

**RHIZOBACTERIA ASSOCIATED WITH GLYPHOSATE-RESISTANT
SOYBEAN (*GLYCINE MAX*)**

Su-Jung Kim

Dr. Robert J. Kremer, Dissertation Supervisor

ABSTRACT

The research was conducted to examine the impact of GR soybean treated with glyphosate on rhizobacterial activities involved in IAA production and soil C and N mineralization in different soil management systems; to determine the effects of commercial foliar amendments on microbial activities in the rhizosphere of GR soybean under glyphosate treatment; and to characterize the effects of selected deleterious rhizobacteria from the soybean rhizosphere on the root growth of ivyleaf morningglory (*Ipomoea hederacea*) seedlings. GR soybean modified the composition of overall rhizobacteria populations and the proportion of IAA-producing rhizobacteria. Glyphosate and foliar amendments affected soil microbial respiration, N mineralization, and urease activity to a limited extent, possibly due to reduced levels of root exudates caused by the treatments. Inhibition of ivyleaf morningglory seedling growth by *Bradyrhizobium japonicum* isolate GD3 was greater than IAA alone. Certain rhizobacteria in the soybean rhizosphere may be potential biocontrol agents for managing selected weeds including ivyleaf morningglory, which is difficult to control with glyphosate in many cropping systems.