

5 Things to Keep in Mind When Using Starter Fertilizer

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The use of starter fertilizer placement on the seed (known as in-furrow placement) is commonplace in many areas of Minnesota. Questions about the value of in-furrow starter fertilizer often come up when corn prices are low.

The application of liquid fertilizer with the planter presents additional costs, which may or may not be warranted depending on the year and where a field is located within Minnesota. The results of several field trials have recently been summarized in a new publication "[Banding Fertilizer on the Corn Seed.](#)" There are a few things to consider when utilizing starter fertilizer banded on the corn seed.

1. Keep fertilizer rates low. Fertilizer placed in the seed row can have a positive benefit on corn growth early in the growing season and potentially on corn grain yield. High rates of salt and nitrogen (N) products which liberate ammonia (NH₃) can have negative effects reducing plant growth and the number of emerged plants. Care should be taken to keep rates low to reduce the risk for damage but maintain a potential for positive benefits from seed placed fertilizer application.

2. Account for nutrients in the starter. The amount of total nutrients applied in the starter should be accounted for in an overall fertility program. While the amount of total nutrients may be low, reducing the amount of a particular nutrient broadcast applied by the rate applied in the starter makes economic sense. Knowing what is being applied by all fertilizer sources in a fertility program helps to keep costs as low as possible and prevent over application of nutrients.

3. Keep an eye on soil test values. Many corn producers may be using starter to enhance their broadcast fertility program. In some instances where money may be tight, seed-placed fertilizer may be relied on to supply all needed plant nutrients. A low-input program will result in a gradual decline in soil test values over the long-term. If soils begin to test low, some broadcast fertilizer may be warranted to increase grain yield and profitability within a given field or field area. Previous knowledge of soil tests will also allow for the reduction of seed-placed fertilizer rates in areas where there may be no benefit.

4. Chose a product that will be economic and fit your goals. With a litany of different product sources available to growers, the best way to select between them is to identify the product that will meet production goals. The best way to compare products is to evaluate the overall cost of the product vs. the amount of total nutrients

purchased. Choosing a product that will meet your goals with the least cost can help ensure the cost of the product can be recovered with additional grain yield.

5. Do not fall for the ortho- vs. poly-phosphate debate: There is an ongoing argument that fertilizer sources containing ortho-phosphate are superior to those that contain poly-phosphate. There is some truth to this argument, as plants only take up phosphorus in the ortho-phosphate form. Fertilizer sources such as 10-34-0 that contain poly-phosphate (60%), also contain a portion of their total P as ortho-phosphate (40%). Any poly-phosphate is quickly converted to ortho-phosphate following application. Early in the growing season, the amount of P needed by plants is low; therefore, there is no difference in performance of fertilizer sources containing P relative to their content of ortho- or poly-phosphate.

The primary goal of applying fertilizer in-furrow will be obtaining a positive economic return on investment from the fertilizer application. Two ways starter can increase profitability are in decreased drying costs due to less moisture in the harvested grain and increased yield. Neither effect is guaranteed in all cases where in-furrow starter is applied. Increased early corn growth is commonplace if in-furrow starters contain P. Increased early plant growth is not an indicator that the use of starter will result in an economic benefit to a farmer.

Our research tells us that decreased grain moisture is more likely to occur in fields where grain is wetter in the fall. It was more common to see decreases when moisture at harvest was around 25% as was the case in 2013 vs. 2012, when most grain moisture in most fields tested 15% or less. Grain yield responses have occurred more frequently in soils testing medium to low in P in particular for poorly drained soils in areas of central to western Minnesota. There is always a slight chance starter will increase yield for soils testing high to very high in P. It is difficult to predict when and where these responses will occur.

Reducing rates or switching to more economical sources of a liquid starter is always an option. Our current data indicates that there is no advantage to applying more than 5 gallons of 10-34-0 in-furrow. In fact, most of our current data indicates that applications could be reduced to as little as 2.5-3 gallons per acre and not sacrifice the potential for decreased grain moisture or increased grain yield. This rate will also decrease the risk for stand damage, which is ever present when applying fertilizer on the seed.

Other questions surround whether to use the old standby 10-34-0 or spend the money for a product that contains potassium (K) and possibly micronutrients. There are two micronutrients that may be of issue for corn, zinc and iron. The potential for a zinc deficiency is more common than iron and can be assessed using a soil test for zinc. The relative potential for zinc deficiency begins to increase when soil tests 0.75 ppm or less (DTPA Zn test). If a liquid zinc product is to be used, ensure that it is fully chelated to prevent the potential reaction of zinc with ortho-phosphate ions in the starter.

Iron deficiencies in corn are very rare but may be possible in areas of central and western Minnesota when soil pH is high (around 8.0) and available iron in the soil is very low. Products that contain a significant portion of iron as ortho-ortho-EDDHA will supply the most available iron to a crop. Due to the cost of products containing o-o-EDDHA, targeting fields with a history of iron deficiency in corn makes the most sense. Iron deficiency chlorosis is a common issue in soybean in central and western Minnesota.

The issues that result in iron deficiency in corn are not the same as soybean. A response to iron application in soybean is not indicative that a response will occur in corn. Due to the rarity of the issue, application of iron in the starter is suggested on a trial basis or in field areas with past history of visible iron deficiency symptoms to ensure it will be economical.

There is no one-size-fits-all solution when utilizing starter fertilizer. The new publication discusses a few options and situations where starter may be more beneficial. The publication also outlines ranges in rates of application that have resulted in plant growth and stand establishment no less than when starter was not used.

Remember that in-furrow starter fertilizer always will present a risk for a negative impact on growth and development of corn. The rate that provides the greatest benefit is less than what can be safely applied on the seed. When utilizing in-furrow starter, a 'less is more' philosophy may be warranted, and may give a better chance for increasing your bottom line.

- See more at: <http://www.no-tillfarmer.com/articles/4587-things-to-keep-in-mind-when-using-starter-fertilizer#sthash.YOPvlfS2.dpuf>