

Don't Forget Starter Fertilizer – Especially Now

We are constantly reminded of the unprecedented volatility in grain prices and fertilizer prices we have experienced over the past year. And how often have we heard that farmers need to cut costs in these questionable economic times. Producers are right to carefully evaluate their overall management plan in order to potentially improve efficiency. However, carefully evaluating overall crop production management plans in order to improve production efficiency is important in stable times and volatile times. It is also important in good times and in not-so-good times. In fact, carefully evaluating management plans in an effort to improve production efficiency is important all the time! You can't save yourself into prosperity.

Starter fertilizer has always been a way of improving crop production efficiency and improving yield prospects. A few, but not necessarily all, of the advantages associated with starter fertilizers are:

- 1) Helps get the seedling off to a healthy, fast start.
- 2) Help the plant quickly establish a large, vigorous root system.
- 2) Reduces the negative effects of many types of stress on plant growth and development.
- 3) Helps alleviate the negative impact of cold, wet and/or compacted soils on nutrient uptake by plants.
- 4) Aids in weed management by enhancing canopy closure.
- 5) Often reduces grain moisture at harvest time.
- 6) Helps counter the effects of late planting by ensuring optimum development of plants.
- 7) Higher yields.
- 8) Greater profitability.

There are several common ways of effectively placing starter fertilizers (Fig. 1). The 2 X 2 starter placement has been the standard for row crops against which all other starter applications have been compared over the years. The 2 X 2 placement places the fertilizer about 2 inches below and two inches beside the seed at planting. While it is commonly referred to as 2 X 2 there is nothing magical about 2 inches. Placement 1.5 X 2 and 2 X 1 would be expected to perform well. The advantages of 2 X 2 placement is that agronomically performs very well, the fertilizer is placed in an area that will quickly intercept root development and the fertilizer is placed well away from the seed so that seedling damage does not result - even with high application rates. The disadvantage is that 2 X 2 starter attachments are expensive, they are heavy (especially with large newer planters) and they have potential residue clearance issues with reduced/no-tillage systems.

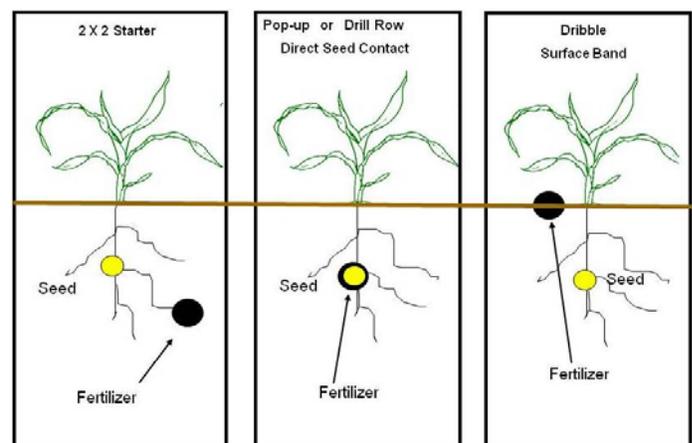


Figure 1. Common Starter Fertilizer Configurations.

'Pop-up' starter applications for row crops and 'drill row' application for smallgrains places fertilizer in direct seed contact at planting time. Drill row applications for smallgrains have been the standard against which other smallgrain starter application methods have been compared for many years. The advantage pop-up and drill row applications is that the fertilizer is placed in an area of very early root development and that the equipment for required for planting equipment is readily available, inexpensive and easily adapted to large equipment. The disadvantage is that germination/seedling damage can result if too high of application rates are used.

A relatively new configuration is the surface band/dribble starter application which places the starter fertilizer on the soil surface an inch or two to the side of the seed after row closure. Earlier research determined that applying a portion of the total N requirements as UAN with the P-K starter was often superior to applying the P-K starter alone (Table 1). Also, surface band/dribble starter fertilizer applications have been essentially equal to the standard 2 X 2 starter treatments. Surface band/ starter applications eliminate the problem of placing too much fertilizer with the seed if additional UAN is placed in direct seed contact for pop-up applications. The surface band/starter applications are easily made by redirecting the fluid fertilizer tubes away from the seed and to the soil surface right after seed row closure. Research from across the country has verified these earlier research findings (Table 2).

Crop responses to starter fertilizer are not limited to low testing soils. Starter responses are often due to limitations in crop nutrient uptake –not availability. Many things other than nutrient availability as estimated by soil tests may limit nutrient uptake. Also, starter fertilizer applications are typically not sufficient to maintain soil test levels over time and other nutrient applications are needed to complement starter fertilizer programs.

Table 1. Starter NPK On No-Till Corn
Scandia, KS - 2000-2001

NPK Rate	Starter Application Method		
	With Seed	2 X 2	Surface Band
<i>Lbs/A</i>		<i>Bu/A</i>	
No Starter	159	159	159
5-15-5	164	190	185
15-5-5	172	191	194
30-15-5	166	213	209
45-15-5	166	211	209
60-15-5	159	211	209
Average	167	202	201

Barney Gordon, Kansas State University Soil Test = High



Figure 2. Surface Band/Dribble Starter Response On Corn (G. Randall, Univ. Minnesota)

Table 2. Starter N & P Effect On Corn Grain Yield
(Randall, 2008, Univ. of Minnesota)

Starter Treatment	Placement		Grain Yield
	APP	UAN	
	<i>gal/A</i>	<i>lb N/A</i>	<i>Bu/A</i>
No Starter	0	0	174
With Seed*	5	0	184
Surface Band **	5	0	184
Surface Band **	5	15	189
Surface Band **	5	30	189
Surface Band **	5	45	183
	LSD (0.10)		7

* Fertilizer Place in direct seed contact
** Dribble band on soil surface 2" beside the row at planting
Bray P-1 soil test = 26 ppm