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Exclusively for Potato Grower of Idaho

Resistance depleting potato growers' arsenal

In the furious fight to stave off the Colorado potato beetle, U.S. potato growers are dangerously close to running out of solutions to control the insecticide-resistant pest.

"Insecticide resistance is threatening to take away every effective material our growers have to control this pest," says George Kennedy, professor of entomology, North Carolina State University at Raleigh.

The problem is especially severe in the northeast and upper Midwest, where total crop failure looms as an enduring threat.

"If we lose imidacloprid, such as Admire® and Provado®, the only defenses we will have left against the beetle are transgenic varieties and IPM strategies. I'm not optimistic these will be enough," Kennedy says.

As U.S. potato growers struggle to cope with resistant Colorado potato beetle, they are not alone in their distress. Around the world, producers of vegetables, fruits, cotton, rice and a variety of field crops are finding organophosphates, carbamates and pyrethroids rendered useless by insect resistance.

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To deal directly with the widening problem, a consortium of the world's leading agrochemical companies is working aggressively through an organization called the Insecticide Resistance Action Committee.

Formed in 1984, IRAC is committed to monitoring the threat of pesticide resistance and developing viable solutions.

IRAC U.S. member companies include Abbott Laboratories, AgrEvo, American Cyanamid, BASF Agricultural Products, Bayer Corp., Novartis Crop Protection, Cotton Incorporated, DowAgroSciences, DuPont, Elf Atochem, FMC Corp., Gowan Co., Monsanto, National Cotton Council, Rhone-Poulenc, Rohm & Haas, Uniroyal Chemical Co., Valent and Zeneca.

Composed of leading entomological experts from the industrial sector, IRAC acts through a series of committees representing each major crop and pesticide group where resistance problems occur.

"Insecticide resistance has been a part of agriculture ever since the grower first turned to chemistry to control pests," says Charles Staetz, FMC Corp., Princeton, N.J. "The mission of IRAC is to find and implement solutions in cooperation with extension, research and farmer commodity groups."

Staetz, international chairman of IRAC, says the organization has devised a comprehensive strategy to confront the growing dilemma of pesticide resistance:

- Identify the scope of resistance problems through surveys;
- Develop methods for detecting and monitoring resistance;
- Discover how resistance occurs;
- Devise programs to counter the loss of pest susceptibility;
- Develop susceptibility management strategies which incorporate all practical pest management methods into a crop management program;
- Disseminate information on management strategies; and
- Interact with regulatory authorities responsible for pesticide registration.

"The problem with the resistant Colorado potato beetle is the type of resistance nightmare we want to avoid in the future. IRAC strategies are designed to minimize that possibility over time," says IRAC member Richard Johnston, American Cyanamid, Princeton, N.J.

As beetle resistance becomes genetically entrenched and geographically widespread, it puts a financial burden on growers, who have often responded by increasing the frequency and volume of sprays.

"This is generally counterproductive, because excessive spraying can exacerbate resistance problems and put additional pressure on the environment. We have to be more creative in our approaches," says Johnston, who recommends that growers adopt IRAC-approved measures to contain and discourage resistance:

- Monitor fields through scouting to determine pest populations and trends, as well as presence of beneficial insects;
- Use insecticides only if target pests are numerous enough to cause economic losses greater than the cost of the materials plus application; and
- Take an integrated approach to pest management, combining as many different control mechanisms as possible, such as protection of beneficials, rotation of insecticide classes, use of transgenic crop varieties and crop rotation.

Potato growers in the Pacific Northwest have thus far been spared the devastating crop losses attributed to resistant Colorado potato beetle elsewhere in the United States, according to Pat Boss, director of government relations, Washington State Potato Commission, Seattle.

"Many of our growers are adopting IPM-type management programs as defensive strategy," says Boss. "Also, the broad spectrum aphicides we are still able to use out here are helping to neutralize the Colorado potato beetle. That's important to us, and we hope to protect our organophosphate and carbamate labels through wise stewardship."

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