

# Researchers create online tool to estimate greenhouse gas reductions through conservation agriculture

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U.S. Agriculture Secretary Tom Vilsack recently announced the release of COMET-Farm, a free online tool created by Colorado State University and the USDA's Natural Resources Conservation Service that will help producers calculate how much carbon their land's soil and vegetation can remove from the atmosphere.

The tool also will help producers calculate and understand how land management decisions impact energy use and [greenhouse gas emissions](#).

"With the help of NRCS' conservation technology and efforts, agriculture and forestry have the unique opportunity to remove carbon from the atmosphere and store it permanently in healthy soils," Vilsack said. "COMET-Farm is a user-friendly tool that will make it easy for any conservation-minded landowner to evaluate their soil's carbon-holding potential."

To use the tool, producers input information about their land, including location, soil characteristics, [crop rotations](#), tillage, fertilization and other management practices. COMET-Farm then estimates [carbon sequestration](#) and greenhouse gas emission reductions associated with conservation practices for cropland, pasture, rangeland, [livestock operations](#) and energy.

"The unique thing about COMET-Farm is that it allows the people who

know the most about what is happening on the land – the farmers – to use very sophisticated technology to quantify greenhouse gas emissions but with an easy-to-use online system," said Keith Paustian, professor in CSU's Department of Soil and Crop Sciences and leader of the COMET-Farm development team.

With record-breaking concentrations of carbon dioxide now in the atmosphere, agricultural conservation – especially soil and crop management – can help remove carbon dioxide from the air. Historically, conversion of native lands to crop production using intensive tillage has resulted in significant losses of [soil carbon](#). According to USDA's Agriculture and Forestry Greenhouse Gas Inventory, conservation tillage and other practices have helped reduce these losses and, in many cases, reverse them. Agricultural soils present an opportunity to absorb a significant amount of carbon. Carbon-rich soils are healthy soils, and healthy soils are more productive and resilient to extreme weather events, such as drought.

"Producers benefit, the environment benefits, and long-term agricultural productivity benefits," Vilsack said. "Through programs and other innovations offered by NRCS, our country has an opportunity to take an aggressive stance on reducing carbon dioxide from the atmosphere while arming our nation's agricultural sector with proactive climate change adaptation strategies."

COMET-Farm is applicable to all agricultural lands in the lower 48 states. The tool is available for use at [www.comet-farm.com](http://www.comet-farm.com). Future model releases are planned by USDA as new methods for calculating [greenhouse gas](#) emissions become available.

Provided by Colorado State University

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