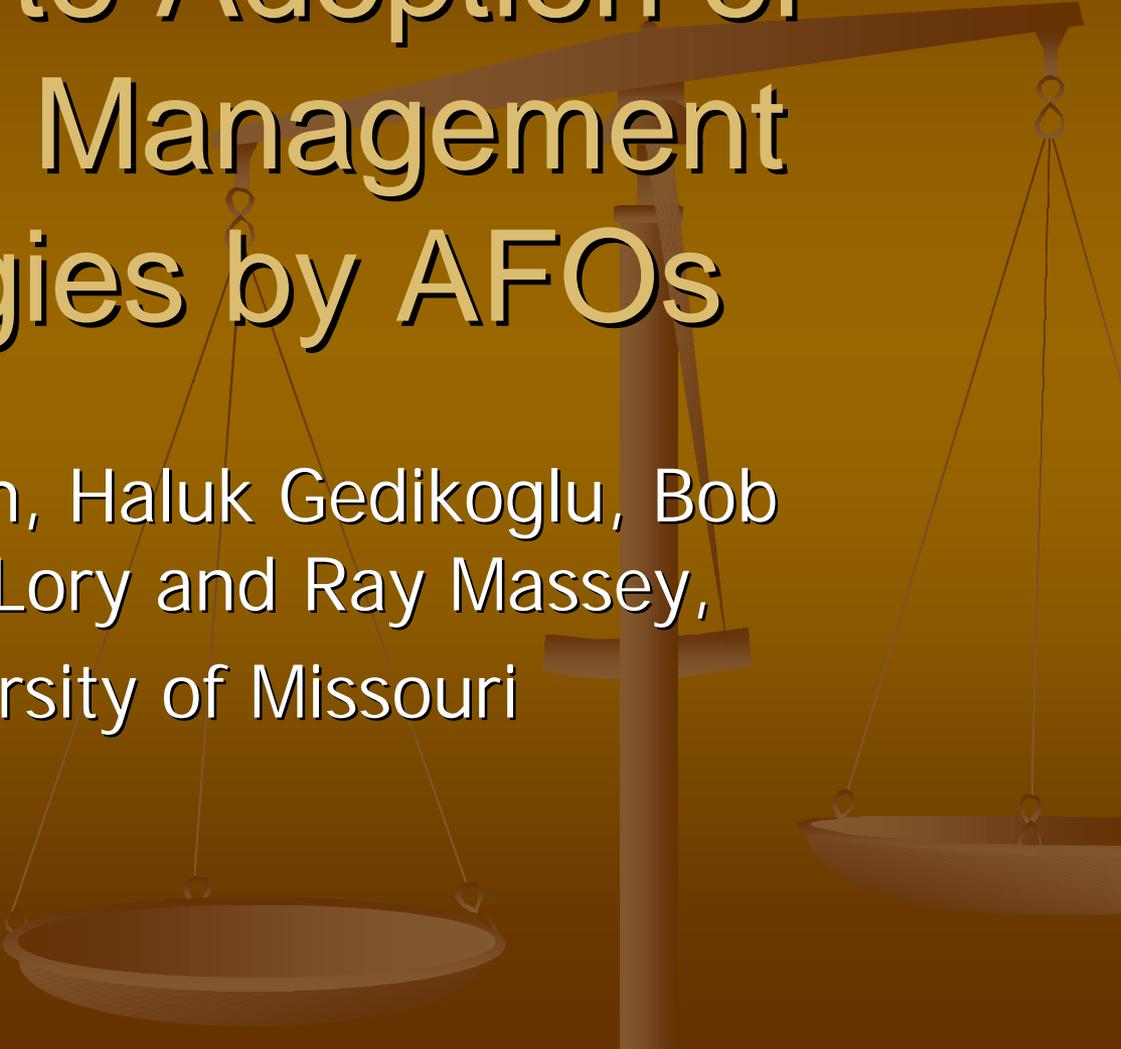
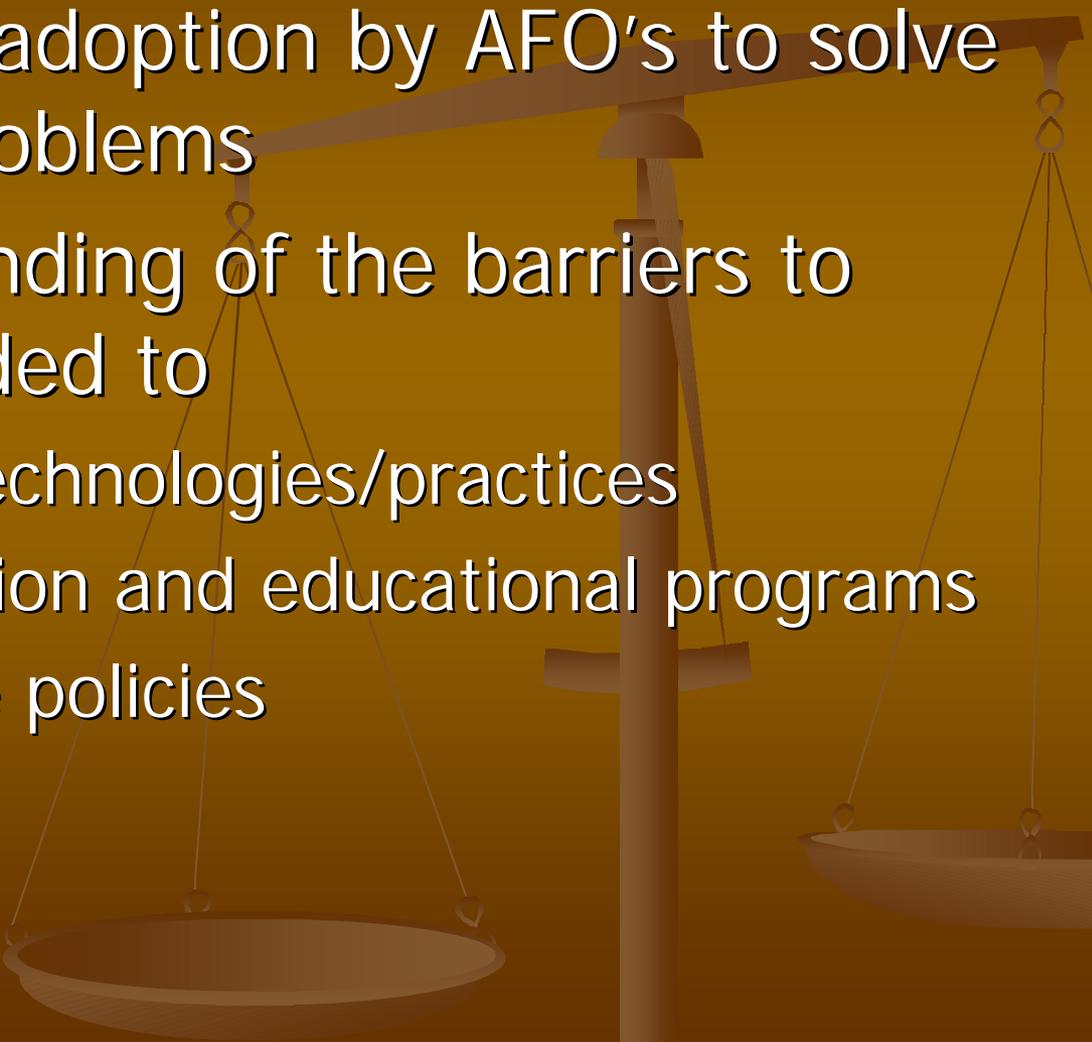


# Barriers to Adoption of Nutrient Management Strategies by AFOs

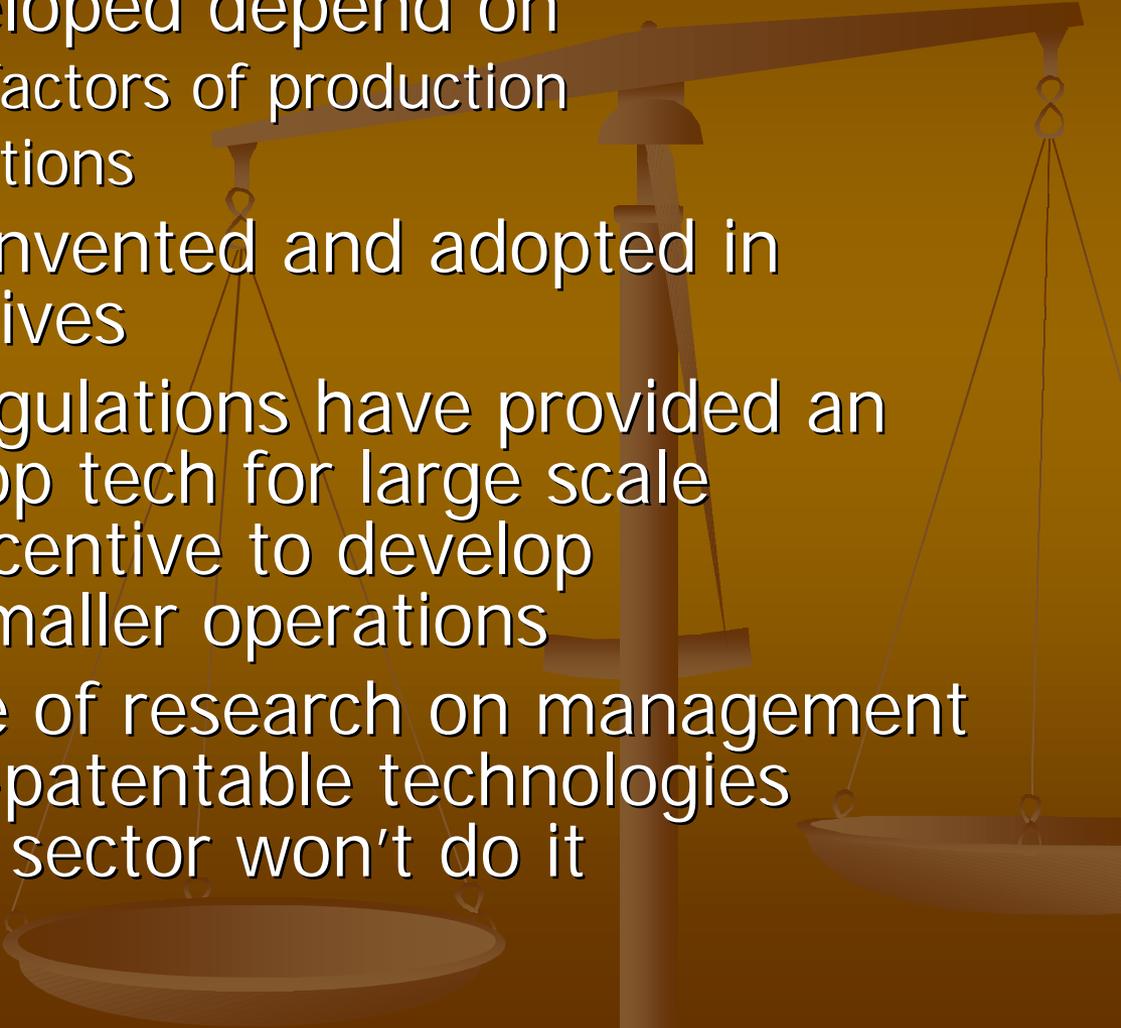


Laura McCann, Haluk Gedikoglu, Bob  
Broz, John Lory and Ray Massey,  
University of Missouri

# Why?

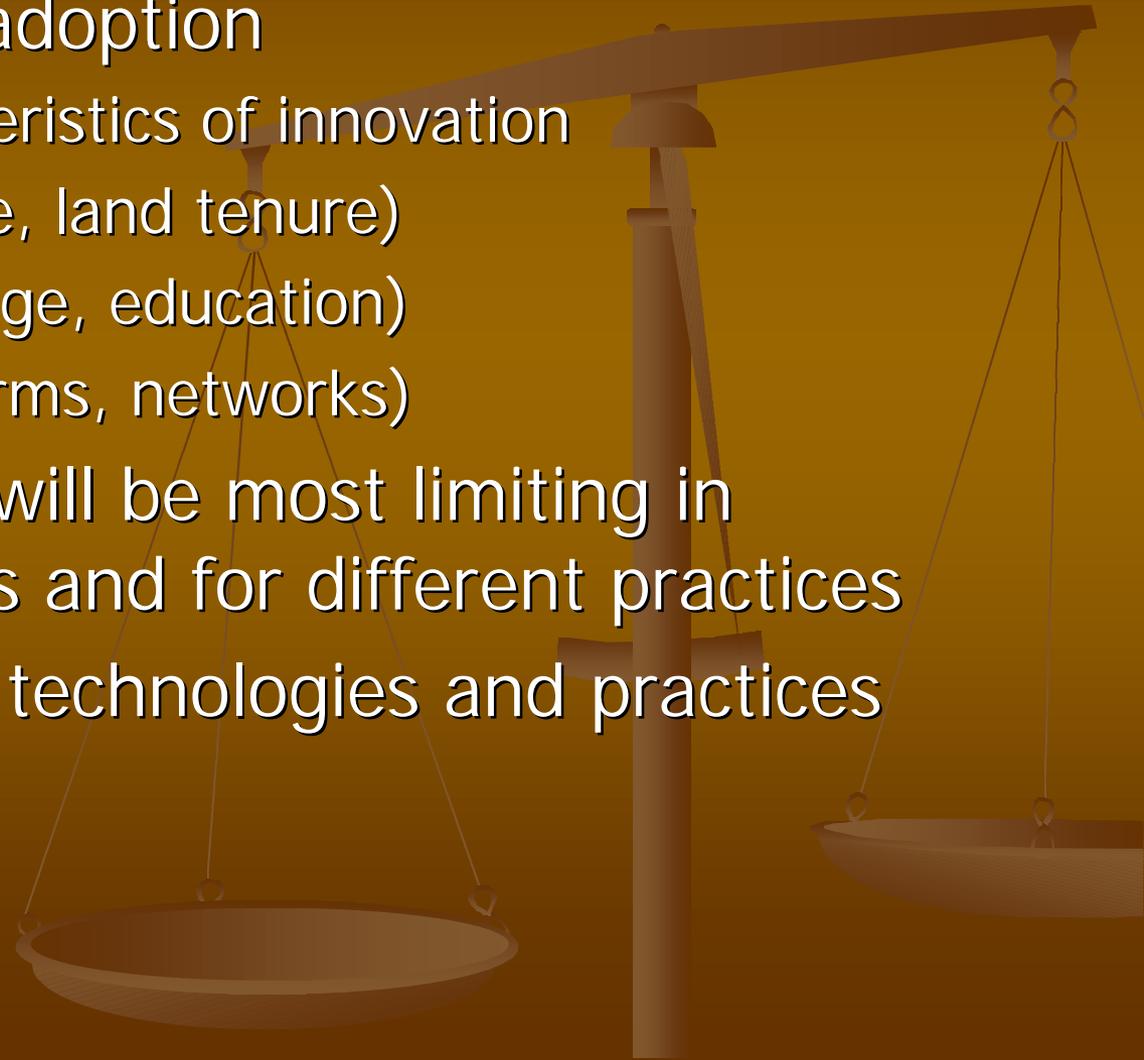
- Need voluntary adoption by AFO's to solve water quality problems
  - Better understanding of the barriers to adoption is needed to
    - Design better technologies/practices
    - Improve extension and educational programs
    - Design effective policies
- 

# Economics and Technology

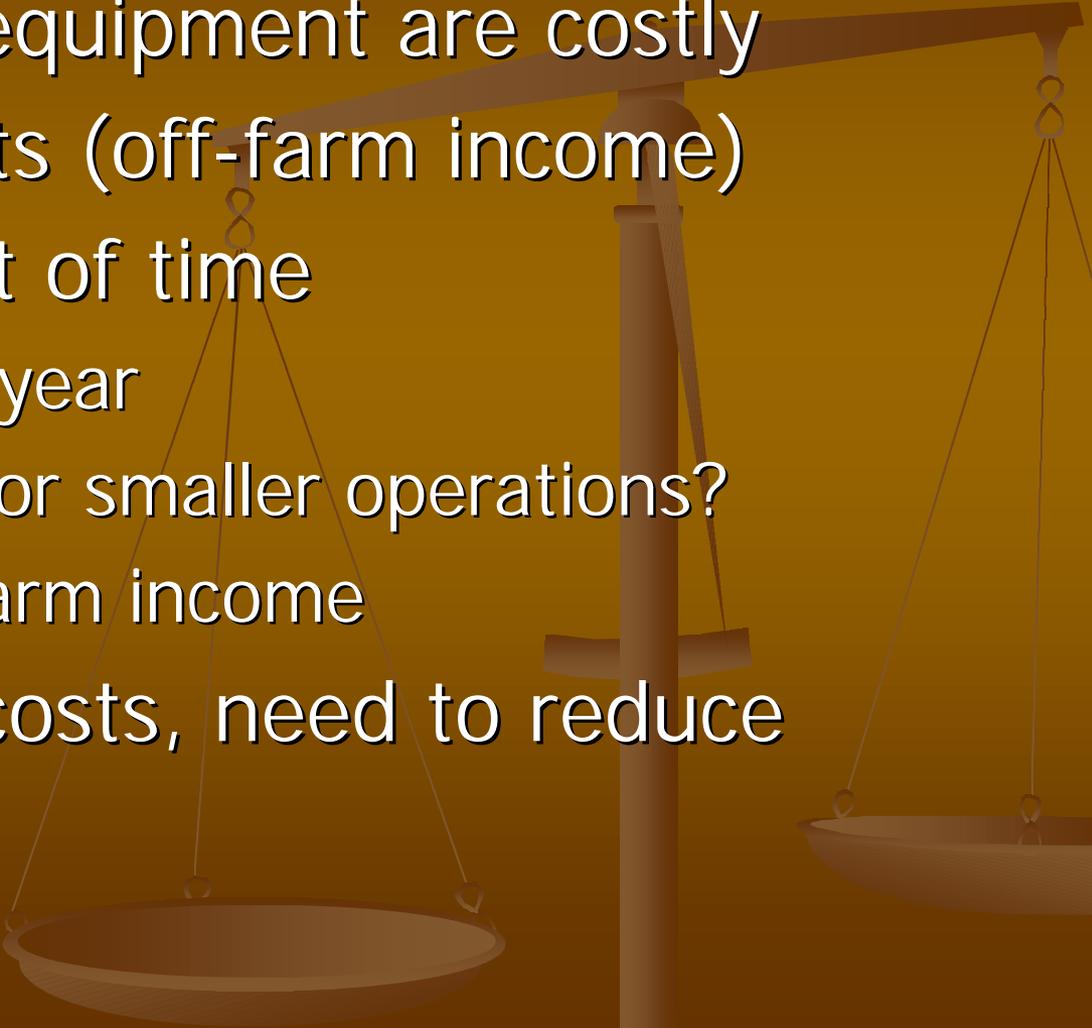
- Technologies developed depend on
    - Relative prices of factors of production
    - Policies and institutions
  - Technologies are invented and adopted in response to incentives
  - Example: CAFO regulations have provided an incentive to develop tech for large scale operations, less incentive to develop technologies for smaller operations
  - Public good nature of research on management practices and non-patentable technologies means the private sector won't do it
- 

# Adoption of Existing Innovations

- Factors affecting adoption
  - Perceived characteristics of innovation
  - Char. of farm (size, land tenure)
  - Char. of farmer (age, education)
  - Social system (norms, networks)
- Different barriers will be most limiting in different situations and for different practices
- → One size fits all technologies and practices won't work

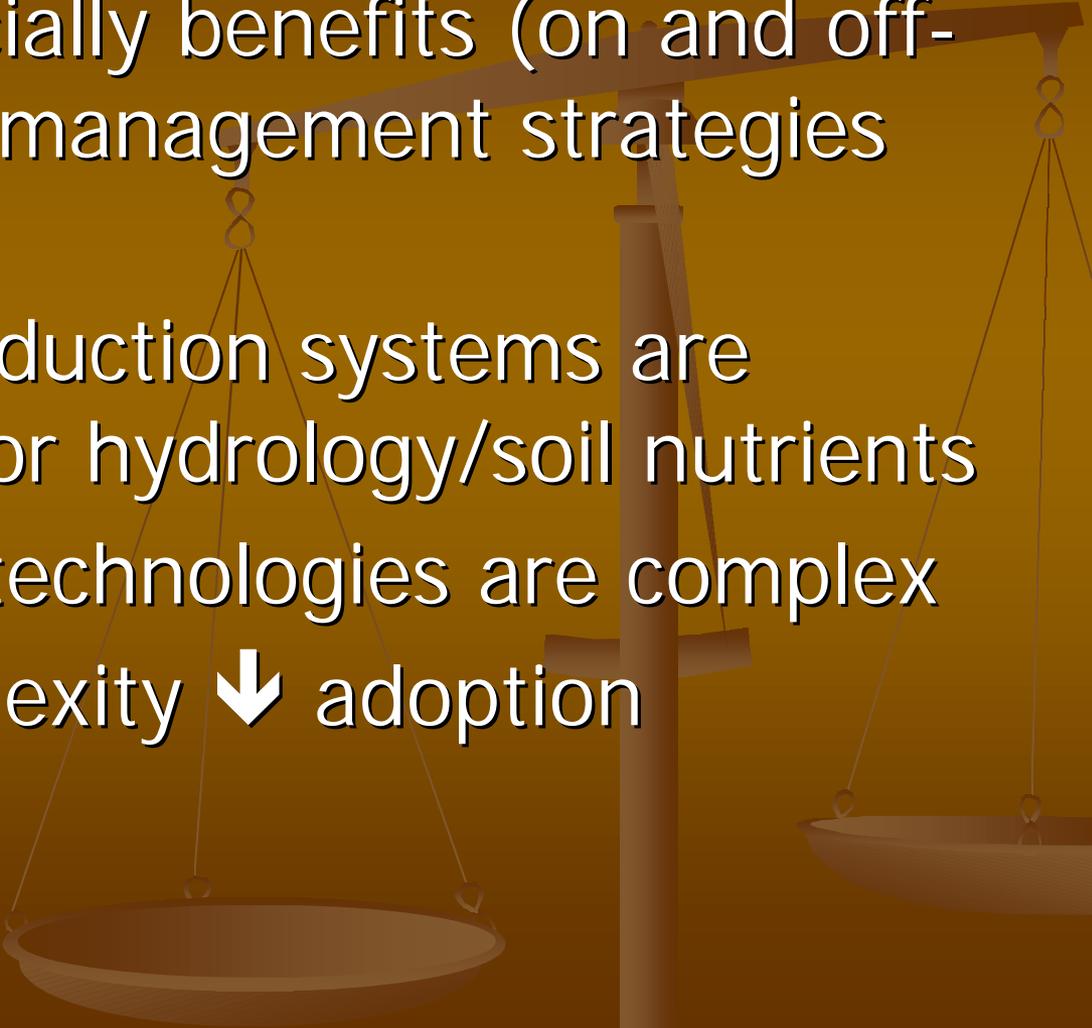


# Perceived Profitability

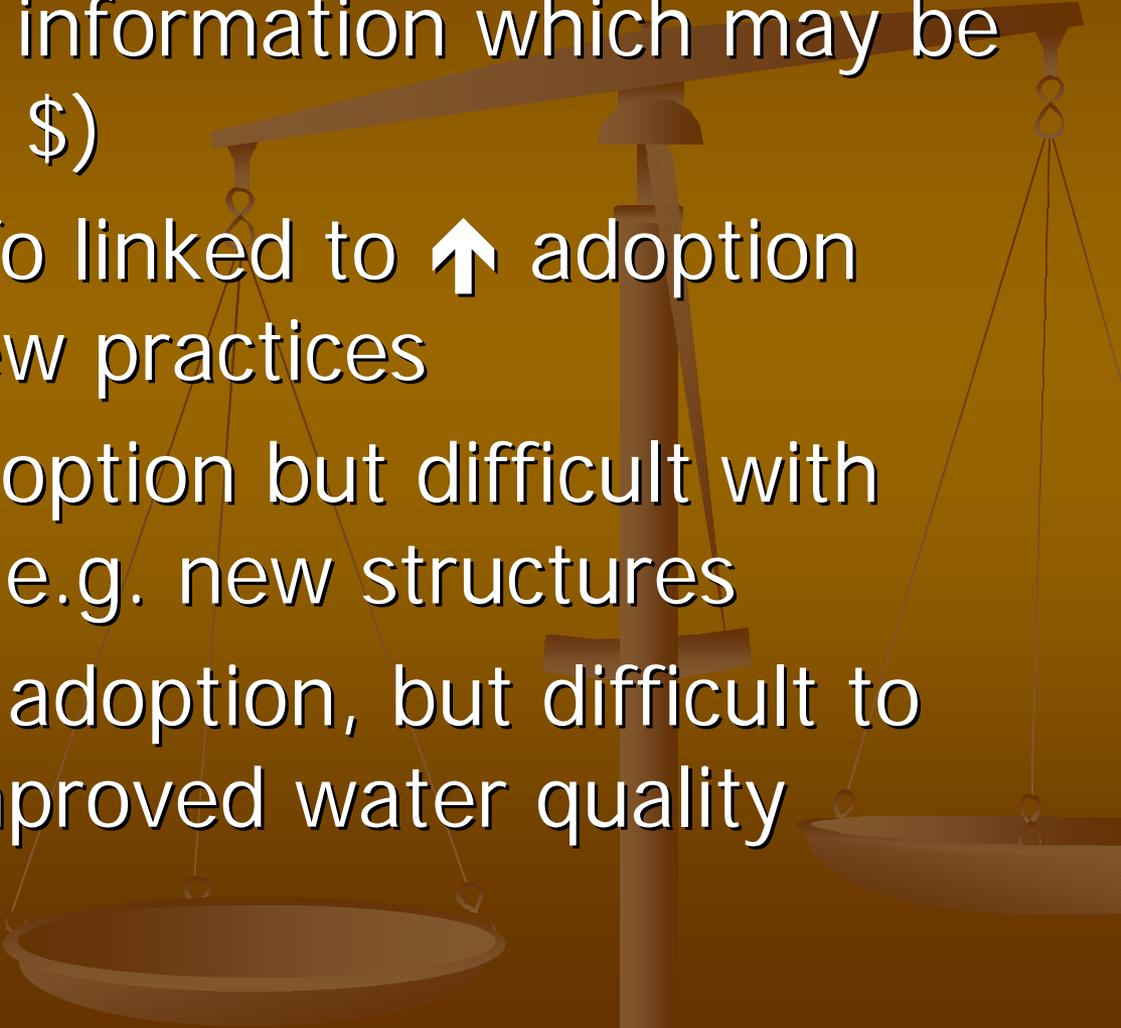


- Structures and equipment are costly
- Credit constraints (off-farm income)
- Opportunity cost of time
  - Varies over the year
  - May be higher for smaller operations?
  - Related to off-farm income
- Transportation costs, need to reduce water content

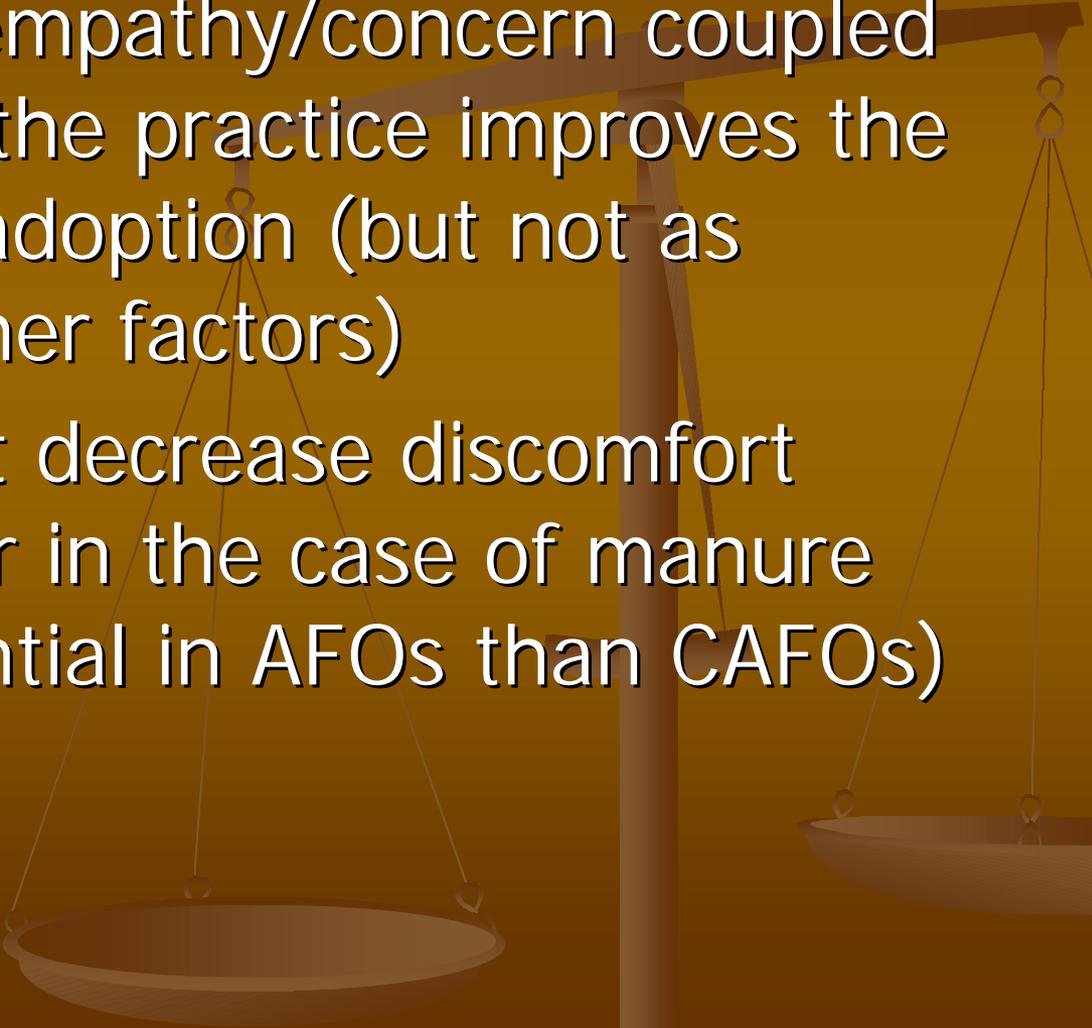
# Uncertainty



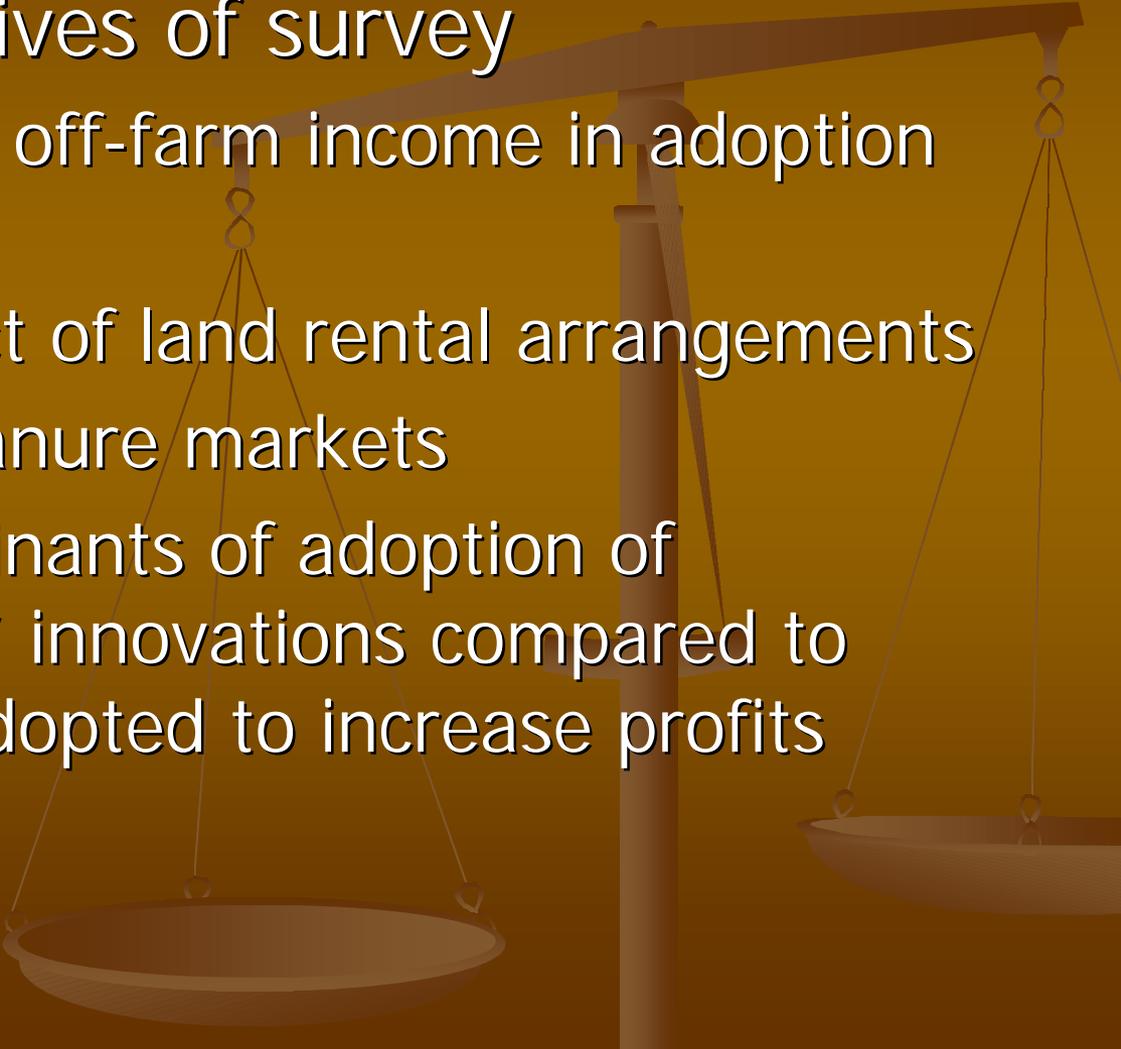
- Costs and especially benefits (on and off-site) of manure management strategies are uncertain
- Animal/crop production systems are complex, ditto for hydrology/soil nutrients
- Recommended technologies are complex
- Perceived complexity ↓ adoption

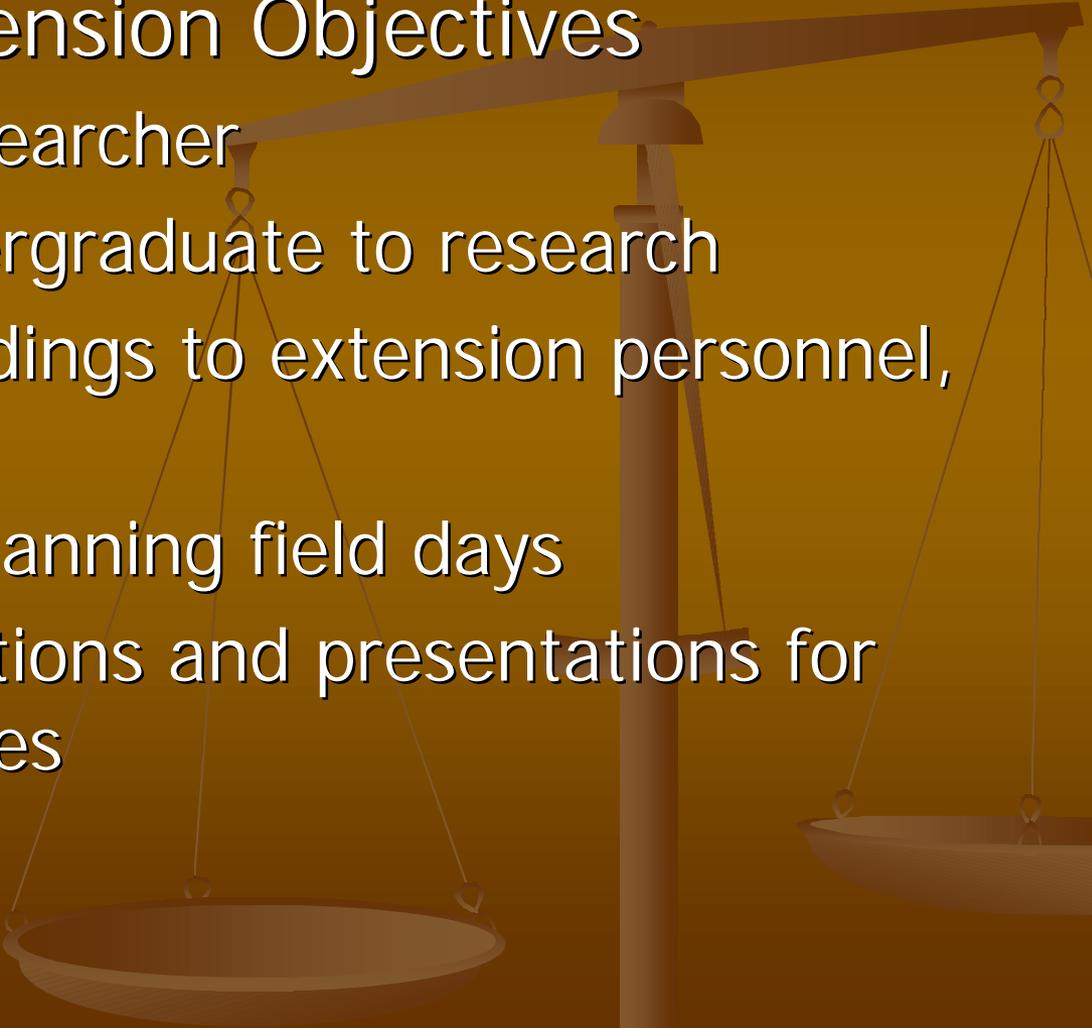
- 
- Need to acquire information which may be costly (time and \$)
  - Use of public info linked to ↑ adoption especially for new practices
  - Trialability ↑ adoption but difficult with some practices, e.g. new structures
  - Observability ↑ adoption, but difficult to see results in improved water quality

# Other

- Environmental empathy/concern coupled with belief that the practice improves the environment ↑ adoption (but not as important as other factors)
  - Innovations that decrease discomfort ↑ adoption, odor in the case of manure (has more potential in AFOs than CAFOs)
- 

# Current CSREES Project

- Research objectives of survey
    - Examine role of off-farm income in adoption (+ or -, why)
    - Determine effect of land rental arrangements
    - Characterize manure markets
    - Identify determinants of adoption of “environmental” innovations compared to ones that are adopted to increase profits
- 

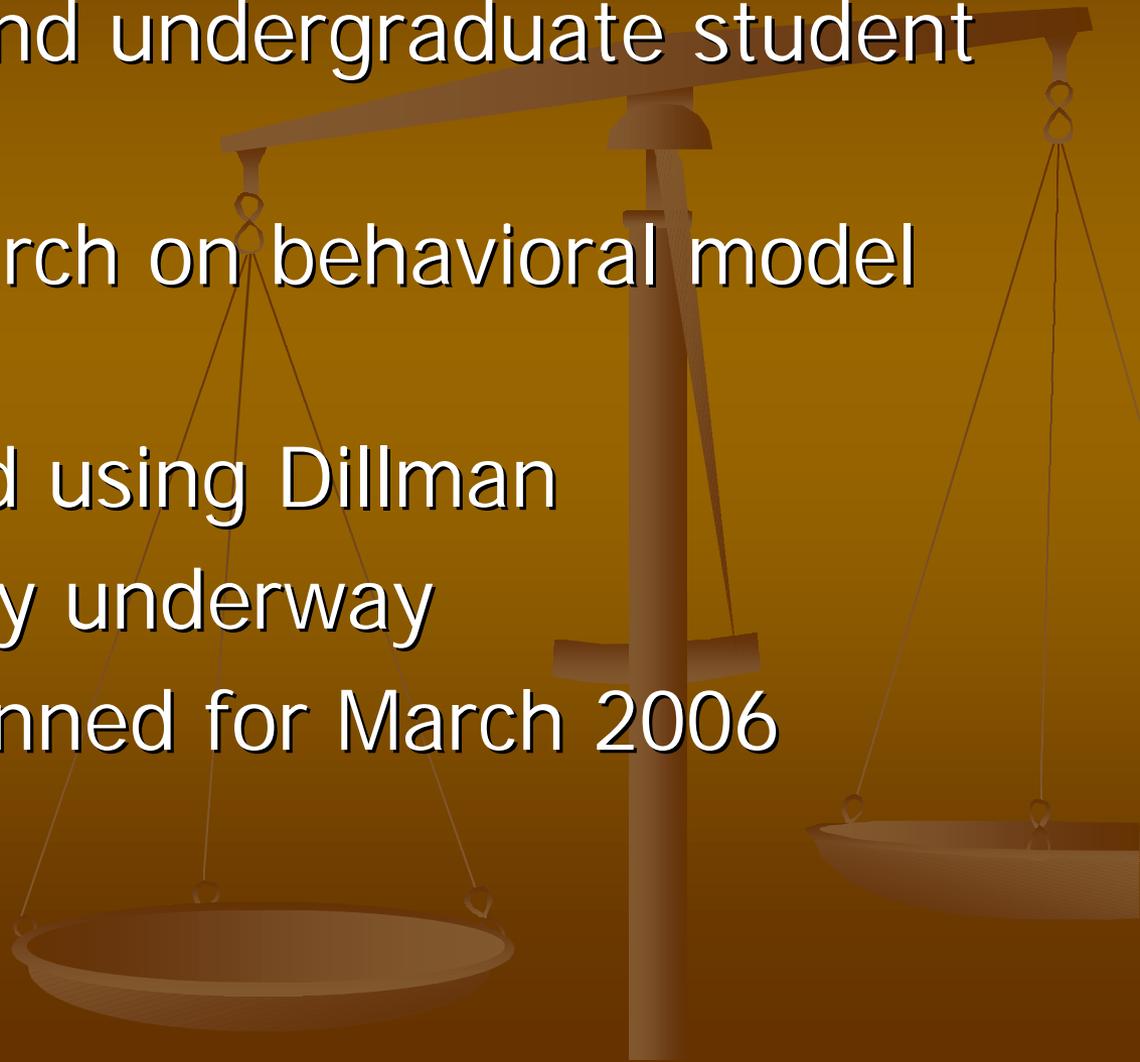


## ■ Educational/Extension Objectives

- Train a new researcher
- Expose an undergraduate to research
- Disseminate findings to extension personnel, CNMP writers
- Use results in planning field days
- Prepare publications and presentations for various audiences

# Progress

- Ph.D. student and undergraduate student hired
- Additional research on behavioral model completed
- Survey designed using Dillman
- Pretest of survey underway
- Final survey planned for March 2006



- This project is partially funded by a USDA-CSREES Integrated Research, Extension and Education 406 Project

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