

Weed Seedbank Depletion: Investigating an Overlooked Benefit of Cover Crops

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Overview of project objectives

Cover crops are an accepted weed management practice for their ability to reduce emergence and growth of weeds such as Palmer amaranth and waterhemp. But there is little information about how cover crops affect the viability of weed seeds present in the soil. Reducing the weed seedbank has potential to improve management of all weeds especially herbicide-resistant weeds by reducing weed density in the years following cover crop usage. This project will investigate Palmer amaranth and waterhemp seed germination in plots with and without a cereal rye cover crop. Germination results will be evaluated in the context of soil temperature and moisture at field sites in five states.

Key results

Researchers participating in the project buried mesh packets of fresh Palmer amaranth and waterhemp seeds in the research plots and planted cereal rye in the fall. The seed packets were retrieved and sent to the lab just prior to soybean planting in the spring of 2022. The team retrieved another set of seed packets at fall harvest and will pull the final set in the spring of 2023, prior to planting. After evaluation of the first set of weed seeds, they saw no difference in weed seed viability and germination between the cover crop and non-cover crop plots. Seed viability showed an average of 90% germination rate of both the Palmer amaranth and waterhemp.

Benefit to farmers

A better understanding of weed seedbank dynamics and the mechanisms of cover crop suppression of weed emergence for Palmer amaranth and waterhemp will help farmers to improve their weed management programs in a multiple-year cropping system.

Links

[Weed Seedbank Depletion: Investigating an Overlooked Benefit of Cover Crops](#) *USB National Soybean Checkoff Research Database*