

COMPETITIVE EFFECTS OF VOLUNTEER CORN (*ZEAMAYS* L.) IN CORN. Tye C. Shauck and Reid J. Smeda, Graduate Research Assistant and Associate Professor, Division of Plant Sciences University of Missouri, Columbia, MO 65211.

Volunteer corn (*Zea mays* L.) is considered a competitive weed that can significantly reduce yields when present in soybeans. However, research is limited on the impact of volunteer corn in corn. Field trials were established in Columbia and Novelty, Missouri in 2009 to determine the competitive effects of varying densities of volunteer corn on row corn leaf chlorophyll content, stalk diameter, and grain yield. Under no-till conditions, corn hybrids (69,190 seed per hectare) were sown on May 21 (Columbia) and 22 (Novelty) in 76 cm rows in 3 by 13.7 m plots in a randomized complete block design. Volunteer corn was planted randomly between the planted corn rows with a jab planter at densities ranging from 0 to 8 plants/m² at both locations. At the Columbia location, final volunteer corn stands were low, however, and ranged from 0 to 3.4 plants/m². After establishment, volunteer corn was allowed to compete season-long. Fifteen plants of row corn per plot were marked to collect growth data and estimate nitrogen content. Chlorophyll SPAD meter readings were taken as an indication of leaf nitrogen content and growth was estimated by recording stalk diameters at the end of the growing season.

At the highest volunteer corn plant density of 3.4 plants/m² at Columbia, leaf chlorophyll content decreased at the V6, V8, and VT growth stages by 7, 18, and 20%, respectively, compared to the untreated control without volunteer corn. At this same volunteer corn plant density at Novelty, leaf chlorophyll content decreased at the V6, V8, and VT growth stages by 12, 14, and 18%, respectively. At the highest volunteer corn plant density of 8 plants/m² at Novelty, leaf chlorophyll content was reduced by 17, 21, and 26%, respectively, compared to the untreated control. At densities of 3.4 volunteer corn plants/m², stalk diameters were reduced by 24% at Columbia and by 17% at Novelty compared to the untreated control. At Novelty, row corn grain yield was significantly reduced at a volunteer corn plant density as low as 0.5 plants/m² by 16.8%. Overall, row corn grain yields at Columbia and Novelty were reduced by 40 to 62% at volunteer corn plant densities of 3.4 plants/m². The results from these experiments indicate that volunteer corn is a competitive weed which can significantly reduce leaf chlorophyll content, stalk diameter, and grain yield of planted corn varieties.