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Conserving water with cover crop in no-till systems

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Rainfall is a major source of water for rainfed corn–soybean systems in the Mid-South USA; therefore, minimizing water loss is key to improved crop productivity. Quantifying water conservation and grain yield improvements when using cover crops in no-till systems is difficult due to complex interactive effects of diverse soil types, various weather conditions, topography, and management practices.

Research published in *Agronomy Journal* accounted for all of those interactive and long-term effects. Researchers classified the past 80 years as "wet," "normal," and "dry" rainfall years and assessed water balance in the two summer crops under different rainfall patterns with and without a cover crop.

The team found grain yield increased in dry years following a winter cover crop by 41 kg ha^{-1} in soybean and 144 kg ha^{-1} in corn compared with no cover crop. Overall estimates for a rainfed, no-till corn–soybean rotation system indicated that planting a cover crop reduced deep drainage by 16% and evaporation by 24% and increased soil organic matter by 15% and soil water storage by 13%.

This study assists growers in determining whether or not planting winter wheat could benefit corn and soybean water productivity in a given rain category year and how to optimize such benefits.

Dig Deeper

Yang, W., Feng, G., Read, J.J., Ouyang, Y., Han, J., & Li, P. (2020). Impact of cover crop on corn–soybean productivity and soil water dynamics under different seasonal rainfall patterns. *Agronomy Journal*, *112*.
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