2015
Field Trial Results

AGROSPRAY RESEARCH FARM

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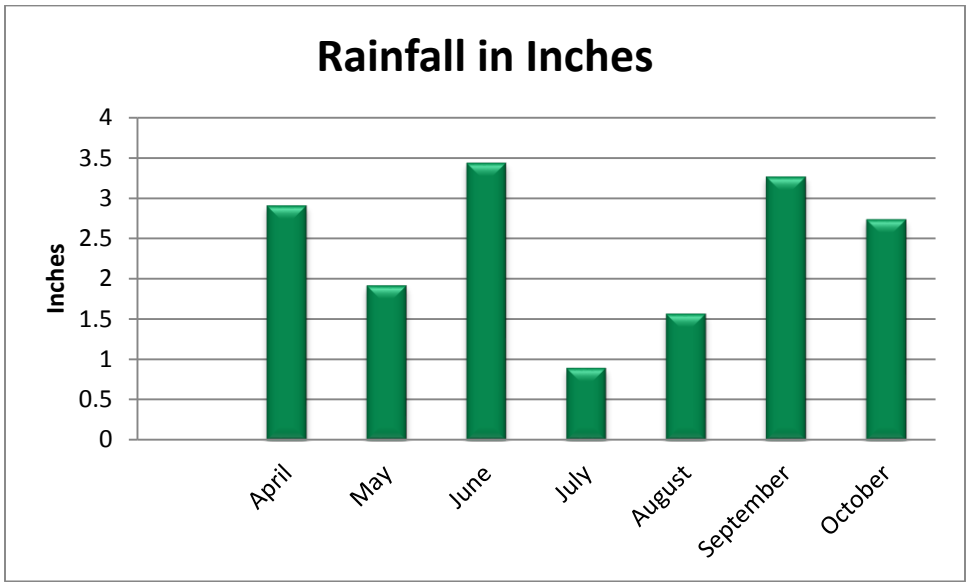
ARF 2015 Weather



Temperature (Fahrenheit)

Month	Mean Max	Mean Min	Mean	High (Date)	Low (Date)
April	54.7	33.8	43.8	72.5 (13th)	23.1 (5th)
May	74.4	47.8	61.3	88.4 (8th)	27.6 (23rd)
June	74.0	53.6	64.1	82.5 (15th)	40.7 (7th)
July	80.5	56.4	68.8	90.6 (29th)	44.8 (3rd)
August	77.3	56.5	66.7	88.2 (17th)	46.2 (28th)
September	76.6	52.9	64.2	90.0 (7th)	41.7 (14th)
October	58.6	39.5	49.1	72.1 (12th)	23.8 (19th)

For current conditions at ARF, please visit: http://www.weatherlink.com/user/agroresearchfarm/

2015 Executive Summary

The AgroSpray Research Farm (ARF), located in Oxford County, Ontario, has over 100 acres of field-sized research trials. Our research focuses on combining environmentally-responsible nutrient application and modern technology to maximize agricultural yields. As demonstrated in our climate summary, there was a frost on May 23rd, as the temperature dropped to 27.6˚F. There were below average rainfalls for the months of July and August; there was less than an inch of rain in July, and about an inch and a half in August. We ultimately experienced, however, an extended grain-fill period, as the first fall frost was experienced on October 19th.

Even with these adverse weather conditions, AgroLiquid products, retailed locally by AgroSpray Limited, appear to have a positive impact on yields. As highlighted throughout the report, there are some significant results. For example, ferti-Rain gives a consistent yield benefit in soybeans, as illustrated in our Foliar Micronutrients on Soybeans trial. This fertilizer has a balanced mix of N-P-K and micronutrients, thus allowing the plants to optimize yields.

Similarly, there were very strong results in our dry starter versus liquid starter comparison in corn trial. This trial builds on last year's research, but a single planter was retrofitted for the 2015 growing season in order to allow for the application of both dry and liquid fertilizers from the same planter, thus minimizing another variable in the research. Significantly, there was a 7.1 bu/ac yield increase with the application of a liquid fertilizer mix applied as per the soil test, as opposed to the highest-yielding dry fertilizer application.

Finally, an important and exciting new trial this year explored the variable rate liquid fertilizer application. In this trial, we used zone sampling to determine the soil fertility needs, and matched the fertilizer application rates to varying nutrient requirements across the field. In areas with low fertility, we applied more nutrients, and in areas with high fertility, we applied less nutrients. We mixed four different products on the go to create site-specific prescriptions. Specifically, we used Pro-Germinator, Sure-K, eNhance, and Zinc; AgroLiquid's fertilizer products allow for the creation of specialty mixes, and technological developments enable us to become ever more precise in our application practices. Such a variable application rate is environmentally-responsible and cost-effective, and in keeping with AgroLiquid's mission to prosper the farmer while safeguarding the environment.

AgroSpray's Area Sales Managers are eager to work with you to build on the knowledge presented in this report, and to help you develop custom fertilizer mixes to meet your specific soil needs.

Liquid Fertilizer Placement on Corn

EXPERIMENT INFO

Planted: 05/08/2015

Harvested: 10/30/2015

Hybrid: A7270G8

Population: 32,000/acre

Row Width: 30”

Prev. Crop: Soybeans

Plot Size: 12 rows x 675’

Replications: 3

Sidedress: 06/19/2015 (40 GPA 28% UAN + 1 L/ac eNhance)

SOIL DATA

pH: min: 6.0; max: 7.0

CEC: min: 4.8; max: 5.6

% OM: min: 1.4; max: 1.7

% P: min: 20; max: 22

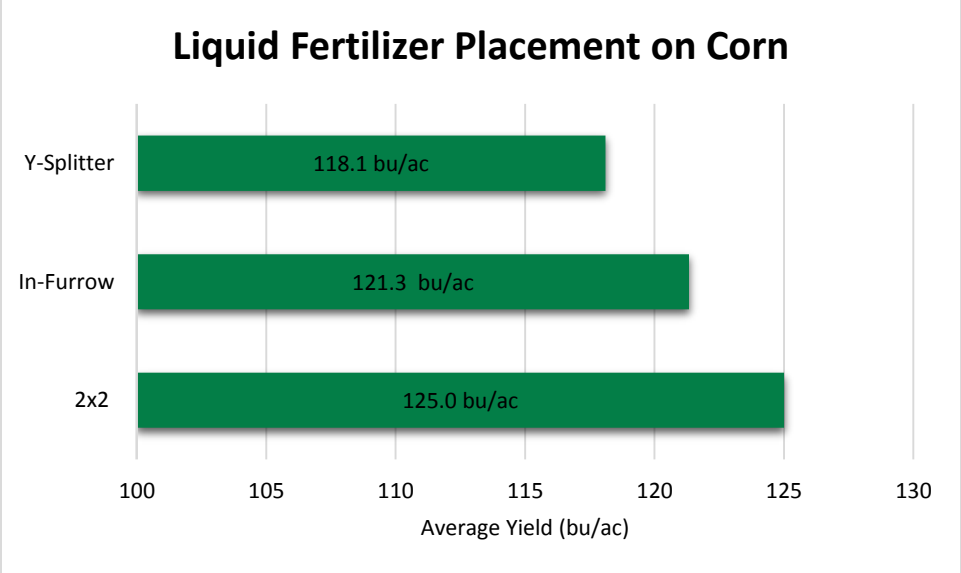
% K: min: 2.3; max: 3.1

% Mg: min: 10.4; max: 14.9

% Ca: min: 59.0; max: 68.5

Objective:
The key to environmentally responsible nutrient management is applying fertilizer from the right source, at the right rate, at the right time, at the right place. This trial aims to ensure that liquid starter fertilizers are applied at the right place.

Starter Fertilizer: 4 GPA Pro-Germ + 4 GPA Sure-K + 1 L/ac Premium Calcium + 1 L/ac eNhance + 2 L/ac Micro 500



Conclusions:
On May 23, fifteen days after planting, this location experienced a drop in temperature to 27.6˚F. The impact of the frost was exaggerated by the excessively dry conditions, making the resulting crop damage more severe. Any plant tissue present at the time of the frost was completely desiccated; however, the growing point survived.

This year, the strongest yield response came with the 2x2 liquid fertilizer placement.

This is the first year of the trial; it will be interesting to see how these treatments will fare in the 2016 growing conditions.

Dry Starter vs. Liquid Starter Comparison on Corn

EXPERIMENT INFO

Planted: 05/17/2015

Harvested: 10/30/2015

Hybrid: A6535G8

Population: 32,000/acre

Row Width: 30”

Prev. Crop: Soybeans

Plot Size: 12 rows x 870’

Replications: 3

Sidedress: 06/16/2015 (40 GPA 28% UAN + 1 L/ac eNhance)

SOIL DATA

pH: min: 5.9; max: 7.4

CEC: min: 4.0; max: 7.8

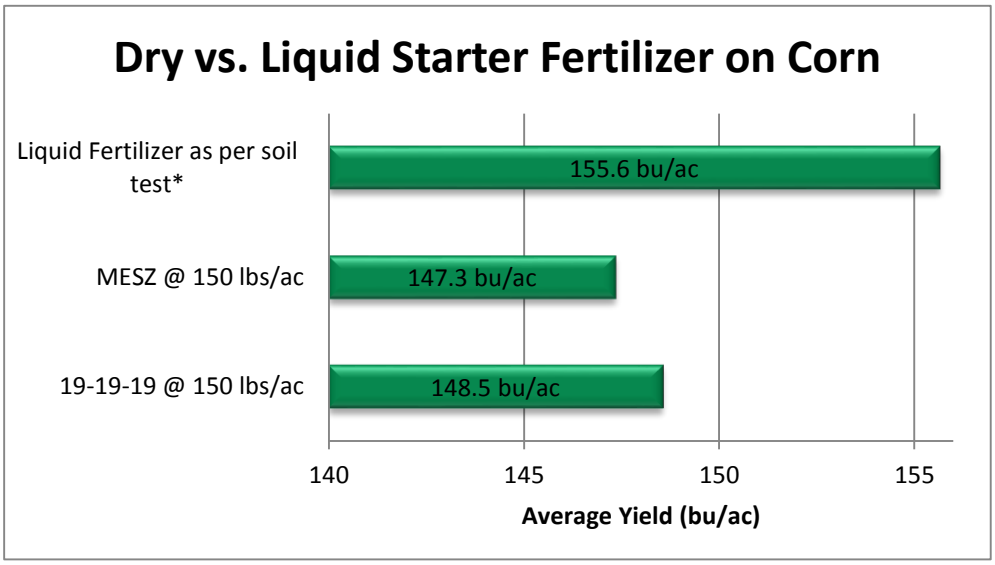
% OM: min: 1.4; max: 2.3

% P: min: 6; max: 18

% K: min: 3.1; max: 3.8

% Mg: min: 11.7; max: 18.6

% Ca: min: 52.8; max: 81.5



***Liquid Fertilizer as per soil test consisted of:**
3.5 GPA Pro-Germ + 4 GPA Sure-K + 1 L/ac Premium Calcium + 1 L/ac Micro 500 + 1 L/ac eNhance + 0.5 L/ac Boron.

Notes:
Both the liquid and dry fertilizer treatments were applied with the same planter.

The liquid fertilizer was applied in furrow. Following the typical practice, the dry fertilizer was applied 2x2.

Conclusions:
The strongest yield results came with the liquid fertilizer treatment. This treatment was designed as per the soil test recommendations.

The two dry fertilizer treatments were pulled from the dry fertilizer industry standards; 19-19-19 is the conventional choice, while MESZ (12-40-10-5S-1Zn) is a more recent choice.

The field in this trial is deficient in both Boron and Calcium. The liquid fertilizer treatment helped to address the crop needs; these nutrients are not included in the 19-19-19 or MESZ fertilizers.

This trial demonstrates the significance of matching fertilizer treatments with soil test requirements.

Variable Rate Liquid Fertilizer

EXPERIMENT INFO

Planted: 05/15/2015

Harvested: 10/30/2015

Hybrid: A6535G8

Population: 32,000/acre

Row Width: 30”

Prev. Crop: Soybeans

Plot Size: 40 acres (20 acres for each treatment)

Sidedress: 06/26/2015 (40 GPA 28% UAN + 1 L/ac eNhance)

SOIL DATA

pH: min: 5.4; max: 7.4

CEC: min: 4.5; max: 9.4

% OM: min: 0.8; max: 2.3

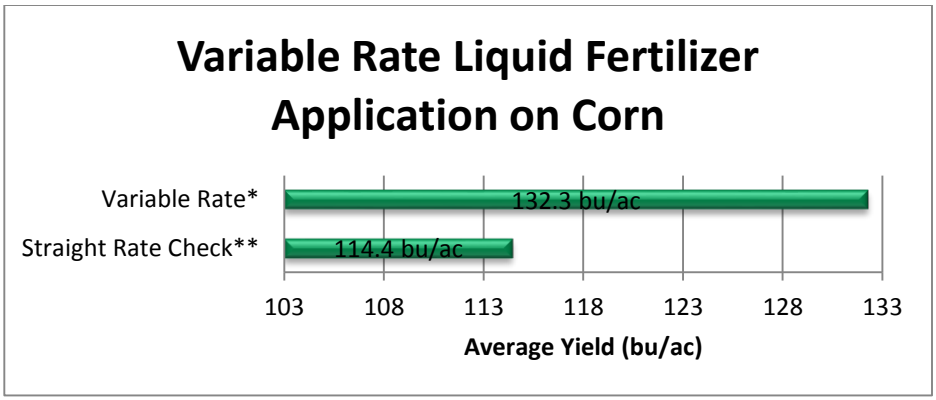
% P: min: 9; max: 26

% K: min: 1.6; max: 3.7

% Mg: min: 5.6; max: 19.5

% Ca: min: 24.6; max: 77.3

Objectives:
Here at ARF, our foremost concern is responsible nutrient management. Each application is made with the **“T.R.U.S.T”** (Test, Rate, Usability, Sustainable, & Timeliness) philosophy. AgroLiquid fertilizers are manufactured in such a way so as to allow the custom blending of individual products in virtually any combination to meet the specific needs of the crop. Variable rate liquid fertilizer application allows us to apply the right rate of fertilizer in the right place.



*** In the Variable Rate treatments, varying rates of the following products were applied as per the soil test zones:**
Pro-Germ + Sure-K + eNhance + Zinc

****Straight Rate Check as per the soil test consisted of:**
3 GPA Pro-Germ + 4 GPA Sure-K + 1 L/ac eNhance + 1 L/ac Zinc

Conclusions:

This is the first year of this trial. In the 2015 growing conditions, there was a significant yield response of 17.9 bu/ac to the variable rate liquid fertilizer applications. These application rates and nutrients were generated based on zone sampling.

Liquid Starter Fertilizer Comparison on Corn

EXPERIMENT INFO

Planted: 05/10/2015

Harvested: 10/30/2015

Hybrid: A6757G8

Population: 32,000/acre

Row Width: 30”

Prev. Crop: Soybeans

Plot Size: 12 rows x 2191’

Replications: 3

Sidedress: 06/16/2015 (40 GPA 28% UAN + 1 L/ac eNhance)

SOIL DATA

pH: min: 6.1; max: 7.8

CEC: min: 5.7; max: 14.3

% OM: min: 2.5; max: 4.4

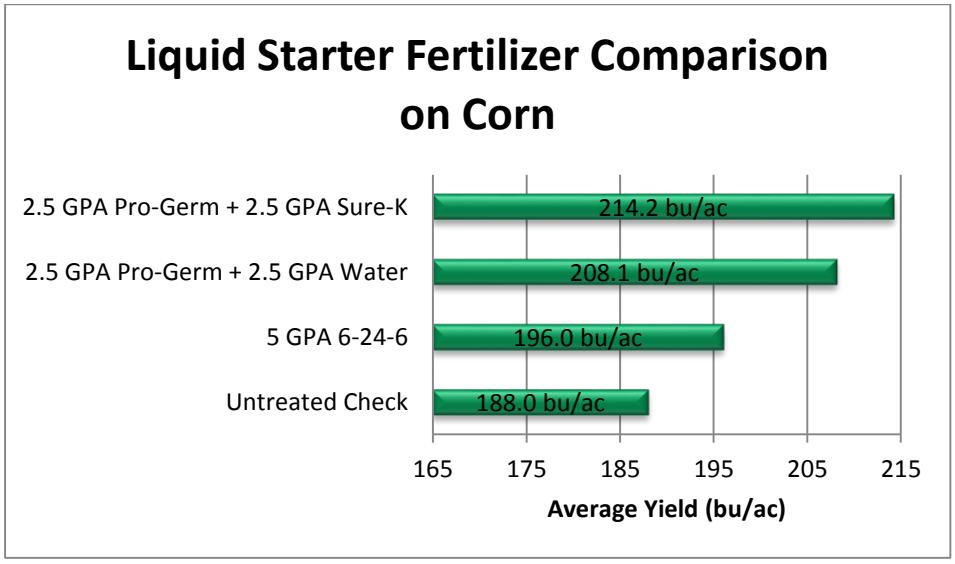
% P: min: 1; max: 4

% K: min: 1.2; max: 3.9

% Mg: min: 8.8; max: 16.1

% Ca: min: 45.1; max: 89.2

Objective:
Placing small to moderate amounts of plant nutrients in a band in close proximity to the seed at planting increases early-season growth and yield of grain crops (Bates, 1971; Walker et al., 1984; Reeves et al., 1986; Osborne 2005). Yield response to starter fertilizer has been observed even when soil test values are high (Touchton, 1988; Gordon and Whitney, 1995; Osborne 2005). Limited uptake of P early in the growing season can reduce yield because of the importance of adequate P nutrition in the development seeds (Tisdale et al. 1993; Osborne 2005). Starter fertilizer is known to increase corn yield, regardless of hybrid or planting date, by increasing early-season plant height and reducing grain moisture and days to silking (Mascagni and Boquet 1996; Osborne 2005).



Conclusions:
It has been well established that a corn crop with a starter fertilizer application of some blend has stronger results than a crop with no starter fertilizer.

The ability to mix products together in varying quantities to better match the needs of the soil can produce notable results, as illustrated by the yield of the Pro-Germ and Sure-K treatment. Overall, this plot location is low in both phosphorous and potassium; soil test data can ensure the best choice of fertilizer is applied.

Foliar Micronutrients on Soybeans

EXPERIMENT INFO

Planted: 06/03/2015

Harvested: 10/18/2015

Variety: PS1162R2

Population: 160,000/acre

Row Width: 10”

Prev. Crop: Corn

Plot Size: 36 rows x 1435’

Replications: 3

Foliar Application: 07/16/2015 (R2)

SOIL DATA

pH: min: 5.5; max: 7.3

CEC: min: 4.5; max: 11.7

% OM: min: 1.7; max: 4.9

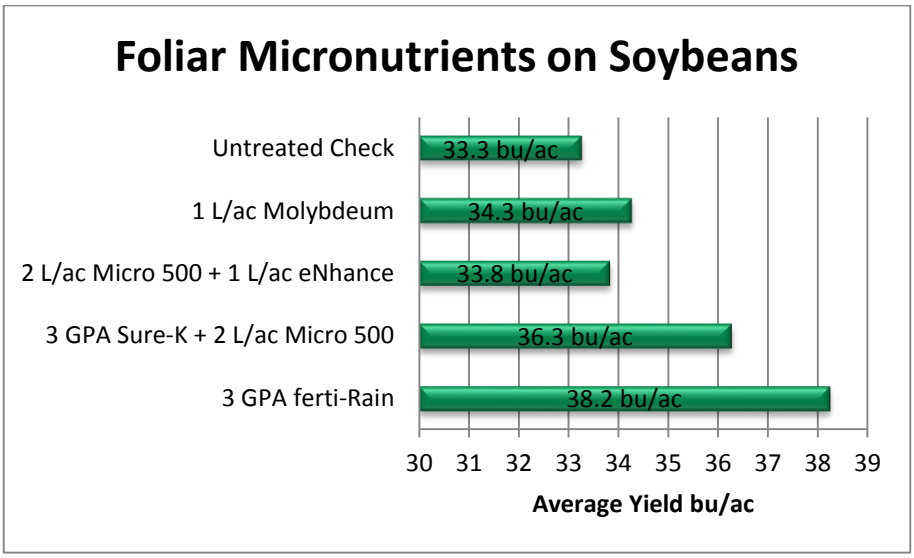
% P: min: 3; max: 10

% K: min: 2.9; max: 5.1

% Mg: min: 7.3; max: 18.1

% Ca: min: 34.1; max: 80.3

Objective:
Agricultural fields are often found deficient in one or more of the micronutrients – boron, copper, manganese, iron, zinc and molybdenum (A&L Agronomy Handbook 2001). In many cases, “deficiency of certain micronutrients is the factor responsible for ineffective utilization of the major and secondary nutrients supplied in fertilizer and liming programs” (A&L Agronomy Handbook 2001). The addition of micronutrients to a fertilizer program is becoming increasingly important, as increased yields means a higher removal of micronutrients from the soil (A&L Agronomy Handbook 2001).



Conclusions:

In this second year of the trial, the foliar application of ferti-Rain continues to consistently provide the strongest yield response. Increasing soybean yields necessitates greater micronutrient uptake; the composition of ferti-Rain addresses this need.

Notably, the growing conditions this season were much dryer than last year, suggesting that the benefits of ferti-Rain are notable across varying growing conditions.

In-Furrow Micronutrients on Soybeans

EXPERIMENT INFO

Planted: 06/05/2015

Harvested: 10/10/2015

Variety: PS2082NR2

Population: 160,000/acre

Row Width: 30”

Prev. Crop: Corn

Plot Size: 12 rows x 900’

Replications: 3

Foliar Application : R2 - 07/22/2015 (1 GPA ferti-Rain)

SOIL DATA

pH: min: 5.9; max: 7.6

CEC: min: 4.3; max: 11.7

% OM: min: 1.3; max: 2.7

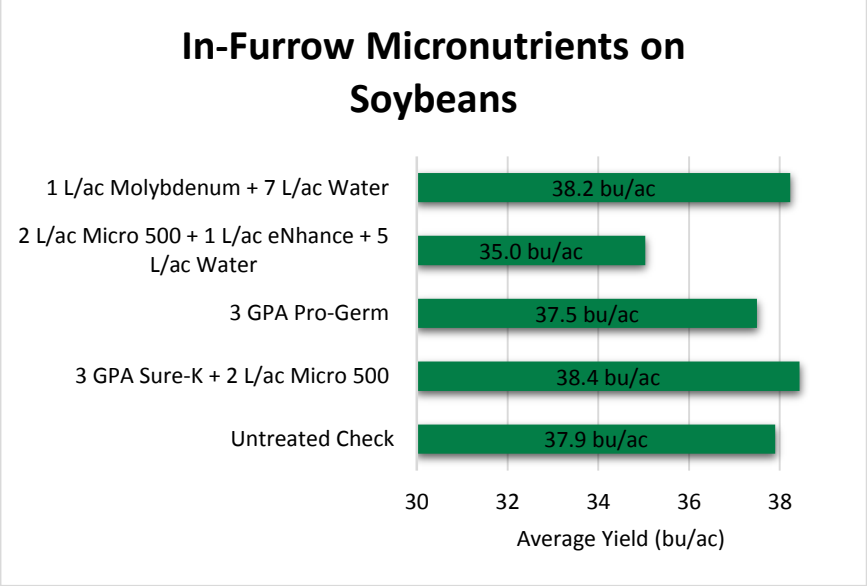
% P: min: 5; max: 30

% K: min: 1.2; max: 6.7

% Mg: min: 8.5; max: 16.3

% Ca: min: 51.9; max: 89.6

Objective:
There is continued interest in increasing soybean yields, and growing interest in using starter fertilizer in soybean production. Historically, however, starter fertilizer has not produced consistent yield increases in soybeans (Staton, 2014). This lack of positive response to starter fertilizer has been at least partially attributed to not incorporating adequate amounts of the proper nutrients in the starter fertilizer (Staton, 2014). This trial aims to provide insight into which nutrients are most likely to produce a positive yield response when included in starter fertilizer program for soybeans.



Conclusions:
This is the first year of this trial, and it was a dry growing season. There were very small differences between the untreated check and most treatments.

The treatment with the 2 L/ac Micro 500 + 1 L/ac eNhance + 5 L/ac of water showed a yield reduction when compared to the untreated check. Perhaps this antagonism can be partially explained by the addition of S; this nutrient may have inhibited nodule formation due to the increased uptake of N.

Notably, Molybdenum appears to demonstrate a stronger response in an in-furrow application, as opposed to a foliar application.

It will be interesting to see the results of this trial in the 2016 growing season.

AgroLiquid Product List
Proudly Retailed in Canada by AgroSpray

Pro-Germinator™ A high-quality, dual form phosphate fertilizer with multi-form nitrogen for immediate uptake and superior usability well into the growing season. (9-24-3-0.1Fe)

Sure-K™ A versatile, chloride- and hydroxide-free potassium fertilizer for extremely efficient results in all cropping environments. (2-1-6)

Kalibrate™ An exceptional potassium and sulfur fertilizer that contains 6% sulfur. In most soil environments Kalibrate™ will eliminate the need for additional potassium applications making it an excellent potassium source for all soil-based cropping systems. (2-0-10 w/6% sulfur)

High NRG-N™ A multi-form nitrogen fertilizer with one percent sulfur for effective, season-long nitrogen availability for more efficient applications. (27-0-0-1S)

Micro 500™ A proprietary formulation of zinc, manganese, iron, copper and boron to maximize micro-nutrient efficiency. (1.8%Zn, 1.2%Mn, 0.37%Fe, 0.25%Cu, 0.02B) (Additionally, individual secondary and micronutrients are produced using proprietary chelation chemistry.)

eNhance™ The only nitrogen supplement formulated to work within the plant to produce greater nitrogen availability and reduce input costs. (Note: eNhance is added to UAN solutions at a rate of 2 gallons per ton of 28% and 2.25 gallons per ton of 32%). (8.7% S, 0.07% zinc, 0.07% manganese)

Premium Calcium For precision placement of usable calcium and improved availability in conservation tillage environments. (3% Ca)

ferti-Rain™ Combines proprietary new technology and proven chemistry to simulate rapid nutrient uptake and plant development through foliar application. (12-3-3-1.5S-0.1Fe-0.05Mn-0.1Zn) (ferti-Rain™ was formerly known as F-07 during development.)

NResponse™ Stabilized liquid urea-based nitrogen plus sulfur. (20% urea, 2% ammoniacal, 2% nitrate nitrogen,1% sulfur). Used primarily as a foliar application.

accesS™ It is a Sulfur fertilizer supplemented with micronutrients, with an analysis of 17% sulfur and 0.25% each of iron and manganese. It is used in two ways: added to UAN solutions (20 gal per ton of 28%) or as a sulfur additive to planter (NOT in the seed furrow) and sidedress applications where additional sulfur is needed.

S-Calate™ This is the newest crop nutrition product introduced in late 2012, with an analysis of 14% sulfur, 7% nitrogen and 1% calcium. Like accesS™, it is used in two ways: added to UAN solutions (20 gal per ton of 28%) or as a sulfur additive to planter (NOT in the seed furrow) and sidedress applications where additional sulfur is needed. It is being targeted for soils with low pH.