

PLANT DISEASE AND INSECT ADVISORY



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WHEAT DISEASE UPDATE

Consider Diseases When Determining Planting Date for Wheat

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Wheat is commonly used as forage for cattle and to produce grain in Oklahoma, which enhances the economics of farming. In such a dual-purpose system, wheat is planted as early as late August to maximize forage production, whereas in a grain-only system, wheat would most likely be planted in October. Although disease development depends on many factors including the presence of inoculum, temperature, rainfall, and variety planted, early planting increases the likelihood that diseases such as wheat streak mosaic virus, the aphid/barley yellow dwarf virus complex, and the root and foot rots will be more prevalent and more severe.

Root and foot rots: These root and foot rots are all caused by fungi, many of which can result in poor stands in the fall (Fig 1). Specific diseases include dryland root rot (*Fusarium*), sharp eyespot (*Rhizoctonia*), common root rot (*Bipolaris*), take-all (*Gaeumannomyces*), strawbreaker or eyespot (*Pseudocercospora*) and browning or Pythium root rot (*Pythium*). Controlling the root and foot rots is difficult. There are no resistant varieties or fungicide treatments that control all of these diseases at a consistently high level. Although late planting (after October 1 in northern OK, and after October 15 in southern OK) helps to reduce the incidence and severity of root rots, it will not entirely eliminate their presence or effects. If you have a field with a history of root rot, plant that field as late as possible or plan to use it in a "graze-out" fashion. In addition to planting date, take-all is greatly favored by a high soil pH (>6.5). Thus, when liming fields to correct for acid soils, be sure not to raise the pH above this level. Elimination of residue also helps control take-all, and can be somewhat helpful in reducing some of the other root rots. However, research has shown that elimination of residue by tillage or burning does not affect the incidence or severity of strawbreaker. For more information on wheat root rots, take-all and strawbreaker, see OSU Extension Facts F-7622 or go to <http://entopl.okstate.edu/ddd/hosts/wheat.htm>.



Fig 1. Poor stand in fall from seedling root rot (A), seedlings with rotted roots due to dryland root rot (B).

Aphid/barley yellow dwarf virus (BYDV) complex: BYDV (Fig 2A) is transmitted by many cereal-feeding aphids (Fig 2B), and hence, is associated with aphid infestations. Fall infections by BYDV are the most severe because the virus has a longer time to damage the plant as compared to infections that occur in the spring.

Several steps can be taken to help control BYDV. First, a later planting date (after October 1 in northern OK, and after October 15 in southern OK) helps to reduce the opportunity for fall infections. Second, some wheat varieties (e.g., Custer, 2174, and Ok102) tolerate aphids and/or BYDV better than others; however, no wheat variety has absolute resistance to the aphid/BYDV complex. Third, control the aphids that transmit BYDV. This can be done by applying contact insecticides to kill aphids, or by treating seed before planting with a systemic insecticide. Unfortunately, by the time contact insecticides are applied, aphids frequently have already transmitted BYDV. Systemic, seed-treatment insecticides such as Gaucho 480 (Imidacloprid - Gustafson Corp.) and Cruiser (Thiamethoxam – Syngenta) can effectively control aphids after planting, but in some years aphids do not occur and hence the treatment may not be as beneficial as in years when aphids are numerous in the fall. Be sure to thoroughly read the label before applying any chemical. For more information on the aphid/barley yellow dwarf virus complex, go to: <http://entopl.okstate.edu/ddd/hosts/wheat.htm>.



Fig 2. Purple and yellow leaves due to barley yellow dwarf virus (A), greenbugs - one of the many aphid transmitters of barley yellow dwarf virus (B).

Wheat streak mosaic virus (WSMV) & the high plains virus (HPV): WSMV (Fig 3A) was found in western Oklahoma, western Kansas and in the Texas panhandle in both the fall of 2004 and spring of 2005. HPV (Fig 3B) also is transmitted by the wheat curl mite (WCM – Fig 4) and can infect both wheat and corn. Both viruses have been found in Oklahoma, Kansas, and Texas. WCMs and these viruses not only survive in crops such as wheat and corn, but also in grassy weeds and volunteer wheat. In the fall, mites spread to emerging seedling wheat, feed on that seedling wheat, and transmit the virus to the young wheat plants. Wheat infected with WSMV or HPV in the fall is either killed by the next spring or will be severely damaged. Planting late in the fall (after October 1 in northern OK and after October 15 in southern OK) and controlling volunteer wheat are two practices that provide some control of WSMV and HPV. However, it is critical to destroy volunteer wheat at least two weeks (three weeks is better) prior to emergence of the fall-seeded wheat because the WCMs have a life span of only 7-10 days. Thus, destroying volunteer wheat at 2-3 weeks prior to emergence of seeded wheat will reduce or eliminate mite numbers in the fall. For more information on WSMV and HPV, see OSU Extension Facts 7636

(WSMV) or go to the Plant Disease & Insect Diagnostic Laboratory web page at: <http://entopl.okstate.edu/ddd/hosts/wheat.htm>.



Fig 3. Wheat streak mosaic virus (A), high plains virus in wheat (Photo courtesy of Dr. Stan Jensen, Univeristy of Nebraska) (B).

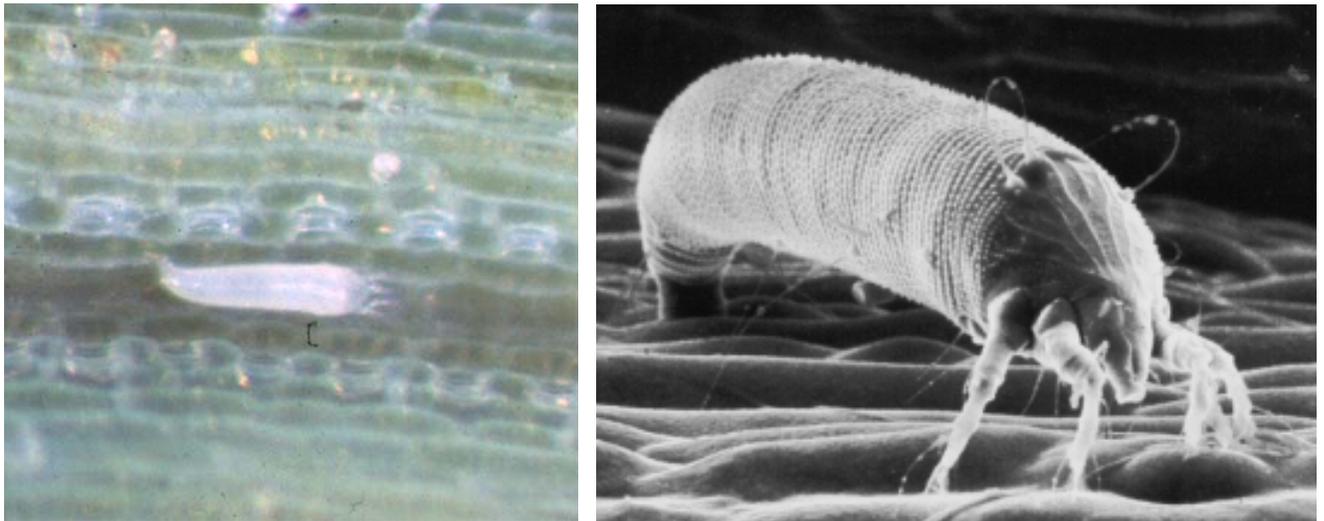


Fig 4. A wheat curl mite on a wheat leaf at 63X magnification (left), electron micrograph (right).

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