

COMPETITION OF GLYPHOSATE-RESISTANT VOLUNTEER CORN WITH GLYPHOSATE-RESISTANT SOYBEAN. Paul T. Marquardt and William G. Johnson, Research Associate, Associate Professor, Department of Botany and Plant Pathology, Purdue University, West Lafayette, 47907.

Transgenic volunteer corn expressing glyphosate-resistance is a significant problem weed in corn/soybean rotational systems. Over 90% of soybeans planted in North America are glyphosate-resistant (GR), and glyphosate is often the only weed management treatment practice used in these fields. Previous studies have shown a positive correlation between the adoption of GR corn and increasing cases of volunteer corn in soybean following corn, indicating that this is a growing problem. This issue is particularly timely due to the increasing prevalence of stacking both glyphosate and insect-resistant (mainly Bt) traits into the same genetically-modified plant. GR volunteer corn expressing insect-resistant traits can potentially add increased selection pressure to insect pests outside resistance management programs. GR volunteer corn can also compete with soybean, lowering yields. The objective of this study was to determine how different densities of GR volunteer corn would affect soybean growth and yield. Volunteer corn seed was harvested from GR plants in 2007. This seed was then hand-planted at densities which ranged from 0.5 plants/m² to 16 plants/m² within soybean plots. Data collected included leaf area measurements (corn and soybean), plant dry weight (corn and soybean), and soybean yield. Soybean yield reductions between 272 and 1568 kg/ha occurred at corn densities of 0.5 plants/m² to 16 plants/m². Significant yield reductions occurred when 2 plants/m² emerged at the same time that soybean emerged.