Assessing agroforestry's advantages

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North Dakota field windbreaks protect adjacent field crops, reduce wind erosion and store carbon. A typical, 2-row, mixed species field windbreak will store between 15 and 30 metric tons of carbon per mile. Credit: USDA-NRCS

Agroforestry, the deliberate placement of trees into crop and livestock operations, can help capture substantial amounts of carbon on agricultural lands while providing production and conservation benefits. However, we currently lack tools for accurately estimating current and projected carbon values in these systems.

In North America, windbreaks are an effective carbon-capturing option. Only occupying about 2 to 5% of the land, windbreaks also help protect crops and livestock, as well as reduce wind erosion. They provide a means to increase production while reducing greenhouse gases.

James Brandle, a University of Nebraska–Lincoln professor, explains

that unlike forests, the linear design of windbreaks creates a more open environment with different light and climate conditions. As a result, agroforestry trees usually have different characteristics than trees grown under forest conditions. New tools specifically designed for windbreak trees are needed to determine current or future amounts of carbon contained in agroforestry practices.

Researchers at the University of Florida, University of Kansas, University of Nebraska and the USDA National Agroforestry Center (NAC) have developed a model to predict the amount of carbon contained by agroforestry systems. This modeling approach uses detailed web-available data for windbreak, soils and climate.

While this research focused only on green ash windbreak growth in Nebraska, it provides a good basis for determining agroforestry's contributions in farming operations.

More information: www.agronomy.org/publications/ … eq/articles/40/3/842

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