Understanding Why Farmers Choose to Adopt Best Management Practices

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Indiana Watersheds Webinar Series
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norms
money
TRUST
fear of regulation
age
information
values
attitudes
risk perceptions
social networks

Natural Resource Social Science Lab at Purdue

- Surveys
- Interviews
- Literature reviews
- Focus groups
- Facilitated meetings

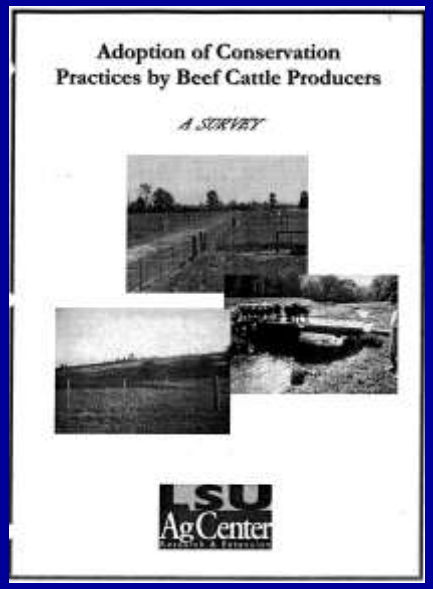
ACS Ag Conservation Solutions, LLC

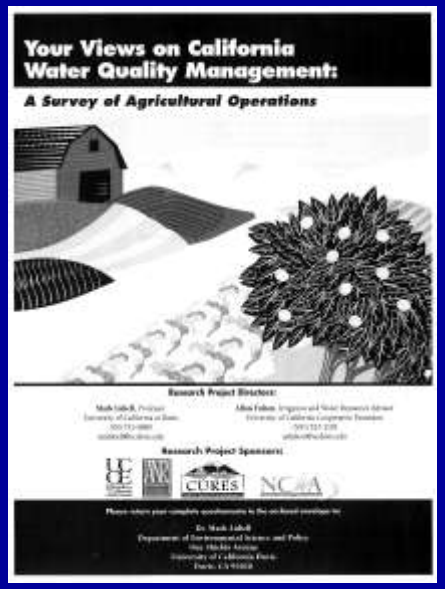
"Blending Ag Profitability While Enhancing the Environment"

Ag Conservation Solutions

- ACS -Focus on soil health, continuous no-till, cover crops, nutrient management – since 2005
- NRCS for 26 years – last 10 years at Conservation Technology Information Center
  - NRCS State Agronomist, Illinois
  - DC is 2 counties (12 years), mapped soils (2 years)
- Operated retail fertilizer outlet (1 year)

1982-2007: 55 U.S. Studies looked at BMP adoption





Meta-analysis results published in Prokopy et al., 2008, *Journal of Soil and Water Conservation* and Baumgart-Getz, Prokopy, Floress, 2012, *Journal of Environmental Management*.

1982-2007: 55 U.S. Studies

- Overall Finding:
  - Very few generalizable trends

- However →

age

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Farm size

Smaller Farms:

- Not as aware of information sources: SWCD, NRCS, watershed group, Extension
- Less aware of pollutants and practices
- Have more positive attitudes towards improving water quality
- More willing to try new practices

Perry-Hill and Prokopy, In Press, *Journal of Soil and Water Conservation*

Small Farms:

- May not have needed specialized equipment – i.e. no-till planter
- May work off farm and not able to attend educational events –lower management
- Many time unsuccessful
- May lack awareness – too many horses in a confined area

1982-2007: 55 U.S. Studies

- Overall Finding:
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- However →

Environmental attitudes

Attitudes

Three types of farmers:

- motivated by farm as business
- motivated by stewardship concerns
- motivated by off-farm environmental benefits

Reimer, Thompson, Prokopy, 2012, *Agriculture and Human Values*

1982-2007: 55 U.S. Studies

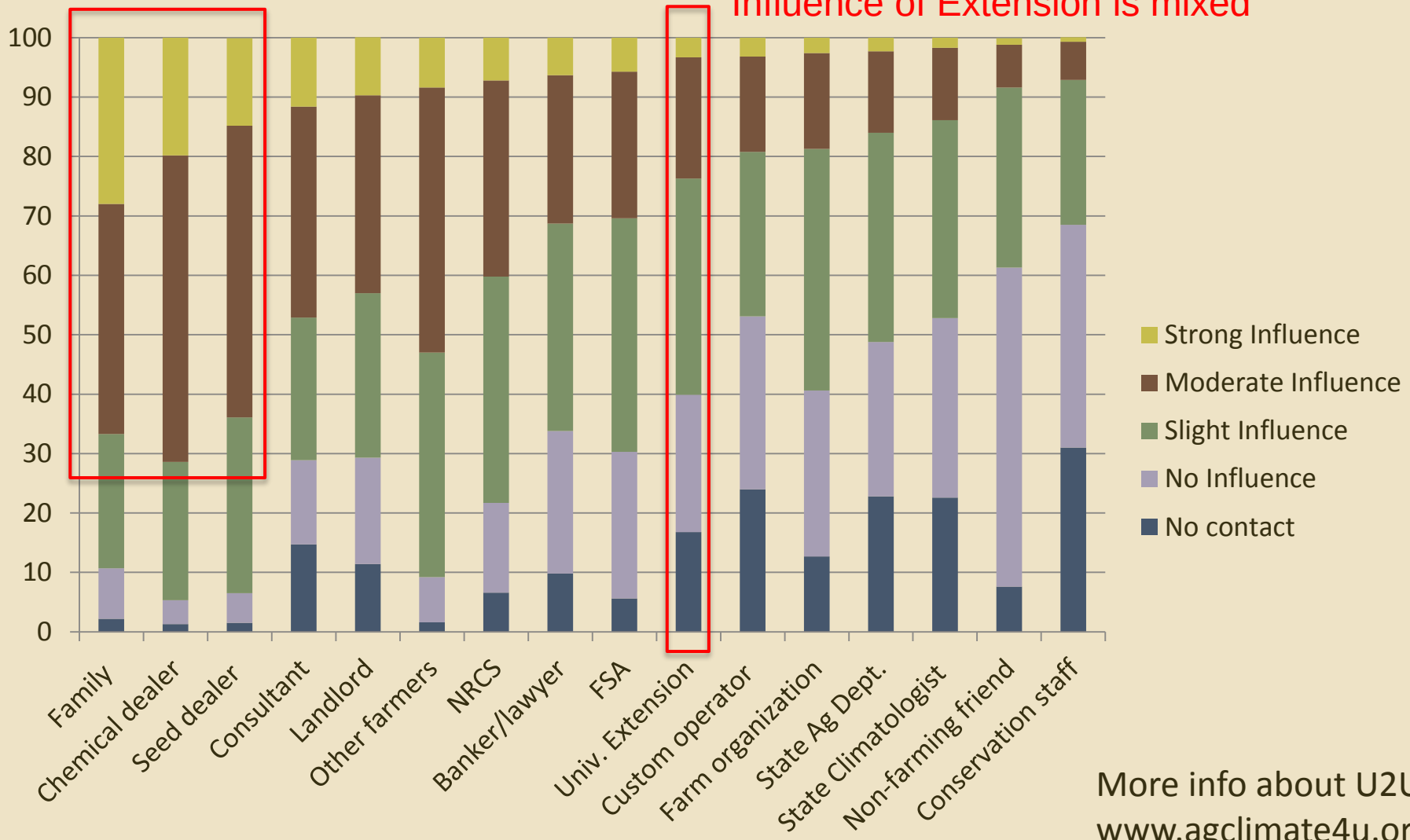
- Overall Finding:
  - Very few generalizable trends

- However →

Please indicate how influential the following groups and individuals are when you make decisions about <u>agricultural practices and strategies</u>. (survey of ~5000 farmers in Midwest)

Family, chemical dealers, and seed dealers are most influential

Influence of Extension is mixed



More info about U2U:
www.agclimate4u.org

Traditional Approach

- Reducing soil losses to “T”
- Follow the label for pesticide management
- Follow university recommendations for nutrient management
- Probably will not achieve water quality goals

Practice Differences

- Mechanical practices – involve moving dirt and should last for years (with proper maintenance)
- Cultural practices – tied more directly to crop production, yields, and profits, ie no-till corn

Practice Differences

- Mechanical practices – grass waterway, grade stabilization structure, pond, dry dam, 2-stage ditch, fencing, etc
- Cultural practices – crop rotation, tillage system, nutrient management, pest management, cover crops, filter strip, etc

Change is Complicated

- Risk vs Reward - Actual vs perceived
  - No-till corn may be shorter
- USDA programs (deficiency payments, crop insurance) rewards for high yields
  - Makes some producers risk adverse – don't change anything which may decrease yield
- Owned vs Rented land
  - Competition for new ground to farm is intense
  - Not tilling the ground is a sign of a lazy farmer to some (NOT)

Look for **WIN –WIN** Opportunities

- No-till corn (done correctly) - same or better yield and saves time, which means one can farm more acres or spend more time with family.
- No-till corn (done incorrectly) – reduced yield which decreases profits and results in going back to tillage

Current Approach – Improving Soil Health

- Making the soil better – more RESISILENT
- Systems approach
- Increasing organic matter which means there cannot be soil erosion
- Minimal soil disturbance – continuous no-till
- Have something growing every day possible – strategic cover crops
- Precision farming – guidance system, variable rate nutrients, yield monitor → **Adaptive management**

Cover Crop Options

Practice Characteristics also Important

Focus on:

- Raising awareness of on-farm and financial benefits
- Environmental benefits
- Compatibility with current farm practices

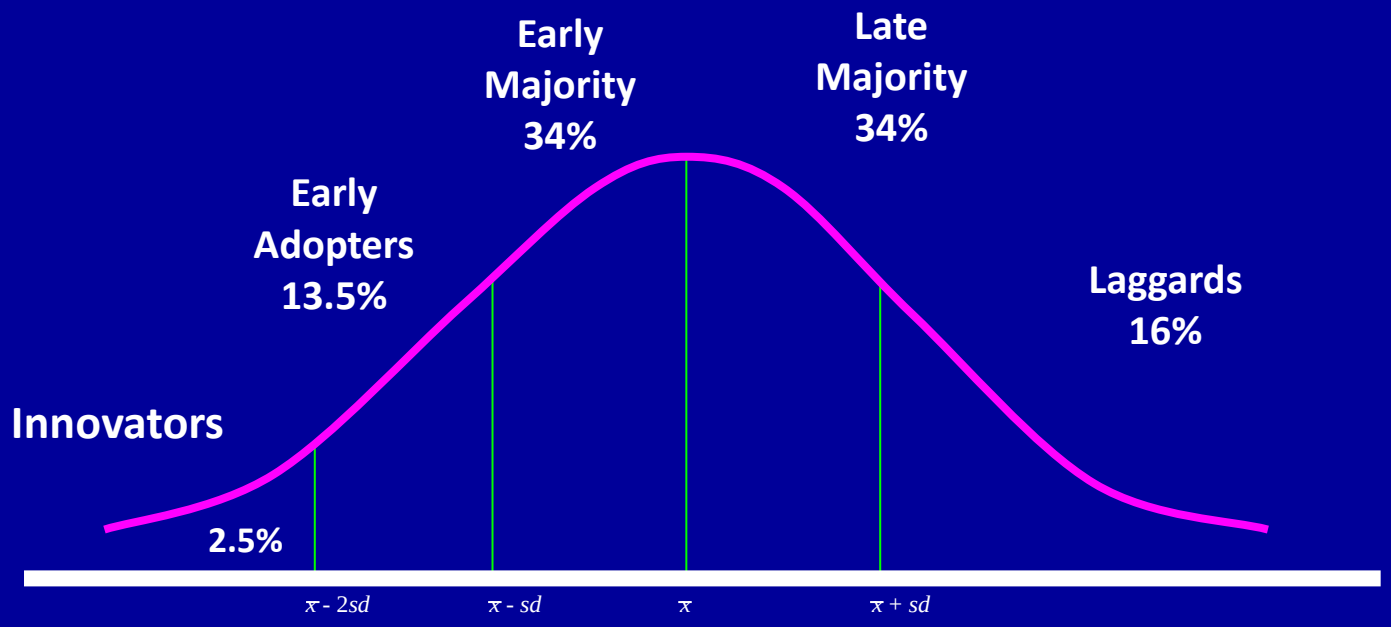
Reimer, Weinkauf, Prokopy, 2012, *Journal of Rural Studies*

Case of Two Stage Ditches

- Surveyors have no mandate and often wait for landowners to call them
- Establish protocol between surveyor, NRCS and SWCD in watershed
- Address issues of performance and cost-benefit and “dirt”
  - Field tours that cover range of ditches

Interview data from St. Joseph’s watershed, Indiana

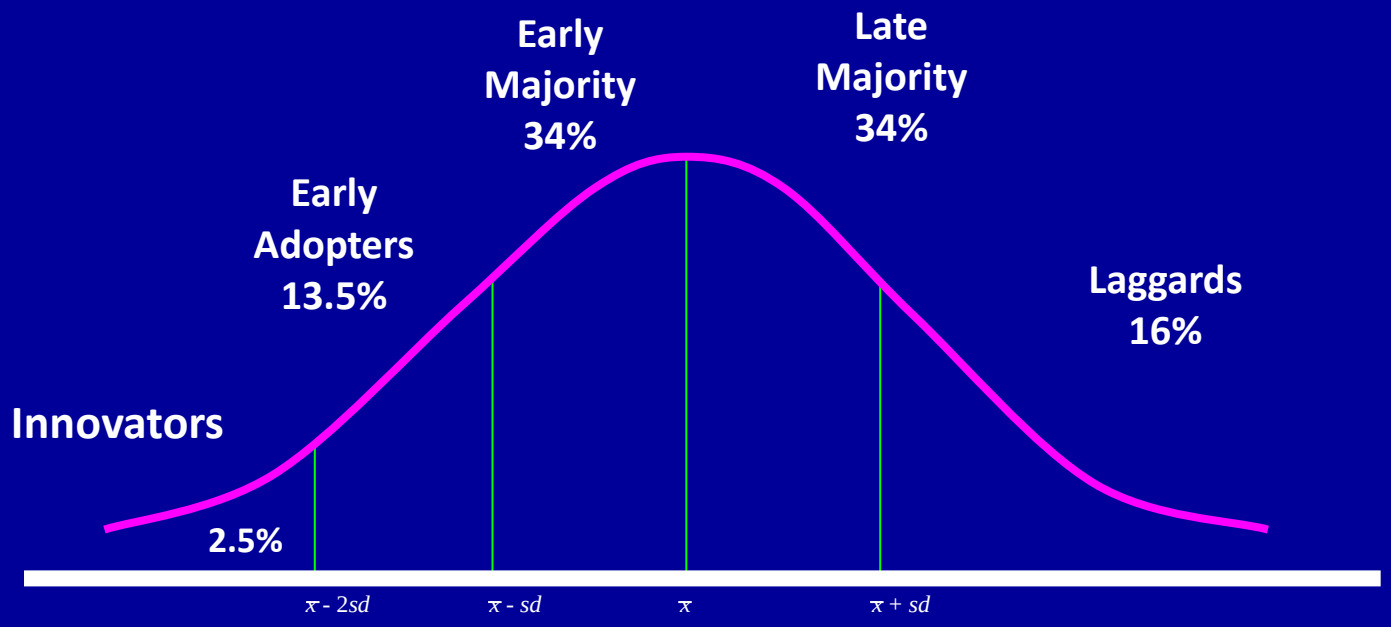
Diffusion of Innovations (Rogers)



Innovators:

- Need to be respected in community for this to lead to more adoption.

Diffusion of Innovations (Rogers)



Change in a Watershed

- Farmer to farmer has highest credibility
  - Find well respected farmer innovators who will help lead the effort
  - But also needs support from agribusiness (local co-op, crop consultant, seed dealer and equipment dealer)
  - Needs one person with good people skills and technical skills to “PULL IT ALL TOGETHER”

Group Dynamics

- Small groups of farmers/consultants working together with a good facilitator to identify common production/conservation issues (plots) and discuss problems/ answers can be very powerful.
  - Indiana OnFarm Network
  - Indiana Conservation Cropping System Initiative CIG

What motivates maintenance?

- Local networks – being connected to community groups
  - Social norm towards BMP maintenance?
- Sense of ownership is important
  - Hesitancy to participate in government programs leads to longer term maintenance

Adam Baumgart-Getz, Ph.D. Dissertation, 2010

Where Programs Succeed

- Focus on watersheds with sufficient capacity:
  - Paid watershed staff
  - Active conservation groups
  - Inter-agency trust and collaboration
  - Problem salience and awareness
  - “Basic” BMPs already adopted
  - Some farmers are conservation leaders

Source: facilitated discussion with government program administrators, university researchers, and professional resource managers

Where Programs Fail

- Focus on the individual farmer, not communities
  - Lack of consistent farmer network engagement
- Don't think about maintenance
- Don't consider constraints such as drainage boards
- No landscape-scale planning, geographic targeting
    - Despite interest from farmers!*

*Margaret Kalcic, 2013, Ph.D. Dissertation

Take Away Messages

- Some watersheds have more capacity.
- Need to think about adoption from perspective of *farmer* and *practice.*
- Having the “right” innovators is critical.
- Networks are extremely important!
  - Facilitated by person with needed people skills and technical skills.

Take Away Messages

- Must focus beyond initial adoption and think about who will maintain practices.
- Adaptive management needed due to changes in technology, weather, etc.
- Incentives have mixed results.
- First come, first served approach not always best.