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Biomass crop to conserve cultivated histosols

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Green onions grown on miscanthus-amended field. Photo courtesy of Jacynthe Dessureault-Rompré.

Peatlands are known to perform essential economical, societal, and regulating functions. High-value vegetable crops are grown on these soils across North America. Those precious and highly fertile soils—known as Histosols—are very sensitive to soil organic matter decomposition and wind/water erosion, which leads to soil carbon loss to the atmosphere.

In a recent *Soil Science Society of America Journal*, researchers evaluated how the use of biomass crops as soil amendments could help us reach carbon equilibrium. Biomass crops were selected for high yield and high carbon stability—a critical feature to replace the carbon lost from Histosols. The team evaluated decomposition behavior of the selected crops in a field study and then modeled long-term scenarios of annual and biennial amendment of Histosols using the collected data.

The team found that using miscanthus and willow at an annual input rate of about 7.5 T of carbon would be sufficient to ensure sustainability, assuming that erosion is under control. The next step will investigate carbon losses in different soil and crop management to improve conservation strategies at the farm scale. This finding challenges the perception that Histosols cannot be grown sustainably and sheds light on effective soil conservation strategies for the next generation of growers farming Histosols.

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Dessureault-Rompré, J., Libbrecht, C., & Caron, J. (2020). Biomass crops as a soil amendment in cultivated histosols: can we reach carbon equilibrium? *Soil Science*

Society of America Journal, 84, 597–608. https://doi.org/10.1002/saj2.20051

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