

Iowa Climate Science Statement 2016: The Multiple Benefits of Climate-Smart Agriculture

In April 2015, U.S. Secretary of Agriculture Tom Vilsack announced the new U.S.D.A. initiative, Building Blocks for Climate-Smart Agriculture. Through this program, Iowa's former governor proposed expanding voluntary, incentive-based programs and initiatives to enable farmers, ranchers, and forest owners to confront human-caused global warming.

Farmers and land managers who have implemented proven conservation practices have positioned Iowa to lead implementation of Climate-Smart Agriculture. Iowa's leadership through wider adoption of conservation practices will benefit our state, while these practices lessen human contribution to net greenhouse gas emissions. Iowa – once replete with soil carbon built by deep-rooted perennial vegetation – can reduce net greenhouse gas emissions with crop-perennial systems that pull heat-trapping carbon dioxide from the atmosphere and rebuild soil carbon. Thus Iowa – already a world leader in agricultural production and products – could now also take pride in “carbon-storage farms” that also improve soil health, wildlife and pollinator habitat, and water quality.

Carbon can be rebuilt in soils through boosting two widely accepted conservation practices prioritized by the Climate-Smart Agriculture program. First, transforming marginal croplands to perennial vegetation in land set-aside programs permanently stores carbon in soils, preventing its exposure to air and transformation to carbon dioxide, while also incorporating nitrogen that otherwise would enter waterways. Second, reducing cropland tillage prevents soil erosion, thereby reducing silt and phosphorus runoff and returning carbon and nutrients to the soil just below the surface.

Climate-Smart Agriculture aims by 2025 to reduce nation-wide net emissions and enhance carbon storage in the soil by over 120 million metric tons of CO₂ equivalent annually – the same effect as taking 25 million passenger vehicles off the road. By comparison, Iowa has 4.3 million registered vehicles. This achievement would match the greenhouse gas reduction of U.S. wind farms built from 2000 to 2015.

Iowa's and our nation's Climate-Smart Agriculture efforts will be one part of a worldwide initiative, strengthened by the U.N.-sponsored climate talks held in December 2015 in France. The resulting Paris Climate Agreement produced new commitment toward implementation of national plans for limiting human-caused global warming.

We, as Iowa educators, believe Iowa should play a leadership role in this vital effort, just as our state has already done for wind energy. We urge our representatives to help Iowa's innovative farmers and land managers establish a multi-faceted vision for land stewardship by vigorously implementing federal, state, and other conservation programs. Doing so could generate a more diverse landscape with acres dedicated to deep-rooted, native perennial vegetation within working lands (buffer strips, strip prairies, grazing land, and integrated crop-livestock systems among other possibilities). Such a landscape would benefit all Iowans by transforming Iowa's vast croplands into resources that simultaneously generate food, feed, fuel, a healthier climate, better soils, wildlife habitat, and cleaner waters.

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