Early-Season Weed Competition in Corn

Did you know that weeds have the potential to compete with corn as early as the 1-leaf stage? Research conducted at Colorado State University indicates that very early competition can occur, causing the corn plant to make adjustments in growth that could lead to reduced yield potential.

**Weed Competition**

Weeds compete with crop plants for nutrients, water, light, and space. Research also suggests that weeds can alter the growth of corn seedlings even before the competition for resources begins. The first flush of weeds that emerge soon after corn planting can be the most competitive. When weeds begin to impact corn yield can vary widely depending upon weed species and densities, emergence timing of the weeds, environmental conditions, and cultural practices.

**Preemergence Weed Control**

Field testing conducted at Colorado State University evaluated the importance of using a preemergence (PRE) herbicide to protect corn yield potential. Corn was planted with winter wheat that emerged along with weeds and the corn in an ecological field study. The timing effect of wheat and weed removal on corn yield was evaluated using herbicide treatments applied PRE and postemergence (POST) at the 1-, 3-, 5-, and 10-leaf stages of corn, compared to an untreated control (Figure 1). Results indicated that corn plants responded to the presence of other plants as early as the 1-leaf stage. Measurements taken through hand harvest of individual plants showed corn responding to competitive effects with reduced growth and a lag in reproductive development. With increased time of competition, there was more variability in the response of individual corn plants, leading to greater differences in corn kernel number and corn yield per plant. Field testing conducted under normal corn growing practices, when averaged across trials over years, showed a yield benefit when using a PRE herbicide treatment in the weed control program (Figure 2).

**Figure 1.** The influence of time of weed removal on corn ear size. Corn plants detect the presence of weeds very early in their growth cycle and make reproductive adjustments that are not altered by subsequent ideal growing conditions. (Photo courtesy of P. Westra, Colorado State University)

**Figure 2.** Corn yield data averaged over 3 years (2005-2007) to evaluate the importance of a preemergence (PRE) herbicide to protect corn yield potential. Roundup® brand agricultural herbicides were applied early-POST with and without PRE and late-POST. (Colorado State University testing)
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Manage Weeds to Maximize Corn Yield Potential

- Start with a clean field (tillage or a burndown herbicide application).
- Apply a Roundup Ready PLUS™ endorsed preemergence (PRE) residual herbicide close to corn planting (website: www.RoundupReadyPlus.com).
- Scout fields for later weed flushes and apply a Roundup® brand agricultural herbicide postemergence (POST) when weeds are small. Tank mixtures may be necessary for additional control or to manage resistant weeds.

PRE herbicides can reduce the risk of early-season competition by controlling or reducing populations of weeds that emerge with the corn crop. Controlling the first flush of weeds also provides greater flexibility in the timing of any POST herbicide applications that may be necessary to control later emerging weeds. Early-season weed control along with season-long weed management helps to maximize corn yield potential.


Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

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