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Do cover crops sequester soil carbon?

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Author Humberto Blanco collecting and trimming intact soil cores from field plots to determine soil bulk density required for computing soil organic C stock. Photo courtesy of

Humberto Blanco.

Sequestering carbon in the soil with cover crops is generating attention as a way to mitigate climate change and enhance soil ecosystem services. However, the extent to which cover crops can sequester soil C appears to vary.

In a recent review article in the *Soil Science Society of America Journal*, researcher Humberto Blanco synthesized published research data in the United States on the impacts of cover crops on soil C and highlighted management practices that could boost the ability of cover crops to sequester soil C.

The review found that, when comparing the use of cover crops to no cover crops, cover crops accumulated soil C in only one-third of the cases. Cover crops may have limited effects on increasing soil C when they (i) produce a relatively low amount of biomass (<2 Mg ha^{-1}), (ii) when planted in the short term (less than five years), and (iii) when planted in high-C soils (>1% C).

Management strategies that can boost cover crop biomass production—and thus cover crop potential to sequester C—include planting cover crops early (in summer or early fall) or terminating them late (at main crop planting) when precipitation is sufficient.

Dig deeper

Blanco-Canqui, H. (2022). Cover crops and carbon sequestration: Lessons from US studies. *Soil Science Society of America Journal*, *86*, 501–519.

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