IMPACT OF AGRICULTURAL PRACTICES ON FUNGAL-ASSOCIATED DECAY OF GIANT RAGWEED SEED IN SOIL**.** Xianhui Fu, Joanne Chee-Sanford, Martin M. Williams II and Adam S. Davis, Ph.D student, Department of Natural Resources and Environmental Sciences, University of Illinois, Urbana, IL 61801, Environmental Microbiologist, United States Department of Agriculture-Agricultural Research Service, Affiliate, Department of Natural Resources and Environmental Sciences, University of Illinois, Affiliate, Department of Crop Sciences, University of Illinois, Urbana, IL 61801, Ecologist, United States Department of Agriculture-Agricultural Research Service, Assistant Professor, Department of Crop Sciences, University of Illinois, Adjunct Professor, Natural Resources and Environmental Sciences, University of Illinois, Urbana, IL 61801, and Ecologist, United States Department of Agriculture-Agricultural Research Service, Assistant Professor, Crop Sciences, University of Illinois, Faculty member, Program in Ecology and Evolutionary Biology, University of Illinois, Affiliate, Natural Resources and Environmental Sciences, University of Illinois, Urbana, IL61801.

Seed-banks are the greatest source of annual weed emergence in cropland. Reducing seed-bank persistence is an important goal of weed management, however little is known about seed-bank dynamics and factors that can affect seed fate in soil. Seed burial studies, along with fungicide treatment, previously provided evidence for fungi as a seed mortality factor in soil. While our recent research revealed characteristics of fungal communities on surfaces of decayed seeds of giant ragweed following burial in soil, knowledge of how fungi-seed interactions are affected by agricultural practices is still lacking. Artificial seed-banks were established under conventional-, reduced-, and no-tillage fields in both corn and soybean crops to examine the effects of tillage, crop, burial depth and time, and related environmental factors on fungal-mediated seed decay of giant ragweed from Nov. 2006 to Nov. 2007. PCR-based ARISA was used to characterize the fungal communities associated with both soil and seed specimens. Our results showed that the seed decay rate changed over burial time, with generally higher rates obtained during the time period from May to June, corresponding to the start of the crop growing season. The temporal and spatial dynamics of seed decay rates in soils under conventional and reduced tillage were similar regardless of current crop, and these differed significantly from the dynamics obtained under no-tillage. Large variations of seed decay rate among burial depths were also detected in most tillage and current crop combinations except in no-tillage under corn from May to June. Multidimensional scaling (MDS) analysis showed that fungal community structure in soils or on seed surfaces changed over time. The tillage type and burial depth significantly influenced the fungal community structures in soil and on seed surfaces. This research increases our understanding of seed-bank dynamics and factors that can affect fungal - associated weed seed mortality in soil. Such information will be useful for developing integrated weed management strategies.

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