Agenda

• On-Farm program
• Trial Setup
• Results
  • HeadsUp Seed Treatment
  • Terramax inocculant
  • Nitamin foliar nitrogen
  • soySCIENCE foliar fertilizer
  • Over The Top foliar fertilizer
  • Priaxor fungicide
• 2018 Trial Opportunities
Program Overview

- Farmers working with the On-Farm Network discover, validate and increase the use of inputs and practices that improve:
  - productivity
  - environmental stewardship
  - profitability

- Know what products and practices work best on your farm

- Create fact-based answers to today's farming challenges
To get involved or for more information, contact your regional agronomist:

Matt Hoffman
Northwest Iowa
mhoffman@iasoybeans.com
712-210-2100

Anthony Martin
Northeast Iowa
amartin@iasoybeans.com
515-334-1048

Brett McArtor
Southeast Iowa
bmcartor@iasoybeans.com
515-334-1037

Drew Clemmensen
Southwest Iowa
dclemmensen@iasoybeans.com
515-339-4262
On-Farm Network Advantage

• Farmers equipment - practices - fields

• GPS and yield monitor to collect spatial data

• Statistically valid cause and effect relationships between the factors measured
Trial Setup

- 4 reps, >600 ft strips
- 2 and 3 treatment trials typical
- Keep other factors consistent
- Aerial Imagery of trial fields
- Plot plans or prescriptions can be created for farmer guides
Trial Setup
Trial Setup
Trial Setup - Protocols

• Basic trial layout provided
• Application details clearly displayed
• All contact information listed at bottom
HeadsUp Seed Treatment

- Biological controls as seed treatments growing
- Plant protectant derived from quinoa extract reported to lessen the losses from sudden death syndrome (SDS), rhizoctonia root rot, damping off and white mold
- University trials modest positive results
HeadsUp Seed Treatment

• 12 locations

• Seed treated by a seed supplier with Acceleron® and Acceleron + Heads Up

• Asgrow AG2433
• Asgrow AG3231
HeadsUp Seed Treatment

- Yield Range 46-82 Bu/A
- -1.0 to +2.2 Bu/A response
- Dryer than average conditions encountered
- Low SDS, white mold, early season disease pressure in most fields
- Flat response across trials
- Positive responses not statistically significant
Terramax

• Azospirillum bacteria
• Nitrogen fixation vital for soybean production
• Research in South America has shown a significant yield advantage for co-inoculation in soybeans
• Test the theory that the Azospirillum would work synergistically with native rhizobium to stimulate nodulation and enhance yield
• Dry powder hopper-box or liquid in-furrow
Terramax

- 15 locations
Terramax

- No trials produced a statistical yield advantage
- Yield range 52-67 Bu/A
- -2.3 to +1.7 Bu/A response
- Loss of product to dust for the TerraMax applied as a dry hopper box material
- Visual differences and advantages within isolated areas of fields
- Worth a closer look
Enhanced N-Fixation in Soybeans
Koch Agronomic Services Nitamin

- Proprietary liquid nutrient formulation for soybeans
- Formulated for optimum leaf uptake
- Research from South America has shown a significant yield response to foliar feeding soybeans with low rates of nitrogen
- 1 gal/A @ R1-R3
Nitamin

- 9 locations
Nitamin

- Flat response
- Yield range 51-72 Bu/A
- -1.0 to +1.3 Bu/A response
- 1 high yielding field 10 bu/A
Nitamin

<table>
<thead>
<tr>
<th>Trial Type</th>
<th>Plant Nutrition - Nitrogen Form</th>
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<tbody>
<tr>
<td>Trial Detail</td>
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<tr>
<td>Crop Rotation</td>
<td>Soybeans following Corn</td>
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<td>Planting Date</td>
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<td>Seed</td>
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<td>Application Detail</td>
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**TREATMENT**
- ⬤ Nitamin
- ⬤ Untreated
AgXplore soySCIENCE

- Proprietary liquid nutrient formulation for soybeans
- Research in other states has indicated a foliar post-app can enhance soybean yield
- 2 qts/A @ R1-R3 vs untreated
AgExplore soySCIENCE

- 6 locations
AgExplore soySCIENCEn

- Slightly negative response
- Yield Range 37-73 Bu/A
- -2.6 to +0.2 Bu/A response
AGBIO-LOGIC Over The Top w/potash

- Proprietary liquid nutrient formulation for soybeans
- Humic acid + NPK + micros
- Research in other states indicated that foliar post-app can enhance soybean yield
- 1 qt/A @ V3-V5
AGBIO-LOGIC Over The Top w/potash

- 5 locations
AGBIO-LOGIC Over The Top w/potash

- Small yield differences
- Yield levels ranged from 52 to 68 Bu/A
- -1.0 to +2.0 Bu/A response
Priaxor fungicide

- 2 actives fluxapyroxad and pyraclostrobin
- Yield enhancement of Priaxor fungicide under Iowa soils and weather patterns
- 4 oz/A @ R1-R3 on soybeans
Priaxor fungicide-Soybeans

• 10 locations
Priaxor fungicide-Soybeans

• Yield range 44-68 Bu/A
• -0.9 to + 4.9 Bu/A response
• Dry midseason conditions across much of the state
• Higher responses were located in the northern half of the state
## Fungicide Profitability - Soybeans

<table>
<thead>
<tr>
<th>Treatment Costs</th>
<th>Soybean Price / Bushel</th>
<th>Bushel / Acre Gain</th>
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**2017 Mean**

*Top Trial*
Soybean Fungicide Yield Advantage
Response Range: -3.8-11.1 Bu/A

*Approach, Custodia, Domark, Headline, Headline AMP, Laredo, Proline, Priaxor, Quadris, Quilt, Stratego, Stratego YLD, Zolera FX

https://www.iasoybeans.com/programs/isa-research/get-informed/research-results/online-database/

## Fungicide Profitability on Soybeans

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Should I spray or not? Variety susceptibility, disease history in the field, weather, scouting…
Possible reasons for flat results
Disease Pressure?
Wheel Tracks?
Wheel Tracks?

**Do Wheel Tracks Affect Yield?**

Sprayer wheel traffic from first flower (growth stage R1) through harvest can damage soybean plants and reduce yield (Figure 3).

Our research suggests that an adequate soybean stand (more than 100,000 plants per acre) planted in late April though mid-May can compensate for wheel tracks made when a field is sprayed at R1. Yield loss can occur, however, when wheel tracks are made at R1 or later in thin soybean stands (less than 100,000 plants per acre) or late planted soybeans.

Regardless of stand, plants could not compensate for wheel tracks made at R3 (early pod development) or R5 (early seed development).

Soybean planted in narrow rows (15 inches or less) always had yield loss from wheel track damage, whereas soybean planted in wide rows (30 inches or less) had yield loss from wheel tracks in only half of all research trials. Although 30-inch rows should be wide enough to allow the sprayer’s wheels to pass between rows without damaging the standing crop, some damage does occur because it is difficult to keep the wheels from hitting some plants while operating at 10-15 MPH. The percentage of yield loss was the same regardless of row spacing (Table 1).

**Table 1. Estimated impact of boom width on grain yield loss per acre from wheel-track damage in soybean at Fairland, Columbia City, and Bufferville, Indiana.**

<table>
<thead>
<tr>
<th>Boom Width (feet)</th>
<th>30</th>
<th>60</th>
<th>90</th>
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<td>Yield Loss Per Acre (%)</td>
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Possible reasons for flat results
## 2018 Trial Opportunities

### ISA ON-FARM NETWORK®
#### 2018 REPlicated STRIP TRIAL INTEREST FORM

**CONTACT INFORMATION**

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Circle any of the trials you may be interested in conducting on your operation.

### 2018 Projects

| Plant Nutrition - Poly4 Polyhalite vs. Potash | Soybeans | Corn |
| Soil Health - Cover Crop Time of Termination | Soybeans | Corn |
| Soil Health - No-Till vs. Tillage | Soybeans | |
| Pest Management - Seed Treatment Nematode, TBO | Soybeans | Corn |
| Plant Nutrition - TerraMax Soybean Intoculant (Pre-treated seed provided) | Soybeans | |
| Plant Nutrition - Nitrogen Management In Cover Crops | Soybeans | |
| Crop Management - VRS Basix Study (100K, 130K & 160K Populations) | Soybeans | |
| Crop Management - Multi-genetic planting | Soybeans | |
| Biological - Valent MycoApply Endprime In-furrow | Soybeans | |
| Crop Management - Profit Plot - Population/Fungicide Interaction | Soybeans | |
| Pest Management - Layered Residual Herbicides | Soybeans | |
| Pest Management - Fungicide | Soybeans | |
| Plant Nutrition - Agridote BorPak | Soybeans | |
| Plant Nutrition - Post Humic Product, TBO | Soybeans | |
| Plant Nutrition - Multi-Rose Nitrogen | Soybeans | |
| PGR - Tryptophan by-product | Soybeans | |
| Cropping Systems - Soybean Harvest Loss, Draper vs. Conv. Header | Soybeans | |
| Other Interests: | |

### 2018 Fall Projects

| Soil Health - Tillage (No-Till, Strip-Till, Conventional, Vertical) | Soybeans | Corn |
| Soil Health - Yellow Mustard cover crop before Corn | Soybeans | |

To sign up for trials or for more information please visit IsaOnNet.com or contact your regional agronomist:

- Anthony Martin-Northeast Iowa, 319-461-0739, amartin@isouns.com
- Brad McArthur-Southeast Iowa, 315-454-2417, bmcarter@isouns.com
- Matt Hoffman-Northwest Iowa, 732-210-2450, mhoffman@isouns.com
- Drew Clemens-Southwest Iowa, 515-339-2462, dclemens@isouns.com
Poly4 Polyhalite vs Potash

• 14% K2O, 17% CaO, 6% MgO and 19% S
• Low chloride fertilizer with improved nutrient uptake.
• Poly4 provided for trial
• Targeting potassium deficient fields.
• Applied Spring 2018
• Corn or Soybeans
Nitrogen Management in Cover Crop before Corn

- Corn can be vulnerable to early season N deficiency
- Testing nitrogen form or timing
  - AMS vs 32%UAN
  - All N preplant vs Split application
- Targeting cover crop fields going to corn
Cover Crop Termination Timing

• Termination timing of cover crops can greatly effect the performance of the cash crop

• Compare cover crop terminated 2 weeks pre-plant, at planting, and after planting
Multi-Rate Nitrogen

- 5-Rate Nitrogen trials – Year 2
  - 80, 110, 140, 170, 200 lbs/A CS Rotation
  - 110, 140, 170, 200, 230 lbs/A CC Rotation

- Testing Precision Planting’s Smart Firmer

- Year 1 results are covered in:
  - Adaptive N Management – Anthony Martin
  - Corn Research Trials – Rich Stessman
Soybean Seeding Rate

• Plant replicated strips of:
  • 120, 140, 160K seeds/A

• Testing Precision Planting’s Smart Firmer

• Optimum seeding rate
• Potential for VRS
Tillage - Strip-till, No-till, Conventional till

• Compare yield and other agronomic benefits between different tillage practices
Nematicide Seed Treatment

- SCN found in 98% of fields in 2017
- SCN #1 soybean pest
- ~20 acres of treated seed provided for trials
TerraMax inoculant seed treatment

- Characterize the level of enhanced nodulation for new inoculant
- Seed will come pretreated with TerraMax inoculant
Valent MycoApply EndoPrime on Corn

• Contains humic acids and mycorrhizae to promote increased nutrient availability

• Help prevent drought stress with increased root growth

• Applied in-furrow with starter or water
AgXplore BorPak on Soybean

- Boron manages plant carbohydrate levels
- Essential during bloom and pod set
- Soybean foliar applied V3-V5 with post or R1-R3 with fungicide

http://www.atpnutrition.ca
Tryptophan concentrate

• Tryptophan acts as a natural growth stimulant similar to auxins

• This product is still in early development research

• Applied V5-V8
Post + Residual Herbicide

• Trouble managing late season weeds

• Post residual herbicide can prevent late season weed emergence

• Outlook herbicide provided for post residual application before V5
Other Trial Opportunities

- Row Spacing
- Multi-hybrid planting
- Nutrient form/timing
- Humic/Fulvic Acid + Fertilizer
- Draper vs conventional head
- Ag Technologies
- Others??
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Takeaways

• On-Farm trials invaluable before making a change
• Soybean inoculants didn’t pay but worth a second look
• Negligible soybean foliar responses
• Fungicide yield bump on soybeans
• 2018 On-Farm Trial opportunities
Thank you!
QUESTIONS?