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**Cover Crops and Pest Supression in Annual Maize Bioenergy Cropping Systems**

Increasing perenniality in annual crop systems with cover crops has multiple benefits but fails to enhance predator communities.

**The Science**

Adding cover crops to annual maize production systems did not enhance predator communities. And predation levels remained low in comparison to perennial bioenergy crops.

**The Impact**

Incorporating winter cover crops into annual bioenergy cropping systems increases soil health and water quality benefits. However, perennial bioenergy crops such as switchgrass and native prairie provide similar benefits while also supporting higher levels of predators and pest suppression.

**Summary**

The goal of this study was to determine the impact of a winter cover crop in a continuous maize bioenergy cropping system on the number and diversity of predator species and the impact of the predator communities on predation rates in the following maize crop. In Great Lakes Bioenergy Research Center Biofuel Cropping Systems Experiments in Michigan and Wisconsin, insect communities, sentinel prey removal rates, and aphid suppression were compared in maize grown with and without cereal rye/Austrian winter pea cover crops, and were contrasted to two perennial biofuel feedstocks (switchgrass and mixed prairie) that are known to support high levels of natural predators. In the maize systems, there was no effect of cover crop on number and diversity of predators, on the sentinel insect egg prey removal rate, or on aphid densities. However, both perennial systems showed greater abundance and diversity of predators, as well as increased biocontrol services, compared to the maize systems. While the rye/pea cover crops did not increase biocontrol services, the other positive benefits they provide, such as reducing soil carbon loss, erosion, and nutrient runoff, suggest they are suitable for these locations.

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**Publications**

Fox, A. F. *et al.* “Cover crops have neutral effects on predator communities and biological control services in annual cellulosic bioenergy cropping systems.” *Agriculture, Ecosystems, and Environment* **232,** 101-109 (2016) [DOI: 10.1016/j.agee.2016.07.003

**Related Links**

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[Yes or No]