A Multi-State Effort to Evaluate if Alfalfa Can Eliminate Herbicide Resistant Amaranthus Weed Seed Production & Reduce the Seedbank to Near Zero

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Herbicide resistance is a major obstacle in crop production, particularly weed species within the genus *Amaranthus* (e.g. waterhemp & Palmer amaranth). Alfalfa shows promise as a crop used in rotation to control resistant populations of these species. Research across multiple states has shown that established alfalfa can severely reduce the seed production of waterhemp. As the seed has a short longevity in the soil, we expect *Amaranthus* seedbanks to be severely reduced or even eliminated during alfalfa production. However little is known about the *Amaranthus* species seedbank dynamics in alfalfa. To fill this gap in knowledge we have established experiments across three locations (Pennsylvania, Wisconsin, New Mexico) evaluating if alfalfa can reduce the weed seedbank of *Amaranthus* species. Experiments will quantify the reduction of the *Amaranthus* seedbank over two years, if different weed management tactics in the establishment year can enhance reduction, and whether weed seedbank reduction is scalable to the farm level. We will overview initial results and future activities in this presentation.