New virus threatens High Plains wheat crop

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Triticum mosaic virus poses a new threat to Texas wheat, according to Texas AgriLife Research scientists in Amarillo.

The disease was discovered in 2006 by Dr. Dallas Seifers, a Kansas State University researcher, said Jacob Price, AgriLife Research associate researcher.

Price is working with Dr. Charlie Rush, AgriLife Research plant pathologist, and Dr. Ron French, Texas AgriLife Extension Service plant pathologist, on a variety of studies to determine how big of a role it plays in the disease pressure put on area wheat.

The virus is difficult to detect and contain because it is carried by the same mite and exhibits many of the same symptoms as several other diseases already attacking wheat, Price said. It is in the same family of diseases as wheat streak mosaic.

Triticum mosaic virus is carried by the wheat curl mite, he said, which is the same vector that spreads/transmits wheat streak mosaic virus and High Plains virus.

Symptoms of each of the diseases are generally yellowing and stunted plants, Price said. While they all look the same, he said he is studying yield reduction, root development and water uptake to see if they vary between the diseases.

"Right now, there's not much you can do about the vector, so it is all a

matter of management," he said. That includes both prevention and reduction of inputs once a field is infected.

Destroying volunteer wheat and reducing natural prairie grasses around wheat fields are the key control methods at this time, Price said. This is especially important for dryland producers who plant early, because the grasses act as a "green bridge" to the wheat.

"The wheat curl mite is found on volunteer wheat and many different grasses, and is blown in the air by winds," he said.

Also, because the symptoms of all these viruses are indistinguishable in the field, producers will need to get any sick wheat tested, Price said.

"Bring it to us or mail it to us," he said. If a sample is mailed, it needs to be packed with a cold pack. Sample submission forms can be found at http://amarillo.tamu.edu/programs/plantpathtce .

Price said it is hard to know how much yield loss has been caused by the triticum mosaic virus alone, because no one knew it existed and therefor did not test for it until last year's crop.

From March 14-June 6, Price received 309 wheat samples. Of the samples, he said, 72 percent tested positive for wheat streak mosaic, 51 percent for triticum mosaic virus, 34 percent for High Plains virus and 14 percent for barley yellow dwarf virus.

"Very rarely did you find triticum without wheat streak mosaic," Price said.

Of the samples containing triticum mosaic virus, he said 47 percent also had wheat streak mosaic and 4 percent also had High Plains virus, but the other 49 percent had all three viruses.

Price worked to find out how widespread the triticum virus was and found it throughout the entire west side of the Texas Panhandle.

"I really need to survey everywhere I can this year," he said. He wants to try to determine where the diseases cross, transmissibility by vectors, host ranges such as native grasses and conservation reserve program grasses, yield loss due to single and dual infections and distribution for multiple viruses.

In a previous study, Price has determined wheat streak mosaic virus reduces water uptake. With early diagnosis of the problem and thus irrigation reduction, a producer with a 540-acre center pivot can eliminate two irrigations totaling 4 inches, at $11 per thousand cubic feet, and save approximately $24,000, he said.

"In calculating the counties with wheat acreage infected in the northern Panhandle, early diagnosis could save as much as $9 million for producers by eliminating wasted irrigations," he said. "We weren't testing for triticum at that time, so it is also a factor to be investigated."

Price said they are using satellite imagery early in the season to identify suspect fields and then will go out and test the field.

"We have the potential to save producers billions of dollars in wasted irrigation and fertilizer costs," he said.

While some detection of the disease can be made during warm falls and in early planted wheat, the typical time it will start showing up is during February and March when things start greening up and coming out of dormancy, Price said.

"The main time people irrigate in this area is in the late spring and summer during grain fill and heading," he said. "We want to catch it

before then, if not in the fall."

Source: Texas A&M University