Pest prognosis

How to control the impact of insects on crops.

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Studying the past is one of the best indicators of future developments.

Assessing this year's regional perspectives on the impact of insect pests will provide farmers with management strategies for next year's growing season.

Hardin County, Iowa, grower John Gilbert said there's no substitute for frequent and early scouting when it comes to insects.

"Sometimes a farmer feels pressure to spray insecticides when they see neighbors doing it, but I believe in scouting to determine if recommended thresholds warrant treatment," he said. "The only cost you can control is the cost you don't have."

While keeping up with the nuances of pest management can be daunting, there are myriad practices specific to common insects that can help growers control their impact.

For the original article, visit: https://bit.ly/2sVktuz

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Western bean cutworm

"In my 40 years of farming, I've never encountered an insect more difficult to scout than the western bean cutworm," said Gary Battles, corn and soybean farmer in St. Joseph County, Indiana, just 15 miles from the Michigan border. "Basically, you have to scout for moth eggs in 7-foot-tall corn, and, when you detect threshold egg masses, there's a narrow window for insecticide application to be effective."

Battles said the caterpillar corn pest is a double-edged sword striking crop profits. "Not only do you lose kernels and yield from worms feeding on corn ears, the pest injury allows a gamut of molds to develop. Disease from insect wounds results in taking a hit in grain quality at the elevator."

In 2017, Battles found the peak moth flight for his fields and those he scouts for neighbors ranged from June 22 to August 9. The moths lay 20 to 50 eggs per mass, with one egg producing multiple larvae. Egg masses are white and gradually turn to purple around tasseling, which indicates the larvae will begin to hatch within a day.

Battles has worked with Christian Krupke, Purdue University entomology professor, to learn more about scouting and managing the pest. Krupke said western bean cutworm has become the primary insect pest issue in northern Indiana and surrounding states. He attributes the increase in populations to the pest's resistance to Bt hybrids, rather than weather as is often the case with other pests.

Krupke believes it's time to evaluate management strategies, because most currently available Bt corn hybrids will not control western bean cutworm. Bt corn hybrids containing the Cry1F gene will not offer effective control of the pest, he said.

"We always recommend rotating insecticides and Bt hybrids to avoid resistance. Planting a different crop in fields from year to year also helps with insects and other pests," he said. "This year, farmers were in a damage-control mode with western bean cutworm. They've reached for pyrethroid insecticides, which are effective for now. As we move forward, growers may need to think about rotating to a

chlorantraniliprole insecticide, which has a different mode of action to help manage resistance."

Krupke suggested insecticide treatment for western bean cutworm be timed according to when larvae hatch from egg masses and move into the developing ear. "Once the larvae reach the ears, you can't control them," he said. "The key is scouting, and the threshold is 5 percent of the corn plants have an egg mass. Check a minimum of 100 plants in different areas of a field. The eggs are usually laid on the upper side of leaves nearest the whorl, but will occasionally be found elsewhere on the plant."

He recommended growers wait until corn is in the reproductive stage to use an insecticide. Larvae will have to make one more move at this point: from leaf axils or the whorl, where they are feeding on pollen, and then on to the developing ear. Krupke said they will spend the rest of their larval stage here.

"Timing is key, because insecticide residual activity may last a week at best," he explained. "Several larvae per ear can reduce grain yield by 30 to 40 percent, but the real issue is ear rots and the toxins that come with them. These compounds are highly-persistent in grain and toxic to livestock at very low concentrations."

Soybean aphids

"When it comes to soybean aphids, we have significant acreage that is infested with aphid resistant to insecticides — and it's the third year we've seen problems. We expect the problem to stick around in 2018," said Bob Koch, University of Minnesota Extension entomologist. "It's something new in Minnesota and just documented in the past couple years. Now, it's rampant." He noted soybean aphids are not a new pest, but that a new genetic stock has evolved.

Specifically, he reported many cases of pyrethroid insecticide failures to control soybean aphid, and laboratory confirmation of resistance. "My concern is that we have relatively few insecticide groups in the toolbox, and, if we have resistance to one of these tools, who knows how long it is until we have resistance to others," Koch said. To manage soybean aphid resistance, he believes farmers should frequently scout fields and spray insecticides only when they reach thresholds.

"If more people adhered to thresholds before spraying, there would be less overall soybean aphid resistance. Growers may not think it's much of an additional cost, so they treat with an insecticide application at low thresholds. I urge them to keep in mind the long-term costs, such as insecticide resistance and environmental sustainability," he added.

Cole Trebesch said he follows university threshold recommendations to control soybean aphids in his Brown County, Minnesota, fields. "We begin scouting for them in mid-July. The threshold for triggering an insecticide application is 250 aphids per plant, and populations can double in two days. At that point, we anticipate spraying in less than a week," he said.

Volunteer wheat

"The number one thing Kansas farmers can do to control insects in wheat is to get rid of volunteer wheat," said Jeff Whitworth, Kansas State University Extension entomologist. "Control volunteer wheat, and you can control most pests."

Whitworth stressed the importance of volunteer wheat control, because it serves as a host for wheat curl mites, Hessian fly and greenbugs in the fall. "We experienced heavy rainfall last year, plus a mild fall and winter, which led to an explosion of volunteer wheat. When volunteer wheat is within a half-mile of a field that will be planted to wheat, it should be totally dead at least two weeks prior to planting," he explained.

Volunteer wheat allows the wheat curl mite to survive until it can move to newly planted wheat, and it may lead to wheat streak mosaic virus. Carried by wind, the wheat curl mite can travel up to one-half mile from volunteer wheat and infest new wheat fields. Traditionally, wheat curl mites occur in the western third of Kansas, but in 2017, infestations occurred about halfway across the state, west to east, Whitworth reported.

Increased amount of volunteer wheat also serves as a host for Hessian fly. "In north-central Kansas, we saw several wheat fields plowed up in January and February due to Hessian fly damage," he said.

Traditionally, growers have been advised to plant wheat after the Hessian fly-free date, which varies by region. "For the past six to seven years, we've found there is no Hessian free-fly date," Whitworth added. "The Hessian free-fly date is now called the 'Best Management Planting Date.' These insects are now active into December because of the warmer fall temperatures and milder winters we've seen."

Again, he emphasized the importance of controlling volunteer wheat two weeks prior to planting to avoid the yield-robbing complications of Hessian fly and other pests.

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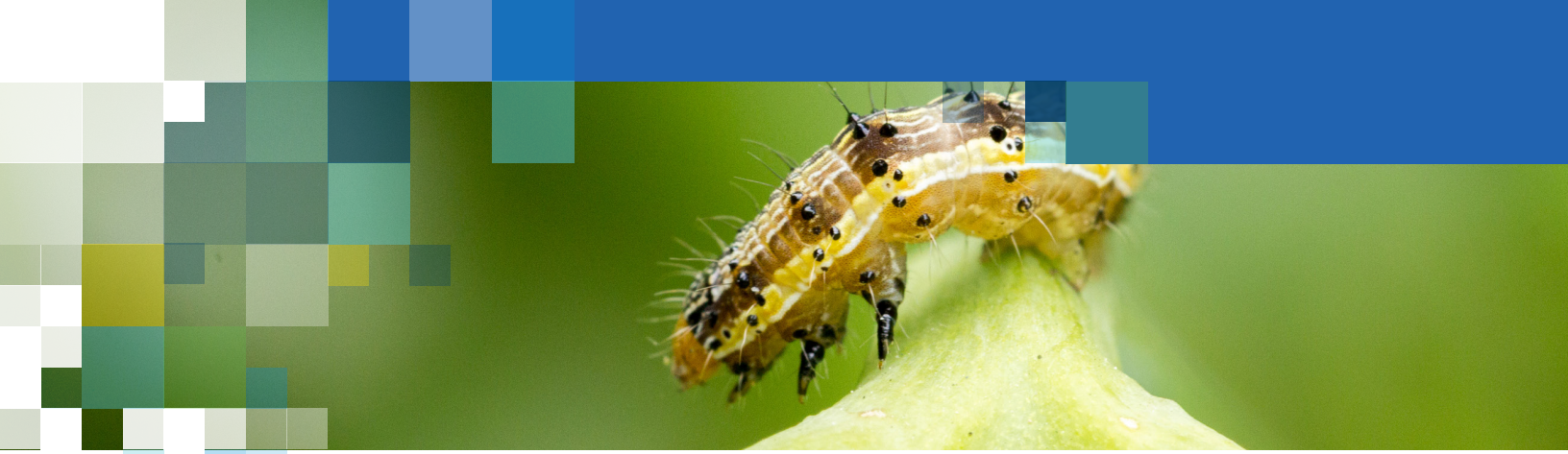

Bollworms, red-banded stinkbugs

Surrounded by cotton fields, consultant Tucker Miller parked his pickup to eat lunch and reflect on the woes of 2017 insect infestations.

"Every year presents a problem, and the major 'eye-opener' this year is the tremendous, rolling generations of bollworms that are surviving in Bt cotton," he said. Miller serves clients with 30,000 acres of cotton and other crops in north-central Mississippi.

"We've seen some slippage in traits and insecticide control. In 2018, we need to budget for one application of diamide for bollworm, or possibly two," Miller said. He advised whole-plant scouting for bollworm and following Mississippi State University pest-control guidelines to determine thresholds. "My growers are hoping for more availability of Bollgard 3 and WideStrike 3 Bt cotton varieties in 2018 to offer greater protection."

Miller reported 2017 was a normal year for soybean insects with the exception of red-banded stinkbugs. "We're seeing problems in late-planted soybeans, which appear to be acting as a 'trap crop' for late-season insects. The red-banded stinkbug presented a game-changer this year. Usually, we spray stinkbug species and get rid of them. The red-banded stinkbugs just keep coming."

Angus Catchot, Mississippi State University Extension entomologist, echoes concern about bollworms and red-banded stinkbugs. "We've treated 75 to 80 percent of our cotton acres with a diamide chemistry for bollworm and seen more survival than ever in Bt cotton. Another 50 to 60 percent of the acres received two insecticide applications, which is highly unusual," he said. "This presented a big problem for many growers who didn't budget for these applications."

The red-banded stinkbug offered a new, significant challenge for soybean growers, Catchot said. "It's not commonly a pest for us, but it overwintered during our warmer-than-usual winter and became a widespread problem across the lower two-thirds of Mississippi." This species prefers to feed when pods are being filled and can result in 90 percent yield loss. They can remain active in warm winters and continue breeding.

"There's no substitute for scouting, and treat with insecticides only as needed," he added. "Also, set realistic budgets for insecticides. Build in contingencies, follow university and industry information and budget accordingly."