

# Manure, Animal Health & Water Quality for Agricultural Professionals



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Penn State is committed to affirmative action, equal opportunity, and the diversity of it's work force.



# A modern dairy farm is a complex system with interrelated:

- components
- activities
- inputs
- outputs



# Diversity of advisors, venders and regulators that impact farm

- economic
- social
- on-off farm relationships



# Agricultural Engineering for Ag Professionals

- A series of integrated programs led by PSU agricultural engineers and veterinarians
- 2 day workshop
- Classroom and farm
- 10 - 20 students
- Cost recovery



# Agricultural Engineering for Ag Professionals - Format

- small group workshops
- multidisciplinary
- 8-10 hours lecture
- 4 hours farm practicum
- 2 hours recommendations and reporting



# Program Goal

- Give Ag Professional some basic knowledge of engineering related to milk production
- Provide tools that can be used on farms to help identify and solve problems
- Not making them engineers!!
- Provide CEUs as appropriate



# Audience

- Ag Professionals
  - Veterinarians
  - Nutritionists
  - Extension educators
  - Equipment suppliers
  - Milk company field staff
  - NRCS and Conservation District Personnel
  - Nutrient management planners



# Team approach is best

- modeled by teaching staff from various disciplines
- problem, impact and solution related





# Animal Health and Manure Handling Systems Team

- Robert Graves – Agr. Engr.
- John Tyson - Agr. Engr.
- Dan McFarland - Agr. Engr.
- Tom Wilson - Agr. Engr.
- Dave Wolfgang - Veterinarian
- Ernest Hovingh – Veterinarian
- Rich Stehouwer – Soil Scientist
- Charlie Abdalla – Agricultural Economist



# Animal Health and Manure Handling Systems

- Introduction - A Systems Approach to Manure
- Three common animal health areas, their relationship to facilities and solutions (veterinarian and engineer)
  - Lameness/Sore Feet: Health & Facility
  - Environmental mastitis: Health & Facility
  - Infectious Diseases: Health & Facility



# Animal Health and Manure Handling Systems

- Stand alone topics
  - Pathogens, Human Health & Antibiotic Resistance
  - Field and Crop Issues
  - Cleaning and Disinfecting
  - Regulations and Policy
- On-Farm Practicum
- Problem Solving & Report Development

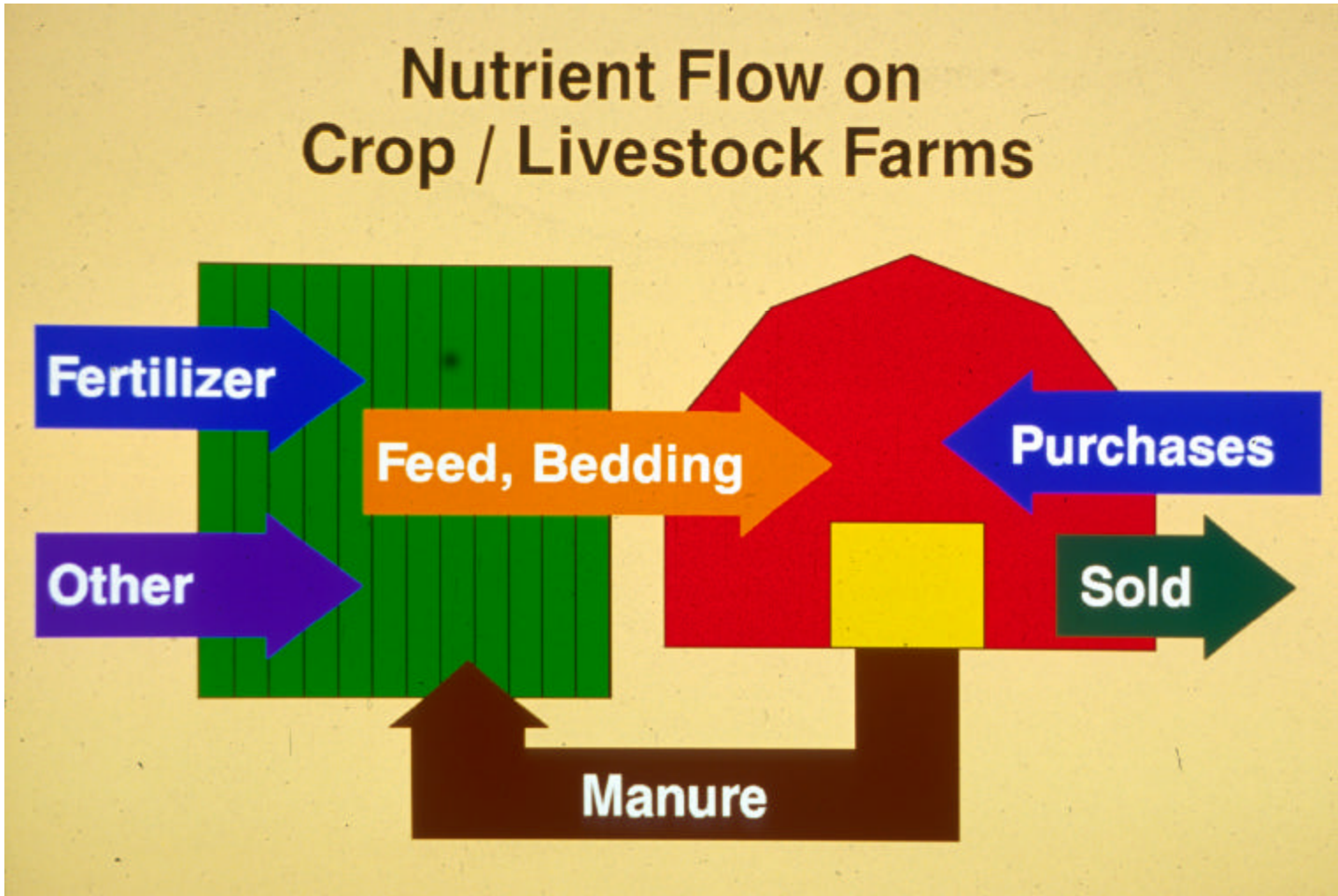


# System Emphasis

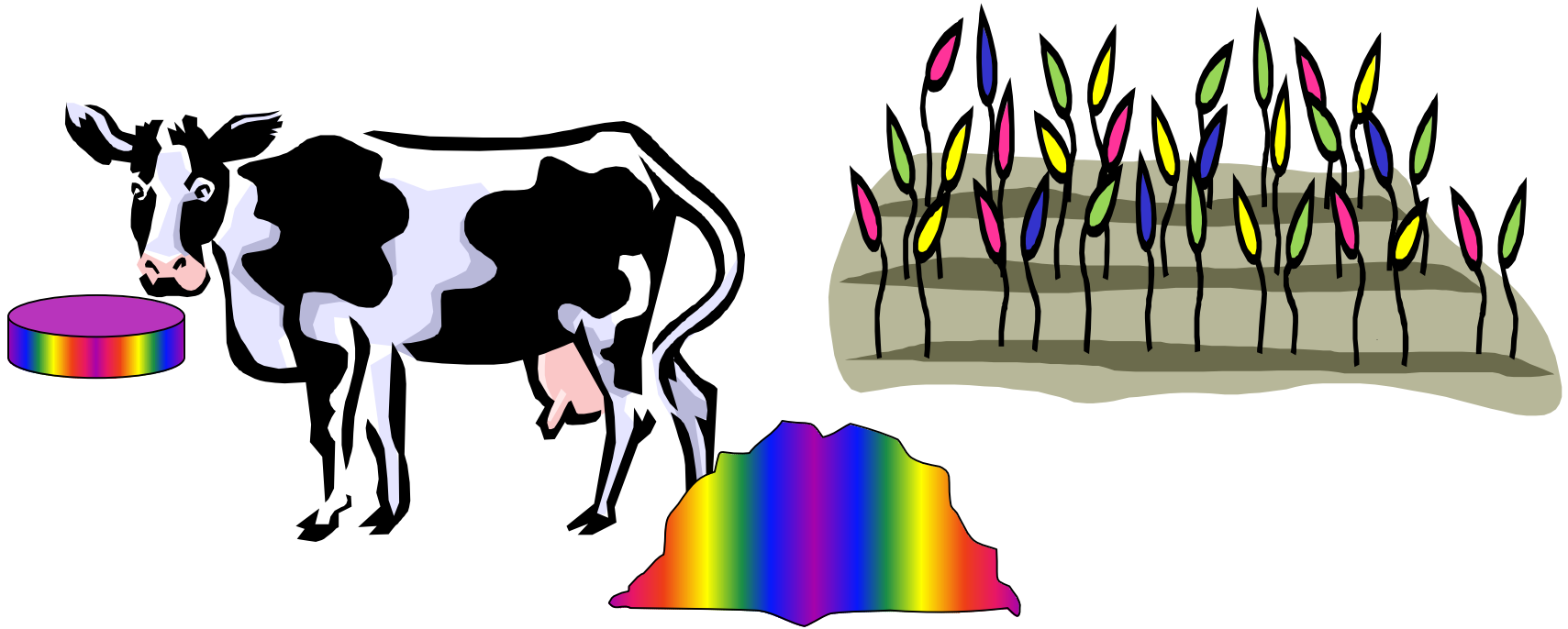
- A complex interrelated system
- Actions in one place will impact outcomes someplace else



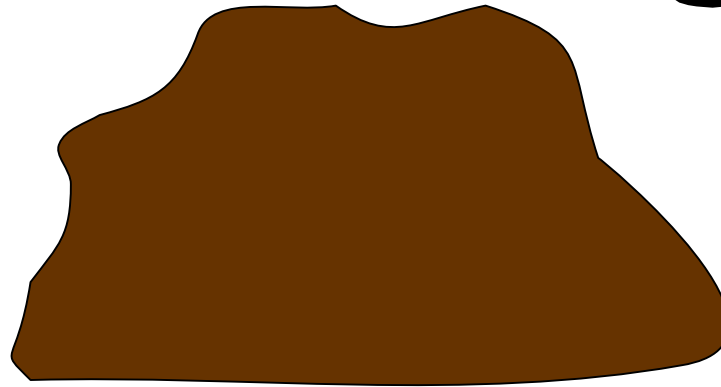
# Nutrient Flows



# There is a Relationship!



# Looking at Manure in a Different Way



Who all is looking at manure  
and  
What do they see?



# Farmer – manure is:

- Another job to do
- Another check to write
- Source of variety of problems
- Potential resource or liability
- Investment without monetary return





# Neighbor – manure is:

- Odor
- Stuff on road to drive through
- Good for garden
- Threat to quality of life



# Veterinarian - manure is:

- A disease agent for cows and calves
- A reservoir/breeding ground for bugs
- Something to walk in
- Indicator of cow health



# Organic Farmer – manure is:

- Source of organic fertilizer
- Inorganic contaminants in manure



# Manure Safety

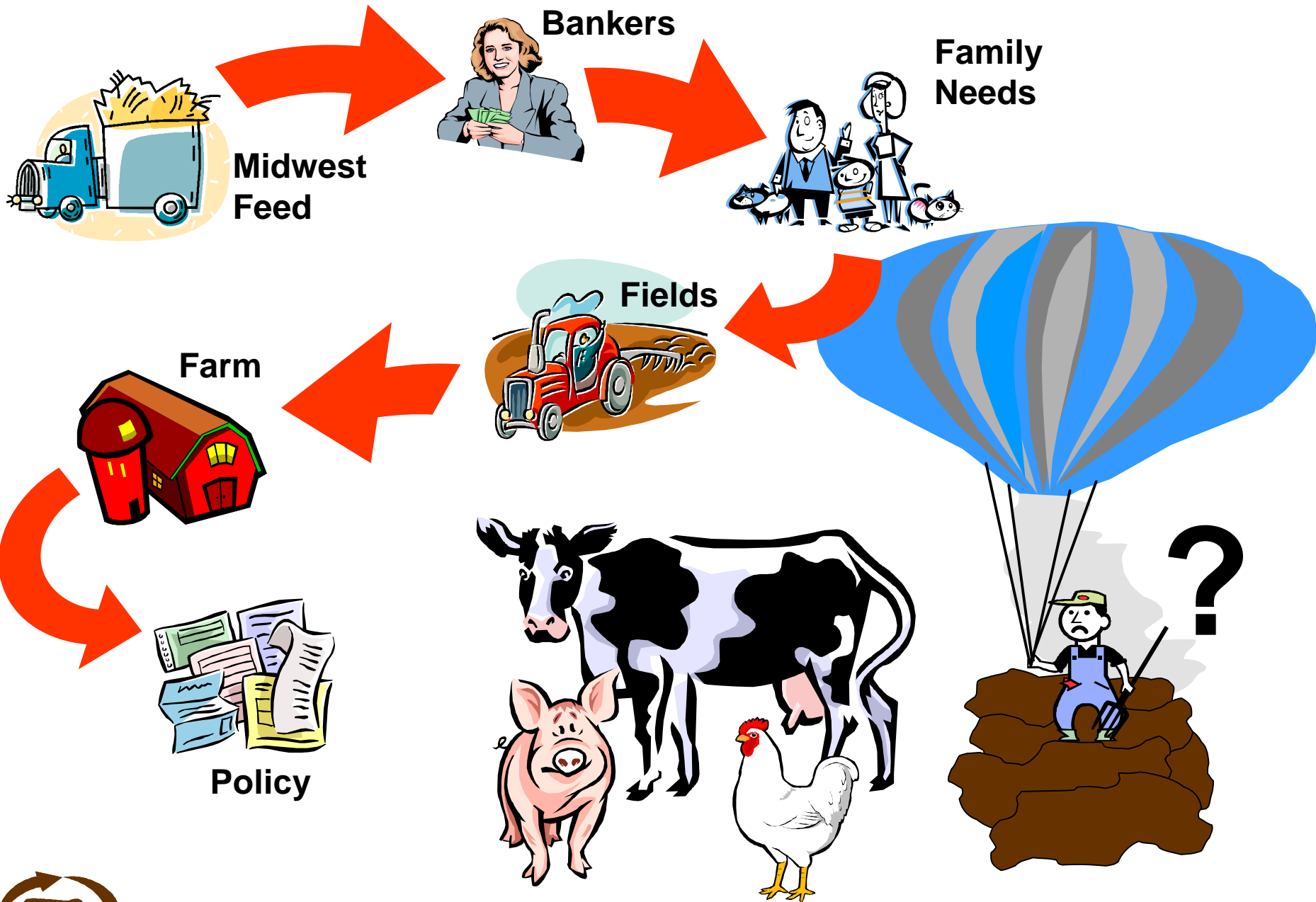
- machinery
- pathogenic microorganisms
- drowning
- asphyxiation
- poison gas



# Everyone is part of the problem (solution)

- Environmental quality does not start at the back end of the animal!





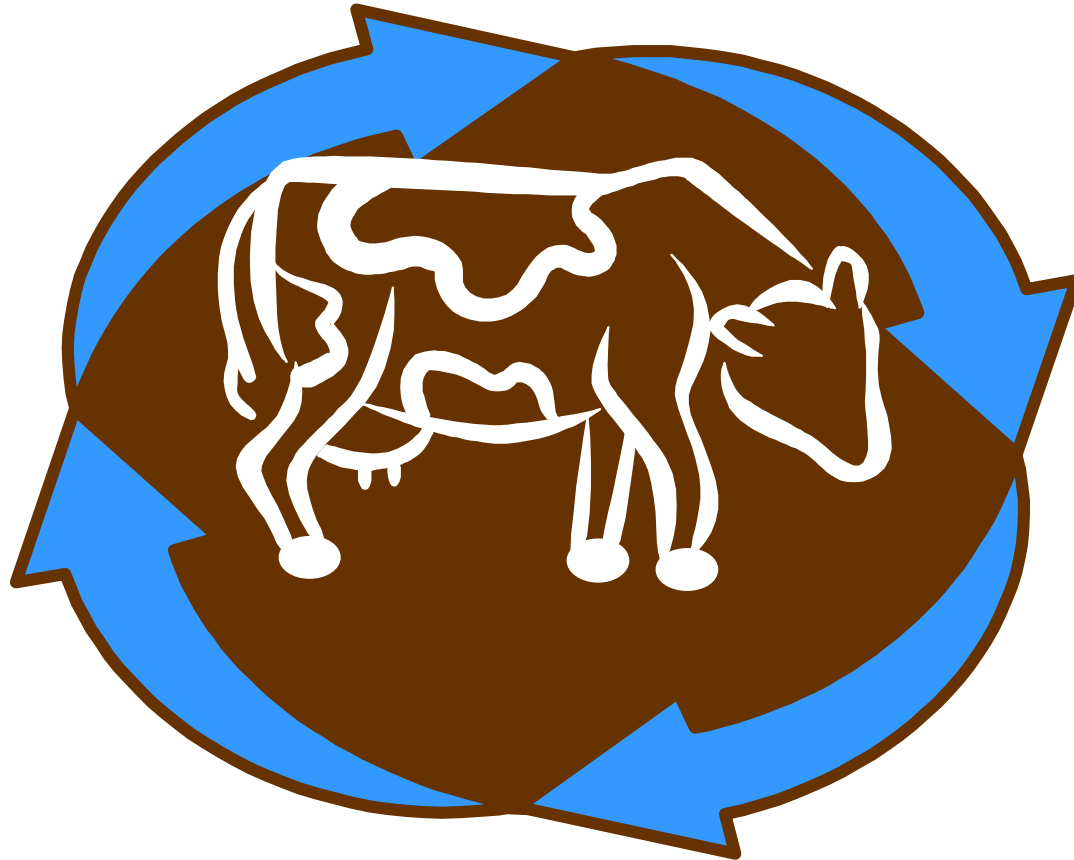
# Conclusions

- AEAP programs are successful
- Marketing to diverse audience is a challenge
- Program is continuing
- Eliminating problem solving and report development



# More to manure than meets the eye

## What goes around, comes around!



<http://AgEngWorkshop.cas.psu.edu>

