The Consortium for Agricultural Soils Mitigation of Greenhouse Gases (CASMGS)

Description

CASMGS was established to develop and communicate a comprehensive program of agricultural practices that support greenhouse gas mitigation. CASMGS works across academic institutions and interfaces with other national and international organizations, and maintains regular communications with decision makers and producers. CASMGS originally consisted of 9 universities and one DOE lab, but will now provide opportunities for additional partners as projects and funding become available.

Background

The buildup of atmospheric carbon dioxide (CO_2) and other greenhouse gases (GHG) has created concern about the implications on our climate and the environment. Agriculture can help mitigate GHG in a cost-effective and environmentally sound way. Sequestering carbon in agricultural soils and reducing emissions of nitrous oxide (N_2O) and methane (CH_4) can be achieved by a variety of improved management practices. Such practices also generate corollary benefits such as increased soil fertility, reduced erosion and improved soil and water quality. Many of these practices also provide adaptation to climate change by increasing efficient water use, a serious issue in the western Great Plains. Properly managed, agriculture can also be a source of renewable energy, thus providing energy security and additional opportunities for the rural economy. Research and outreach is needed to enable implementation of agricultural mitigation options.

CASMGS brings together the nation's top researchers in the areas of soil carbon, greenhouse gas emissions and mitigation, agricultural management, computer modeling, and economic analysis. Computer models of agricultural ecosystems and economic systems are already being used for preliminary predictions of current and potential carbon sequestration, greenhouse gas mitigation, and for economic and policy assessments.

Agriculture is in the position to provide services that offer substantial environmental benefits to society at-large and potentially receive income for those services. Such services include: 1) Soil carbon sequestration; 2) Water quality protection; 3) Biofuels; and 4) Improved wildlife habitat.

Soil carbon sequestration is the most immediate result of practices designed to increase soil organic matter levels. It is estimated that 20% or more of targeted reductions in greenhouse gas emissions can be met by soil carbon sequestration, at a cost at least 50% lower than other methods of greenhouse gas mitigation.

In addition, soil carbon sequestration is uniquely positioned to provide multiple benefits to producers and society, including improved soil and water quality, and greater efficiency and profitability for agriculture.

Already private groups and financial markets have expressed interest in the potential for soil carbon sequestration in many areas of the U.S., and the value of "charismatic carbon credits" derived from agriculture.

The overall goal of CASMGS **is *to provide tools and information to implement mitigation options for agriculture and provide market opportunities for farmers*.**

To achieve this goal CASMGS will continue to:

- Evaluate and make recommendations for 'Best Management Practices' to sequester carbon and reduce net greenhouse gas emissions from soils, in partnership with federal, state and private entities. Evaluate the link between bioenergy production and greenhouse gas emissions in agriculture.
- Predict rates of carbon sequestration and greenhouse gas emissions, provide field- and farm-level decision support tools, and evaluate alternative national economic and policy strategies using integrated models to assess the impacts of mitigation programs on crop production potential, food security, and environmental quality.
- Provide measurement and monitoring tools for quantifying and verifying soil carbon sequestration rates and greenhouse gas emissions. Establish demonstration projects where needed.
- Provide information to stakeholder groups: policy makers, the agricultural sector, energy and transportation industries, the scientific community, and the general public. This will be done through annual and special reports, scientific and trade journals, popular publications and a website (www.soilcarboncenter.ksu.edu). CASMGS will participate in the transfer and adoption of technology for quantifying and verifying carbon sequestration rates.

Funding will enable CASMGS to provide the outreach necessary to implement carbon sequestration and greenhouse mitigation strategies in agriculture. Funding is being sought to (1) provide the infrastructure to retain CASMGS critical mass; and (2) for specific tasks and outcomes needed to aid agriculture at the national level for further development of mitigation options. The NY-based Robertson Foundation provided $1 million for 2007 to serve as a bridging grant to continue CASMGS outreach efforts and to aid in obtaining future funds. This private foundation interest and support illustrates the importance and impact CASMGS is having on this issue.

Congressional Action Requested

CASMGS is seeking (1) institutional support for a five-year program with an annual appropriation of $750,000, starting in FY08; and (2) $3-5M in annual funding for research activities.

CASMGS will continue to collaborate with federal agencies, including DOE, USDA, EPA, NSF, Department of State, NASA, Dept. of Interior (USGS), and Dept. of Commerce (NOAA).