Science Societies

Making agriculture carbon neutral

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Producer Tony Wagnerand and Lee Briese, Certified Crop Adviser and Society member (right), look at soil quality. Photo by Abbey Wick.

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The world is challenged by many issues, including feeding a growing population, mitigating climate change, maintaining soil health, and improving water quality. Failure to address these agricultural challenges has enormous consequences, including food insecurity, an increased number of extreme climate events, and possibly civil unrest. However, managing these issues is neither trivial nor easy. It has been hypothesized that adopting climate-smart agricultural practices like reduced tillage will provide positive outcomes for crop yields and the environment. Although recommendations for these practices vary with location, climate, and cropping system, there are climate-smart options for all crops.

Climate-smart agricultural practices have been defined as systems that increase agricultural productivity while decreasing nitrous oxide, methane, and carbon dioxide emissions. The development of site-specific solutions requires a transdisciplinary approach that combines expertise from agronomists, soil scientists, crop scientists, data scientists, statisticians, biologists, and sociologists. Research suggests that a one-size-fits-all approach will not work in all situations. For example, climate-smart practices designed for rice production may have limited overlap with practices designed for wheat, soybean, or corn. Further, practices designed for temperate dryland agriculture may differ from practices designed for semi-arid irrigated landscapes.

While it might not be possible to transfer all agricultural systems from one ecoregion to another, the core science is likely transferable. The American Society of Agronomy,

Soil Science Society of America, and Crop Science Society of America contain many basic and applied scientists as well as certified soil scientists, agronomists, and crop advisers that can strengthen research teams. Therefore, our Societies contain the intellectual infrastructure for finding these connections and a home for transdisciplinary research focused on improving food security while simultaneously reducing agriculture's impact on the environment.

Decode 6

An approach that is being explored to increase the adoption of climate-smart practices is volunteer and compliance carbon markets. In a volunteer market, carbon credits can be bought or sold, and participation is not mandatory. In a compliance market, selling is voluntary, but buying may be mandatory. These are significant programs as it is suggested the voluntary carbon offsets market will reach a value of $700 million by 2027. Unfortunately, because these markets are being set up piecemeal by different entities, each market has slightly different requirements and uses terms many do not understand. For example, the carbon markets use words like additionality, permanence, and carbon dioxide equivalence. Our Societies are launching a new educational program and website to provide unbiased information about the carbon markets. The program and site are called Decode 6.

Decode 6 was named because of its mission to decode carbon and ecosystem services for crop advisers, professionals, soil scientists, extension agents, conservationists, and farmers. The "6" refers to both the atomic number of carbon and the six broad topic areas the program will cover: carbon, markets and economics, water, nutrients, biodiversity, and climate. With the help of ASA, CSSA, and SSSA

members as expert content contributors, the Decode 6 team is producing short, unbiased, science-based articles, videos, and podcasts. The site, **decode6.org**, will fully launch in November, but the landing page is up now if you want to check it out.

The content will be free for all but producing it, and maintaining the site is expensive. If you are interested in donating funds to help keep the platform free—or if you're interested in contributing content—contact Dr. Chris Boomsma, Director of Science and Strategy for Decode 6, at Send Message.

USDA Partnerships for Climate-Smart Commodities

In addition, ASA, SSSA, and CSSA members are taking part in a new funding initiative from the USDA Partnerships for Climate-Smart Commodities. This program will support a diverse range of farmers, ranchers, and private forest landowners to market climate-smart commodities, reduce greenhouse gases, and increase production agriculture. Seventy projects were funded in the first Partnerships initiative, and they will receive in total up to $2.8 billion in new funding. Many of our members in private companies, universities, and other institutions will work together to create new climate-smart practices and commodities. These partnerships were created quickly and synergistically because many of the participants have been interacting and conversing at the **ASA, CSSA, and SSSA Annual Meeting** over the years. Thus, if you are creating a team focused on feeding a growing population, mitigating climate change, maintaining soil health, and improving water quality, consider making our Societies your professional home. You are sure to find the people, tools, know-how, and resources needed!

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