

Breakout session II: Refining and Prioritizing Future Research, Education and Technology Transfer Needs by Commodity/Interest Group

**Truman Room—Poultry
Facilitator: Matt Smith**

Recorder: John Brooks
Reporter: Dennis Maze

Research, Education, and Tech Transfer Needs by Commodity Group

- 1) Poultry waste to energy
 - a. Use for poultry waste
 - b. Carbon credits
 - c. Nutrient transport/utilization
 - d. Anaerobic digestion
 - i. Biogas use in house
 - ii. How cost effective?
 - iii. Fractionation of coarse from fine (nutrient value)
 - e. Storage issues
 - i. Store outside – if wet becomes a liquid manure
 - f. What to do with char. From combustion methodologies?
- 2) Heat recovery for heating poultry houses
- 3) Land application of poultry manure
 - a. Fine for current application rates – but lower rates need other equipment
 - b. Alternative application methods
 - i. Sub-surface application, “knifing” approaches
 - c. Odor control – if injection is feasible then odor is controlled
 - i. Address water quality issues
 - d. Do the alternative methods retain carbon in soil – management
 - e. Tie up (immobilize) N so a slower release over time – reduce NH₃, nutrients volatilization
 - f. Storage issues – on farm storage conditions
 - i. Covering – is an option
- 4) Availability and cost benefit of alternative methods for bedding
 - a. Alternative bedding materials
 - i. Possible plant that can be grown on the farm
 - ii. Sand
 - iii. Pine bark nuggets
 - iv. Complete sustainability
 - b. Composting (in-house)
 - c. Quantify benefits and negatives
 - i. Concerns with pathogens
 - ii. Benefit of heating – warm bedding

- iii. Release of emissions during the process
 - d. Treatment of ventilation off houses
- 5) By-product utilization – entire industry
 - a. Poultry feathers
 - b. Fat
 - c. Blood
 - d. Spent hens
- 6) Public and ecological environmental risk assessment
 - a. Properly manage litter application to control PACs
 - i. Hormones – endocrine disruptors
 - ii. Metals
 - iii. Pharmaceuticals
 - b. Fate and transport of PACs - BMPs
 - c. Synergism of nutrient movement – w/pasture management

PRIORITY

- 1) Waste-energy
- 2) Land application
- 3) PACs

**Clayton Room—Swine
Facilitator: Mike Cotta**

Recorder: Brian Kerr

Reporter: Al Sutton

Packaging main issues/categories

Emissions

Nutrients

Pathogens

Energy Balance

ARS to continue efforts in superior manure treatment technologies (Cost effectiveness being a vital component). Include systems analysis (production inputs, nutrient excretion, emissions, manure quality, delivering nutrients to soil (including the water and air environment), and subsequently into cropping systems. Include economic analysis to this holistic approach.

How can we use co-products to enhance nutrient utilization efficiency within the animal (nutrient utilization within the animal), keep nutrients in the manure, and subsequently optimize the use of these nutrients in cropping systems? Develop dietary interventions to optimize pork production, but yet minimize the footprint on the environment.

Odor control (including ‘gasses’ and ‘nutrient’) and mitigation technologies (process models for each species).

Swine emissions national working group: standard methodologies and protocols, sources of odor, etc. (what we know, what we do not know, gaps in knowledge that need to be research/understood), who is doing what and using what technology, improved reporting results to stakeholders/regulators/producers, etc. (Proactive approach of trying to decide what will be important within the next 5 years and having the data ready at/when it is needed.) (Better coordinated research.) (What data should be included in the research report (temperature, date, humidity, wind speed, management systems, etc.).

As we develop mitigation technologies, how can we evaluate how well the methods worked (errors associated with measurements within and between experiments). Develop better standards (QC), protocols, sample collection, measurement of air flows, etc. A better (more complete) reporting of factors involved in the research so we can develop better process-based models. Development of ‘the’ standard method that is recognized by all (EPA, International, etc.).

Wal-Mart’s ‘sustainability’ model (methods) as a way for Wal-Mart to evaluate their suppliers. Carbon footprint (energy) sustainable model. [Put all suppliers on the same comparison basis.] ISO lifecycle assessment. Capitalize on these opportunities.

Ladue Room—Beef
Facilitator: Andy Cole

Recorder: Roger Eigenberg
Reporter: Clayton Huseman

206 Components

- 1 Air Quality
- 2 Nutrient Management
- 3 Pathogens
- 4 By-Products – Energy

GHG, Particulate matter is gaining more attention

Coarse and fine particulate matter – quantify to set standards

Is there a health effect and how to quantify

Ecosystem services, entire landscapes – not just practices but also the entire environment

Carrot approach rather than stick, hold on to nutrients or carbon – show energy saving rather than another regulation

Nutrient management, nutrient recycling how to get energy out to cut down on natural gas

How to find a home for combustion products, the ash

Nutrient management – experience taking up more nutrients need to be realistic

Co-products: understanding where the variation of results come from (BTU's in combustion)

Co product vs by product co has value and by product may incur a cost
Understanding distillers grain and the differences in composition

How does an industry determine if something is cost effective – economics

Pathogens does not show up with the industry too much yet – 70's work done on grazing cattle. What has been done is this area recently?

Emerging area is energy, comments: experience not all successful; lots of other potential sources of energy; the crop residue; need good job analyzing energy markets. At what point do I use an anaerobic digester? We sometimes forget is that lots of energy goes into growing the crop. Most look at manure as something just need to deal with. Now more looking at options.

C2B2 biofuel research; algae based production. Looking at what to do with that byproduct. IS ARS actively doing algae? Not much in the way of algae.

Water quantity and quality in the America West; so water use issues – recycling water and who gets it. Also, need tools to deal with the regionalism. This should be applied to ARS research to understand regions.

Competitive grants; why is beef less? Societal pressure?

Lindbergh Room A—Dairy
Facilitator: Daniel Miller

Recorder: April Leytem
Reporter: Bob Naerabout

Research, Education, and Tech Transfer Needs by Commodity Group

On farm treatment (BMPs) for air emissions and nutrient management, what is the economic impact particularly on small producers (ie diet modification and use of distillers grains)

Need to look at systems as a whole. Improving efficiency of production per cow without generating negative environmental impacts.

Air emissions (MeOH), pathogen drift (wastewater irrigation), phosphorus are the 3 big issues for dairy production in the NW.

TX has big issues with P in soils, pathogen drift (in water and source tracking), air emissions not a big issue yet.

CA: air emissions biggest issue (MeOH, VOCs, GHG, PM10), transfer of pathogens with particulate matter, mitigation technology for particulate transport

Improve waste handling systems to generate energy, capture nutrients, reduce volume of waste, kill pathogens, reuse water. Nutrient management would become obsolete if we could do this. Improvements in solid separation technology to use micro-irrigation and precision agriculture. Capture the value of the waste stream. Transportation is the weak link in the system. We need a systems approach.

Document transport of PACs and the persistence of PACs in the environment (groundwater). Questions about what background levels are

Prioritization of needs:

Air emissions in ID and CA. Make sure that research done by ARS is delivered to EPA to add to the NAMES study. Open lot study is needed to add to NAMES study: PM, GHG, NH3

Use of co-products/byproducts in feed rations and effects on energy and nutrient utilization.

Water use and re-use.

Lindbergh Room B—By-products
Facilitator: Allen Torbert

Recorder:

Reporter: Mark Bryant

Research, Education, and Tech Transfer Needs by Commodity Group

CCP,s

Foundry Sand, Pulp&Paper

- Rainfall simulation study?
 - Year long risk assessment data
 - Water shed monitoring
 - Erratic precipitation
 - What are the questions:
- FGD gypsum – Agland restoration
- Energy crop enhancement
- Degraded land
 - Mined lands
 - Highly eroded land

II. Ag Industry perception

- Environmental concerns
- Distillers grain – Feed
 - Changes downstream concerns
- Size of potential “supply” scope & Scale of Benefit
- Allocate & priority of resources
- Application guidance, maximize benefits, ID risks
- USDA –EPA “Guidance”
- Current plan
 - Phyto/bio availability
 - Risk Assessment
 - Application technology
 - Bioenergy
- Blending multiple sources to optimize benefit and cobenefits
- Be Thorough – Ask the hard questions
- Easy to use tools
 - Demonstrations
 - Local- regional guidance, BMP’s
- Field Days