

STARTER FERTILIZER VARIABILITY



WHAT YOU SHOULD KNOW WHEN COMPARING STARTER FERTILIZERS!



Is your 9-18-9 or 3-18-18 a premium starter? The above samples all represent the same fertilizer analysis, which proves that starter fertilizers come in all colors and viscosity. However, it's what is in the starter that counts during planting and at harvest. Now, looking at the samples above, which starters would you apply through your liquid fertilizer equipment? We've all heard the saying, you get what you pay for, and that holds true for fertilizer too. That's right just because a fertilizer has the same analysis, it does not mean it is the same product. And just because a fertilizer is clear, it does not mean it does not have heavy metals or impurities.

A good sales representative can fool most of us, but he/she will not fool your crop. Bottom line, good raw materials are key to making a quality product! NACHURS products are manufactured with the highest quality raw materials to provide available nutrients, seed safety, precision placement, and are corrosion-free. It's these characteristics that make NACHURS starters truly unique! Now let's **take a look how some fertilizer manufacturers are cutting costs on phosphorus, potassium, and nitrogen.**

PHOSPHORUS SOURCES:

Substitute superphosphoric acid (SPA) for technical grade phosphoric acid

- The more SPA the less ortho (available P) in the product
- **By substituting SPA, product price can be reduced by up to \$.30/gallon**

Substitute "spent acid" for technical grade phosphoric acid

- Spent acid is acid that has been used primarily for etching metal in the automobile industry. It contains high levels of heavy metals that could be toxic to seeds and/or other crops.
- **By substituting spent acid, product price can be reduced by up to \$.50/gallon.**

POTASSIUM SOURCES:

Substitute KCL (muriate of potash) for KOH (potassium hydroxide)

- Substituting KCL could change the agronomic performance and physical characteristics of the product. It could raise the salt index level, which could harm seed germination.
- **By substituting KCL, product price can be reduced by up to \$.20/gallon.**

NITROGEN SOURCES:

- There are many different suppliers of urea, both foreign and domestic, with varying specifications in terms of quality and seed safety (biuret)
- **Substituting high biuret urea would decrease nitrogen cost but jeopardizes seed safety**
- Ammonium nitrogen dramatically increases P uptake
- **Substituting cheaper grades of aqua ammonia can sacrifice quality**

**B & A Fertilizer Co.
Robert Bowen
613 Fairlane
Ida Grove, IA 51445-1630
712-364-2672 Call 712-830-4289**

Here are some questions to ask the next fertilizer sales rep that states he/she can sell you the same product at a much lower cost. See how NACHURS brand products compare.

- | | |
|---|--|
| 1. What raw materials make up the product? | Ammonium hydroxide, green phosphoric acid, potassium hydroxide |
| 2. How much orthophosphate (available phosphorus) does the solution contain? | 80% orthophosphate
20% polyphosphate |
| 3. What is the salt index; can it be placed on the seed? | SEED SAFE
Low salt index |
| 4. Does it contain chlorides, heavy metals, or other impurities? | Chloride-free
Low heavy metals
Low impurities |
| 5. Is the fertilizer soluble? | One of the most soluble starters on the market |
| 6. Will it corrode application equipment? | Virtually non-corrosive |
| 7. How well does the product store? | Down to 5 ° F (approximately) |
| 8. Does your starter have a comprehensive product guarantee? | Yes, NACHURS liquid starters are guaranteed seed safe product when used at recommended rates |
| 9. Is your fertilizer compatible with most insecticides? | NACHURS liquid fertilizer mixes well with most in-furrow insecticides and other pesticides, but we always recommend a jar test prior to full scale mixing |
| 10. Do you provide technical & agronomic support for this fertilizer? | NACHURS has the best agronomic, technical, and sales support in the industry for seed-placed starter. Should there be an issue, we will respond immediately. |

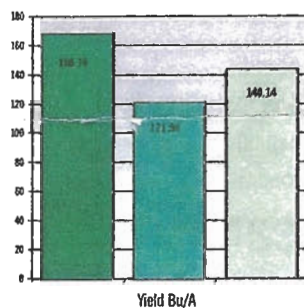
Be sure when you are talking to your fertilizer sales rep that you know what raw materials are being used in your finished product? Raw material substitutions may decrease the product price but may decrease the agronomic safety and performance. When comparing starter fertilizers, it's important to compare apples to apples, not just a numerical analysis. There is a reason that NACHURS is the leading manufacturer of seed-safe starter fertilizers, because **WE WILL NOT COMPROMISE FERTILIZER QUALITY FOR A CHEAPER PRICE**. We know through 62 years of experience that a quality product delivers quality results during planting and at harvest time! Our customers rely on this quality guarantee for more timely, hassle-free plantings.



HIGH POLY FERTILIZERS VS. NACHURS® FERTILIZERS

Farmers and fertilizer dealers unfamiliar with NACHURS fertilizers sometimes have difficulty comparing our program to the conventional 7-21-7 and 10-34-0 liquid fertilizer programs. NACHURS fertilizers are manufactured with the highest quality raw materials and was specifically formulated for seed placement and foliar feeding. 7-21-7 and 10-34-0 are not recommended for on-the-seed placement and foliar feeding due to their high salt index or chemical structures. Comparing 7-21-7 and 10-34-0 to NACHURS liquid fertilizers is similar to comparing apples to eggs.

Purdue University research has shown that seed placed phosphorus is at least 4 times more efficient than phosphorus placed 2" x 2". Seed placed phosphorus is 40 times more efficient than broadcast phosphorus. The Fertilizer Institute and independent researchers have found that fertilizers like 7-21-7 and 10-34-0 are up to 70% polyphosphate, which means its phosphorus is only 20-30% available to the crop during critical growing stages. NACHURS liquid fertilizers are 80-100% orthophosphate, which means they are immediately available during critical growing stages. NACHURS seed placed phosphorus requires lower application rates, less storage, higher yields, better plant quality, and is non-corrosive on equipment. What does this mean to you—MORE PROFITABILITY!

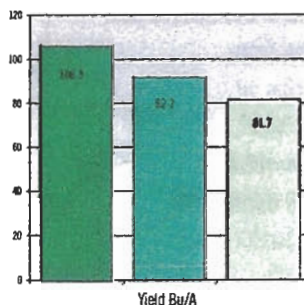


CENTERVILLE, SOUTH DAKOTA

- ▶ NACHURS 9-18-9 (5 Gal/A) In-Furrow
- ▶ 10-34-0 (5 Gal/A) In-Furrow
- ▶ Nutra-Flo Diamond (5 Gal/A) In-Furrow

NACHURS ADVANTAGE:
+46.8 Bu/A, +24.62 Bu/A

Conducted 2004

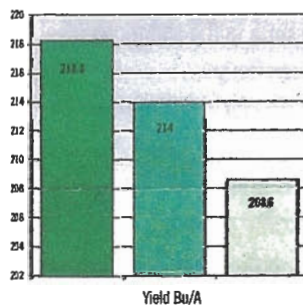


EVANSVILLE, INDIANA

- ▶ NACHURS Starter
- ▶ 32% N Only
- ▶ 10-34-0 Only

NACHURS ADVANTAGE:
+14.1 Bu/A, +24.6 Bu/A

Conducted 2002

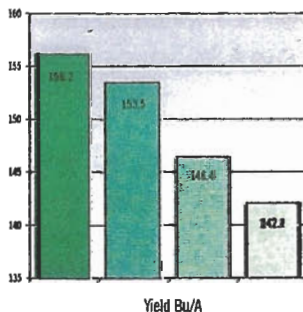


BOWLING GREEN, KENTUCKY

- ▶ NACHURS Starter
- ▶ 10-34-0
- ▶ CHECK

NACHURS ADVANTAGE:
+4.6 Bu/A, +9.7 Bu/A

Conducted 2004



CEDAR FALLS, IOWA

- ▶ NACHURS 6-24-6 (5 Gal/A)
- ▶ 7-21-7 (13 Gal/A, 2 x 2 Placed)
- ▶ 10-34-0 (10 Gal/A, 2 x 2 Placed)
- ▶ CHECK

NACHURS ADVANTAGE:
+2.7 Bu/A, +9.8 Bu/A, +14.1 Bu/A

2700 Acres, 6 Replications, Conducted 2000

ORTHO VS. POLY

What does research show?

"In the soil, polyphosphate converts to orthophosphate by hydrolysis (adding on water). The time required for hydrolysis to occur varies with soil conditions. In some cases, 50% of the polyphosphate hydrolyzes to orthophosphate within two weeks. Under cool, dry conditions, hydrolysis may take longer."

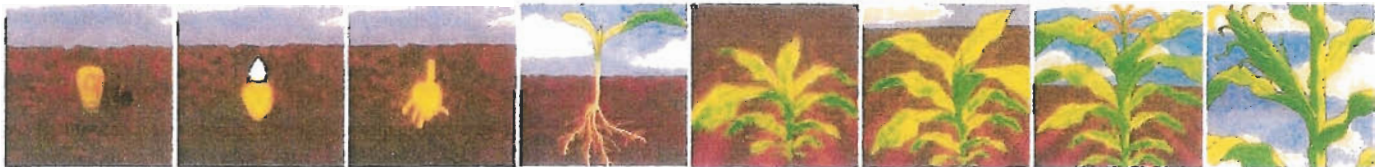
"Some claims have been that polyphosphates will make certain unavailable micronutrients in the soil more available for plant uptake." ... "it is not likely that such complexes would be available for any significant length of time. Research at Michigan State University and Kansas State University has shown that micronutrient uptake is not enhanced by polyphosphate materials."

--MSUE Agricultural Extension Bulletin. **N-P-K FERTILIZERS.**
M.L. Vitosh, Extension Specialist, Crop & Soil Science. 2005.



Plants predominately absorb Phosphorous in the orthophosphate form: $H_2PO_4^-$.

- THE SUPPORTIVE RESEARCH
- Rendig & Taylor, Mc Graw Hill Publishing. **Principles of Soil-Plant Interrelationships.**
 - Troch & Thompson. College of Agriculture Iowa State University. **Soils and Soil Fertility.** Oxford University Press, 5th Edition. 1993.
 - Kluwer Academic Publishers. **Fertilizer Manual.** 3rd Edition.
 - Western Fertilizer Handbook. 8th Edition. 1995.
 - John Wiley & Sons. Henry Foth. **Fundamentals of Soil Science.** 6th Edition.
 - Kansas State University. **Cooperative Extension Service.** October 1988. Pub C-665



"Phosphorus enters the plant through root hairs, root tips and the outermost layers of root cells. It is usually taken up as the primary orthophosphate ion ($H_2PO_4^-$), but can also be absorbed as the secondary orthophosphate (HPO_4^{2-})."

--Potash & Phosphate Institute (PPI). **Phosphorus for Agriculture.** 1998.