

Public Abstract

First Name:Logan

Middle Name:Harris

Last Name:Bishop

Adviser's First Name:Kelly

Adviser's Last Name:Nelson

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Title:Field Pennycress Management in Upstate Missouri

Field pennycress has the potential to serve as a cover and oilseed crop. A seed oil content of 25 to 36% has created interest in pennycress domestication. This research evaluated management strategies for growing field pennycress. The most desirable seeding date and method for field pennycress was broadcast overseeding pennycress at the R5-R6 reproductive stage of corn. There is no interaction between corn residual herbicides evaluated and field pennycress establishment. Soybean following field pennycress had similar or increased yields compared to soybean where there was no pennycress. Harness, Zidua, and Dual II Magnum at half of the labeled rate provided some crop safety to field pennycress while controlling some winter annual and early germinating summer annual weeds. Similarly, Sencor at one fourth and Spartan at half of the labeled amount provided control of some winter and early summer annual weeds while maintaining suitable field pennycress crop safety. When used as a harvest aid, Gramoxone, Reglone, Sharpen, Liberty, Spartan, and Valor controlled field pennycress and weeds that were present when applied 4 days before harvest as desiccants. A tank mixture of Liberty with Sharpen also had good control of all species within three days after application in 2017. No negative effects of harvest aid treatments on pennycress germination were found. Tillage and residue removal both increased field pennycress yield. Prescribed burning of wheat residue before planting or tillage increased yield in this one-year experiment. Residue and tillage management will be important in future field pennycress research. This research has identified potential seeding date, pre- and postemergence herbicide safety to field pennycress as well as desiccant effectiveness before harvest, and tillage and residue management of field pennycress planted following wheat. Further research is needed to determine the best management strategies for growing field pennycress commercially with improved cultivars as an oilseed crop in the future.