

The Importance of Controlling Volunteer Wheat

Jourdan Bell, Ed Bynum, and Ron French

There are many risks associated with volunteer wheat. Volunteer wheat can harbor insects and disease pathogens that can be devastating to your upcoming wheat crop in addition to the crop of your neighbor. While it is often believed that volunteer wheat can be a good source of fall pasture, the negative ramifications associated with volunteer wheat far outweigh any potential benefits. In order to minimize potentially significant yield reductions, it is recommended that the volunteer wheat crop be terminated at least two weeks prior to establishment of the next wheat crop in order to break the “green bridge”. Once the “green bridge” is broken, populations of insects and disease pathogens may not develop in the new wheat crop.



Volunteer wheat and summer weeds during the summer fallow. (Photo by Jourdan Bell)

Insects:

Volunteer wheat and poor weed control during the fallow period can provide an alternative host for soil pests in wheat such as the white grub, wireworm and army cutworm. Tillage and the use of herbicides are management options to reduce crop residues and maintain weeds in order to reduce soil pests. While there are not any preplant soil insecticides labeled for wheat fields, insecticide seed treatments can be used to manage some soil pests during the first six weeks after seeding. The wireworm can be controlled, but there are not any seed treatments labeled for white grub control. In the late fall, white grubs move deeper in the soil with receding soil temperature so delaying planting in fields with white grub infestations is an effective method to reduce potential damage. Army cutworms feed on wheat seedlings severing the crown from the plant and ultimately killing the young plants. They can potentially feed throughout the fall and into the spring. In order to minimize army cutworm pressure in wheat fields, it is helpful that weed pressure and crop residues are managed, but soil applied herbicides are also effective. Volunteer wheat in the Texas High Plains harbors several aphids: Russian wheat aphid, greenbug, the bird cherry oat aphid, and English Grain aphid. Greenbugs and Russian wheat aphids inject toxins

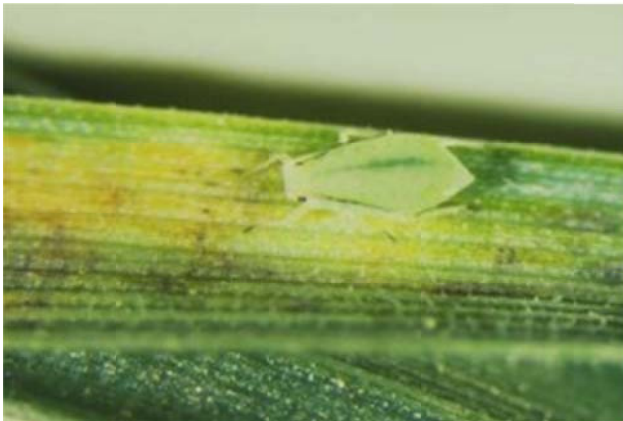
into the leaf tissue while feeding. In addition to feeding damage, the aphids are vectors of barley yellow dwarf virus (BYDV) and Cereal yellow dwarf virus (CYDV), which cause barley yellow dwarf (BYD). By controlling the volunteer wheat and delaying the planting until after October 1, there is less time for the aphid populations to become established.



Russian wheat aphids. (Texas A&M AgriLife Extension Service photo by Monti Vandiver)



Bird cherry-oat aphids, Photo Frank Peairs, Bugwood.com



Greenbug. (Texas A&M AgriLife Extension Service photo)



Army cutworm and feeding damage. (Texas A&M AgriLife Extension Service photo by Jourdan Bell)



White grubs and larva



True Wireworm Beetle

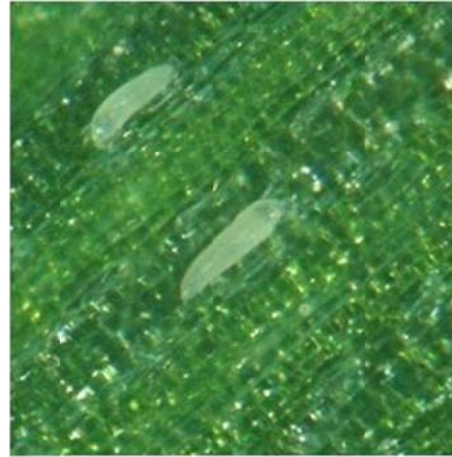


False Wireworm Larva

Diseases:

There are three viral pathogens that commonly infect Texas High Plains wheat: wheat streak mosaic virus (WSMV), Triticum Mosaic Virus (TriMV), and high plains virus (HPV), which is more properly referred to as Wheat Mosaic virus (WMoV). The wheat curl mite is the vector for all three viruses. Unlike the aphids which vector BYDV and CYDV, the wheat curl mite is not an insect; it is a microscopic mite measuring approximately 150 μm .

Wheat can be infected with a single virus or a combination of the three viruses. Yield reductions are dependent on the severity of the disease infection, but the greatest yield losses generally occur in early planted wheat fields. Wheat that is planted early (August and September) for fall grazing is especially susceptible to viral diseases as there has not been adequate time to break the “green bridge” between volunteer wheat that serves as a host for the wheat curl mite/viral diseases and the newly established wheat field.



Wheat curl mite (Texas A&M Research staff photo)

Symptoms caused by WSMV, HPV or WMoV, TriMV, BYDV, and CYDV, appear in the spring. Areas of WSMV, HPV or WMoV and TriMV infestation are light green to yellow in comparison to the healthier wheat crop due to the yellow streaking and mottling on the leaf.

Further discussion of WSMV and HPV can be accessed at:

<http://varietytesting.tamu.edu/wheat/docs/e337wheatstreakmosiacvirus-2.pdf> BYDV infected plants are yellow and stunted, and plants often have underdeveloped root systems.



Yellow and mottled leaves from wheat streak mosaic virus (photos courtesy of Jacob A. Price, Charlie M. Rush and Ron. French).

Methods to Control Volunteer Wheat:

Volunteer wheat can be controlled by tillage or herbicides. While tillage is often the most the cost effective method to control volunteer wheat, tillage is not appropriate on no-till and strip-till acreage. Additionally, tillage prior to planting may result in moisture loss due to evaporation from the seed germination zone that is vital for timely crop establishment especially on dryland acreage. Herbicides provide a good option for controlling volunteer wheat as well as the opportunity to also control fall weed pressure. Pre-plant burndown herbicides remove initial weed flushes as well as control volunteer wheat. This is a good opportunity to also tank-mix with a pre-plant herbicide with residual activity to extend herbicide control into the cropping season.

Burndown and preplant herbicide options for volunteer wheat and broadleaf weed control.

Product	Rate per Acre	Remarks
Amber DF	0.28 – 0.56 oz	Must be incorporated into the top 1” of soil. Use with a disk drill. Requires rainfall to activate.
Finesse DF	0.2 – 0.4 oz	Do not use in soils with pH greater than 7.9. Be observant of rotational restrictions.
Hoelen 3EC	2.0-2.66 pt	Provides annual grass control, but requires rainfall to activate within 7 days of application.
glyphosate products		
+ 2,4-D	Restrictions	2,4-D provides some residual broadleaf control, but if incorporating 2,4-D, you must wait 29 days to plant wheat to avoid crop injury. Pay attention to label restrictions. DO NOT apply on emerged wheat in the fall.
+ dicamba	Restrictions	Maximum dicamba rate of 8 oz/A per application. There is a planting restriction of 10 days on the label.
+ Sharpen	1.0-2.0 oz	Do not apply more than 4.0 oz/A and do not apply after emergence. Suggested spray volume of 15 GPA.
Gramoxone SL	2.0– 4.0 pts	In order to achieve complete control of volunteer wheat, the application should be made prior to tillering. Minimum spray volume 10 GPA.

Control your volunteer wheat to minimize disease and insect pressure and enhance yield potential for yourself and your neighbor!