



In-season Applications of Crop Nutrition—Beyond Nitrogen!



For crops like corn and wheat, in-season applications of nitrogen are almost a given. But many crops can benefit from in-season applications of nutrients such as phosphorus (P), potassium (K), sulfur (S), and micronutrients as well. Adding these nutrients to your nitrogen or crop protection applications helps bypass some of the soil issues encountered at planting [such as cold, infertile soil; nutrient fixation; drought; sodium, etc.] or insufficient root growth, which would cause soil-applied fertilizer to not be as readily absorbed. They can also provide a quick reaction to deficiency symptoms or low tissue analysis.

Plus, adding P, K, S or micronutrients to a sidedress, topdress or crop protection pass* has a relatively low cost, and allows us to target mid-season growth stages with specific nutrients. There is a large demand for those nutrients in the late vegetative and reproductive stages of development. It's an opportunity to increase the investment potential you've already made in getting that crop out of the ground by maximizing yield.

AgroLiquid has researched the value of applying phosphorus, potassium, sulfur and micronutrients through sidedress, topdress, or foliar applications and has determined that in-season applications of each of those nutrients, in combination with nitrogen or as an addition to crop protection, can increase crop yield and improve profitability. →

*Always follow label instructions and perform a jar test before mixing any crop nutrients and/or crop protection products.



Corn

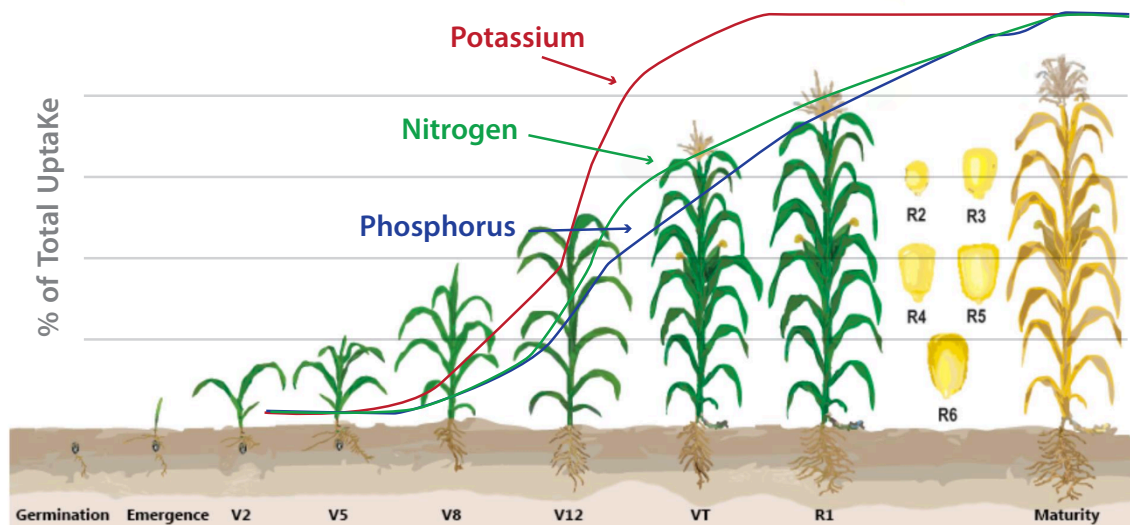
Reid Abbott, Agronomist

In the last several years, everyone in ag has had to knuckle down and learn how to manage inputs to maximize outputs and return on investment. While that often means spending more money in the eyes of a grower, cultural practice changes can have dramatic effects on the final outcome with little to no cost increase. For fertility management, spoon-feeding crops seems to be the fundamental change that the industry is trending towards, and the past few years has seen a rise in foliar feeding and applications such as Y-Drop as well. In-season fertility of nitrogen has been around for decades, but now growers are looking at adding phosphorus, potassium, secondary and micronutrients to enhance their programs at key times while the crop is growing.



In-Season Applications—Not Just for Nitrogen!

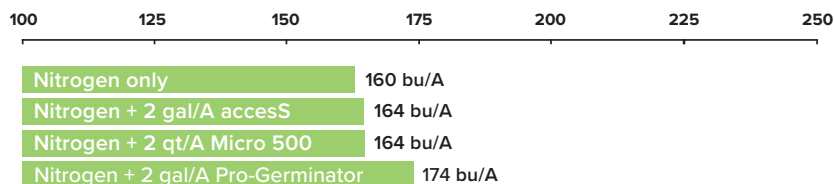
Corn, and other crops, often benefit from in-season applications of nutrients such as phosphorus (P), potassium (K), sulfur (S), and micronutrients. There is a large demand for those nutrients in the late vegetative and reproductive stages of development. AgroLiquid has researched the value of applying phosphorus, potassium, sulfur and micronutrients through sidedress applications and has determined that in-season applications of each of those nutrients, in combination with nitrogen, can increase crop yield and improve profitability.



So, what does the research show?

A corn trial conducted at the North Central Research Station (NCRS) in Michigan on low phosphorus soils showed the value of adding accesS™, Micro 500®, or Pro-Germinator® to sidedress nitrogen applications through Y-Drop applicators.

North Central Research Station (NCRS), Michigan
Corn Yield (bu/A)



A corn trial conducted at the Nutrien Research Farm in Kentucky showed the value of adding Kalibrate®, Kapitalize™, Micro 500®, or Pro-Germinator®, to sidedress nitrogen application through Y-Drop applicators.

Nutrien Research Farm, Kentucky
Corn Yield (bu/A)





Soybeans

John Leif, Agronomist

A good soybean crop nutrition plan must be based on crop need and soil analysis. That program will usually start with soil application of phosphorus, potassium, sulfur and micronutrients, as needed. Splitting the applications of those nutrients may be the best way to maximize yield. Soybeans require large amounts of potassium (K), sulfur (S), and calcium (Ca). They also require micronutrients such as manganese and iron to meet their yield potential. In addition to soil applications of those nutrients, soybeans often respond to foliar applications. Sure-K® and fertiRain® products are well suited to provide cost-effective crop nutrition when applied as foliar treatments.





So, what does the research show?

10 year Soybean Yield average			
No Fertilizer			69 bu/A
Sure-K	5 gal/A	In-furrow	75 bu/A
Sure-K	3 gal/A	Foliar V-4	76 bu/A

Soybean Yield			
No Foliar			71 bu/A
fertiRain	2 gal/A	R1	86 bu/A
fertiRain	1.5 gal/A	X3 (V3, R1 and R3)	93 bu/A

Especially with higher yield goals, foliar feeding may provide optimal results. Timely applications of nutrients can help rectify some nutrient deficiencies, but more important, foliar applications can provide necessary nutrients at times of high demand for plants.

Sure-K®

Sure-K® is a flexible potassium product that can be used in foliar applications with very consistent performance and minimal risk of crop injury. AgroLiquid has conducted trials at the North Central Research Station (NCRS) in Michigan, as well as locations across North America, that demonstrate the performance of Sure-K in soybeans.

Sure-K was applied for 10 consecutive years in a corn-soybean rotation as a soil applied treatment and as a foliar treatment. Over the 10 years of the trial, the foliar application of Sure-K at 3 gal/A consistently performed as well as Sure-K applied at 5 gal/A in-furrow.



FertiRain® is a combination of nitrogen, phosphorus, potassium, sulfur, and micronutrients, specially formulated to provide balanced crop nutrition with minimal risk of crop injury when applied to foliage. Research with fertiRain demonstrates its performance as a foliar treatment, and its flexibility as a partner with other AgroLiquid products to provide the necessary nutrition for soybeans.

When applied alone, fertiRain provides excellent potassium nutrition along with nitrogen, phosphorus, and sulfur. Application timings are flexible, and it can be tank mixed with many crop protection products.*

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Wheat

Stephanie Zelinko, Agronomist

Nitrogen (N) applications make up the largest expense of a wheat growers fertility program. Additionally, nitrogen is at high risk of loss especially when applied broadcast—and no one wants that, especially in a year like this one. Obviously, it is important to manage a wheat nitrogen program to ensure the best use of the dollars spent. AgroLiquid has been evaluating nitrogen fertilizer source options for many years at the North Central Research Station (NCRS) to prove product performance and evaluate the benefits of adding other nutrients to those in-season applications.

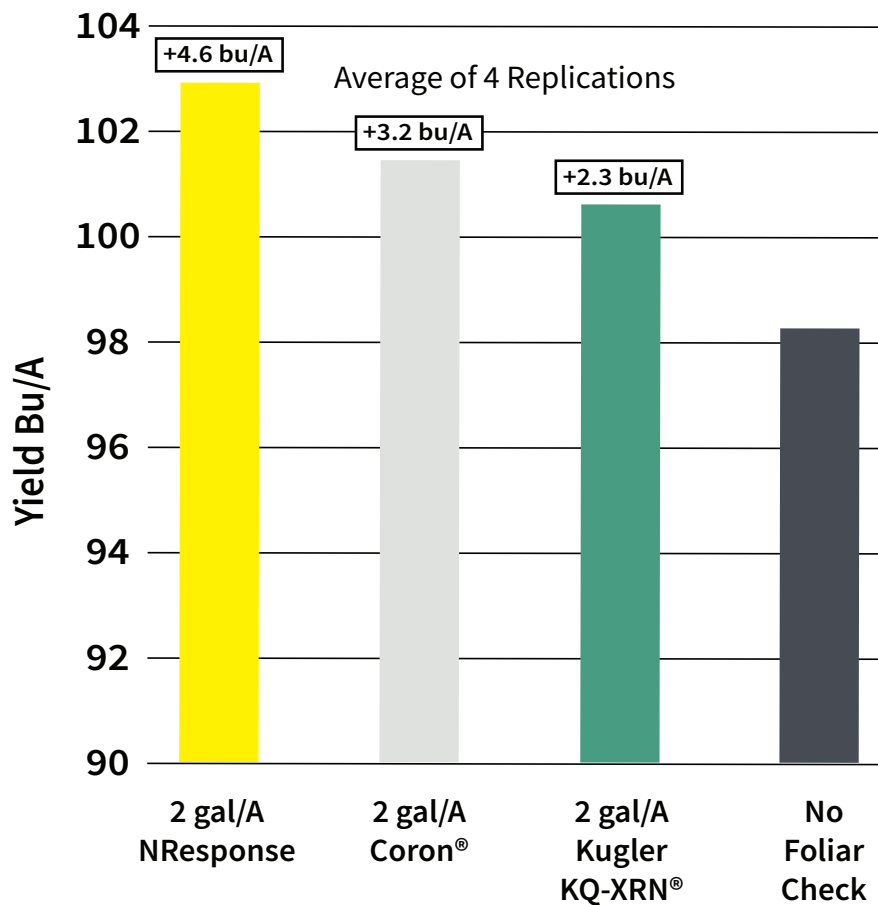
To determine the benefits and make comparisons of NResponse™ versus other foliar nitrogen sources when made at flag leaf timing on soft red winter wheat, the NCRS established plots in the fall of 2020 with tram lines to allow for flag leaf foliar applications with a self-propelled sprayer without damage to plot harvest area.



So, what does the research show?

Flag Leaf Foliar on Winter Wheat

North Central Research Station—2021



All treatments received 150 lbs/A MAP + 150 lbs/A potash; 14 gal/A 28% + eNhance™ (topdress at Feekes 4); 26 gal/A 28% + eNhance (topdress at Feekes 6).

As expected, all the nitrogen products provided a yield advantage over the no foliar check. The 2 gal/A application of NResponse provided a 4.6 bu/A yield response, which is a \$34.68/A return on investment.