

New research explores the impact of cover crop residues on weed control

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Cover crops have a well-documented role to play in suppressing troublesome weeds. But what happens as those cover crops degrade?

A new study featured in the journal *Weed Science* explores whether cover-crop residues help to suppress summer annual weeds and promote greater crop yields. Researchers planted single cover-crop treatments of

cereal rye, hairy vetch, crimson clover and forage radish in the fall, as well as two-way and three-way mixtures. Each was followed by corn and soybean crops.

The team tracked the biomass of each cover crop and the residual components produced—uncovering several key trends. They found that cover-crop biomass and the ratio of carbon to nitrogen influenced weed suppression and its duration. For example, a 9 to 1 ratio of carbon to nitrogen suppressed pigweed by 50 percent at four weeks after treatment, while a 20 to 1 ratio delivered the same level of control eight weeks after treatment.

Similarly, a cover-crop biomass of 2,800 kg per hectare was needed for 50 percent suppression four weeks after treatment, while a biomass of 6,610 kg per hectare was needed for the same level of suppression at eight weeks after treatment.

In fields where the cover crop was the only weed control measure used, corn and soybean yields increased as both cover crop biomass and [carbon](#) to nitrogen ratios increased.

Researchers found that most mixtures of [cover crops](#) produced more biomass than individual cover crops alone. Carbon to [nitrogen](#) ratios produced by cereal rye and a cereal rye-forage radish mixture were 36 to 1—greater than all the other cover crop treatments. Hairy vetch and crimson clover had ratios of 12 to 1 and 17 to 1, which were the lowest ratios produced by any of the cover [crops](#).

"Our study shows that the biomass of the cover crop isn't all that matters," says Kara Pittman of Virginia Tech, lead researcher for the study. "The composition of the residues the cover crop leaves behind are also important to [weed](#) control."

More information: Kara B. Pittman et al, Cover crop residue components and their effect on summer annual weed suppression in corn and soybean, *Weed Science* (2020). [DOI: 10.1017/wsc.2020.16](https://doi.org/10.1017/wsc.2020.16)

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