



Triticum mosaic is one of several viral diseases spread by wheat curl mites that negatively influence wheat production throughout the Great Plains. The disease was first described in Kansas during the 2006 growing season. Within a few years, wheat disease experts detected Triticum mosaic in many key wheat producing states in the central United States. This extensive distribution indicates the disease had been present for decades and symptoms caused by Triticum mosaic were attributed to other viral diseases.

## Symptoms

The symptoms of Triticum mosaic include yellow leaves with contrasting green and yellow streaks (Figure 1). The discoloration may affect the entire leaf but is often more intense near the leaf tip (Figure 2). The disease may cause spotting or mottled reaction in some wheat varieties. The symptoms of Triticum mosaic resemble those caused by wheat streak mosaic and High Plains mosaic. In many situations, plants are infected by multiple viral diseases complicating

## Quick Facts

- Symptoms of Triticum mosaic include yellow leaves with contrasting green and yellow streaks. The discoloration may affect the entire leaf but is generally more intense near the leaf tip.
- Wheat curl mites spread the virus that causes Triticum mosaic. Volunteer wheat can support large populations of these mites. Other grassy weeds also can support wheat curl mites, but these mite populations are generally smaller than those found on volunteer wheat. The wind moves the mites to newly planted wheat.
- The timely removal of volunteer wheat, avoiding early wheat planting, and selecting wheat varieties less susceptible to the disease reduces the risk of severe Triticum mosaic. Chemical sprays and seed treatments are not effective against wheat curl mites.



Figure 1. Wheat infected with Triticum mosaic often has yellow leaves with contrasting green and yellow streaks.



Figure 2. The yellow discoloration caused by Triticum mosaic is often more intense near the leaf tip than at the leaf base.



Figure 3. *Triticum mosaic* is spread by wheat curl mites. These mites cause the edges of affected leaves to curl over. The mites can be seen within the curled area but only with 30 to 40× magnification.

accurate diagnosis. Specialized laboratory testing is available at K-State's Plant Disease Diagnostic Lab to assist with disease identification.

### Disease Cycle

*Triticum mosaic* is caused by the *Triticum mosaic virus*. The virus is spread by the wheat curl mite, *Aceria tosichella*, which feeds on wheat and other grasses. The wheat curl mite is tiny and can only be seen with considerable magnification (30–40×). Mite feeding causes the edges of affected leaves to curl over (Figure 3). Large curl mite populations during grain filling stages can reduce grain yield and test weight even when the viral diseases are not present.

Volunteer wheat can support large populations of wheat curl mites during the summer when winter wheat is absent. Other grassy weeds also support the

mites, but these populations are often much smaller than those found on volunteer wheat. The wind moves mites from volunteer wheat or other hosts to the newly emerging wheat. Once established in a new wheat planting, the mites introduce the virus as they feed. As the curl mite population grows, the mites continue to spread within the field taking the virus with them. If weather conditions remain favorable, wheat curl mites remain active for months and spread the disease to near-by fields.

### Control

- **Timely removal of volunteer wheat and other grassy weeds.** Volunteer wheat and grassy weeds can be removed with herbicides or tillage operations. The populations of curl mites decrease as the volunteer wheat or grassy weeds dry down, but this process takes time. Therefore, volunteer wheat and grassy weeds should be dead and dry for 2 weeks before planting the new wheat crop.
- **Avoid early wheat planting.** Planting wheat early increases the risk the new crop will emerge when warm temperatures favor wheat curl mite reproduction and movement.
- **Plant varieties that are less susceptible to the disease.** Recent observations indicate wheat varieties including: Duster, Gallagher, TAM 112, and Winterhawk have moderate levels of genetic resistance to *Triticum mosaic*.
- **Chemical controls are not effective.** Testing indicates that the currently labeled insecticides and miticides do not provide effective management of the wheat curl mite.

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