Expected Products

Product 1. A national database of GHG flux and C storage.

Product 2. Regional and national guidelines of management practices (in the form of a decision aid) that reduce greenhouse gas intensity, applicable for use by producers, federal and state agencies, and C brokers.

Product 3. Development and evaluation of computer models created to assess management effects on net greenhouse gas emission and carbon storage.

Product 4. Summary papers for action agencies and policy makers, based on the current state of knowledge.

GRACEnet

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ARS National Program

www.ars.usda.gov/research/programs.htm

GRACEnet contributes directly to the goals and objectives of the ARS National Program 204 (Global Change), ARS National Program 202 (Soil Resource Management) and ARS National Program 207 (Integrated Agricultural Systems).

GRACEnet also contributes to the priorities of the USDA Global Change Office, the Climate Change Science Program (e.g., the North American Carbon Project) and the Climate Change Technology Program.

ARS Mission

The Agricultural Research Service conducts research to develop and transfer solutions to agricultural problems of high national priority and provides information access and dissemination to

- ensure high-quality, safe food and other agricultural products,
- assess the nutritional needs of Americans,
- sustain a competitive agricultural economy,
- enhance the natural resource base and the environment, and
- provide economic opportunities for rural citizens, communities, and society as a whole.

October 14, 2008

Greenhouse gas Reduction through Agricultural Carbon Enhancement network

GRACEnet

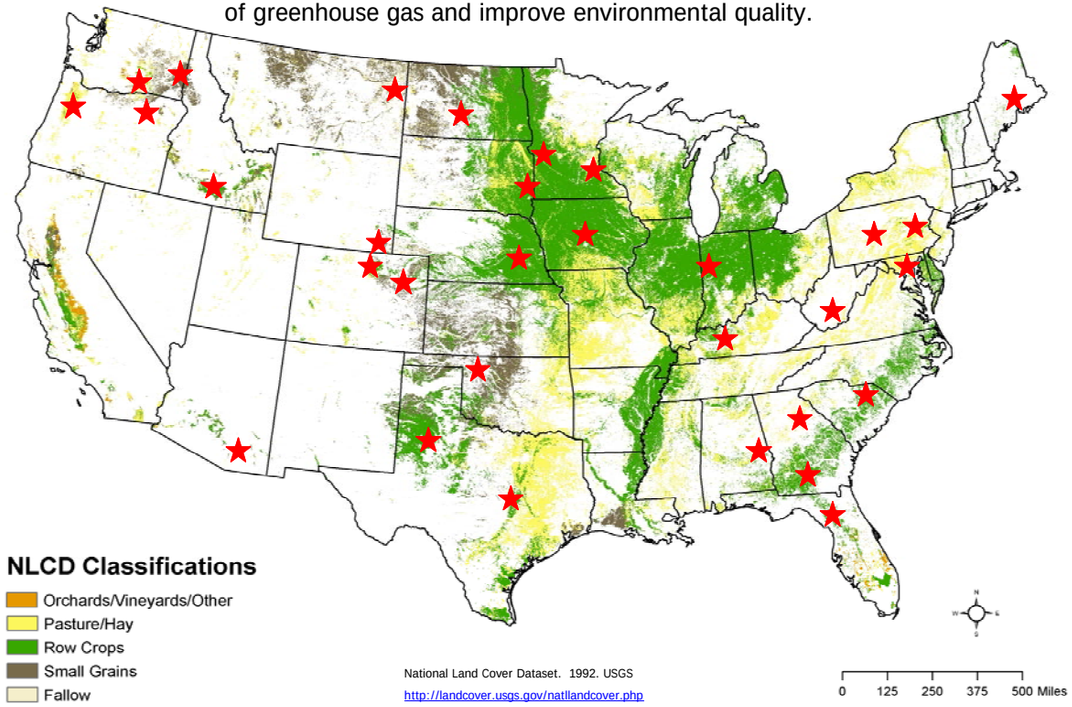
A research program to assess soil carbon sequestration and greenhouse gas mitigation by agricultural management

USDA Agricultural Research Service

United States Department of Agriculture

GOAL

Identify and develop agricultural strategies to enhance soil carbon sequestration and reduce greenhouse gas emission and to provide a scientific basis for carbon credit programs, to reduce net emission of greenhouse gas and improve environmental quality.



APPROACH

Consistent protocols for soil, trace gas and plant sampling are used across the network.

Assessment within GRACEnet follows four location-specific scenarios:

1. Business as usual in production agriculture for various areas of the country.
   What is the carbon accumulation/loss rate under typical agricultural management?

2. Maximizing carbon sequestration rate.
   What can be done to reach the highest carbon sequestration rate?

3. Minimizing net greenhouse gas emission.
   Agriculture is the main source of nitrous oxide and methane to the atmosphere. Practices will be developed to decrease the emission of these gases.

4. Maximizing environmental benefits by improving water, air, and soil quality.
   This scenario investigates management systems to optimize both agricultural and environmental benefits, by sequestering soil carbon and decreasing greenhouse gas emissions.

OBJECTIVES

1. Evaluate status and direction of change in soil carbon for typical and alternative agricultural systems.

2. Determine net greenhouse gas emission (carbon dioxide, methane and nitrous oxide) of current agricultural systems for typical and alternative agricultural systems.

3. Determine the environmental effects (water, air and soil quality) of agricultural systems developed to reduce greenhouse gas emission and increase soil carbon storage.