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Abstract

Poster

Major: Agriculture

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Cereal rye suppression of pennycress, lambsquarters, and waterhemp as effected by rye establishment timing

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With rising agricultural input costs, farmers are looking for new solutions to combat herbicide-resistant weeds. Most corn and soybean farmers in the Midwest rely on chemical and mechanical tactics for weed control, but may benefit from incorporating additional cultural tactics, such as planting cover crops. In particular, cereal rye (*Secale cereale*) has been a popular option because it is easy to establish, successfully overwinters, and has the ability to reduce germination and biomass of competing weeds. Our hypothesis was that planting cereal rye before weed germination would result in reduced weed emergence and biomass of waterhemp (*Amaranthus tuberculatus*), common lambsquarters (*Chenopodium album*), and field pennycress (*Thlaspi arvense*). There were three establishment treatments: 1) rye planted first and weeds planted one week later, 2) weeds planted first and rye planted one week later, and 3) rye and weeds planted simultaneously. There were two species mixture treatments: 1) rye planted in same pot with individual weed species, and 2) rye and individual weed species grown separately. Treatments were established in 10-cm square deep pots in a commercial potting mix and were grown in a greenhouse. Rye and weed heights were measured weekly two weeks after planting. At eight weeks after planting, the number of weeds and rye plants in each pot were counted, weeds and rye were separated, and all plant material was harvested for biomass. Establishing rye prior to weed emergence resulted in smaller weeds. Conversely, planting weeds before rye allowed for larger weeds and smaller rye. Rye should be considered as a cultural weed control tool to minimize reliance on herbicides and tillage.