PLANT DISEASE AND INSECT ADVISORY

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Planting Date Affects Wheat Diseases

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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 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 and the high plains virus, the aphid/barley yellow dwarf virus complex, and the root and foot rots will be more prevalent and more severe.

Wheat streak mosaic virus (WSMV) & the high plains virus (HPV): WSMV and HPV (Fig 1) were both prevalent across the western half of Oklahoma, western Kansas and in the Texas panhandle in 2006. Both of these virus diseases are caused by viruses that are transmitted by the wheat curl mite (Fig 2). These mites and viruses survive in crops such as wheat and corn, as well as 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. It is critical to destroy volunteer wheat at least two weeks prior to emergence of seedling wheat because the wheat curl mites have a life span of 7-10 days. Thus, destroying volunteer wheat at least two weeks prior to emergence of seedling wheat will reduce or eliminate mite numbers in the fall. Given the high incidence and severity of these two virus diseases in the 2004 crop, producers should be extra diligent in controlling volunteer wheat before planting their 2005 wheat this coming 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://entoplp.okstate.edu/ddd/hosts/wheat.htm.

Aphid/barley yellow dwarf virus (BYDV) complex: BYDV (Fig 3) is transmitted by many cereal-feeding aphids, and hence, is associated with aphid infestations (Fig 3). 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, please be aware that 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 the Plant Disease and Insect Diagnostic Laboratory at: http://entoplp.okstate.edu/ddd/hosts/wheat.htm.

Fig 1. Symptoms of wheat streak mosaic virus (left), and high plains virus (right) (photo of HPV courtesy of Dr. Stan Jenson, University of Nebraska).

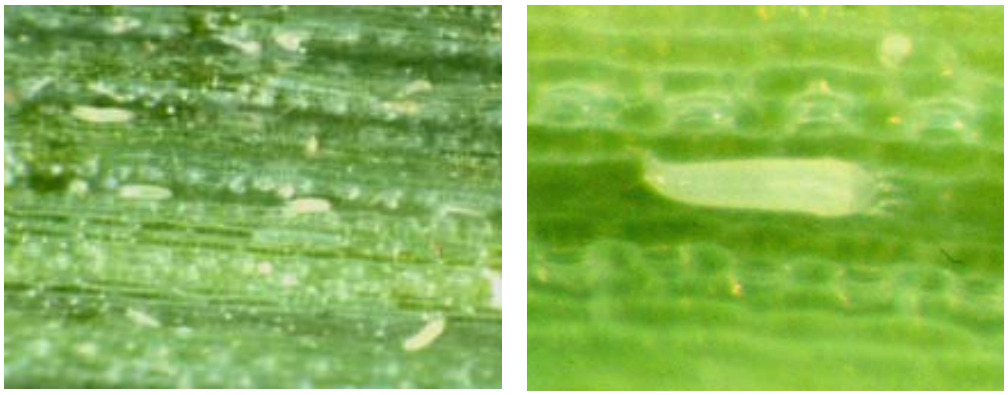

Fig 2. Wheat curl mite at (A) 10X magnification and (B) 63X magnification.

Fig 3. Bird cherry oat aphid (left) an abundant transmitter of barley yellow dwarf on wheat (right).

Root and foot rots: These include several diseases caused by fungi such as dryland (Fusarium) root rot, Rhizoctonia root rot (sharp eyespot), common root rot, take-all, and eyespot (strawbreaker). Dryland root rot (Fig 4) caused by the fungus Fusarium was particularly severe across much of Oklahoma in 2006. 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. However, seed treatments such as Dividend XL and Gaucho XT are a combination of chemicals that offer varying levels of activity against aphids (and hence BYDV), smuts and bunts, and seedling root rots. In contrast, a chemical such as Raxil MD offers activity against bunts and smuts and seedling root rots. Be sure to read the label of any seed treatment to be sure it offers activity against the diseases of concern in your situation.

Late planting (after October 1 in northern OK, and after October 15 in southern OK) also can help reduce the incidence and severity of root rots, but planting late will not entirely eliminate the presence or effects of root rots. If you have a field with a history of root rot (and there were a lot of these in 2006), plant that field as late as possible or plan to use it in a "graze-out" fashion.

For some root rots, there are specific factors that contribute to disease incidence and severity. For example, a high soil pH (>6.5) greatly favors disease development of the root rot called take-all. Thus, when liming fields to correct for acid soils, be sure not to raise the pH above this level. Another practice that can help limit take-all and some of the other root rots is the elimination of residue. However, elimination of residue by tillage or burning does not seem to affect the incidence or severity of eyespot (strawbreaker). For more information on wheat root rots, take-all and eyespot (strawbreaker), see OSU Extension Facts F-7622 or go to the web page: http://entoplp.okstate.edu/ddd/hosts/wheat.htm.

Fig 4. Field views (top) and symptoms (bottom) of dryland root rot caused by the fungus *Fusarium*. This root rot was prevalent and significantly damaged wheat in Oklahoma in 2006. Note the tiller death in the top images and the pinkish discoloration typically associated with this fungus in bottom images.

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