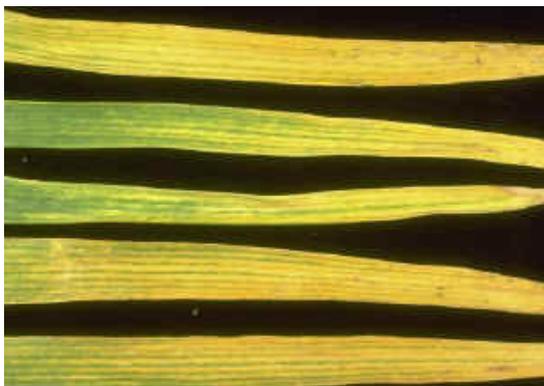


WHEAT STREAK MOSAIC VIRUS

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SYMPTOMS

Initial spring symptoms of wheat streak mosaic virus usually show up in April on edges of fields near volunteer wheat. Look for yellow streaking or mosaic patterns on young leaves. Infected plants are stunted and tiller poorly. Tillers of infected plants are sometimes prostrate on the ground. As the weather warms, symptoms become more severe. Leaves on infected plants turn yellow from the tip down, but usually the leaf veins remain green longest. This gives the leaves a yellow and green striped appearance. Often, leaves fail to unfurl completely. This is due to the microscopic wheat curl mite which carries the virus. You can look for curl mites with a 10X magnifying lens under the curled portion of the leaf. Curl mites look like tiny white rice grains. If curl mites are found, odds are very high that the plant is infected with wheat streak mosaic virus. Serological tests for wheat streak mosaic are available from the KSU Plant Diagnostic Lab.



LIFE CYCLE

Wheat streak mosaic is carried to wheat plants by the wheat curl mite. There is no other known vector. Typically, the source of both mites and virus is volunteer wheat. The most severe wheat streak mosaic is found where volunteer wheat provides a "green bridge" through the summer between successive wheat crops.

The worst case scenario is when wheat gets hailed just before maturity. This leads to an early crop of volunteer, and mites move onto it very readily from the old crop. A cool, wet summer allows maximum survival of the volunteer wheat and the mites. Then a long, warm fall allows plenty of time for mites to move onto the newly seeded wheat and begin reproduction. A hot, dry spring is the final blow because infected plants have poor roots and are more susceptible to drought.

Green foxtail, giant foxtail, some varieties of corn, sandbur, crabgrass, barnyardgrass, stinkgrass, witchgrass, hairy grama, Canada wildrye, Virginia wildrye, and bermudagrass are potentially important hosts because they can maintain both the virus and the curl mite through the summer. However, we rarely see a significant problem with anything except volunteer wheat.

Mites depend on the wind to carry them to new plants. That is why infestations are worst northeast of volunteer fields (direction of prevailing wind is northeast). When they land on a plant, they move to the youngest unfurling leaf and begin feeding.

The next generation takes only 7 to 10 days to produce. They seem unaffected by cold winter temperatures and may even multiply during winter months. Their major weakness is their need for fresh plant material. In the absence of living leaves, they can only survive a few days.

CONTROL

Losses due to wheat streak mosaic depend on the variety, the weather, the percent of plants infected, and the time of infection. Fall infection is the most severe and can cause 50% loss or more. Spring infections may cause losses closer to the 20% range.

the first and most important control is to break the bridge created by volunteer wheat. See "Be a Good Neighbor: Control Your Volunteer Wheat," KSU Extension publication number MF-1004. Volunteer should be killed at least 2-3 weeks prior to the emergence of the new crop. It may be killed by cultivation or by herbicides, but it must be a thorough job because just a few plants can harbor a lot of mites. Since mites travel in the wind, volunteer must be killed within 1/4 to 1/2 mile of the new field. Coordination of volunteer control is a community effort which requires good cooperation between neighbors.

The second control is to avoid early planting. Early planting allows the mites plenty of time to move into the field, reproduce, and spread. Waiting until after the "fly-free" date is recommended for wheat streak mosaic control. Ask your local county extension agent about recommended planting dates for your area.

The third control is to plant a variety with resistance to the virus or the curl mite. Current resistance information is contained in Wheat Variety and Insect Ratings, publication MF- 991. Although many varieties have partial resistance, none are highly resistant to wheat streak mosaic. Researchers are attempting to find improved sources of resistance and incorporate them into future varieties.

There are no chemicals which are effective or labeled for curl mite control. TAM 107 and TAM 200 were resistant to the curl mites, but the mite populations adapted, and now the varieties are susceptible. [R.L. Bowden]