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Cover crops improve soil services in water-limited regions

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Winter rye and winter triticale cover crops in a water-limited (about 400 mm annual precipitation) experimental site near Sidney, NE (late spring 2018). Photo by Humberto Blanco.

Most of our knowledge of cover crop impacts on soil ecosystem services is from high-precipitation regions, but a better understanding of cover crop impacts in water-limited regions is needed.

In the *Soil Science Society of America Journal*, researchers reviewed cover crop impacts on cover crop biomass production, soil C accumulation, soil erosion, soil water, nitrate leaching potential, soil microbial biomass, weed suppression, crop yields, and livestock production across regions with less than 500 mm of precipitation per year.

Cover crops produce substantial biomass amounts although it's about 1 Mg ha^{-1} less than in all temperate regions. They reduce water erosion potential, nitrate leaching, and soil water while increasing soil microbial biomass and C stocks and suppressing weeds. They do not affect crop yields in most cases despite reducing soil water about half the time. Grazing and harvesting cover crops could generate additional income without negating soil benefits.

Overall, available research information shows positive to neutral impacts of cover crops on many soil ecosystem services in water-limited regions without major negative impacts on crop yields.

Dig deeper

Blanco-Canqui, H., Ruis, S.J., Holman, J.D., Creech, C.F., & Obour, A.K. (2021). Can cover crops improve soil ecosystem services in water-limited environments? A review. *Soil Science Society of America Journal.*

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