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Resistance management: A grower's choice

Growing crops today is a world away from cultural practices 30 years ago. Transgenic plants, Integrated Pest Management techniques and sophisticated crop protection brands all are tools accessible to a grower. With these new tools, resistance management tactics are becoming numerous and effective.

“Now is the time to make a difference in controlling long term costs by being proactive and aggressive with resistance management before it becomes serious and little can be done,” says John Long, chairman of the Insecticide Resistance Action Committee, otherwise known as IRAC.

But even with these advances in technology, there is still a viable concern of pests developing resistance to the tools growers use. Much of this concern stems from the lack of education regarding insect management and the critical role a grower plays in the fight against resistance.

An organization of crop protection companies is leading the charge in managing insect resistance. The Insecticide Resistance Action Committee (IRAC) is intensifying efforts with research, fieldwork, consultation and educational programs to aid growers confronted with resistance issues. The group is addressing problems such as:

- **Spider mites.**
- **Diamondback moths.**
- **Colorado potato beetle.**
- **Silverleaf whitefly.**

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Resistance Management

Catastrophic failures like those described above are not common. However, every major crop — cotton, rice, corn, fruits, vegetables and ornamentals — has one or more resistant pests.

“In total, more than 500 species of insects and other arthropods have already shown resistance to at least one class of insecticides,” says Long. “Once a crop protection product is rendered ineffective by resistance, it could very well be lost from the toolbox forever.”

The price of insecticide resistance in lost yields and higher insect control costs is staggering — in some years more than \$1 billion in cotton for the budworm/bollworm complex alone.

According to Long, prevention is the best strategy, but if resistance is suspected, first eliminate other possible causes.

In many instances, lack of control can be attributed to application error, equipment failure or less-than-optimal environmental conditions. In the event of a control failure due to resistance, don’t respray with an insecticide of the same chemical class.

IRAC recommends several resistance management strategies for transgenic crops as well as traditional pesticides, including:

- Monitoring fields through scouting to determine pest populations and trends, as well as presence of beneficial insects;
- Using insecticides only if target pests are numerous enough to cause economic losses greater than the cost of the materials plus application; and
- Taking 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.

The mission of IRAC is to help growers maintain the efficacy of crop protection products. Implementation of comprehensive strategies include:

- Identifying the scope of resistance problems through surveys;
- Developing methods for detecting and monitoring resistance;

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- Discovering how resistance occurs;
- Devising programs to counter the loss of pest susceptibility;
- Developing susceptibility management strategies that incorporate all practical pest management methods into a crop management program;
- Disseminating information on management strategies; and
- Interacting with regulatory authorities responsible for insecticide registration.

The Insecticide Resistance Action Committee was formed in 1984 to provide a coordinated crop protection industry response to the global development of resistance in insect and mite pests. IRAC now is concentrating its resources on local implementation of resistance management strategies by growers; establishing the relationship between monitoring data and level of control in the field; and educating all involved in crop protection.

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