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Are allelopathic cover crops impacting row crops?

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One example of evolving cover crop management is growing corn in cereal rye that was terminated after corn planting ("planting green"). Photo by Katja Koehler-Cole.

Winter cover crops benefit soil health and can suppress weeds in subsequent row crops but may also lead to lower yields. Allelopathic cover crops are known to inhibit weed seed germination and early growth, and thus some speculate that allelopathic chemicals released by cover crops may be the cause for some of the observed yield reductions, but cause-and-effect relationships are rarely established.

In an article recently published in *Agricultural & Environmental Letters*, researchers reviewed literature documenting effects of allelopathic winter cover crops on four row crops. Studies that used known allelochemicals in the lab or measured allelochemicals in the field were included.

Only seven studies met the criteria for inclusion, and six of them were lab studies. Corn and wheat germination and root length were sometimes impacted by allelopathic chemicals from cereal rye and other cover crops, but soybean was unaffected. One field study reported reduced cotton performance due to allelopathic cover crops.

Clear cause-and-effect relationships for row crops grown in the field could not be established due to the limited number of studies. However, with the increase in cover crop acreage and constantly evolving management practices, research to identify risk factors for allelopathic impacts and how to avoid them is needed.

Dig deeper

Koehler-Cole, K., Everhart, S.E., Gu, Y., Proctor, C.A., Marroquin-Guzman, M., Redfearn, D.D., & Elmore, R.W. (2020). Is allelopathy from winter cover crops affecting row crops? *Agricultural & Environmental Letters*, *5*, e20015. https://doi.org/10.1002/ael2.20015

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