

Wheat Streak Mosaic Virus

Pierce Taylor and Peng Tian

MU Plant Diagnostic Clinic



Wheat streak mosaic virus (WSMV) is a plant virus that infects wheat and other cereal crops, causing significant economic losses in many regions of the world. WSMV is a serious threat to global food security, as it can significantly reduce crop yields and limit the availability of wheat and other cereal crops for food and feed. WSMV is part of the family Potyviridae, which includes many other economically significant plant viruses. WSMV is transmitted by a tiny, winged insect called **Wheat Curl Mite (*Aceria tosichella*) (WCM)**, which can easily spread the virus from plant to plant. In addition to WSMV, there are two important viruses, **High Plains virus (HPV)** and **Triticum mosaic virus (TriMV)**, which share the similar life cycle driven by the transmission of WCMs. However, HPV and TriMV were not reported in Missouri so far.

Symptoms of WSMV infection include characteristic yellow streaks on the leaves of infected plants. As the infection progresses, leaves take on a mottled appearance which can eventually lead to stunted growth, reduced yields, and even plant death in severe cases. Severity of the disease depends on plant age at the time of infection, environmental conditions. Warm (75-80°F, 24-27°C), dry weather promotes infection by stressing plants and encouraging the proliferation of the primary vector, the WCMs.

There is no known cure for WSMV, but preventative measures such as adjusting planting date and removing volunteer plants can help reduce the spread of the virus. Controlling the wheat curl mite population through currently labeled insecticides has been shown to be ineffective. Farmers and researchers are working on developing resistant wheat varieties that can withstand WSMV infection. So far there are two WSM-resistant wheat varieties available hard white winter wheat RonL by the Kansas Agricultural Experiment Station and hard red winter wheat Mace released by the USDA-ARS and the Nebraska Agricultural Experiment Station. There is no variety resistant to HPV and TriMV and developing new resistant varieties is a long-term process that requires careful breeding and testing.

Reference:

B Hunger. *Three Virus Diseases of Wheat in Oklahoma*. Oklahoma State University Extension Publication EPP-7328