

Wheat Predators

Entomologist: Ways To Protect Wheat From Growth To Sale



Dr. Doug Johnson, extension professor of entomology with the University of Kentucky, discusses insect control in stored wheat and aphid damage.

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Insect control in stored wheat and aphid damage was discussed recently by Dr. Doug Johnson, extension professor of entomology with the University of Kentucky, located on the UK Research and Education Center in Caldwell County in Western Kentucky.

“Wheat storage is fairly important as this year there’s a big incentive to store wheat over the course of time, and although there is good money in that, it all depends on the quality of the wheat at the time of sale,” he said.

When putting wheat in the bin, he said the wheat should be as dry as can be, because the dryer the wheat the less the insects can feed on it.

“We don’t want any trash, we don’t want any broken kernels, we don’t want any fines, because there are a number of insects that can only live on those broken kernels and those are generally the ones that cause us problems,” Johnson continued. “We tend to think about the weevils and the lesser grain borer which are very important, but I would say a good eight to nine times out of 10 when I get a question, they have the secondary feeders, the flour beetles and the rusty and flat grain beetle. That group is infesting their wheat and causing them either to be docked or in some cases they can’t sell it at all.”

Johnson also talked about barley yellows and the aphids that move barley yellows.

“These viruses can only be moved by aphids and there’s a suite of grain aphids that occur in Kentucky and many of the surrounding states led by the bird cherry oat aphid, but also the English grain aphid, the green bug, and the rice root aphid; all these can move the viruses among plants,” he said. “This was a particularly difficult year for us because we were above 50 degrees in January and it stayed very warm for a significant period of time. This also happened in Illinois and Indiana because I got a number of calls from those folks.”

Temperature is always the driving factor with these insects. Anytime it’s above 50 degrees, or when you have bright sunshine – because the ground can be heated by the sun even when the air temperature is low – the insects can move, they can pick up the virus and move it.

“We’ve had a lot of symptoms around Kentucky, and some places are worse than others. Of course, symptoms can sometimes be a big fat lie because some wheat will show a lot of symptoms and not have a great deal of loss; other wheats won’t show any symptoms at all but will suffer loss. So the fact that you have symptoms is not a good thing necessarily, but it also doesn’t mean that you have a tragedy on your hands. Wait to evaluate what’s going on when you’re harvesting.”

He predicted that a repeat of this kind of warm weather would probably force an increase in the application of insecticides to control aphids, which is the only way to control the movement of the barley yellows. The most important infections are the ones that occur in the fall. Once in a while infections that occur in spring are harmful but no one knows what’s going to happen if there continues to be an aphid presence and activity in the middle of January. That’s something else to be aware of and look at differently.

“The level of damage mainly comes down to a couple of factors and both of those factors are based on these temperatures,” he pointed out. “Aphids’ rate of growth, movement, reproduction and feeding is based on temperature. They move based on temperature. Wheat is a plant so it does the same thing. It grows by temperature. Growth rate also depends on temperature. When it’s cold wheat’s not growing. The virus depends upon the wheats’ cellular machinery to produce more virus so when wheat isn’t growing, the virus within the plant is not increasing. Because viruses are moved by these aphids they’ll be moved more when the temperatures are warm. More plants will be infected, but in addition to that if the wheat is growing and it’s cells are operating, the virus simply hijacks the cells to make more virus particles as opposed to whatever the cell is supposed to be making. All these factors will increase the amount of virus in the plant. The amount of virus in the plant is directly related to how badly that individual plant will be damaged.

“The yield loss in the whole field is related to how many individual plants have been infected by having aphids feed on them, and how rapidly the viruses increase in those plants,” he concluded. △

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