Understanding Why Farmers Choose to Adopt Best Management Practices

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norms  money  fear of regulation

TRUST  information  values

age  attitudes  risk perceptions

social networks
Natural Resource Social Science Lab at Purdue

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

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- Overall Finding:
  - Very few generalizable trends

- However → age
1982-2007: 55 U.S. Studies

Overall Finding:
- Very few generalizable trends

However →
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

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
Overall Finding:
- Very few generalizable trends

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 agricultural practices and strategies. (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

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
Innovators:
- Need to be respected in community for this to lead to more adoption.
Diffusion of Innovations (Rogers)

<table>
<thead>
<tr>
<th>Innovators</th>
<th>Early Adopters</th>
<th>Early Majority</th>
<th>Late Majority</th>
<th>Laggards</th>
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</thead>
<tbody>
<tr>
<td>2.5%</td>
<td>13.5%</td>
<td>34%</td>
<td>34%</td>
<td>16%</td>
</tr>
</tbody>
</table>

- Knowledge
- Persuasion
- Decision
- Implementation
- Confirmation
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.