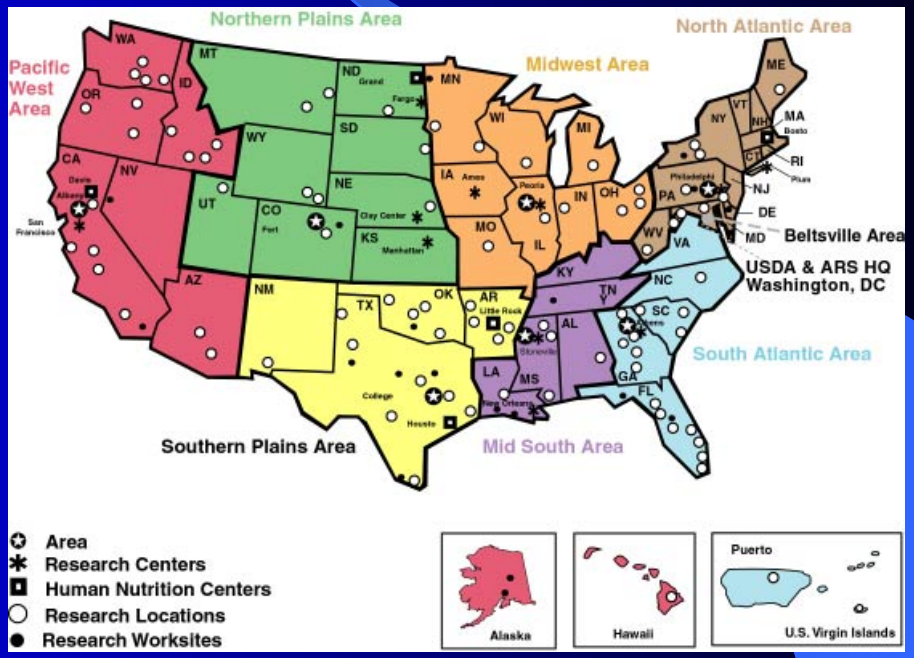
Agricultural Research Service

Charlie Walthall
National Program Leader
Climate Change, Soils & Emissions Research Program
NP212

November 6, 2008

ARS: USDA In-House Research Arm

- 8,000+ employees
- 2,100+ scientists
- 100+ laboratories
- $1.1B annual budget
- Partnerships
- International collaboration

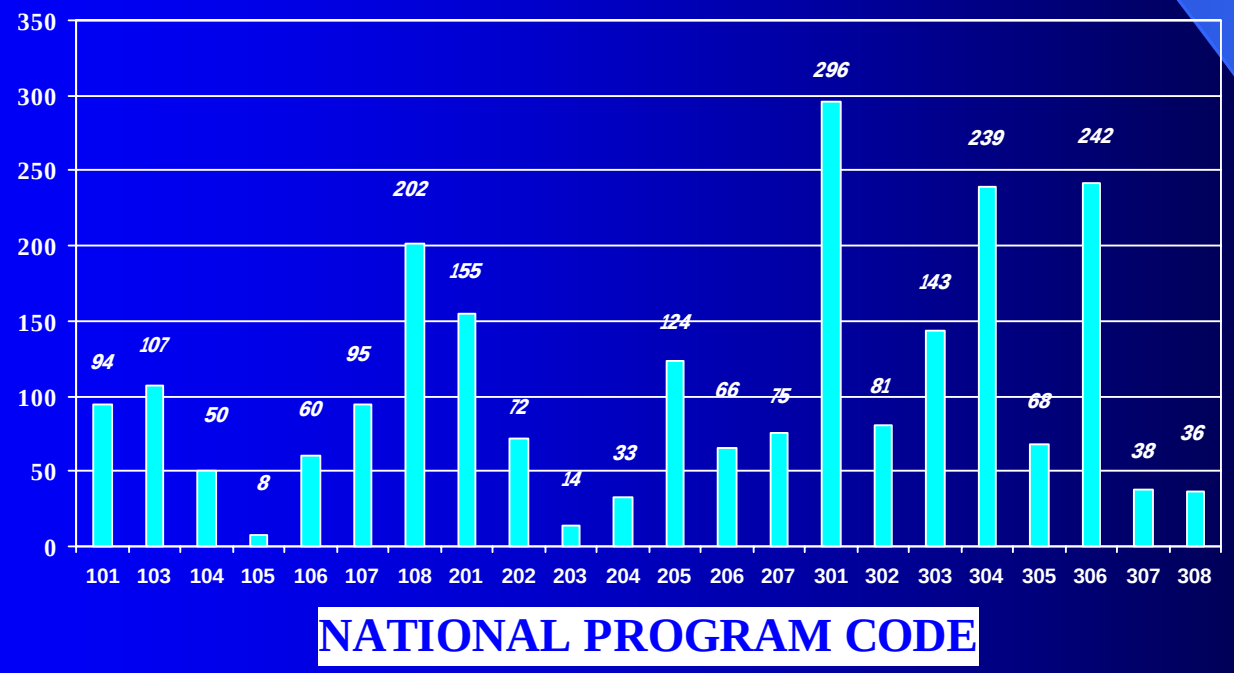


ARS Research

- Farm-to-table research scope
- 1,100+ projects
- 30 National Programs
  - Animal Production & Protection
  - Natural Resources & Sustainable Agricultural Systems
  - Nutrition, Food Safety, and Quality
  - Crop Production & Protection

National Programs
(2007)

- (NP 203) Air Quality ~ $8 M/ 14 FTE
- (NP 204) Global Change ~ $12 M/ 33 FTE



5 Year Research Project Cycle

- Customer & scientist workshop**
- Develop Action Plan & research projects
- Outside Panel* project reviews
- Annual Reports
- 5 Year Program Assessment Report
- Outside Panel * program review**

**AAQTF input important

*ARS Office of Scientific Quality Review

NP212 (Climate Change, Emissions & Soils Research Program)

=

NP202 (Soils)

+

NP203 (Air Quality)

+

NP204 (Global Change)

"Boundary Layers Program"

Air Quality Research

- *Enable Improvements of Air Quality via Management and Mitigation of Emissions from Agriculture*
  - Agricultural systems
  - Animal operations
  - Post harvest processing systems

**NP206 Manure & Byproduct Utilization

Research Topics

- Particulate Emissions
- Ammonia & Ammonium Emissions
- Malodorous Compounds
- Ozone Impacts
- Pesticides & Other Synthetic Organic Compounds
  - VOCs

Research Approach

- Characterize & quantify emissions
  - "Basic" data in time & space
  - New measurement technologies
  - Verification of existing measures
- Develop process models
- Develop emissions control and decision support systems
- Develop ozone tolerant crops

Climate Change Research

*"Adaptation and **Mitigation**"*

Develop Knowledge and Technologies for:

- *Reducing Atmospheric Greenhouse Gas Concentrations*
- *By Management of Agricultural Emissions and Carbon Sequestration*

"New *Product* or *Service* from Agriculture"

Greenhouse gas Reduction through Agricultural Carbon Enhancement network: *GRACEnet*

- 30 ARS locations
- Provide info on soil C status & GHG of current agricultural practices
- Trace gas measurements (nitrous oxide, methane)
- Develop new management practices to reduce net GHG emissions, increase soil C sequestration
- Comparing among common management scenarios at each location
- Data base, summary papers, DSS for NRCS application, guidelines, predictive model (**CQESTR**)

Charles L. Walthall PhD
USDA-ARS Office of National Programs
Climate Change, Emissions & Soils Program
charlie.walthall@ars.usda.gov
301-504-4634
301-504-6231