Allelopathic Potential of Tall Fescue on Native Prairie Plants of the Midwest, USA. (C06-renne130315-Oral)

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Abstract:

Tall fescue (TF, Festuca arundinacea Schreb.) is reportedly allelopathic to many agronomic plants, but studies regarding its allelopathic potential on native prairie plants are lacking. In three glasshouse experiments, we tested the potential allelopathic effects of endophyte-infected (E+) and uninfected (E-) TF on native grasses and forbs of midwestern U.S. prairies. In petri dishes, E+ and E- TF solutions made from ground seeds or fresh tissue inhibited the germination of 8 of 11 species. TF seeds and seedlings also reduced the emergence of two native grasses under some conditions in potting soil. However, when seeds of 11 prairie species were sown in sterilized local soil and given water or one of the four TF solutions daily, seedling emergence and subsequent growth did not differ among treatments for any species. We conclude that if TF is allelopathic, its inhibitory effects on the germination and seedling growth of native prairie plants are limited. On the other hand, the apparent inability of these plants to detect TF could reduce the success of prairie restoration efforts if germination near this strong competitor confers negative fitness consequences.

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