

Check Planter's Liquid Starter Equipment Before Heading to the Field

by Dennis Zabel

As the planting season bears down upon us, there are some things we need to check on the planter's liquid fertilizer system to be sure that PureGrade starter fertilizer will be properly applied. For most growers there will be little to do except to check for wear and tear and cleanliness.

The problems we see in the field fall into one of these 3 general categories:

1. **Improper setup or maintenance.**
2. **Incorrect rate or different rates from one row to the next.**
3. **Broken or missing parts.**

Fertilizer manifolds used on planters and drills to distribute fertilizer to each row fall into two distinct categories; those that use orifices (pressurized systems) to control flow to each row and those that don't.

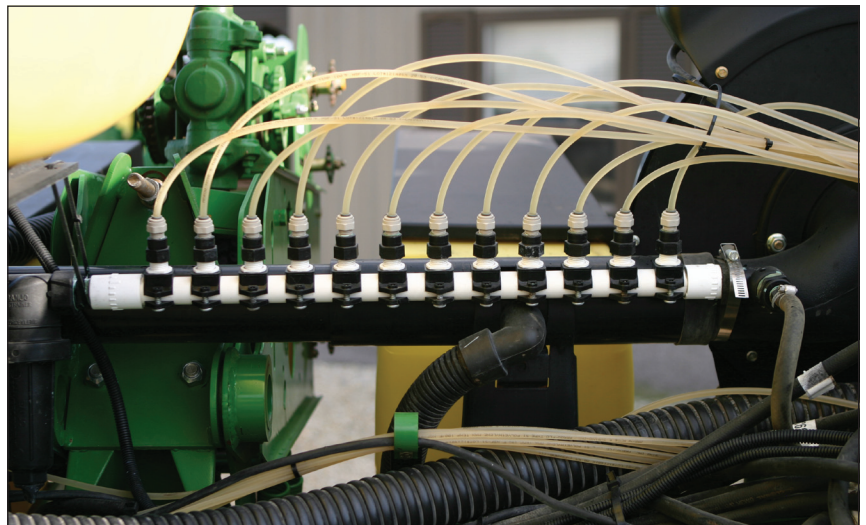
Manifolds with orifices are highly recommended to accurately deliver PureGrade to each and every row in a uniform manner. Application rates are more uniform from one row to the next and from one end of the planter to the other when orifices are used.

Manifolds With Orifice Bodies (pressurized systems)

While manifolds with orifice bodies are relatively trouble-free, there are a few things we need to check to achieve uniform performance.

- **Check the orifices.** Be certain they are not cracked, bent or missing. Plastic orifices can crack and when pressure from the system is applied, the crack opens up and an excessive rate of fertilizer is applied to that row.
- **Orifice bodies should be checked periodically to insure that dirt isn't clogging or partially clogging the orifice.**

After cleaning, be sure to reinstall the orifices properly. Orifices easily get lost at this point. They may fall out during reassembly without being noticed. This leads to a very high rate of application.



This example illustrates a typical manifold setup to accurately meter PureGrade liquid fertilizers. An orifice body for each row on the planter or drill is required. In the background is a ground drive piston pump that supplies fertilizer under pressure to the manifold. Because PureGrade fertilizers flow easily at low temperatures and are used at lower rates than many other liquid fertilizers, many growers choose to use electric pumps because of their simplicity and lower cost.

- **Check the lines from the manifold to each row.** These should be quarter inch microtubing for best performance at the 3-6 gallon/acre rates of application. Look for cracking, pinching from planter iron and abrasions. If the planter sits outside, check for deer chewing on the lines. Short sections of tubing can be spliced in if necessary or the entire length can be replaced. So called 'one pound' flow restrictors should be applied as close as possible to the outlet in or near each



planter unit. The restrictor reduces surging in the rate of flow during application and stops 'dribble-out' when turning around on the field ends. Many orifice bodies already contain a flow restrictor at the manifold to stop 'dribble-out' and siphoning.

• **A flow monitor is the best way to see that all rows are receiving the same rate of fertilizer.** In the absence of a flow monitor, all rows should be calibrated regularly. For best results, application rates should not vary more than 5% from one row to any other row and certainly not more than 10%.

• **Fertilizer line replacements should be same size and type as originally installed.**

Manifolds Without Orifice Bodies

Manifolds without orifices are designed to work best at higher application rates. For application rates in the 4-6 gallon/acre range some modifications may be needed to achieve desirable results. Rates of application may vary greatly from one end of the planter to the other when operated on strongly sloping fields.

• **Use a flow monitor to insure fertilizer delivery rates are uniform from one end of the planter to the other.**

• **Reduce line size to quarter inch microtubing to reduce potential surging.**

• **Install in-line orifices if possible.**

Manifolds with orifices are highly recommended to accurately deliver PureGrade to each and every row in a uniform manner. Application rates are more uniform from one row to the next and from one end of the planter to the other when orifices are used.

• **Fertilizer lines to each row should be the same length within 5% if no orifices are installed.** It is the friction or resistance to flow in the lines that keeps rates from row to row uniform. Any change in diameter or length of the fertilizer line alters the rate.

• **Pay special attention to the combination of pump speed and pressure to reduce tendency to surge at the 4-6 gallon/acre rate.**

• **Install 'one pound' flow restrictors as near to the outlet as possible at each row unit to reduce potential to surge and eliminate 'dribble-out' while turning.**

• **When replacing the fertilizer lines to the row units it is important that the replacement matches the other lines in diameter and length.** The lines to each row should be the same size. A slightly larger diameter or a shorter line will dramatically increase the flow rate due to less friction.

For many producers a quick check is all that is necessary. However, parts wear out or break over time. For best results from PureGrade fertilizers always be sure that every row is receiving the planned rate of fertilizer. ■



A fertilizer tube is mounted into the top of this seed firming device for easy, no fuss, row application of PureGrade fertilizer.

GoldStart Fertilizers are Safe for In-Furrow Use ...competitive grades containing sulfur may not be safe.

In this article we are comparing the characteristics of GoldStart fertilizers with competitive 9-18-8-5S and 9-15-4-3S fertilizer grades. We are most interested in characteristics that limit use as a seed placed starter, specifically the source of sulfur.

The sulfur source is potassium thiosulfate. Potassium thiosulfate is otherwise an excellent source of both potassium and sulfur. However, its high salt index makes it risky to use in seed placed fertilizers. As a general rule, many universities recommend that no thiosulfate should be placed with the seed.

Sulfur is an important nutrient for crops, but since it is mobile, it can be applied to the soil in a variety of methods that will make it available to the crop.

SEED PLACEMENT SUITABILITY FOR SELECTED FERTILIZERS				
Fertilizer Product	Salt Index	Suitability for Seed Placement	High in Orthophosphate	Salt-Out Temp. (deg F°)
GoldStart 3-18-18	8.5	Yes	Yes	-1
GoldStart 6-24-6	11.5	Yes	Yes	10
GoldStart 9-18-9	16.7	Yes	Yes	2
10-34-0	20.0	Caution	No	-20
4-10-10	27.5	No	No	16
7-21-7	27.8	No	No	9
9-15-4-3S*	30.3	No	No	36
9-18-8-5S*	41.0	No	No	50
UAN (28%)	63.0	No	N.A.	0

*Salt index and salt out temperatures were calculated assuming that ammoniacal and UAN solution are used for the nitrogen sources. If urea is substituted for UAN solution, both the salt index and salt-out temperatures are lower.

GoldStart fertilizers are formulated from specific raw materials with low salt indexes for safe placement into the seed furrow. The calculated salt indexes for GoldStart fertilizers are lower than those of many products made by our competitors and generally available commodity grades. ■

