

Fertilizer Advizer

Maximizing return on you fertilizer dollar! ADVIZER NUMBER: TWO

Improve Phosphorus Efficiency by Banding In-Furrow

By Dennis Zabel

Growers are looking for ways to make their fertilizer dollars go further. As grain prices fluctuate and fertilizer prices remain relatively high, many are looking at banding P to keep yields high while keeping costs down. We'll take a look at how banding technology can increase yield while lowering costs.

A number of years ago the University of Nebraska published data in their *Soil Science News* where they looked at the efficiencies of banding phosphorus fertilizers compared to broadcasting on glacial till soils when growing wheat. A number of liquid and dry phosphate products were represented. Many areas of the country have glacial till soils. They are characterized by having fine textures with high cation exchange capacities.

The results were startling. **Phosphorus uptake efficiency was nine times better when banded compared to broadcasting.** Efficiency is defined by the amount of applied P that actually found its way into the above ground portion of the crop compared to the application rate. Most of the broadcast P ended up in the ridges between the rows and remained positionally unavailable to the root system.

Table 1. Phosphorus uptake efficiency on Glacial soils.

Placement method	% of applied P found in the crop
Banding	18
Broadcast	2



Banding technology can increase yields while lowering costs.

There are three main reasons for this dramatic increase in plant uptake:

1. Placement Matters! P is an immobile nutrient and needs to be placed where developing roots can find it fast.
2. Banding reduces fixation or "tie-up" of P because there is less fertilizer/soil contact. A higher percentage of applied P is available for plant use.
3. The young, limited root system of a small plant has difficulty finding enough P fast enough in the surrounding soil especially under low soil temperature and low soil test P conditions.

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A university study showed phosphorus uptake efficiency was nine times better when banded compared to broadcast.



6-24-6

Planter-applied liquid GoldStart 6-24-6 has many advantages. It is made especially for accurate row banding on many crops.

- More efficient use of P compared to broadcasting.
- Rate of application adjustments are easy from inside the cab.
- Seed safe for many crops such as corn, milo and wheat.
- Does not "cake up" in damp weather like some dry fertilizers.
- Accurate placement and rate with easily available planter kits.
- Does not corrode mild steel.
- Stores well.
- Convenient and easy to use.
- Pumps do the work of moving the fertilizer.
- Saves money compared to inefficient broadcast.

Improve Phosphorus Efficiency by Banding In-Furrow *(continued from page one)*

If we take the results from Table 1 and convert the percentages into pounds of phosphate recovered by the crop we see something like this:

In Table 2 we show that by banding just 5 g/a 6-24-6 in the seed furrow the crop still recovers 2.4 times as much P compared to broadcasting 100 lbs/a of 11-52-0. By getting more P into the crop, yield increases over broadcast P can be expected. In the Nebraska tests the banding program yielded 14 bushels more than broadcast P.

While today's fertilizer prices are fluctuating somewhat as I write this, there is an estimated \$20 per acre cost savings for the banding program over the broadcast.

We should note that it is not the 11-52-0 itself that is at fault, but the way that it is normally applied, broadcasted, that makes it nearly ineffective. Certainly, dry fertilizers can be banded, but no one wants the labor of handling dry fertilizer on a planter and trying to apply it accurately. That's where liquid fertilizers like GoldStart 6-24-6 have the big advantage. Liquids are easier to use and apply accurately.

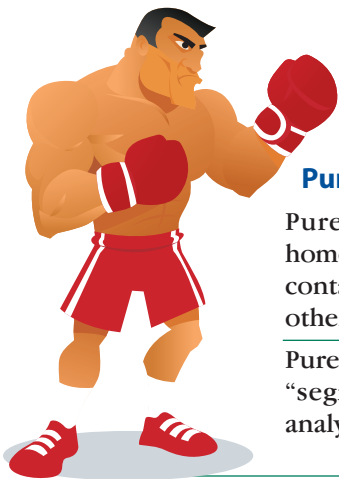
Liquid GoldStart 6-24-6 is specially made for row application so nutrients, especially phosphorus is correctly placed. Equipment is widely available for any type of drill or planter for precision placement and an accurate, uniform rate of application.

Other studies by Kansas State University on milo show that it takes 6 times as much phosphorus when broadcast as it does banded to get the same yield increase. In another study on corn by KSU it was shown that 30 lb/a broadcasted P did nothing while a row placed 6-24-6 at 3 gallons/a containing 8 lb/a P increased yields by 23 bushels per acre.

Soil testing is the best guide. Soil tests save money by showing which nutrients aren't needed as well as those that are. ■

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Fertilizer program	Estimated applied P recovered in %	Estimated lbs. of applied P ₂ O ₅ /ac recovered by crop
Row banding GoldStart 6-24-6 @ 5 gal/ac (13.3 lbs P ₂ O ₅)	18	2.4
Broadcast 100 lb/ac 11-52-0 (52 lbs P ₂ O ₅)	2	1.0



PureGrade™ LIQUID Fertilizer vs. DRY Fertilizer for Starter Fertilizer Applications

PureGrade™ Liquid Fertilizer

PureGrade liquid fertilizers are homogeneous solutions. Every drop contains the same analysis as every other drop.

PureGrade does not settle out or “segregate” in the tank. A given analysis stays the same.

PureGrade Liquid fertilizers have low salt indexes for increased seed safety. Raw materials are chosen for their low salt index. Salt index values are available to customers.

Application technology for seed and 2x2 placement of liquid starter fertilizers is more advanced. Fertilizer placement tubes are available for any type of planter or drill. Seed firmers manufacturers also incorporate liquid starter application needs into their designs. Many excellent designs for both seed and 2x2 liquid placement are available.

Plant more acres per day with less fill time with PureGrade. Many growers size their planter or saddle tanks to hold enough PureGrade to last between seed fills when planting corn. Using PureGrade requires less labor compared to dry.

Dry Fertilizer

Dry blends can vary in consistency from batch to batch and even within a batch.

Dry blends can “segregate” during transportation and while in the planter’s dry fertilizer box. This means more phosphorus here, maybe more potassium somewhere else. The industry is making improvements in this area.

Salt indexes are usually not calculated. A general system of “pounds of salt per acre” from the nitrogen and potassium chloride is often used.

Application equipment technology hasn't changed much with the exception of air delivery systems from pull-behind carts. Dry starter systems can only “dibble” or “scatter” granules in a seed or 2x2 slot. Continuous band placement cannot be accurately made at lower rates suitable for row placement.

More stops to fill are required to fill fertilizer boxes on the planter.

