

IMPACT OF WEED REMOVAL TIMING ON GLYPHOSATE-RESISTANT CORN (*Zea mays*).
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Weed removal timing in corn is critical to minimize competition for available resources. Although many studies have focused on the density of weeds and/or length of time weeds compete in corn, few competition studies have considered implications on nitrogen availability. The objective of this experiment was to compare weed removal timing to in-season corn leaf nitrogen and the resultant grain yield. Field studies were conducted in central and northeast Missouri. Treatments included POST glyphosate applications at different weed heights and additional applications to maintain weed-free conditions the remainder of the season. A chlorophyll meter (Minolta[®] SPAD-502) was used to record leaf nitrogen in selected treatments at 15-day intervals following weed removal until plant senescence. At both locations, glyphosate applications on small grasses, broadleaves, or a mixture of weeds were important to grain yield. In central and northeast Missouri, grain yield was reduced 21% and 9% respectively, by delaying glyphosate applications until broadleaf weeds reached 20 - 25 cm. However, yield reduction from grass pressure was only up to 8% when application was delayed until the grasses reached 30 cm. Grain yield was optimal when the initial glyphosate application was made on 5 - 10 cm weeds followed by a second application, versus an initial application on 10 - 15 cm weeds or later. Corn leaf nitrogen was consistent in plants up to silking, and then declined. At central Missouri, where rainfall was limited, corn leaf nitrogen was an accurate prediction tool of grain yield following weed competition. At northeast Missouri, where rainfall was timely, grain yield was similar for most treatments where corn leaf nitrogen was measured. Therefore, leaf nitrogen differences between treatments were minimal.