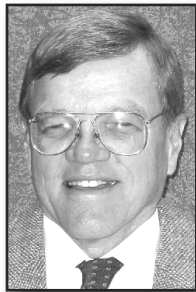


Controlling Volunteer Corn Prior To Wheat Planting

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The problems we are seeing with volunteer corn this season is a painful reminder of what we observed in 2007. There are several factors that contributed to these problems. The early corn harvest in combination with a timely rain has enhanced the development of

volunteer corn in many fields this season. Also, the stress of this summer's dry weather may have limited kernel size and allowed more seed to pass through the combine. Improper adjustment of combines is a common reason for greater than normal seed loss. Even though 2 percent is considered acceptable loss, this could leave a substantial amount of corn seed in fields.

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. Another opinion is that early-season competition from volunteer corn will impact growth and yield of wheat.

The 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 we did 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 including duration and pattern of rainfall following harvest. Volunteer corn at UKREC germinated uniformly in the fall of 2007 due to the rainfall over a six-day period soon after corn harvest and a three-day period approximately two weeks later. The development of volunteer corn in 2007 was fairly uniform and 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 a foliar applied herbicide. Tillage provides immediate results, but may increase the risk of soil erosion and more time relative to using burndown herbicides. While tillage will destroy emerged volunteer corn plants, it may 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 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. Paraquat alone tends to be inconsistent in controlling corn that originates from seed that were planted or incorpo-



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

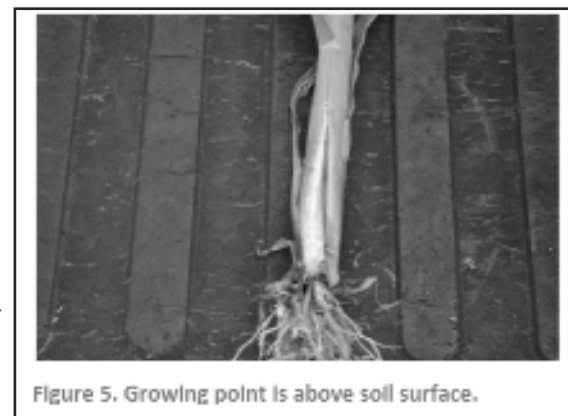


Figure 5. Growing point is above soil surface.

rated in soil. We have seen this when we try to kill corn for replant situations in the spring. However, 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.

Research on the use of Finesse showed up to 60 percent control of volunteer corn within 7 days after planting no-till wheat. Finesse is a premix of ALS inhibitor herbicides (chlorsulfuron + metsulfuron) and is slow in its activity. Unfortunately frost occurred before Finesse reached maximum activity; consequently we were unable to determine if the herbicide would have eventually killed the volunteer plants. 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. Δ

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