Midwestern Farmer
Nitrogen Management
151 interviews
May-September 2014
- Indiana, Iowa, Michigan
Commercial corn growers >100 acres
- Variety of application technologies, types
Contact sources:
- Extension
- Other organizations (SWCD, Practical Farmers of Iowa, MAEAP)
- Snowball sampling (farmer referral)
A note on representativeness

- Not representative of larger farm population

- Reflect range of:
  - Operation types
  - Technological sophistication
  - Biophysical conditions
  - Farmer personalities
Semi-structured interview guide

- Operation & fertilizer questions
- Sources of information about fertilizers
- External influences (policies, corporations, neighbors)
- Impacts on the environment & climate change
Mean operated (owned and leased) = 1,600 acres
- Iowa=1,236  Indiana=2,216  Michigan=1,529

Range = 170 – 9,000 acres

Mostly crop
- 17 w/livestock (hog, cattle, dairy)
- Corn-soy rotation
Fertilizer Behaviors
Fertilizer Use

USDA 2010 mean: 156.8 lbs/acre in Corn Belt
*Do not sum to 151; many farmers use multiple fertilizer types within the same operation/field*
Fertilizer Timing

- DAP, AMS
- All anhydrous
  IA=11  IN=3
- UAN=78
  Anhydrous=24
  Urea=3

Number of Farmers

- Fall (major) 14
- Fall (minor) 16
- Preplant 62
- At planting 77
- Popup 22
- Weed & Feed 25
- Sidedress 105

*Do not sum to 151; many farmers use multiple applications within their operations*
Fertilizer Timing

*USDA 2010 ARMS data
Common Applications

Number of Farmers

- Fall + SD: 8
- Pre + starter: 12
- Pre + starter + SD: 11
- Starter + SD: 36
- W&F + SD (w/ or w/o starter): 22
Q: Is determining how much N to apply each year a difficult decision?

Wide agreement on complexity and uncertainties in N mgmt

• Weather & time lags
• Prices
• Recommendations
• Risk
Two Paths of Decision Making

- **Simplification**
  - Reliance on heuristics (rules of thumb)
    “I’m well convinced from what I’ve read over the years, it’s going to take 1.1 pounds of nitrogen to make a bushel of corn.” –IA farmer
  - Reliance on past decisions
    “Well, it’s not a difficult decision. I think it becomes easier every year.” –MI farmer
Two Paths of Decision Making

Mgmt Intensification

- Reliance on data
  “I would say it’s not difficult because we have all that information available . . . when you’ve got a lot of data it kind of makes it easier; we’re not guessing.” - MI farmer

- Reliance on split application
  “I like spoon feeding it, getting at the three or four times on there.” - IN farmer
Decision Making Process

Yield Goal

Past performance
Soils
Rotation
Risk Preferences
Commodity Prices

Fertilizer Prices
Weather

Data

Past Experience

Recommendations from others

Yield Performance
Fertilizer Rate
Thank you

Questions & Feedback

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Sources of Uncertainty in N Mgmt

Weather

“You don’t know what the weather is going to be like during the growing season.” – IA farmer

“If we could predict the weather, we could do things a lot more efficiently. But we can’t predict growing conditions.” – MI farmer

Time Lags

“You never know until 9 months later what you should have done.” – IA farmer
Sources of Uncertainty in N Mgmt

Recommendations

“What the guy selling my anhydrous tells me, I give that all the weight it’s worth knowing that he’s trying to sell me something…” - IA farmer

“I feel very trustful of our local [fertilizer dealer’s] guy. A lot of people say ‘I’m not going to use my fertilizer guy’s agronomist’. Well, frankly we don’t feel that way” - IA farmer

“You can’t just rely on the numbers, you’ve got to use some educated guesses and think about the extra things that might play as factors.” - MI farmer
Sources of Uncertainty in N Mgmt

Prices

“[E]conomics. If corn is $8 (per bushel), you put a lot of N on. If corn is $4, you may not make the most money by putting the [same amount on].” -IA farmer

Risk

“I never want to be short on nitrogen, let’s put it that way. You don’t want nitrogen to be your limiting factor, you want something else to be your limiting factor. And I know that’s not a good answer, but it’s a truthful answer.” -IA farmer