Volunteer Corn Reduces Yield in Corn-Soybean Rotation

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Corn can’t be a weed! Corn was planted across 9.1 million Nebraska acres in 2010. Nebraska alone harvested 1.47 trillion bushels of corn in 2010 for a value of nearly 8 trillion dollars. Farmers spend thousands of dollars on high quality, value-added seed every year. Corn has been a staple in Nebraska since the Nebraska territory was formed in 1854. How can we call it a weed?

Since the introduction of Roundup Ready corn in 1998 corn has rapidly become a weed of concern in Nebraska as well as other corn producing states. This is especially true of a corn-soybean rotation where both crops are Roundup Ready. In 2010 91% of the corn and soybean acres planted in rotation in Nebraska were from biotech seed and 94% of those were herbicide resistant (NASS July Agri-Fact 2010). The problem arises during the corn harvest when kernels are dropped or lost from the combine. These kernels overwinter in or on the soil and germinate in the spring. The occurrence is especially high in fall tilled fields. Burying the kernels adds a degree of protection and allows a higher germination rate. No-till fields show a lesser volunteer population due to disease, insect, and animal activity. With a heavy infestation in the spring yield reductions as high as 40% in soybeans and 30% in corn-corn rotations has been noted. It has also been noted that corn rootworm numbers are considerably higher in fields where volunteer corn had been observed and not controlled.

How do we control this new weed? There are three methods currently being studied for control. The first is spring tillage after the volunteer corn has germinated. This method works for both corn and soybean systems; burying and destroy the seedlings. This method could delay planting for the intended crop, and could result in loss of yield depending on environmental conditions and length of delay. Secondly, there are herbicides. A pre-plant or pre-emerge grass herbicide should adequately control the volunteer weed population in a soybean crop. In a corn crop this is not recommended as the herbicide needed to eliminate the volunteer corn will also destroy the intended hybrid corn. In a no-till soybean system, a post emerge grass herbicide can also be used, however the timing should be earlier than later to eliminate the volunteer before they get too big to effectively control. Another strategy is to abandon one crop to a non-Roundup hybrid or variety and control that crop through sound integrated pest management practices, which could involve the use of herbicides other than Roundup. Even in a traditional, non-biotech, corn crop the control of volunteer corn is relegated to spring tillage.

Early control is critical in controlling the volunteer corn, further, hybrid selection for cultivars that are resistant to lodging is equally important. Select those hybrids that are more apt to stand well until harvest. Evaluate hybrids for lodging, green snap, and drop ear potential as these are more likely to decrease harvestability and increase harvest loss. Select hybrids that are resistant or tolerant of stalk rots, such as anthracnose. Properly adjust harvest equipment to minimize loss. Any corn lost at harvest has the potential to become a volunteer corn weed for the next crop. For further information concerning strategies to control volunteer weeds contact your University of Nebraska-Lincoln Extension Educator.