

Agricultural Air Quality Task Force

Greenhouse Gas and Volatile Organic Compounds Sub- Committee

Key mitigation technologies and practices currently commercially available for agriculture

- Improved crop and grazing land management to increase soil carbon storage
- Restoration of cultivated peaty soils and degraded lands
- Improved rice cultivation techniques and livestock and manure management to reduce CH₄ emissions
- Improved N fertilizer application techniques to reduce N₂O emissions
- Dedicated energy crops to replace fossil fuel use
- Improved energy efficiency

- **Agricultural practices collectively can make a significant contribution at low cost**
 - To increasing soil carbon sinks,
 - To reducing GHG emission,
 - To contributing biomass feedstocks for energy use

Agriculture

- A large proportion of the mitigation potential of agriculture (excluding bioenergy) arises from soil C sequestration, which has strong synergies with sustainable agriculture and generally reduces vulnerability to climate change.
- Stored soil carbon may be vulnerable to loss through both land management change and climate change.
- Considerable mitigation potential is also available from reductions in methane and nitrous oxide emissions in some agricultural systems
- There is no universally applicable list of mitigation practices; practices need to be evaluated for individual agricultural systems and settings

Biofuels

- Biomass from agricultural residues and dedicated energy crops can be an important bioenergy feedstock, but its contribution to mitigation depends on
 - demand for bioenergy from transport and energy supply,
 - on water availability,
 - on requirements of land for food and fiber production.
- Widespread use of agricultural land for biomass production for energy may compete with other land uses and can have positive and negative environmental impacts and implications for food security.

IPCC Report

- A wide variety of national policies and instruments are available to governments to create the incentives for mitigation action.
- Policies that provide a real or implicit price of carbon could create incentives for producers and consumers to significantly invest in low-GHG products, technologies and processes. Such policies could include economic instruments, government funding and regulation.
- Government support through financial contributions, tax credits, standard setting and market creation is important for effective technology development, innovation and deployment.

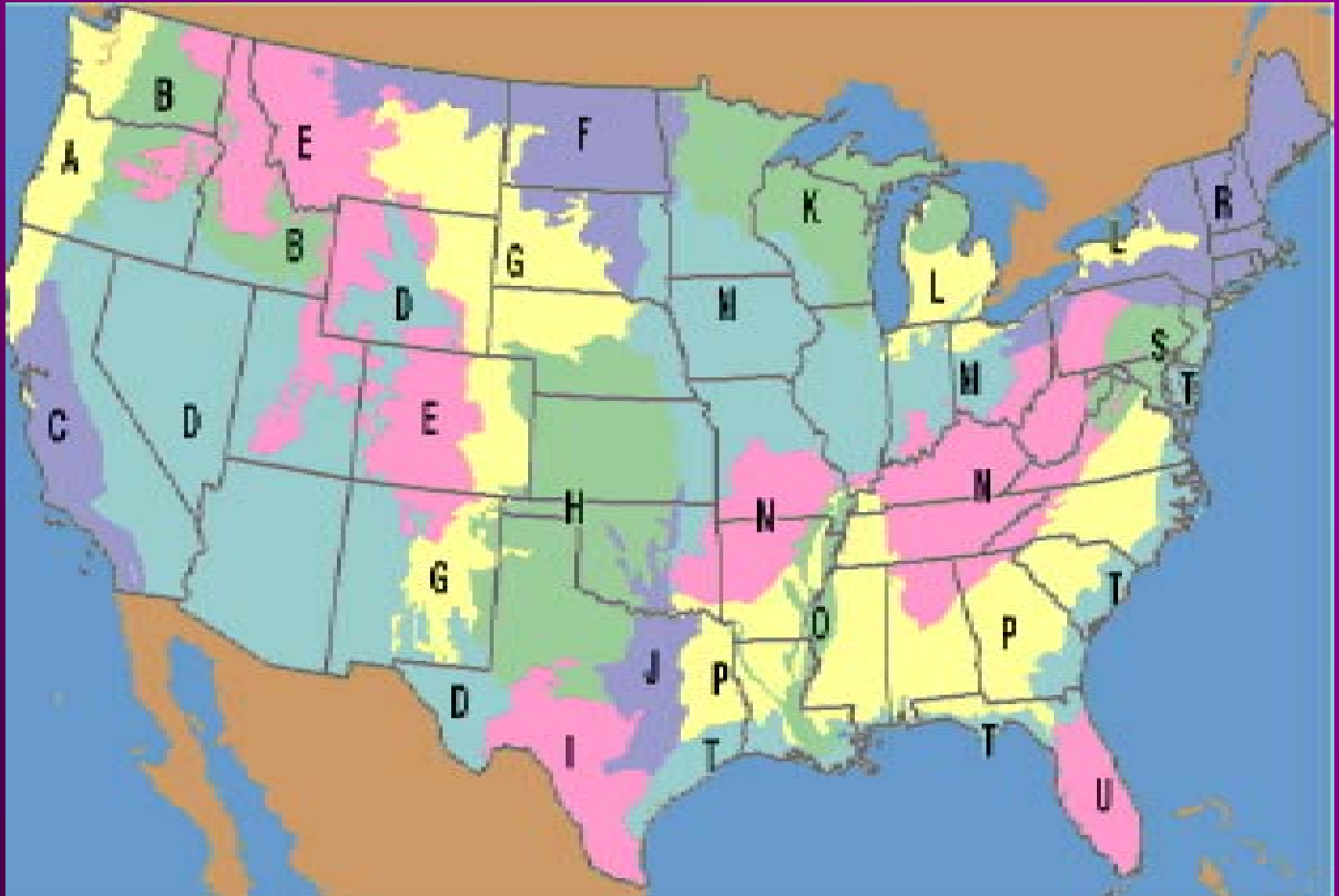
Greenhouse Gas and Volatile Organic Compounds Sub-Committee

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- NRCS Liaison:
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- Task Force request that NRCS, in conjunction with ARS and university scientists, conduct an evaluation of minimum standards acceptable for measuring, monitoring, and verifying GHG sequestration and emissions in agricultural operations for the purpose of marketing and trading GHG credits to be considered in the FY07 Farm Bill.
- Task Force requests that USDA shall lead development of an auditing protocol for verifying emissions (or uptake) and develop a coordinated method to uniformly apply predictive technologies across they array of agricultural systems, climates, and soils across the country and international.
- To identify the uncertainties in GHG emissions and mitigation, the Task Force request that NRCS coordinate with ARS and university scientists an evaluation of spatial and temporal variability in data availability and quality of GHG emissions and mitigation, and VOC emissions data and consider incorporating this information into the NRI. NRCS should then provide back to the Task Force a report on their findings.

CCX Zones for Soil C sequestration



Methane



Mitigation of CH₄



Greenhouse Gas and VOC Information Resource Center

- Task Force recommends establishment of a USDA Greenhouse Gas and VOC Information Resource Center
 - Should be located at a research institution to facilitate outreach from ARS, CSREES, NRCS, and Rural Development to clientele

Task Force recommends an examination of the potential impacts of feedstock production for biofuels

- *Changes in land use, and potential conversion of conservation lands to biomass production.*
 - science-based recommendations on practices to avoid unintended environmental or ecological impacts are warranted.
- *Changes in water needs, availability, and water quality impacts.*
- *Competition for grains and oilseeds.*
- *Competition for biomass*
 - crop materials used to reduce soil erosion, restore and improve soil organic matter and nutrients with cellulosic energy production.
- *Lifecycle analyses and GHG/C accounting for biofuels production.*
 - A low-carbon fuel standard will ensure the best total GHG outcomes.
- *Assessing co-benefits of biofuel production,*
 - such as soil quality, reduced erosion from marginal crop lands, and enhanced wildlife benefits.

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- Evaluate current GHG emissions and mitigation policies and practices
 - Expand CEAP to a more holistic review approach
→including air quality issues
 - Review NRCS programs in regards to GHG emissions and mitigation
 - Review effectiveness of reducing GHG and VOC emissions through current EPA regulation
- Identify and promote critical research needs to USDA and EPA on GHG sequestration, emissions, and mitigation practices.

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- Develop conservation management strategies (practices) that support the environmentally safe use of pesticides.
- AAQTF needs to promote a system based approach of GHG mitigation, not concentrate on individual gases. Need to investigate the interactions between carbon and nitrogen in agricultural systems.
 - In particular, need to promote further investigations into the dynamics of nitrous oxide (N_2O) emissions.

