

Managing Volunteer Corn Prior To Wheat Planting

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The conditions this season are favorable for having problems with volunteer corn. Harvest is well ahead of normal which allows volunteer corn more time to emerge in the field and compete for water and nutrients. Also, the stress of this summer's dry

weather may limit ear and kernel size and allow them to pass through the combine during harvest.

There is some debate whether volunteer corn is a threat to wheat. One viewpoint is that volunteer plants will eventually be killed from fall's freezing temperatures before they can impact wheat. However, another opinion is that volunteer corn can harbor insects that are harmful to wheat and can limit growth and yield of wheat through early-season competition. High populations of volunteer can transpire a substantial amount of valuable moisture that we are lacking this fall. Dry soil conditions will obviously make it difficult for planting and for wheat emergence.

Limited research at UKREC in the fall of 2007 showed 11 percent lower wheat yield if volunteer corn was not controlled. It is not clear if this trend in yield loss will hold true for every case, but it does show significant economic losses can occur from volunteer corn competition.

The germination pattern of volunteer corn may be uniform or sporadic depending on a number of factors such as duration and pattern of rainfall following harvest. Volunteer corn at UKREC germinated uniformly in the fall of 2007 due to abundant rainfall over a six-day period soon after corn harvest and again during a three-day period approximately two weeks later. The development of volunteer corn in 2007 was fairly uniform and plant height ranged from 6 to 8½ inches tall at the time of planting wheat in mid October.

Sporadic germination patterns that are associated with irregular rainfall may make it difficult to determine the optimum time for controlling volunteer corn. It is possible that implementing control options well ahead of wheat planting will allow for escapes if seed germination is extended over a long period.

The options for managing volunteer corn include tillage or foliar-applied herbicides before planting. Tillage provides immediate results, but may increase the risk of soil erosion and require more time relative to using burndown herbicides. While tillage will destroy emerged volunteer corn plants, it could also stimulate germination of any remaining seeds that were incorporated in the soil during the tillage process.

Glyphosate controls volunteer corn providing plants do not originate from corn with the 'glyphosate-tolerant' or Roundup Ready trait. The fact that a significant number of Kentucky's corn acres are planted to glyphosate-tolerant hybrids limits the opportunity to use glyphosate. Glyphosate usually requires 7 or more days to kill plants; consequently, it may not be the right choice if immediate control is needed.

Paraquat provides rapid control of vegetation; therefore, it may be preferred over glyphosate if speed of control is desired. Paraquat helps manage volunteers with GMO traits, including glyphosate-tolerant corn. However, paraquat alone tends to be inconsistent in controlling corn that originates from seed that were planted or incorporated in soil. This is often the case when trying to kill corn for replant situations in the spring. Limited research in 2007 showed at

least 95 percent control for corn plants from seeds that were not incorporated into soil. Our current theory is that the growing points of volunteer corn plants originated from seed on or near the soil surface and were exposed to paraquat and other related stresses.

Finesse is another option that has been evaluated for controlling volunteer corn. Finesse is a premix of two ALS inhibitor herbicides (chlor-sulfuron + metsulfuron) which is slow in its activity. It is labeled at 0.5 oz/A preplant or prior to emergence of wheat for volunteer corn control up to 18" in height. The addition of a non-ionic surfactant at 0.125 percent to 0.5 percent with Finesse is required. Research in 2007 on the use of Finesse showed up to 60 percent control of volunteer corn within 7 days after planting no-till wheat.

Unfortunately frost occurred before Finesse reached maximum activity; consequently, we were unable to determine if the herbicide would have eventually killed the volunteer plants. Additional research on Finesse at 0.5 oz/A in 2011 showed 80 percent control at 19 days after application. The advantage of Finesse is that it would likely provide residual activity for any later emerging volunteer plants as well as help in managing Italian ryegrass. The rotational crop restrictions for Finesse require an interval of at least 6 months before planting STS soybeans or 18 months for non-STs soybeans and field corn.

Select Max has been discussed as another option for managing volunteer corn. It is labeled to control volunteer corn in soybeans or in pre-plant applications for field corn; however, it is not labeled prior to wheat planting. Since the Select Max label does not address the use of Select Max for wheat, a minimum of 30 days is required after application before wheat should be planted. Δ

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Figure 4. A high population of volunteer corn can transpire a large amount of soil moisture.



Figure 5. Growing point is above soil surface. File: WH Sci Newsletter Vol CN in WH (Draft5) 09-05-2012



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