PLANT DISEASE AND INSECT ADVISORY

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Oklahoma State University
127 Noble Research Center
Stillwater, OK 74078

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Effect of Planting Date and Seed Treatment on Wheat Diseases

Dr. Bob Hunger, Extension Wheat Pathologist (1)
Dr. Tom Royer, Extension Wheat Entomologist (1)
Dr. Jeff Edwards, Extension Wheat Agronomist (2)
Departments of Entomology & Plant Pathology (1), and Plant and Soil Sciences (2)
Oklahoma State University

Wheat commonly is used in Oklahoma as a dual-purpose crop and thereby is grazed by cattle in the late fall and winter, and then also used to produce grain. Planting wheat as a "grain-only" crop would generally occur in October; however, when used for "grazing + grain," wheat is planted in early to mid-September to maximize forage production. Planting wheat this early significantly increases the likelihood that diseases such as wheat streak mosaic virus, high plains virus, the aphid/barley yellow dwarf virus complex, and root and foot rots will be more prevalent and more severe.

Wheat streak mosaic virus (WSMV) & the high plains virus (HPV): WSMV and HPV are transmitted by the wheat curl mite. Mites and viruses survive in crops such as wheat and corn, as well as many 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. No seed treatments are effective in controlling WSMV/HPV. However, 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 completely 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 should greatly reduce mite numbers in the fall. Although not widespread in 2007, both WSMV and HPV were observed in Oklahoma in 2007. That fact, coupled with the great amount of volunteer wheat present during the summer means that producers need to be extra diligent in controlling volunteer wheat before planting their wheat this coming fall as there likely will be a high mite population in the fall because of the high amount of volunteer wheat. For more information on WSMV and HPV, see OSU Extension Facts 7636 (WSMV) or http://entoplp.okstate.edu/ddd/hosts/wheat.htm.

Aphid/barley yellow dwarf virus (BYDV) complex: BYDV is transmitted by many cereal-feeding aphids, 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) seem to 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) (Table 1) can effectively control aphids during the fall after planting, but in some years aphids are sparse and such a 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 webpage for the PDIDL at: http://entoplp.okstate.edu/ddd/hosts/wheat.htm.

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). Controlling 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, a seed treatment such as Gaucho XT (Table 1) is a combination of chemicals that is active against aphids (and hence BYDV), smuts and bunts, and seedling root rots. In contrast, a chemical such as Raxil MD offers activity against bunts, smuts and seedling root rots but not insects. Hence, CAREFULLY 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 severe root rot, consider planting that field as late as possible or plan to use it in a “graze-out” fashion if that is consistent with your overall plan.

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 PDIDL webpage at: http://entoplp.okstate.edu/ddd/hosts/wheat.htm.

Seed treatments: Planting treated wheat seed represents an additional cost input but should be carefully considered for several reasons including:

1. Control of common bunt (also called stinking smut) and loose smut. The similarity of these names can be confusing. Both affect the grain of wheat, but whereas common bunt spores carryover on seed or in the soil, loose smut carries over in the seed. Seed treatments are highly effective in controlling these diseases. Hence, if common bunt was observed in a field and that field is to be planted again with wheat, then it is recommended that the planted wheat seed be treated with a fungicide effective against common bunt. Similarly, if loose smut was observed in a field and that seed is to be used as seed wheat, it is recommended that a systemic seed treatment effective against loose smut be applied. For more information on common bunt & loose smut, see http://entoplp.okstate.edu/ddd/hosts/wheat.htm, consult the "2007 OSU Extension Agents' Handbook of Insect, Plant Disease, and Weed Control (OCES publication E-832)," and/or contact your County Extension Educator.
2. Enhancing seedling emergence and stand establishment by control/suppression of root, crown and foot rots. This was discussed above under "Root and Foot Rots." Refer to Table 1 for a more detailed description.
3. Control of the aphid/BYDV complex. Again, this was discussed previously; refer to Table 1 for a more detailed description of seed treatments useful for this objective.
4. Deciding whether or not to plant treated seed is something to consider carefully. Treating seed represents an additional cost, but there are potential benefits also associated as described above. If a seed treatment is used, **be sure to carefully read the label to ensure that the treatment is intended (and labeled) for your desired goal, and that it is applied at a rate labeled for the desired activity**. For more information on seed treatments, their intended uses and rates consult the "2007 OSU Extension Agents' Handbook of Insect, Plant Disease, and Weed Control (OCES publication E-832)," and/or contact your County Extension Educator.

Dr. Richard Grantham
Director, Plant Disease and Insect Diagnostic Laboratory

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