Wheat Leaf rust in the USA in 2018 – Summary

Leaf rust caused by *Puccinia triticina* was present at low severity and incidence throughout the eastern soft red winter wheat region and hard red wheat region of the Great Plains in 2018. From February to March, temperatures were 10-15 °F higher than average in south Texas and along the Gulf coast area, and leaf rust was present at normal severity and incidence levels. This was followed by a cold April, with temperatures 5-11 °F below average throughout most of the USA. In May temperatures were 5-11 °F above average throughout most of the USA, with lower than normal levels of precipitation in the southern Great Plains. The combination of prolonged and widespread cold temperatures followed by the hot and dry weather drastically slowed the increase and spread of leaf rust in the southern Great Plains and southeastern states. There was very little leaf rust on wheat in the winter wheat and spring wheat regions further north, due to the lack of wind borne urediniospores arriving from the southern Great Plains region, and southeastern states.

Among 238 isolates that were tested for virulence in 2018, 32 races were found. Overall across the entire USA, race MNPSD with virulence to wheat lines with Lr genes *1, 3, 9, 24, 3ka, 17, 30, B, 10, 14, 39* at 35%, race MPPSD with virulence to wheat lines with Lr genes *1, 3, 9, 24, 26, 3ka, 17, 30, B, 10, 14a*, 39 at 16%, and race MBTNB with virulence to wheat lines with Lr genes *1,3, 3ka, 11, 17, 30, B, 10*, at 9.7% were the most frequent races.

Races MBTNB, MPPSD, MNSPD, and MCTNB with virulence to *Lr11* were the most common races in the southeastern states. Soft red winter wheat cultivars with *Lr11* are grown in this region. Races MNPSD, and MPPSD, were the most common races in the hard red winter wheat area from Texas to Nebraska. Both races are virulent to *Lr39,* which is present in many wheat cultivars grown in this region. In the spring wheat area of North Dakota, South Dakota, and Minnesota, races MNPSD, MBDSD, and TBBGS were the most common. All three races are virulent to *Lr39*, and TBBGS is virulent to *Lr21,* which is present in many spring wheat cultivars in this region.

Table 1 lists the number and frequency of the *Puccinia triticina* races found in the different regions and across the overall USA.

Table 2 lists the frequency of virulence to leaf rust resistance genes in the different regions and across the overall USA.

Table 3 lists the hard red winter wheat cultivars grown in Texas, Oklahoma, and Kansas in 2018, and the postulated Lr genes.

Table 4 lists the hard red spring wheat cultivars grown in Minnesota and North Dakota in 2018, and the postulated Lr genes.

The Excel file, 2018 wheat leaf rust virulence survey lists the collection number, location, cultivar (if known), and virulence (race designation) of the single uredinial isolates tested in 2018.