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Wheat Streak Mosaic Virus Prevalent in Western Oklahoma and the Panhandle

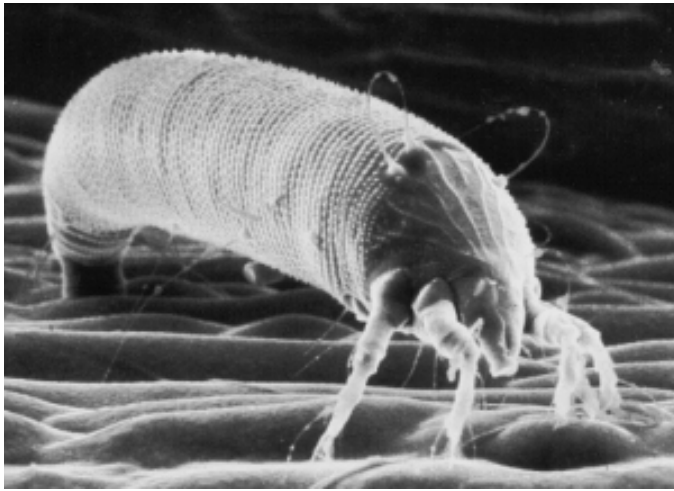
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Current situation: Strong symptoms of **Wheat streak mosaic virus (WSMV)** (see Figure 1) are being observed in multiple wheat fields across the panhandle and western Oklahoma. To date (April 19), we have received wheat that has tested positive for the presence of WSMV from southwestern OK (around Altus), northern Oklahoma (around Dacoma), and the panhandle. The last time I saw significant levels of WSMV in Oklahoma was during the spring of 2002 when WSMV was observed across western OK from the southern to the northern border. In Oklahoma, WSMV occurs only in the western part of the state, which I believe is related to the mite vector being limited to this part of the state due to climatic conditions.



Figure 1. Symptoms of wheat streak mosaic virus on wheat plants in the field

Epidemiology of WSMV: WSMV is transmitted by the wheat curl mite (right). WCMs have a wide host range including wheat, corn, and many grassy weeds. Mites that have survived the summer on volunteer wheat, corn, or weeds spread to emerging wheat in the fall, feed on the young wheat, and transmit WSMV to the wheat. Only rarely are symptoms of WSMV (see Figure 1) seen in the fall, but as soon as temperatures begin to warm in the spring, symptoms begin to appear. Symptoms follow the infestation path and severity of the mites, which spread



by the wind. Often fields are infected from a fence row, so infected plants are more common near that fence row and become less as one walks deeper into the field. On occasion, I have seen consistent infection over large fields (below). In these cases, the source of the mites was always an adjacent field where volunteer wheat or corn was present over the summer, and this field served as a source of mites to infect the emerging wheat over a long period of time in the fall. In cases where WSMV infections occurred in the fall, that wheat will yield nothing or very

little (Table 1). However, yield losses due to WSMV also can be significant when infection occurs in the spring (Table 1).



Control of WSMV: There is very little, if any, difference in reaction of commercial wheat varieties to WSMV (again, see Table 1). Hence, control of WSMV depends on limiting the over-summering and fall infection of emerging wheat by the WCM. Planting late in the fall helps to achieve this, but to some extent the effectiveness of late planting is also related to the severity of the winter, that is, late planting will not help as much in a year with a mild fall and winter. Another control that helps to reduce WSMV is to control volunteer wheat. The WCM as a life span of about two weeks. Hence, destroying volunteer wheat at least two weeks prior to emergence of seedling wheat will help to reduce the infestation of emerging wheat with WCMs. This also applies to planting wheat in a field where corn has been grown, that is, be sure at least 2 weeks (3 weeks is better) elapse between the time when the corn is completely dead and the time when the seedling wheat emerges.

Table 1. Yield of wheat infected with wheat streak mosaic virus (WSMV) in the fall, spring, or not infected.

Variety and time of infection	Severity of WSMV (0-3*)	Yield (bu/acre)
Chisholm – fall infected.....	2.7	19
Chisholm – spring infected.....	1.3	42
Chisholm – not infected.....	0.0	51
Century - fall infected.....	3.0	13
Century - spring infected.....	1.3	49
Century – not infected.....	0.0	71
2157 - fall infected.....	3.0	14
2157 - spring infected.....	1.0	44
2157 - not infected.....	0.0	49
Siouxland - fall infected.....	3.0	14
Siouxland - spring infected.....	1.0	40
Siouxland - not infected.....	0.0	41
Tam 108 - fall infected.....	1.7	25
Tam 108 - spring infected.....	0.7	48
Tam 108 - not infected.....	0.0	63
Vona – fall infected.....	3.0	05
Vona – spring infected.....	1.7	33
Vona - not infected.....	0.0	38

*Values are the average from three replications rated as:

0=no symptoms

1=no stunting present, leaves mostly green with a few yellow streaks

2=plants slightly stunted, leaves with mixed green and yellow streaks

3=plants stunted, leaves with severe yellow streaking and a few green streaks or green islands.

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