

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.
- Kluwar 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.

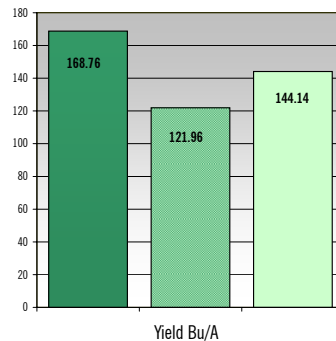


HIGH POLY FERTILIZERS VS. NACHURS® FERTILIZERS

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 that 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!**

THE SUPPORTIVE RESEARCH

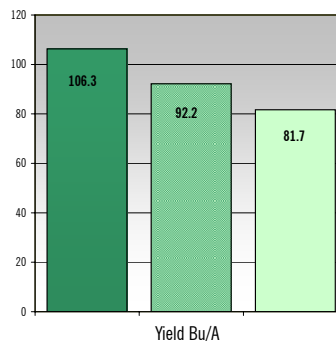


CENTERVILLE, SOUTH DAKOTA

- ▶ 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

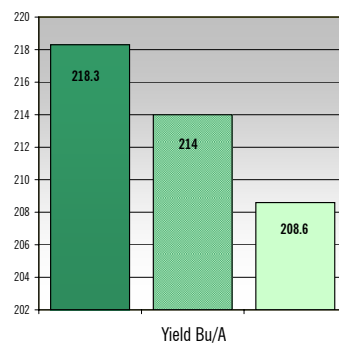


EVANSVILLE, INDIANA

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

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

Conducted 2002

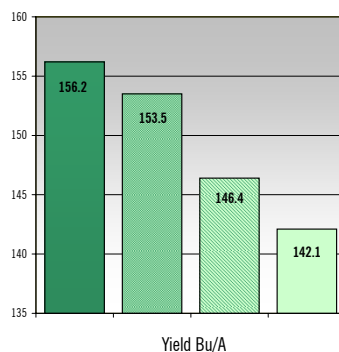


BOWLING GREEN, KENTUCKY

- ▶ 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

2000 Acres, 6 Replications, Conducted 2000