How Minnesota Corn Producers Manage Fertilizer Nitrogen

Insights for Dealers

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Professor, Department of Soil, Water and Climate

UNIVERSITY OF MINNESOTA
Driven to Discover℠
Producer (decision-maker) Survey

Partnered with Minnesota Corn Growers Association

- Pre-survey trial (10 key individuals)
- Hardcopy survey mailed 8/15/2012
- Random 500 members (200+ Ac. corn)
- Reminder sent at 1 and 3 weeks
- 58% response rate
Producer Profile

Age: 54 years (22-88)
Acres (total): 1414 (200-5000)
96% soil test regularly
96% soil test regularly

Sampling system

- Random
- Geographical grid
- Soil types
- Yield maps
Soil Sample Collector

- Independent consultant, 36%
- Fertilizer dealer, 49%
- Producer/farm employee, 8%
- Other, 7%
Laboratory Used

- Private lab in MN: 50%
- Private lab outside MN: 25%
- Don't know: 10%
- University lab: 5%
- Other: 0%
Where Fertilizer Is Purchased

- Co-op
- Private dealer
- Wholesaler
- Other
RATES of Fertilizer Regularly Applied within a field

- Nitrogen:
  - One: 52%
  - Two: 32%
  - >Two: 16%

- P and K:
  - One: 52%
  - Two: 23%
  - >Two: 25%

- Micros:
  - One: 77%
  - Two: 14%
  - >Two: 10%
Purchase Decision Factors

- Location: Extremely important
- Price: Extremely important
- Service: Extremely important
- Product selection: Very important
- Equipment options: Important
- Loyalty to company: Not important
- Loyalty to individuals at dealer: Important
Producer Perspective of Dealer

Offensive Strategy

- Gain Customer Commitment
  - Trusted Advisor
    - Provider is integrated with relevant aspects of customer’s business
    - Provider is considered the first choice for opportunities or needs
  - Solutions Provider
    - Customer values developing collaborative provider relationship
    - Solution provider is part of customer’s business planning
    - Solution provider plays a major role in solution formulation
    - Customer has influence on provider’s strategies and operations
- Meet Customer Needs
- Anticipate Customer Needs

Defensive Strategy

- Exceed Customer Expectations
- Meet Customer Requirements

Satisfaction

- Determine Customer Requirements and Expectations
- Identify Customer by Organization • by Key Contacts

- Value-Added Supplier
  - Customer values unique solutions beyond provider’s core offerings
- Product Vendor
  - Customer makes decisions primarily on cost, schedule, performance
  - No commitment to ongoing relationship
  - ROI is low, risks are great

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Producer Perspective of Dealer

Product and services quality

Customer care

Customer satisfaction

Loyalty

Growth

Competitive differentiation
34% hire a crop consultant
## Influencers on Fertilizer N Rate and Management Decisions

<table>
<thead>
<tr>
<th>Influence</th>
<th>None</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse</td>
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<tr>
<td>Business partner (not family)</td>
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<tr>
<td>Friends/neighbors</td>
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<tr>
<td>Lender/banker</td>
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<tr>
<td>Agency personnel</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other family</td>
<td></td>
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<tr>
<td>Seed/chemical</td>
<td></td>
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<tr>
<td>U of M Extension</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fertilizer dealer</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Crop consultant*</td>
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</tbody>
</table>

*Crop consultant* is considered the most influential influence on fertilizer N rate and management decisions.
Role of Dealers/Consultants
Wolf, J. Soil Water Cons.

“...information and technology transfer in agriculture is largely a privatized process.”
Role of Dealers/Consultants
Constant and Young, Iowa State Univ.

“Fertilizer and pesticide dealers (and crop consultants) have consistent access to farmers and consequently exercise a greater influence on cropping systems.”
“Farmers rely on and value relationships with dealers over public entities (e.g. agency, Extension) as well as other farmers due to liability considerations associated with production failures—ag suppliers ‘stand behind’ their products and recommendations. This is viewed as an ‘insurance’ benefit.”
Role of Dealers/Consultants
Wolf, J. Soil Water Cons.

- Cooperative Extension serves:
  - Areas of “low (business) competition”
    - Role of validator
  - Regions with environmental vulnerability
  - To raise awareness of services
  - To train industry personnel
## N Fertilizer Rate Decisions

<table>
<thead>
<tr>
<th>Factors</th>
<th>% of producers replying “very” or “extremely important”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic optimum yield response</td>
<td>96%</td>
</tr>
<tr>
<td>Peace-of-mind optimum yield</td>
<td>92%</td>
</tr>
<tr>
<td>Minimizing pollution to environment</td>
<td>87%</td>
</tr>
<tr>
<td>Crop response to fertilizer</td>
<td>85%</td>
</tr>
<tr>
<td>Costs of fertilizer products</td>
<td>77%</td>
</tr>
<tr>
<td>Water quality</td>
<td>74%</td>
</tr>
<tr>
<td>Threat of future regulators</td>
<td>49%</td>
</tr>
<tr>
<td>Dealers’ time/labor/equipment</td>
<td>47%</td>
</tr>
<tr>
<td>Public perception of fertilizer</td>
<td>25%</td>
</tr>
</tbody>
</table>
RISK Categories

AGRONOMIC

ENVIRONMENTAL

ECONOMIC

PSYCHOLOGICAL

LOGISTICAL
RISK Categories
(spring vs. fall timing)

AGRONOMIC
• Will yields be compromised with fall application?
• Will (enough) N be available to the plant?

ENVIRONMENTAL
• Will any N leach into subsurface waters or denitrify to atmosphere over the winter?

ECONOMIC
• Will N prices increase from fall to spring?
• Can I apply extra N to maintain high yields to compensate for potential losses?

PSYCHOLOGICAL
• Will I sleep better with work done in fall?
• Will I worry about my potential N losses all winter?

LOGISTICAL
• Do I have time in spring to apply fertilizer when I should be planting?
• Will my dealer have the right fertilizer in the spring?
## Comparing Risk Categories

<table>
<thead>
<tr>
<th>Risk</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agronomic</td>
<td>89%</td>
</tr>
<tr>
<td>Economic</td>
<td>87%</td>
</tr>
<tr>
<td>Environmental</td>
<td>81%</td>
</tr>
<tr>
<td>Psychological</td>
<td>55%</td>
</tr>
<tr>
<td>Logistical</td>
<td>47%</td>
</tr>
</tbody>
</table>

% of respondents replying “very” or “extremely important”
Dealer Survey

Partnered with Minnesota Crop Production Retailers

- Conducted after producer survey
- Hardcopy survey mailed 3/5/2013
- Surveyed ALL 284 member dealerships
- Reminder sent at 1 and 3 weeks
- 63% response rate
## Comparison of Risk Categories

<table>
<thead>
<tr>
<th>Risk</th>
<th>Producer</th>
<th>Dealer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agronomic</td>
<td>89%</td>
<td>93%</td>
</tr>
<tr>
<td>Economic</td>
<td>87%</td>
<td>79%</td>
</tr>
<tr>
<td>Environmental</td>
<td>81%</td>
<td>70%</td>
</tr>
<tr>
<td>Psychological</td>
<td>55%</td>
<td>52%</td>
</tr>
<tr>
<td>Logistical</td>
<td>47%</td>
<td>64%</td>
</tr>
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% of respondents replying “very” or “extremely important”
Comparison of Risk Categories

• Strong alignment between audiences
• Differences appear natural:
  – Economics heightened for producers
  – Logistics critical for dealers
  – Environment important for producers?
Comparison of Risk Categories

- Strong alignment between audiences
- Differences appear natural:
  - Economics heightened for producers
  - Logistics critical for dealers
  - Environment important for producers?

- LOOK DEEPER AT COMPARISONS
  - Surrogate risk questions
Profitable to fertilize for 90% than 110% yield

Today's corn hybrids are more N efficient

Bothered that city residents imply farmers over-apply N

Earth's climate is changing

N rate will be regulated in 5 years

U of M N recommendations are not too low

Farm finances do not limit N use

I'd manage N differently if I had more time, money

Insurance gives me peace-of-mind

I have a reputation as a steward of the environment

I'm concerned about N loss in excessive rains

I'm comfortable selling on futures
## Comparing Associated Risk Categories

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<tbody>
<tr>
<td>Agronomic</td>
<td>0.77</td>
</tr>
<tr>
<td>Economic</td>
<td>0.62</td>
</tr>
<tr>
<td>Environmental</td>
<td>1.04</td>
</tr>
<tr>
<td>Psychological</td>
<td>0.91</td>
</tr>
<tr>
<td>Logistical</td>
<td>0.27</td>
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## Comparing Associated Risk Categories

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<td>0.27</td>
</tr>
<tr>
<td>Environmental</td>
<td>1.04</td>
<td>1.02</td>
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<tr>
<td>Psychological</td>
<td>0.91</td>
<td>0.89</td>
</tr>
<tr>
<td>Logistical</td>
<td>0.27</td>
<td>0.60</td>
</tr>
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Comparison of Risk Categories

- Validated most results for previous risk comparisons
- Continued differences with *economic* and *logistical* risks
- Environmental risk assessment was NO different with surrogate questions
  - Is media message preceding education?
  - Environmental issues important for both
What Does This Mean?

• **Relationship** with customer is critical for business and other perspectives
• Realize and appreciate **risk differences** with customers
• Recognize **role of University** and how this can benefit dealer relationships with producers
University of Minnesota
Land-Grant Mission

To provide breakthrough research, extraordinary education, and dynamic public engagement as we strive to be a world leader in advancing solution-driven science in food, agriculture and natural resources to improve the human condition.
How to Fulfill Mission?

• Research
  – Listen to your research needs
  – Include dealers (and producers) in trials
How to Fulfill Mission?

• Education
  – Educate future workforce via degrees
  – Educate practitioners via Extension programs
  – Certification programs (PAT, CCA, etc.)
How to Fulfill Mission?

• Engagement
  – Listen and converse regularly
Thank you!

Questions?

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