Useful to Usable: Lessons Learned about Selling Conservation

Linda Prokopy
U2U Project Director
Associate Professor, Purdue University
About U2U

Transforming Climate Variability and Change Information for Cereal Crop Producers

Our Vision

- Transform existing climate information into usable knowledge for agricultural decision making
- Give farmers the resources and training to more effectively manage variable climate conditions
- Increase Extension capacity to address agro-climate issues

More resilient and profitable farms in a variable and changing climate
U2U Team

climatologists, crop modelers, agronomists, IT specialists, economists, sociologists, Extension, and more
Project Objectives

Models and Data

Stakeholder Input
Project Objectives

Models and Data

Decision Support Tools

Stakeholder Input

Pilot test tools, methods, and outreach

Disseminate across 12 state region
- There is no shortage of data/models!

- Past research and experience shows existing products are underutilized, not meeting farmers’/advisors’ needs

- Guiding principle: work with stakeholders to ensure we are developing usable information that actually gets used!
Today’s Webinar

• Review research on farmer adoption of behavior

• How U2U is using social science research to improve decision support tool design, uptake and evaluation
Natural Resource Social Science Lab at Purdue

- Surveys
- Interviews
- Literature reviews
- Focus groups
Surveys

- Quantitative, statistically analyzable data
- Usually random sample of population
- Careful design of questions and pre-testing
- Various modes of delivery
Interviews and Focus Groups

- Qualitative, help answer *why* questions
- Usually purposive sample – not generalizable
- Careful design of questions and pre-testing
- Goal = saturation
- Coding of data – usually grounded theory
1982-2007: 55 U.S. Studies looked at BMP adoption

1982-2007: 55 U.S. Studies

- Overall Finding:
  - Very few generalizable trends
1982-2007: 55 U.S. Studies

• Overall Finding:
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• However ➔ Age
1982-2007: 55 U.S. Studies

• Overall Finding:
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• However → Farm size
1982-2007: 55 U.S. Studies

- Overall Finding:
  - Very few generalizable trends

- However ➔ Environmental 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 →
Practice Characteristics also Important

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

Q&A Break

For more information, download this publication at:

tinyurl.com/prokopy
Theory of Planned Behavior / Reasoned Action Approach

Attitudes Toward Behavior

Social Norms

Perceived Behavioral Control

Behavioral Intent

Behavior / Action

Fishbein and Ajzen, 2010
Intention to use climate information

Social norms
Social norms

- Subjective norms: what do others think I should do?
- Who's in the farmer's network? Who does the farmer trust?

Intention to use climate information
Intention to use climate information

Social norms

Descriptive norms: what are others doing?

Subjective norms: what do others think I should do?

“I base a lot of what I do on relatives because they are big operators and they like to talk.”

Who’s in the farmer’s network? Who does the farmer trust?

Intention to use climate information
Intention to use climate information

Social norms

Attitudes towards the behavior

Intention to use climate information
Intention to use climate information

Social norms

Attitudes towards the behavior

Do I think climate information will help me?

Do I perceive a relative (dis)advantage over existing practices?

Do I trust climate information?

Is this compatible with my other practices?

Is it easy to use?

Intention to use climate information
Intention to use climate information

- Attitudes towards the behavior
- Social norms
- Perceived behavioral control
Intention to use climate information

Social norms

Attitudes towards the behavior

Perceived behavioral control

Intention to use climate information

Do I need to work with a landlord or renter to get this done?

Is it available when I need to make decisions?

Will I have ongoing support to keep using this information?
Intention to use climate information

Social norms

Perceived behavioral control

Attitudes towards the behavior

Intention to use climate information

Use climate information

Actual behavioral control

Background Factors:
- Demographics
- Networks
- Risk aversion
- Belief system
- Characteristics of farm operation
- Awareness of practice
- Policies
Intention to use climate information

Social norms

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Background Factors:
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Noise!
Farmers rarely make one decision at a time
Comprehensive Literature Review

- Weather and climate products must be
  - Useful, relevant, context-specific, action-oriented
- Usability and packaging matters
- Collaborative development with end-users is critical
  - Encourages buy-in, trust, sustained product use
- Further explore the role of ag advisors

U2U Region and Survey Coverage

Crop data from National Agricultural Statistics Service (NASS)
U.S. 2007 Census of Agriculture
Major corn areas are counties that harvested over 60,000 acres of corn
Minor corn areas are counties that harvested over 5,000 acres of corn

Major Corn Growing Area
Minor Corn Growing Area
Producer Survey
Advisor Survey
Advisor Survey

- 2,530 advisors in 4 states (Extension in all 12 states)
- CCAs, Extension, bankers, agro-business, state/federal, etc.
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Producer Survey
- CS-CAP partnership
- 4,778 farmers in 22 watersheds
- 60% of US corn production
Climate Needs Assessment Surveys

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Questions:
• Use of weather/climate information
• Risk management strategies
• Climate change concerns and beliefs
• Influential information sources
Climate Needs Assessment Surveys

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Attitudes: Do Farmers and Advisors Worry About Climate?
Ag community is concerned about climate-related impacts

Showing % concerned or very concerned

- Longer droughts: Producers 60%, Advisors 70%
- Increased soil erosion: Producers 50%, Advisors 60%
- Increased weeds: Producers 50%, Advisors 60%
- Increased heat stress: Producers 40%, Advisors 50%
- Increased nutrient loss: Producers 40%, Advisors 50%
- More frequent extreme rains: Producers 30%, Advisors 40%
- Increased insects: Producers 50%, Advisors 60%
- More crop disease: Producers 40%, Advisors 50%
- More saturated soils: Producers 30%, Advisors 40%
- Increased flooding: Producers 20%, Advisors 30%
Historical and future climate info is underutilized

Showing % who reported a “moderate” or “strong” influence on decisions/advice

Mixed use of decision support resources

Showing % who reported using any of the following weather-related decision support resources

Advisors do see value in climate info for ag

“I would like to provide advice based on climate forecasts” (n=1696)
  • Disagree/Strongly Disagree = 23%
  • Uncertain = 45%
  • Agree/Strongly Agree = 32%

“Ag producers are interested in using weather and climate information” (n=1743)
  • Disagree/Strongly Disagree = 2%
  • Uncertain = 19%
  • Agree/Strongly Agree = 79%
Advisors do see value in climate info for ag

Weather forecasts are not useful to corn producers
Historical weather trends are not useful to corn producers
Plan fuel purchases
Better plan input purchases
Improve marketing strategies
Improve irrigation planning
Allocate field assignments and crop rotations
Select or modify insurance products
Increase profitability
Plan harvest
Plan tillage timing/strategy
Tailor hybrid selection
Reduce risk of economic losses
Plan planting

Q. Corn producers can use historical weather and/or trend forecasts to...
(Please check all that apply)

Farmers are still uncertain about the value of climate info

“I am willing to use seasonal climate forecasts to help me make decisions about agricultural practices” (n=4,559)

- Disagree/Strongly Disagree = 20%
- Uncertain = 44%
- Agree/Strongly Agree = 36%
Climate change beliefs are diverse, and they matter!

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Climate change beliefs significantly influence perceived climate risks, willingness to use climate info, risk management, adaptation beliefs and trusted info sources.

*Arbuckle, Prokopy et al. 2012, Climatic Change; Prokopy et al., In press, Bulletin of the American Meteorological Society*
Perceived Behavioral Control
When can climate information influence a decision making process?

- Survey data revealed when different decisions made across the region.
- These can be “entry points” for climate information.
- Some decisions made in advance (e.g. seed purchase); some more tactical (e.g. cover crops)
Social Norms
Q: Please indicate how influential the following groups and individuals are when you make decisions about agricultural practices and strategies.

Results from a 2012 survey of Midwestern corn producers conducted by Useful to Usable (U2U) and SustainableCorn.org.

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Who do non-Extension ag advisors trust for climate information?

Prokopy, Carlton, et al., in press, *Climatic Change*
• Surveys alone are not enough!
  – Context and meaning to quantitative results
  – Listen to their concerns and needs
  – Build trust with on-going “learning communities”

• Conducted 12 focus groups with farmers and advisors
  – Indiana, Nebraska
  – Results/feedback communicated directly to DST developers

• Interviews
  – 60+ advisors
  – 22 regional and state climatologists
Keep connecting with stakeholders!

- Need ongoing interaction during all phases
  - Resource intensive but worthwhile

- In-person training at known farmer and advisor events
  - Multi-year contact to build trust
  - 32 outreach events in the last year!

- Building a web and social media presence

- Systematic program evaluation
  - DST usability
  - Influence of products on knowledge and decisions
Summary

• High concern for climate impacts, but climate information is underutilized in ag

• Climate info has value for ag production
  – Useful, relevant, context-specific
  – Usability and packaging matters
  – Collaborative development with end-users is critical (trust!)

• Farmers are greatly influenced by advisors, and advisors trust scientists and Extension for climate information
  – Leverage this trust!
AgClimate View **DST**

This tool provides easy-to-use historical climate and crop yield data for the Corn Belt.

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Corn GDD **DST**

Track real-time GDD accumulations and learn about climate risks for corn development.

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Climate Patterns Viewer **DST**

Connect global climate conditions to local climate impacts.

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Corn Split N **DST**

Determine the feasibility and profitability of using in-season nitrogen application for corn production.