

Functional Diversity and Biomass Carbon of Soil Microbes under Glyphosate-Resistant Cropping System. Konanani B. Liphadzi*, Kassim Al-Khatib, Charles Rice, J. Anita Dille, Kansas State University, Manhattan, and Curtis Bensch, Oklahoma Panhandle Research and Extension Center, Goodwell

The introduction of glyphosate-resistant crops had led to a significant increase in glyphosate use. A long-term field experiment was established in 2001 at Manhattan, KS to study the effect of glyphosate on soil microbial biomass carbon (SMBC) and functional diversity under conventional and no-tillage environment(s). Herbicide treatments were conventional preemergence herbicide, glyphosate applied when weeds were 10 cm tall and when weeds were 20 cm tall. Glyphosate-resistant soybean or corn were grown in rotation. Soil samples were collected monthly during the crop growing period. SMBC was determined using fumigation-incubation technique. BIOLOG procedure was used to determine functional diversity of the soil microbes. Both SMBC and functional diversity were not altered by glyphosate application when compared to conventional herbicide. SMBC did not differ between tillage treatments. The study clearly showed that microbial response to glyphosate-resistant cropping system was similar to that of conventional herbicide.