2019 NUE Workshop

Will Bio-Stimulants Help Meet Crop N Needs?

Jim Schepers
Driving plant **VIGOR** from above ground

Foliar feeding micro-nutrients to corn inbreds @ V3

- Soil pH = 7.5 to >8.0
- Low organic matter
- Variable soil texture - (ancient ocean bed)

**Outcome** - up to 40% increase in seed yield

Foliar micro-nutrients to inbreds @ V3

- 5% increase in stalk diameter at V5-6
- Plants were 8” taller at detasseling
- More rows of kernels, but only slight yield increase
Conklin

“Amplify”

Compound - AMP (adenosine monophosphate)

AMP + soil P = ADP

Seed Treatment
• dry
• liquid

• Enhances germination (energy source)
• Faster and more uniform emergence
• Improves plant stand
AgriEnergy Resources

Potpourri of living organisms and other “goodies” to help plants grow

SP1
- Potato
- Vegetables
- Corn
- Soybean

Best response on cold and wet soils

Liquid applied in seed furrow at 1-3 gallon/A (cost is ~$5.00 per gallon)
Approach

“Harness Nature” via an entire system of management:

• Increase soil OM content and increase WHC
• Promotes paying farmers to sequester C
• Seed treatment - (bacteria and fungi that allow plants to withstand stressful environments)
• Grain marketing assistance
• Increase profitability
• Benefit is 10.1 bu/A for corn in 2018 or ~6% in general
Pivot Bio

First: “N – Producing Microbes”

In-furrow seed treatment (not 2 x 2 with starter)

Tested in 2017 on 5000 field trials at 100 locations

Do the microbes really fix N or rather enhance root exploration or more effectively increase nutrient availability?
Humic & Fulvic Acid

- Product of coal, Leonardite, peat, etc. extraction
- Materials have high CEC
- Quality is highly variable
- Promoted to compliment soil, chemical and biological processes

- Bio-catalyst
- Bio-stimulant
- Soil conditioner
- Many observed benefits
Summary

• Stimulants need to be placed in contact with the seed
• Intended to enhance early season growth
• Assumed to enhance better rooting because response is greatest under stressful situations
• Shortage of “replicated scientific data” because producers are skeptical of plot data and using field-scale equipment means strip trials involve considerable spatial variability