

News Column

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Volunteer wheat control: Protecting Kansas wheat

What measures can producers take to prevent widespread occurrence of wheat streak mosaic virus, High Plains virus, and triticum mosaic virus in wheat this coming season?

There are several things producers can do: delay planting dates as long as feasible, control any significant stands of green foxtail and barnyard grass near fields that will be planted to wheat, and plant wheat varieties with resistance to wheat streak mosaic. However, getting good control of these virus diseases starts primarily with controlling volunteer wheat. Control volunteer wheat soon in order to protect the wheat crop planted this fall.

Volunteer wheat within a half-mile or more of a field that will be planted to wheat should be completely dead at least two weeks before wheat planting. This will help control wheat curl mites, Hessian fly, and wheat aphids (bird cherry oat aphids and greenbugs, etc.) in the fall.

Wheat streak mosaic virus

The most important threat from volunteer wheat is the wheat streak mosaic complex including *wheat streak mosaic*, *High Plains mosaic*, and *Triticum mosaic*. These diseases cause stunting and yellow streaking on the leaves. In most cases, infection can be traced to a nearby field of volunteer wheat, although there are other hosts, such as corn, millet, and many annual grasses, such as yellow foxtail and prairie cupgrass. Controlling volunteer is one of the most effective ways to lower the local risk of the wheat streak mosaic virus complex. Wheat streak mosaic can cause severe economic damage.

Wheat streak mosaic virus is carried from volunteer wheat to newly-planted wheat by the wheat curl mite. These tiny, white, cigar-shaped mites are too small to be seen with the naked eye. The curl mite is carried by wind to new hosts and can travel more than a mile from volunteer wheat. The wheat curl mite also carries the High Plains virus and triticum mosaic virus. When mite populations are large, the wheat curl mites can cause curling of leaf margins and head trapping.

Hessian fly

Hessian flies survive over the summer on wheat stubble. When the adults emerge, they can infest any volunteer wheat that may be present, which will keep the Hessian fly population alive and going through the upcoming crop season. We have found that Hessian flies have an adult emergence “flush” after moisture events all summer and even into November, depending upon temperatures. Therefore, it seems it is really more of a continuous potential for infestation, making it even more critical to destroy volunteer in a timely manner. If there is no volunteer around when these adults emerge, they

will not be able to oviposit on a suitable host plant. If the volunteer is destroyed while the flies are still larvae, this will help to reduce potential problems.

Hessian flies can be problematic all across Kansas, varying in different locations and years depending upon weather conditions and the amount of volunteer wheat. Hessian fly larvae attack young wheat plants near the soil line. Tillers may be stunted and later may lodge. In heavy infestations, the whole stand may be lost.

Barley yellow dwarf virus

Volunteer wheat is a host of barley yellow dwarf virus, and the greenbugs and bird cherry oat aphids that carry it. So in that respect, destroying volunteer helps reduce the reservoir for the barley yellow dwarf viruses. The aphids have to pick up the BYD virus from an infected host plant first in order to become a carrier that can transmit the disease to wheat. Host plants that can carry the disease include volunteer wheat, corn, and others. However, destroying volunteer will have little effect on aphid populations in the fall and spring since the aphids migrate into the state from southern areas.

Russian wheat aphids may also live over the summer on volunteer wheat. While this insect has wings and can be wind borne for hundreds of miles, the vast majority of fall infestations in Kansas appear to originate from nearby infested volunteer.

Various other pests

A number of other pests are also associated with the presence of volunteer wheat, an example is the chinch bug. Occasionally, adult bugs will fly from maturing sorghum fields in late summer to nearby fields where volunteer wheat is growing. Where infested volunteer is allowed to grow right up until seedbed preparation just prior to planting, early-planted continuous wheat is likely to become infested. Similarly, volunteer that is allowed to grow through the fall and into the following spring may serve as an attractive chinch bug host.

Another reason to control volunteer is that volunteer and other weeds use up large amounts of soil moisture.

In summary, the most important reasons to control volunteer wheat are:

- Wheat curl mite/wheat streak mosaic virus
- Hessian fly
- Russian wheat aphid
- Take-all
- Bird cherry oat aphid/greenbug/barley yellow dwarf virus
- Banks grass mite
- Chinch bug
- Reduces moisture loss