Other Perspectives on ARS Research Priorities

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Stakeholder questionnaire

1. Description of your organization.
2. Is ARS an important resource? Example of valuable input.
3. Describe how to achieve an ideal relationship with ARS.
4. Issues that ARS should help address relative to *Agricultural Air Quality and Global Change* issues.
5. Top five research priorities for ARS in the next five years.
6. Priorities that ARS scientists are well-positioned to address.
7. Additional issues or comments.

22 replies

Description of organizations

- Federal government agencies – 7
- Producer associations / groups – 6
- For-profit companies – 6
- Non-profit groups – 3

ARS as an important resource

- **Air quality – cotton ginning**

  Critical to particulate abatement program, emission standards

- **Crop and animal production**

  Providing a variety of management guidelines

- **Tillage (residue) research / C sequestration**

  Soil productivity, conservation, biofuel production, soil quality

ARS as an important resource

- **Greenhouse gases**

  Emissions research (GRACEnet), providing inputs for modeling efforts

- **Global change / invasive plant species**

  Information critical to forecasting potential health impacts

Description of ARS research

- Research has credibility, without for-profit influences
- Provides a leading role in long-term research, unique facilities
- Uniquely qualified to work across large geographic regions
- Unique in ability to bring many players to the table
- Major stake in developing knowledge base

Description of ARS research

- Multiagency field campaigns
- Global Change Program is unique & important, expertise and focus
- Listen to local groups to identify priorities, not top down
- Adjust priorities as necessary

ARS Research Priorities

- **Ag-induced air quality, prediction and mitigation strategies**
- **Quantify total agricultural impacts (holistic evaluation)**
- **Understanding mechanisms of global change**
- **Develop mitigation strategies to adapt to climate variability**

ARS Research Priorities

- Life cycle analysis of various crops (biofuels), emissions & sinks
- Interactions between food plants and invasive species
- C footprint / C sequestration
- Quantification of variability of C distribution (uncertainty analysis)
- C & N cycle

Agricultural Air Quality Task Force (AAQTF)

- ***Role*** **of VOCs in $PM_{2.5}$ and ozone and interaction with SOx, NOx and ammonia…..**
- **Ammonia emissions *models*: additional animal species**
- **Health research organizations *collaborations***
  - **Agricultural workers health issues**
- **Biofuels**
  - **Environmental impacts**
  - **Sustainability of production**

AAQTF…

- **Ammonia from *cropland & animal sources***
  - ***Role* in formation of $PM_{2.5}$**
  - ***In a timely manner***
- **Conservation Management Practices**
  - ***Evaluate* existing & new**
- **Greenhouse gas emission *controls***

NRCS Air Quality & Atmospheric Change Team (Portland, OR)

- **PM**
  - **Animal operations**
  - ***Sampler bias* in ag situations**
  - **Fugitive dust from *all types of ag operations***
  - **Wind erosion model (WEPS) evaluation for $PM_{2.5}$, PM_{10}**

NRCS Air Quality & Atmospheric Change Team

- N_2O greenhouse gas
  - Losses of *complete agronomic system*
  - Control via fertilizer efficiency, etc.
  - Animal waste management systems
- Ammonia emissions and VOCs
  - From *all aspects of agricultural operations*:
  - Variations in time & space, sources; process models

NRCS Air Quality & Atmospheric Change Team

- **Odor**
  - **Dispersion**
  - ***Factors*: micromet, topography, structures, species**
- ***Holistic evaluation* of crop residue burning**
  - **Soil carbon effects**
  - **Effectiveness of alternatives**
- **More *synthesis projects***

NRCS Air Quality & Atmospheric Change Team

- ***Interaction with atmospheric science community***
- **NRCS Conservation practices**
  - **Design parameters**
  - **Effectiveness**
  - **Soil carbon quantification**

Common Themes

- ***Synthesis*** **projects**
- ***Process models***
- **Basic *data***
- ***Life cycle/whole system/holistic*** **approach**
  - ***Time***
  - ***Space***
- ***Interactions*** **with other scientific communities**

Common Themes

- ***Controls & strategies***
- **C & N cycles / interactions**
- **Reliable measurements**