

**The Extension Cord**  
“*Connecting K-State to the Community*”  
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## **Wheat Streak Mosaic Virus Resistance Expectations**

There has been a lot of ag press, lately, concerning the infestation of wheat streak mosaic virus across the state of Kansas this summer. It is being discussed by the Kansas Dept of Agriculture and Kansas wheat producers to begin requiring it be controlled under some provision of the noxious weed law.

To help reduce the chances of wheat being infected with wheat streak mosaic, producers may choose to plant a variety with resistance to the wheat streak mosaic virus or to wheat curl mites, the vector of the disease. It is important to understand what producers can reasonably expect from these varieties.

### ***Wheat streak mosaic virus resistance***

Wheat varieties adapted to Kansas with resistance to the wheat streak mosaic virus include Joe (white wheat), Oakley CL (a single-gene Clearfield variety), and Clara CL (a white, single-gene Clearfield variety). These varieties all have the same gene, *wsm2*, for wheat streak mosaic resistance. Temperature sensitivity varies a bit among these, but all will tend to lose wheat streak mosaic resistance at high temperatures.

The degree of resistance to wheat streak mosaic in these varieties will vary in the field. If temperatures are warm (average temperature greater than 68 degrees F) for extended periods (about 2-3 weeks in growth chamber studies) in the fall after these varieties have emerged, they can become infected with wheat streak mosaic. If this occurs, the plants can show symptoms as early as the fall or more typically during the spring. Symptoms include typical stunting and prostrate growth, as well as bright yellow streaked leaves as the disease progresses during the season.

If temperatures are cool in the fall, producers can expect these varieties to show less severe disease symptoms than susceptible varieties. If a spring infection occurs when temperatures are warm, these varieties will show the yellowish mottling symptoms – although not the stunting seen with fall infections.

Producers should also be aware that these varieties remain susceptible to triticum mosaic virus and High Plains mosaic virus, diseases similar to wheat streak mosaic in both visible symptoms and yield reduction they cause. Plants infected with multiple viral diseases often experience greater yield loss than those infected by just one of these diseases.

If producers notice symptoms typical of wheat streak mosaic on these varieties, they could send samples in to the plant disease identification laboratory through the Extension office. The

disease may be either wheat streak mosaic, High Plains mosaic virus, triticum mosaic virus, or some combination thereof.

In 2017, these resistant varieties generally had less wheat streak mosaic disease than susceptible varieties where the disease was present, based on field observations. Still, it was not uncommon to see symptoms on these varieties. In many cases, these plants were co-infected with one of the other diseases.

### ***Wheat curl mite resistance***

Wheat varieties adapted to Kansas with resistance to the wheat curl mite include TAM 112, Byrd, Avery, and T158. All of these are hard red winter wheat varieties.

While these varieties are susceptible to the wheat streak mosaic virus (as well as the High Plains virus and triticum mosaic virus), they may escape these diseases because of their resistance to the wheat curl mite. The wheat curl mite is the vector for all of those virus diseases.

Based on field observations, producers can expect these varieties to hold up better than susceptible varieties against all three of these virus mosaic diseases under light to moderate wheat curl mite pressure. Under heavy pressure, such as when wheat is planted adjacent to a field that has had volunteer wheat growing on it all summer, these varieties can get overwhelmed by wheat curl mite pressure and become infected with these virus mosaic diseases.

*(Sources: Erick DeWolf, K-State Extension Wheat Pathologist; Romulo Lollato, K-State Wheat and Forages Specialist; Guorong Zhang, Wheat Breeder, Agricultural Research Center-Hays; J.P. Michaud, Entomologist, Agricultural Research Center-Hays)*