Yellow dwarf a common sight in many Indiana wheat fields

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Warm temperatures late into last fall are partially to blame for damaged wheat showing symptoms of yellow dwarf, said a Purdue University expert.

"We were having daily highs in the low 60s and nighttime temperatures were not freezing," said Greg Shaner, Purdue Extension crop disease specialist. "This gave aphids (the primary vector) more time to reproduce and transmit the virus that causes yellow dwarf."

During the past two weeks, symptoms of yellow dwarf have become evident in many wheat fields. Fields are now showing irregular plant height and erect flag leaves with purple tips, both symptoms of yellow dwarf. Another symptom is a general pale green color, which could be mistaken for nitrogen deficiency.

Yellow dwarf not only cosmetically damages the plant, but also stunts its growth. Infected plants have a stunted root system, as well as short stalks and smaller leaves. The wheat heads also are smaller and there are less of them, resulting in yield loss.

On a healthy well-formed wheat head, there should be roughly 16-18 spikelets, and each spikelet should have two kernels. A good wheat crop would produce 35 kernels per head, Shaner said.

"Right now, there is absolutely nothing farmers can do," he said. "The infection is there, the damage is done and there is no real additional

infection taking place."

However, if damage is severe enough, growers can still make the decision to tear up a field and replant, but the window of opportunity is closing. It is becoming late for planting corn, but soybeans are still an option. That decision for much of the state should have been made a week or 10 days ago after the heads emerged.

To estimate yield potential for a field with yellow dwarf, start by counting the heads in several arbitrarily selected 19-inch row sections for wheat planted at the standard row spacing. The population of wheat heads for a high yield should range from 60-70 plants per square foot, and for an adequate yield 55 heads per square foot. These densities assume each head has 16-18 spikelets and produces 35 kernels. Other variables that must be taken into account when determining yield include reduced head size, spikelet number and kernel size.

Yellow dwarf is caused by a virus and spread by aphids. When an infected aphid feeds on a wheat plant, it transmits the virus to the plant, Shaner said. The offspring of an infected aphid are not carriers of the virus, but typically not for long. Shortly after the new aphids start to feed on an infected plant, they acquire the virus and spread the infection as they move to healthy plants, he said.

Yellow dwarf is a sporadic disease. For Indiana, it's a problem roughly one out of every 10 years, Shaner said. Growers could use an insecticide on the wheat seed, but that may not be economically justified as a routine practice, Shaner said. For aphid control, spraying a foliar insecticide in the fall would be more worthwhile, he said. It also is important to plant after the fly-free date because temperatures are normally low enough to ensure the insects are less active.

Infection can occur in both the fall and spring, but fall infection is more

damaging. Stunting, reduced tillering and predisposition to winter killing are results of fall infection. Spring infection causes noticeable yellowing and purpling of the flag leaf, but not severe stunting.

Source: Purdue University