Plant Disease and Insect Advisory

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Wheat Disease Update

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The following is a summary of observations I made in plots west of Stillwater on 16 Feb 2005 and that I have heard from producers and colleagues in other states during the last 6-8 weeks.

Wheat Soilborne Mosaic Virus (WSBMV) & Wheat Spindle Streak Mosaic Virus (WSSMV): Symptoms of the WSBMV and WSSMV are now quite obvious in my soilborne/spindle streak nursery just west of Stillwater, and in Dr. Jeff Edward's (Wheat Extension Agronomist) variety-demo plot (also on the west side of Stillwater – Figure 1). Hence, I'm sure that symptoms of these viruses are also appearing in fields in Oklahoma where a susceptible variety is planted. These symptoms should become even stronger and more apparent as the wheat begins its flush of spring growth because plants of susceptible varieties will remain stunted and yellow while plants of resistant varieties will grow quickly and be deep green in color.

Fig 1. View of variety-demo strips susceptible (Custer) and resistant (Deliver) to wheat soilborne mosaic virus.

Remember that WSBMV and WSSMV are two different viruses that are both transmitted by a soilborne fungus called *Polymyxa graminis*. Seedlings are typically infected by the fungus in the fall during wet and cool weather, with the virus being brought into the seedling by the fungus. During the fall, winter and early spring the virus replicates and spreads through the plant with symptoms becoming apparent in late February and March.

WSBMV is the more prevalent of these two viruses in Oklahoma. Symptoms of WSBMV (Figure 2) are stunted and yellow-looking (chlorotic) plants that upon close examination reveal a mosaic-type pattern in the leaves (Figure 3). Symptoms of WSSMV are much the same (Figure 2) except that upon close examination of foliage a pattern of chlorotic "spindles" can be observed (Figure 4). The temperature range that favors expression of WSSMV (46 – 54°F) is lower than that of WSBMV (50-68°F), so symptoms of WSSMV usually are observed somewhat earlier than those of WSBMV. These two viruses can co-infect plants, so although symptoms are diagnostic, they can be confounded. Symptoms of these viruses (whether alone or combined) also seem to be more severe in later planted wheat. For example, look at the strips of wheat planted behind "Custer' and 'Deliver' in Figure 1. The back strips were planted on 16 September 2004 and the closer strips were planted on 20 October 2004. Certainly the symptoms are expressed more severely in the closer strips. However, it may be inaccurate to attribute this totally to planting date. That is, conditions (temperature and moisture) around the later planting date were more favorable for seedling infection by the fungus, and hence, the symptoms are more strongly expressed in the later planted plants in the subsequent spring. There are many varieties with excellent resistance to WSBMV and WSSMV, so regardless of the planting date, significant losses can be avoided. For the reaction of specific varieties to these viruses and other diseases, please go to: http://www.wit.okstate.edu/varietyinfo/april2004wvcc.html.

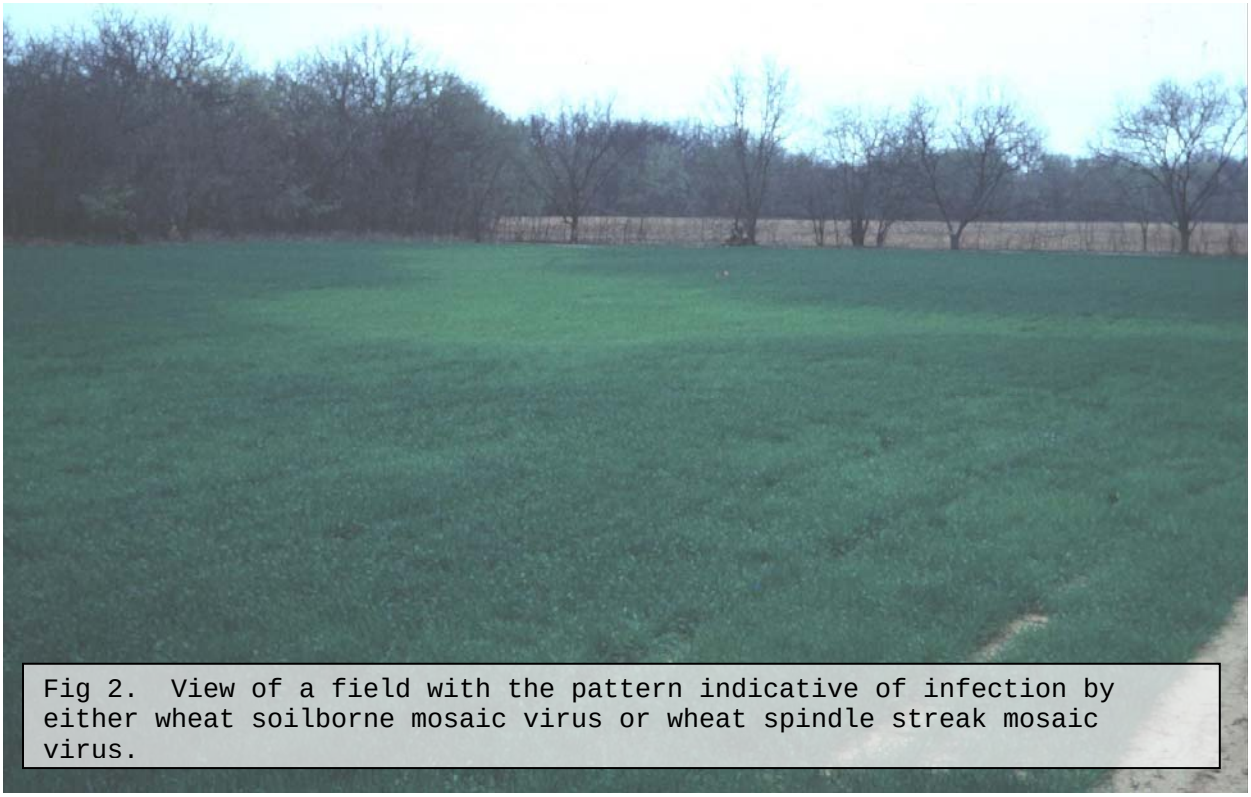

Fig 2. View of a field with the pattern indicative of infection by either wheat soilborne mosaic virus or wheat spindle streak mosaic virus.

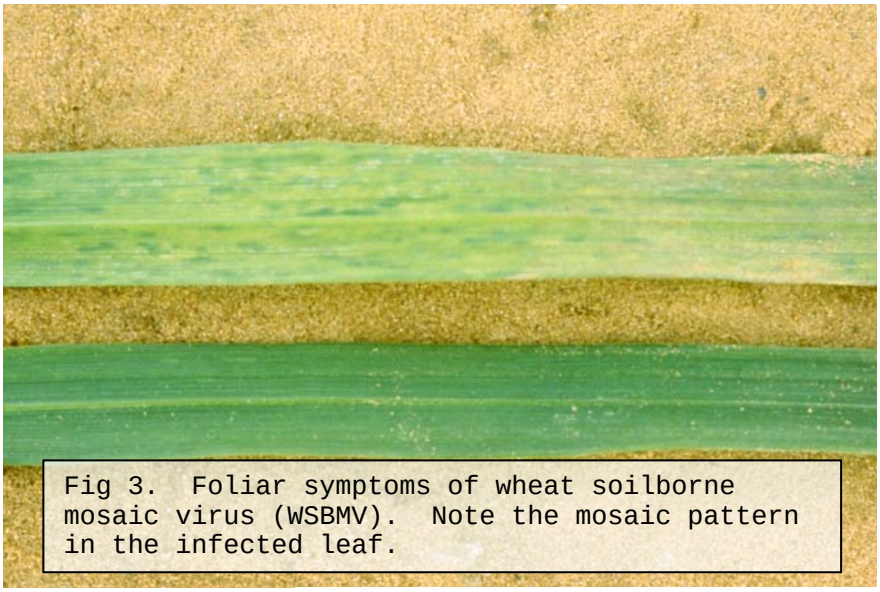

Fig 3. Foliar symptoms of wheat soilborne mosaic virus (WSBMV). Note the mosaic pattern in the infected leaf.

Fig 4. Foliar symptoms of wheat spindle streak mosaic virus (WSSMV). Note the pattern of "spindles" in the infected leaf.

Wheat leaf and stripe rust: I observed "healthy-looking" and sporulating pustules of leaf rust on many of the susceptible varieties in Dr. Edward's variety-demo plot during both January and February. Hence, I think it is safe to say that leaf rust survived the winter in much of Oklahoma. I have only seen these pustules on the lower (older) leaves of susceptible varieties that had a lot of growth and hence were well protected. I did not find any leaf rust in the later planted plots where the plants were smaller and the canopy was not nearly as thick (see Figure 1), and did not see any stripe rust in any plots.

In contrast, Rex Harrington (Research Associate in Soil & Crop Sciences at Texas A&M University) found abundant leaf and stripe rust in plots located in south-central Texas near College Station on February 10. In a more recent update (February 16), Rex reported finding abundant leaf rust in nurseries

near Luling, TX (approx 70 miles east of San Antonio) but light and scattered leaf rust in nurseries near Castroville, TX (west of San Antonio).

By comparison, Rex did not find any stripe rust near Luling, but saw many leaves with stripe rust near Castroville. He also received a wheat sample with stripe rust pustules that came from near McGregor, TX (west of Waco).

Reports from Dr. Stephen Harrison (Agronomy Dept. at Louisiana State University) during January and February have indicated that both wheat leaf rust and wheat stripe rust are quite active around Baton Rouge.

Powdery mildew: In addition to the leaf rust I found in the variety-demo near Stillwater, I also found a few pustules of powdery mildew on the lower (and hence older) leaves of susceptible varieties. These were old looking lesions and were quite sparse. Hence, I would suspect that powdery mildew also survived the winter, and may become more prevalent with the coming temperatures increases and spring moisture.

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