit biofungicides registered for the U.S. market. Each uses a bacterium or a yeast as a natural alternative to chemical fungicides used to control rot diseases in apples, pears, and citrus. Commercial development of both biofungicides began with ARS research discoveries.

Such discoveries and products from ARS and others have greatly increased the IPM alternatives now available to producers. That's one of the reasons why USDA established a national IPM initiative last year. Its goal is to help producers apply IPM on 75 percent of our cropland by the year 2000.

This summer, USDA, in cooperation with land grant universities, will begin creating state and regional teams to devise IPM systems for crops in particular growing areas. Teams will include experts in a range of sciences. Members will be drawn from

state agricultural experiment station extension specialists, producers, industry, ARS, and other federal and state agencies. The ARS scientist on a team will bring unique experience and expertise—for example, for developing a new spray or granule formulation for a biocontrol organism.

In 1994, USDA and EPA took another step that will foster IPM systems and protect our food and fiber from pests. In a memorandum of understanding, the two agencies agreed to focus development of alternative controls where they're most needed—that is, against pests for which the major effective chemical control is proposed to be deregistered or otherwise newly restricted. To expedite the effort, USDA's Cooperative State Research, Education, and Extension Service plans a competitive research grant program in 1996.

ARS scientists will continue to be crucial in developing IPM strategies for commercial use. But the future transfer of technology continues to depend on a foundation of hard-won knowledge of production systems.

We build and fortify this knowledge base through long-term investment in research. This investment aims to understand, for example, the biology, behavior, and environmental niches of pests—and their natural enemies. This understanding can support each decision a farmer or rancher makes in raising crops and livestock. Similarly, ARS research investment in crop and animal biology and production practices pays off in new IPM tools.

The IPM initiative will accelerate the renewable process of discovery, application, and education. It presents a unique opportunity to improve agricultural productivity and realize major gains in environmental stewardship.

### **Richard M. Parry**

ARS Assistant Administrator  
Office of Technology Transfer