Carbon Sequestration Benefits

- Carbon sequestration simply means removing carbon dioxide – which is suspected of contributing to global warming – from the atmosphere and storing it in the soil.

- **The total carbon sequestration and fossil fuel offset potential of U.S. cropland is currently estimated at 154 million metric tons of carbon per year or 133% of the total greenhouse gas emissions by agricultural land and forestry activities**. In other words – even current agricultural croplands have the ability to store carbon in the soil – so imagine how much more this process could be enhanced if a focused effort was made. [USDA]

- Measuring carbon storage is a difficult task – but USDA notes that the most direct means of determining soil carbon sequestration is to measure, over time, sequential changes in the soil. USDA also cites a need for a better soil carbon database. This bill would accomplish both goals by providing incentives for a pilot project which will increase carbon storage while simultaneously pulling in actual data from different soil types across the nation. This bill will bolster our knowledge and maximize the agriculture industry's positive environmental contribution on climate change.

- The estimated amount of Carbon stored in world soils is more than twice the Carbon living in vegetation or in the atmosphere. Approximately 50% of the soil organic carbon has been lost from the soil over a period of 50 to 100 years of cultivation. This loss represents the potential for storage of Carbon in the soil. [Kansas State University – Dept. of Agronomy research paper]

- **In the tallgrass prairie (located in Kansas), Kansas State University researchers have demonstrated an increase of approximately 2 tons of Carbon per acre through increased conservation practices.** This demonstrates the potential of rangeland soils to sequester additional Carbon under proper management. [Kansas State University – Dept. of Agronomy research paper]

- Comparison studies of no-till farming practices to traditional tillage have projected carbon gains of between 20 to 80% after 40 years. [KSU research paper]

- The Forest Service is already developing management practices to increase sequestration and implementing practices on the national forests. It is time to fully expand these principles throughout USDA.

- USDA's Agricultural Research Service (ARS) notes that several studies have been done on carbon sequestration practices – including a study which found that grazed pasture land stored carbon at a significantly higher rate than non-grazed areas. Another ARS study notes that the effects of no-till ag practices have measurable effects in carbon sequestration. This research confirms the approach taken by our bill – that conservation need not be limited to locking land away from production – rather by encouraging best management practices aimed at enhancing carbon sequestration.

- **Sequestering carbon is a win-win strategy for agriculture and the environment**. The practices used to maximize carbon sequestration have numerous benefits:
  - – Sequestration helps mitigate global climate change by storing carbon dioxide in soils.
  - – Soil restorative measures can increase biomass production
  - – Sequestration improves soil quality and agricultural production
  - – Conservation practices which sequester carbon simultaneously enhance water quality by helping to reduce runoff – or nonpoint source pollution.
  - – Conservation practices enhance wildlife habitat

- There are already a number of **known agricultural practices which enhance carbon sequestration including:**
  - – Restoring degraded soils
  - – Increasing biomass production
  - – The use of no-till farming
  - – Converting marginal lands to compatible land use systems
  - – Increased production of high carbon-storing crops
  - – Increased use of conservation and riparian buffers strips
  - – Reclamation of mineland and toxic soils
  - – Increased use of winter cover crops

- "Agriculture often has been blamed for environmental problems ranging from soil erosion and degradation to eutrophication of surface water and contamination of ground water, loss of biodiversity and the greenhouse effect. Rather than being a problem, adoption of appropriate land use and BMPs is an important solution to numerous economic and environmental issues. It is in our national interest to encourage widespread adoption of proper agricultural practices for sustainable use of natural resources and improvement of our nation's environment."

  "Some economists estimate that reduction in Carbon emissions would require a carbon tax . . . assuming an average tax of $300 per MT, a total saving of 154 MMTC/yr is equivalent to $46 billion/year. Therefore, total saving by Carbon sequestration in soil and fossil-fuel off-set by proper land use and soil management is about $71 billion/year or $260 per capita per year."

  – R. Lal, Professor of Soil Science, Ohio State University
  – J.M. Kimble, USDA-NRCS – Lincoln, NE
  – R.F. Follett, Supervisory Soil Scientist – USDA/ARS – Ft. Collins, CO

- **Farmers are already beginning to look toward carbon sequestration practices as a potential new market.** Between 1998 and 1999, Iowa farmers grew and harvested 4,000 tons of switchgrass for use by a utility. These farmers not only benefit from the sale of the biomass commodity itself – but are able to sell the additional benefit they provided in growing the switchgrass – carbon sequestration. This bill will allow all farmers to progress toward verification and potential sale of carbon benefits to third parties.

- **Early estimates indicate that the potential for a carbon market for U.S. agriculture could reach $5 billion per year for the next 30-40 years.** Carbon markets are already emerging. Iowa farmers recently sold 6 million metric tonnes of sequestered carbon to Canadian and American utilities. [Consortium for Agricultural Soils Mitigation of Greenhouse Gases – CASMGS].