

Managing Crop Pests

UK Field Trials Reveal Methods For Overcoming Worms, Diseases

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Dr. Doug Johnson, Extension Entomologist with the University of Kentucky at Princeton Research and Education Center, reported at the UK Wheat Field Day on the aphid insecticide trials he has underway. A bit of barley yellow dwarf had already affected the first planting of the trials.

"These trials were planted really early in order to make sure that I get insects and disease transmission to test," Johnson said.

"Barley yellow dwarf is a group of viruses that attacks grasses but the viruses can't move except through aphids," Johnson said. "The aphids themselves that we're working with are not important in terms of their feeding on this crop, they just don't do that kind of damage. There's five species we usually work with and they're only important in moving this virus disease, the symptoms of which can include not only the yellowing and purpling on the plant but stunting as well. There's no stunting in this particular field so there was not a lot of real early infection, but, generally speaking, when you see color in a leaf, particularly the flag, that's what we use to gauge it."

When there's a lot of real red purplish color in it, that generally means it was infected in the fall. That's the most important infection. When you see leaves that don't look thrifty but they're very pale yellow looking then that's generally an infection which occurs in the spring which is not good but it's much less important than what occurs in the fall.

"Disease that occurs early has all fall to develop, then plants go dormant in the winter and the disease develops again in the spring to damage the plant," he said. "Disease that comes in the spring only has that short period of time to develop basically from elongation through yield."

Johnson said he has also been following two additional fairly important things.

"The one that people have been tracking for the most time is the flight of armyworm moths and we've had the largest flight of armyworm moths captured in our trap system here at Princeton and also we have a new trap line in Lexington. We've caught more moths in the first generation that we've ever caught in any year since we've ever been trapping and I forgot to look how long that's been but I know it's been more than 13 years."

A large population of armyworm moths is out there. These are the "true" armyworms, not fall armyworm or beet armyworm, the other forms of the pest.

"It's actual name is 'armyworm,'" he said. "Obviously we're not worried about the moths, they are just an early indicator, an early warning to us that there's a large population. We compare that a couple of ways. We compare that to our historic records and we use a five-year rolling average that we call average or normal."

There have been a couple of years where there were known outbreaks and since Johnson knows the moth capture size of those years, he uses those as a comparison to gauge risk.

"That's really all we're doing is gauging risk," he said. "I cannot make a direct prediction and the reason I can't is because once the moths mate and lay their eggs there are a lot of things that can happen to the eggs and the caterpillars. They can be eaten by predators, they can be parasitized by parasitoid wasps, they can succumb to fungus and virus diseases; so you see lots of things can happen to the early stage of the caterpillar which would allow for a very large moth flight but result in a small caterpillar number. So we can't make a direct prediction but I think it is fair to say that when you have moth numbers as much larger this year than we've ever had, that we're at higher risk of having some problems."

"We also have at the point of this field day, at least three different areas in the state where we have had treatable numbers of armyworms in corn," he continued. "So we know the caterpillars are out there now, they're probably not at their peak number yet."

Johnson expected that to happen the week of the field day or the next week because of the temperature regime. He advised that people who are growing grass crops particularly small grains, corn and hay for pasture or forage, should watch for these insects.

"Actually small grains are not at the greatest risk," he said. "There will always be armyworms in small grains; you give me enough time I'll find you an armyworm in a small grain field; but this crop is getting closer to maturity. It's large, it's robust; if it's been well maintained, the worms tend to be late on this, so I can't say it won't do any harm. It can, but the chances of it compared to corn are much lower. Corn is maybe our highest problematic crop because it's small and right now it's cool and wet so it's struggling. It's not going to die but in a cool wet temperature these insects are favored over the corn because their physiology does better at cool, wet conditions than corn physiology does. It allows them to catch up a little bit."

Also, corn that is planted into a weedy situation, particularly grass weeds, will be more likely affected by armyworms. These worms will eat broadleaf plants although they don't really pre-

fer them. Armyworms are really a grass loving insect. The first places for farmers to check are the grass forages.

"They're not going to be a problem on alfalfa, or on other broadleaf plants but they can be a problem in grass forages," he said. "They will not kill the plant, because they're deep rooted perennials but they could possibly ruin the first cutting or make the pasture unfit for early season production."

Reporting on the aphid insecticide trials he has underway is Dr. Doug Johnson, Extension Entomologist with the University of Kentucky at Princeton Research and Education Center

Photo by John LaRose, Jr.



While none of this may happen, Johnson feels his duty is to share the information to make sure people have a chance to look in their fields to make sure, they either do or don't have the problem.

"Finding the problem at the right time when the worm is not particularly difficult to control is important," he said. "Most of the insecticides labeled for it will do a fine job. I don't worry about people getting control of them if they need it. I worry about them putting control on when they don't need it which costs them a lot of money and puts stuff in the environment we don't need. Also, I worry about not getting there in time, putting a control on too late after the damage is already done. Those are the risks that we're trying to avoid with armyworms."

Johnson also discussed his involvement with the small grain and soybean growers in using aphid suction traps. "We've been looking at a large number of aphids," he said.

"Today obviously, I'm talking about the grain aphids, but we also look for soybean aphids. I share the information with my colleague, Dr. Lee Townsend, who is interested in the aphids on alfalfa and forage grasses. This has been new data for us. To the best of my knowledge before this project was started two years ago, other than observation we've never had population data on any of these species."

To some extent it's simply backing up the theory we already have about how they behave, particularly in small grains. It pretty well verifies what we thought we knew about what was happening. In other cases it's telling us a few new things. We have, for instance, a peak population very late in the spring here of the grain aphids which I, frankly, didn't think about and didn't expect to see.

"I've been talking to Dr. David Voegtlin at the Illinois Natural History Survey, who does all the IDs on this. He's trying to get some background on the biology because that means that even though those aphids have been here there could be a great redistribution of them out over the crops. So if you had control of them before this, theoretically, and all of a sudden they go through a flight and go through redistribution, you might have them again. I don't know that to be the fact, I just don't know what that is, so that's a new factor."

"Also, we've identified the rice root aphid which has never been proven to be in Kentucky before," he said. "We have now found it in both years in Princeton and one year we just started to trap in Lexington, so we do know that it is in all the small grain growing areas of the state. It's particularly important because it lives mostly underground, and you'll hardly ever see it until the symptoms show up."

Johnson discussed some of the treatments that are in the plots, however data on those were only due in June or July.

"That will go into our research report and, obviously, into our educational program over the next year," he said.

From reports from his colleagues in Tennessee Johnson said cutworm problems could show up on small corn.

"We have not seen a lot of difference in our trap numbers here and we have not had a lot of field reports with cutworms so that does not seem to be the case for us now but it's no question in middle Tennessee where it's a real problem," he said.

Readers in the central part of Kentucky may have noticed the presence of a periodical cicada. Those with new shade trees that have fruits, particularly apples or grapes that are setting new fruit, should be on the lookout. △