



THE NACHURS® GUIDE

PROVIDING GROWERS
PREMIUM LIQUID STARTER AND FOLIAR NUTRIENTS SINCE 1946

www.nachursinternational.com





WE ARE A 4R PARTNER
page 3

NACHURS® STARTER & FOLIAR
LIQUID FERTILIZERS
page 4-7

NACHURS® LIQUID FERTILIZERS
PRODUCT ADVANTAGES
page 8-11

NACHURS® LIQUID FERTILIZERS
MAXIMIZING NUTRIENT EFFICIENCY
page 12-15

NACHURS GENERAL NUTRIENT
PROGRAMS BY CROP
page 16-17



WELCOME.

NACHURS products offer a variety of starters and foliars. For row crops, NACHURS starters are meant to be complimentary products in a complete fertility program; they may not replace a broadcast fertility program. For specialty crops utilizing drip irrigation, NACHURS products can provide for all fertility needs in many circumstances.

Your crop has a **Maximum Yield Potential**. Every decision you make impacts whether you maintain that maximum yield or lose it. Your yield potential

can drop dramatically. **That is why getting your crop off to a fast and uniform start with starter fertilizer is so beneficial. Maintain your crop's Maximum Yield Potential.**

The NACHURS team includes sales managers, agronomists, and a full support staff.

PH: 1 800-622-4877
international@nachurs.com

A LITTLE HISTORY ABOUT US.

Built on quality, integrity, and innovation, we pioneered liquid fertilizer in 1946 – formulated to meet the nutritional demands of crops and growing conditions on both sides of the border.



With more than 70 years of experience and knowledge – combined with the continental reach of our six manufacturing plants, extensive transportation network, widespread product depots, and expanding sales force – we provide our customers and business partners with unlimited opportunities for growth and success.

Our two founding companies, The Na-Churs Plant Food Company and Alpine Plant Foods Corporation, captivated growers' attention and revolutionized farming practices by developing seed-safe, liquid phosphate starters that kick-start strong, early root growth and maximize crop yields. In 1998, The Na-Churs Plant Food Company acquired Alpine Plant Foods Corp. and formed Nachurs Alpine Solutions.

NACHURS® liquid fertilizers are manufactured by Nachurs Alpine Solutions®. Our manufacturing facilities are located in:

Today, an ever-increasing number of farmers in every state and province rely on our in-furrow fertilizer starters, fertigation products, foliar nutrition, and micronutrients on nearly every row crop, fruits, and vegetables.

- Marion, Ohio USA - Corporate Office
- Belle Plaine, Saskatchewan Canada
- Corydon, Indiana USA
- Garretson, South Dakota USA
- New Hamburg, Ontario Canada
- Red Oak, Iowa USA
- St. Gabriel, Louisiana USA

WE ARE A 4R PARTNER.



According to The Nutrient Stewardship Initiative:

Agriculture is being challenged to maintain profitable farm economics, while meeting the increased product demands of a growing population and responding to increased scrutiny of land and resource management. Agricultural sustainability means addressing economic, environmental and social goals. 4R nutrient stewardship is an innovative approach to fertilizer best management practices (BMPs) to help achieve agricultural sustainability. The 4Rs imply that there are four aspects to every fertilizer application and it provides an effective framework to assess whether a given crop has access to the necessary nutrients. The four aspects of fertilizer management are interconnected, and none of the four can be right when any one of them is wrong.

RIGHT SOURCE.

NACHURS liquid fertilizers use high quality raw materials and are tailored to meet the needs of specific crops.

RIGHT RATE.

Seed safe at recommended rates, NACHURS products have a low salt index and are non-corrosive. Each drop has the same ratio or percentage of nutrients.

RIGHT TIME.

NACHURS fertilizers can be “spoon fed” to crops, allowing for fertilization exactly when required by the plant.

RIGHT PLACE.

NACHURS liquid starter fertilizers are safe placed directly on the seed and will not harm germination. **PROVEN PERFORMER.**

4Rs OF NUTRIENT STEWARDSHIP

Economically, Environmentally & Socially Sustainable Crop Nutrition



The 4Rs promote best management practices (BMPs) to achieve cropping system goals while minimizing field nutrient loss and maximizing crop uptake.

4R Principles of Nutrient Stewardship



RIGHT SOURCE
Matches fertilizer type to crop needs.



RIGHT RATE
Matches amount of fertilizer to crop needs.



RIGHT TIME
Makes nutrients available when crops need them.



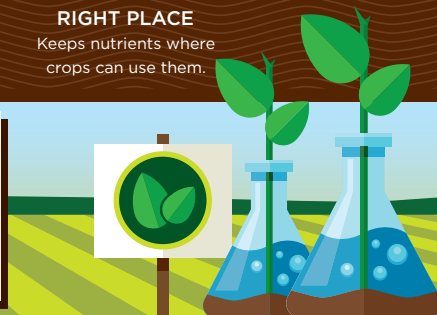
RIGHT PLACE
Keeps nutrients where crops can use them.

The 4Rs—Guided by Science, Proven by Research

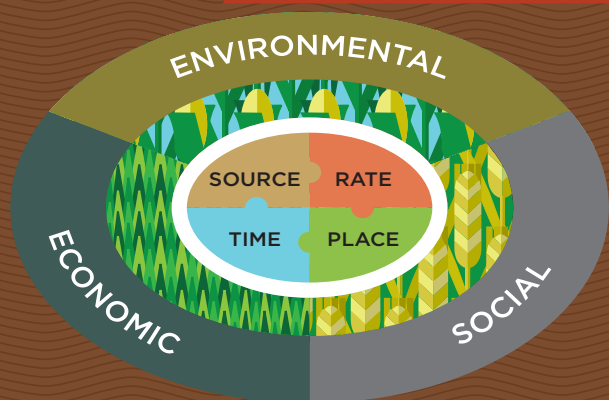
The 4R Research Fund was established by contributions from fertilizer industry members and stakeholders.

\$7,000,000 COMMITMENT

The Research Fund is an industry-funded effort committing **\$7 million** to 4R research. A portion of this money has already been raised and implemented in initial research projects.



IMPLEMENTING 4Rs ON THE FARM



STEP 1:

Identify farm-specific **economic**, **social** and **environmental** goals that the cropping system objectives should address.

STEP 2: Select BMPs that are specific to the grower's goals, soil, climate and cropping system.

STEP 3: Integrate BMPs for all goals and adjust as needed.

STEP 4: Document the 4R nutrient stewardship plan.



Although goals will vary among farm operations and even among fields, the following are commonly identified grower goals:

Improve net farm income and regional economic development.

Improve the quality of farm family housing, diet and education.

Reduce losses of nutrients to the environment.

NACHURS® STARTER & FOLIAR LIQUID FERTILIZERS

Growers across several countries are reaping the benefits of NACHURS liquid starter and foliar fertilizers on a variety of crops: corn, potatoes, tobacco, peanuts, vegetables... Most crops have a critical need for Phosphorus and Potassium from germination through reproductive stages, where maximum yield potential is determined. The NACHURS Advantage ensures that the crop has adequate available nutrients when the plant needs it most for maximum yield potential.



Soybeans



Corn



Corn Silage



Tobacco



Sugar Cane



Apples



Peanuts



Cherries



Wheat



Sunflowers



Hops



Broccoli



Carrots



Potatoes



Cotton

starter

NACHURS P-Focus and NACHURS PK-Focus can be placed directly with the seed at planting time. Placement with the seed enables the phosphate to be taken up at the earliest stages of growth.

This is the stage at which the young crop's requirement for phosphate is most critical.

Starter fertilizer:

- Provides the emerging seedlings with essential nutrients which are accessible near the young roots just as the sugars and starches are being depleted from the germinated seed even when planted in cold moist soils.
- Increases early growth and uniform germination establishing a higher plant population.
- Early robust seedlings can also better resist insect and disease attacks as well as compete more effectively with early weed pressures.
- Provides earlier flowering and maturity leading to a quicker dry down.

The greatest yield potential you're going to have with a crop is the day the seed germinates; it's downhill from here. The weakest time in a plant's life is from germination to emergence; the faster the emergence the better. When you lose yield, it will be either in the early development stage when yield is being established or the late development stage when yield is being preserved.

Why use NACHURS Starter fertilizers?

Phosphate is a key nutrient for the establishment of a healthy crop and it is during this early stage that phosphate is the lead contributor to increasing root mass. Once the root mass has been established, the plant is able to take advantage of the nutrients from a base nutrition program.

Other starter fertilizers require time for the dry granular fertilizer to dissolve or for the polyphosphate liquid fertilizers to break down into the plant available orthophosphate form. NACHURS P-Focus and NACHURS PK-Focus seed-placed starter are already in a liquid soluble

"Nitrogen, Phosphate, and Potassium can all be important nutrients in starter fertilizers. Sulfur and Zinc have also shown to give good response when soil test or local conditions and experience indicate a need."

- Source: Dr. Darst, Executive Vice President, PPI

Note that we put Sulfur, Zinc and Manganese in NACHURS P-Focus and NACHURS PK-Focus.

form and 100% of the phosphate is in the orthophosphate form. NACHURS P-Focus and PK-Focus are very efficient in supplying phosphate for plant uptake.

Using NACHURS P-Focus and NACHURS PK-Focus starter to provide the first ten pounds of plant available phosphate is a proven method to maximize phosphate efficiency and thus yields.

STARTER PRODUCTS:

NACHURS
P-Focus

NACHURS
PK-Focus

NACHURS Potassium Acetate Technology

NACHURS Potassium Acetate (KA) Technology is a combination of an inorganic salt reacted with an organic acid to form a potassium acetate fertilizer. What makes NACHURS KA unique is in the origination of its organic-based carrier (anion), the acetate molecule. Acetate is a natural plant metabolite that has many important functions within the plant as well as in the symbiotic relationship between plant roots and soil microbes/mycorrhizal fungi. It provides a base in which many plant compounds are thereby formed.

Acetate is also a very important part of signaling compounds (flavonoids, lipochitooligosaccharides, etc.) which promote plant-soil microbe relationships, enhanced defense mechanisms, and increased plant productivity.

Since the carrier portion of NACHURS KA is a natural plant metabolite, it is more rapidly and readily taken up by plants, which in turn leads to increased potassium use efficiency and higher productivity.

NACHURS KA also has a very low salt index and leaf burn potential, thus making it extremely safe for both foliar and in-furrow applications. Including NACHURS KA Technology in a sound, well balanced fertility program will provide the plant with added energy (derived from acetate) which will ultimately lead to increased yield. NACHURS PK-Focus and NACHURS K-Focus contain potassium acetate.

micronutrients

Micronutrients are essential to plant life but normally

our soils contain enough to provide sufficient nutrition to the plant. Most growers are well aware of Liebig's Law of the Minimum which states that any deficiency in a nutrient, no matter how small, will hold back the yield potential. As growers have evolved their crop nutrition programs to provide the maximum micronutrients to achieve optimum yields, it is often a micronutrient deficiency that is restricting the plant from reaching its genetic potential.

Growers must take into account the interactions of nutrients with each other. Any over supply on one nutrient can cause another nutrient to become the limiting factor.

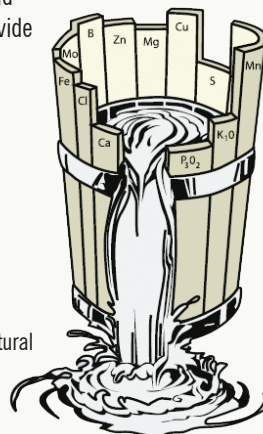
The EDTA Difference

Unlike other micronutrient sources such as complexes, partial chelates, and natural organic complexes, NACHURS EDTA chelated micronutrients are 100%

available to the crop by reducing soil immobilization by remaining water soluble. Other micro sources contain too little complexing agent and undergo major chemical changes, delivering significantly less micronutrient in a form available for plant uptake. While these sources of micronutrients may offer cost savings at first, they can actually create deficiencies for lack of availability.

What is a chelate?

A chelate is a complex organic molecule that surrounds the nutrient ion. Chelates are used as carriers for micronutrients, to keep them in solution and protect them from reactions that cause the micronutrient to become insoluble and unavailable to the plant.



- Chelation allows a nutrient to "maintain its own identity" with no tie up.
- Chelates are organic molecules that trap highly reactive metal cations (+).
- Chelation removes the positive charge from the metals.
- A neutral or slightly negatively charged chelated molecule enters the plant more rapidly.

Zinc (Zn) - 100% EDTA Chelated

Zinc is necessary for starch formation and proper root development. It is also essential for seed formation and maturity. The most common Zn nutrient deficiency symptoms include interveinal chlorosis on older leaves with shortening of the internodal area. This shortening often results in a short compressed plant with a rosetted appearance. NACHURS P-Focus is formulated with Zinc.

Comparing Chelates		
Strength	Stability Constant	Relative
EDTA	16.5	Strong
Phosphate	8.7	Medium
Citrate	4.5	Weak
Glucosulphonate	2-3	Weak
Lignosulphonate	2-3	Weak

Iron (Fe) - 100% HEDTA Chelated

Iron functions as a catalyst in several processes within the plant. It plays a vital role in the formation of chlorophyll and also functions in the respiratory enzymes. Iron serves in the transportation of energy in the plant. Iron is also an immobile nutrient and nutrient deficiencies are usually noticed first in the young leaves. They will first exhibit interveinal chlorosis which will spread over the entire leaf and turn the leaf white. New growth will cease and the leaves will die.

Manganese (Mn) - 100% EDTA Chelated

Manganese is essential to plants but too much is toxic. Manganese functions in chlorophyll development and serves as a catalyst in several enzyme systems in the oxidation-reduction process. Manganese deficiency symptoms are very similar to iron deficiencies and appear in the younger leaves of the plant first. Color may be pale between the veins of broadleaf plants. NACHURS N-Focus and K-Focus are formulated with Manganese.

Copper (Cu) - 100% EDTA Chelated

Copper is important as a co-enzyme. It is needed to activate several plant enzymes, including building and converting amino acids to proteins. Since Copper is an immobile nutrient in the plant, deficiency symptoms usually occur on new growth. Copper deficient plants will become chlorotic and take on a bleached appearance. New growth may die.

Magnesium (Mg) - 100% EDTA Chelated

Magnesium is important for ATP formation in chloroplast, as a structural part of chlorophyll, and activates numerous enzymes; most important being ribulose- 1, 5 - biphosphate carboxylase for photosynthetic carbon dioxide fixation. The typical deficiency symptom is interveinal chlorosis on older leaves.

Calcium (Ca) - 100% EDTA Chelated

A secondary element in plant nutrition, calcium is needed in the plant to promote early root formation and growth. Improves general plant vigor and stiffness of stalk. With Calcium deficiencies, leaves have a wrinkled or crinkled appearance and, in some instances, young leaves may never unfold. Roots are also short and are very bunched.

Boron (B)

Boron is vital to the growth & development of the plant. Without adequate Boron, new growth ceases. It is necessary in the pollination and seed production stages. Boron is essential for maintaining a balance between sugars and starches. A small amount of Boron is beneficial to plants but too much can be toxic to plants. NACHURS N-Focus, K-Focus, and S-Focus are formulated with Boric acid.

All micronutrients are also available for purchase as standalone products.

*Taken from: Western Fertilizers Handbook

Micro+ Starter		Micro+ Foliar	
Calcium (Ca).....	0.1%	Boron (B)	0.1%
Cobalt (Co).....	0.005%	Calcium (Ca)	0.1%
Copper (Cu).....	0.5%	Cobalt (Co)	0.005%
Iron (Fe).....	0.5%	Copper (Cu)	0.5%
Manganese (Mn).....	2.0%	Iron (Fe)	0.5%
Molybdenum (Mo).....	0.005%	Manganese (Mn)	2.0%
Zinc (w/w% Zn).....	3.0%	Molybdenum (Mo)	0.005%
		Zinc (Zn)	3.0%

Micro+
NACHURS offers Micro+ Starter and Foliar packages that offer the required nutrients for optimum plant health and growth.

foliar

NACHURS foliar products are manufactured with the highest quality raw materials on the market today. They include only chelated micronutrients to maximize foliar absorption. NACHURS products offer a variety of foliar options as crops need different nutrients at different times.

NACHURS foliar micronutrients have proven to translocate quickly from the young leaves to the root system. This translocation promotes a healthier plant and healthier root system. A healthier root system takes up more nutrients from the soil. In general, a healthier plant is a more profitable plant!

Foliar sprays should contain:

- Nitrogen to act as an electrolyte to carry nutrients
- Phosphate for internal circulation

The most critical times to apply:

- Periods of great growth activity
- Transition from vegetative to reproductive state
- Presence of deficiency/damage

Timing is crucial. Untimely applications are not effective.

FOLIAR PRODUCTS:



The rate of absorption is just one of many benefits of foliar feeding:

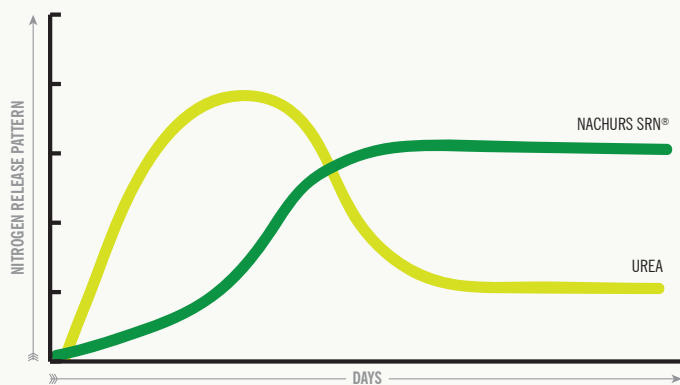
Nutrient	Time For 50% Absorption
Nitrogen (As Urea)	1/2 - 2 hours
Phosphorus	5 - 10 days
Potassium	10 - 24 hours
Calcium	10 - 94 hours
Magnesium	10 - 24 hours

- Source: Michigan State University

SYNERGISTIC EFFECT OF N, P, AND K

Treatment	% P Absorbed From Fertilizer
P alone	12.1%
N + P	20.3%
P + K	13.1%
N + P + K	22.3%

- Source: Dr. John L. Strauss, Director of Agronomy Services, Tulsa Oklahoma



NACHURS SLOW RELEASE NITROGEN ADVANTAGES <<

- Safe and efficient way to supply nitrogen to a growing plant
- Can react rapidly to deficiency symptoms or tissue analysis
- Rapid plant response for correcting deficiency
- Only requires small amounts of fertilizer
- Relatively low cost
- No foliar burn
- Improved yield

Foliar Nitrogen Absorption

Source	mgN
Triazone (NACHURS SRN)	9.60
Nitrate	7.40
Urea	7.31
Ammonium	6.75

31% more Nitrogen was absorbed from Triazone than from Urea

- Source: Widders, Michigan State

Translocation & Remobilization

Source	%
Triazone (NACHURS SRN)	62.2
Ammonium	28.5 (2 ¼)
Urea	24.7 (2 ½)
Nitrate	18.1 (3 ½)

Comparison of movement of N sources throughout plant from treated to untreated leaves.

- Source: Widders, Michigan State



NACHURS® LIQUID FERTILIZERS PRODUCT ADVANTAGES

Shopping around for fertilizers? In such tough economic times, farmers have a lot of factors to consider when planning for a successful growing season. We would like to help make those decisions easier. For over 70 years, the leader in top quality fertilizers has been NACHURS. We will not compromise fertilizer quality for a cheaper price. But you don't need to take our word for that; the proof is in the product.



IMMEDIATELY AVAILABLE N-P-K
REDUCED CROP STRESS

QUALITY.

NON-CORROSIVE
LOW MOISTURE CONTENT
LOW IMPURITIES
HIGH SOLUBILITY
LOW SALT INDEX
LOW APPLICATION RATES

HIGHER YIELDS
LARGER, FULLER ROOTS

PRECISION PLACEMENT
QUICK, UNIFORM EMERGENCE
SEED & FOLIAR SAFE
COMPATIBLE WITH INSECTICIDES
STORES WELL

EASE OF USE (TIME EFFICIENCY) <<

Less stopping

For starter applications you can size your tank to run out when seed runs out. With dry fertilizer you have to stop more often. For foliar application, our rates are often less than other products.

One pass

For starter applications, product is placed when the seed is planted on the same pass. For foliar applications our products are compatible with many other products (pesticides, fungicides, herbicides, insecticides) and can be applied when you are already going into the field to make a pass.

Cleaning

Unlike dry fertilizer and high salt liquid fertilizers, our products are non-corrosive, low salt, and have a neutral pH. No extensive equipment cleaning is necessary.

SPOON FEEDING / RISK MANAGEMENT (STAGED NUTRITION) <<

We recommend adding nutrients throughout the growing cycle:

- Starter nutrition at the time of planting
- Staged (early to late season) foliar nutrition at key points

NACHURS starter allows the plants to be continuously fed efficiently during its growing cycle versus putting everything down at once and risking the chance that it won't be available to the crop.

By spoon feeding the crop, it allows the grower to decide how much fertilizer to add to the crop during the season (and in essence how much money to spend on it as the season goes on) versus putting it all out before the season starts and hoping to get a good year. It also allows for the grower to add required trace elements to the foliar application if needed.

GAIN TIME <<

Our starter products get the crop off to a fast start which shortens the amount of time for the crop to grow to maturity.

The crop will have a quicker and consistent emergence

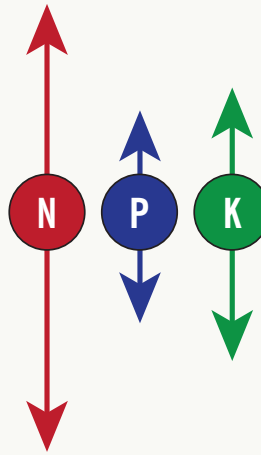
- This gives the crop a better chance of surviving a late spring frost
- If planted late, this will help catch the crop up
- Faster emergence allows for earlier pesticide application

The crop will also develop a better canopy coverage

- This will shade ground conserving moisture
- Weed growth will be reduced

Getting off to a fast start also means an earlier maturity

- Better chance of avoiding an early autumn frost due to earlier harvesting
- Decreased moisture content, resulting in drier corn at harvest



NACHURS PRODUCT BENEFITS

- Ease of Use
- Spoon Feeding / Risk Management
- Gain Time
- Efficiency
- Quality
- Yields

“Fuller-season hybrids, in general, are higher-yield hybrids. And the right starter fertilizer stimulates early growth—in essence, enabling the hybrid to mature to its full yield potential in less time. To “cram” if you will, a 115-day hybrid season into fewer calendar days.”

- Source: PCS Group

EFFICIENCY <<

Nitrogen moves quickly throughout the soil moisture profile.

Phosphate moves very little in the soil. The majority of P in most soils is essentially in insoluble forms.

Potassium is slow to move and usually becomes stratified in soil layers.

- If the plant does not get the nutrients then nutrients did not do any good
- Most of the nutrients applied are lost or tied up. It is estimated that the following percentages of nutrients are either lost or tied up when placed in the soil:
 - N-50% • P-95% • K-85%
- When nutrients are applied efficiently, less is needed and money is saved
- Further healthy plants can process water and nutrients more efficiently
- NACHURS fertilizers can be placed on the seed at planting which greatly improves nutrient efficiency.

QUALITY <<

Safety (low impurities, low salt, neutral pH)

- Plant/seed safe at recommended rates
- Non-corrosive on equipment

Storability

Year round storability in any temperature environment

Compatibility

Compatible for tank mixing with trace elements, herbicides, pesticides, fungicides, insecticides to help:

- Correct deficiencies
- Decrease plant stress

We always recommend a jar test first and mixing the product right before application.

YIELDS <<

Decades of trials have shown yield advantages using NACHURS products vs. dry starter, 10-34-0 and no starter.

SPECIALTY VS. COMMODITY <<

NACHURS P-Focus (10-18-4)

10-34-0

1.28 kg/liter x 18% = 0.231 kg P₂O₅/liter times 50 liters/HA equals 11.56 kg of P₂O₅/HA

11.6 kg/liter x 34% = 0.474 kg P₂O₅/liter times 50 liters/HA equals 23.68 kg of P₂O₅/HA

100% orthophosphate means all 11.56 kg/HA is available to the plants

30% orthophosphate is the average which means only 7.10 kg/HA is available to the plants

NACHURS P-Focus has 62% more available P than standard 10-34-0

OTHER DIFFERENCES:

- Low impurities
- Low salt – seed safe at recommended rates
- Non-corrosive
- Storable
- Micronutrients included

- High impurities
- High salt
- Potentially corrosive
- Less storable
- No micronutrients

TRUE SOLUTION VS. SUSPENSION <<

Suspension fertilizer is NOT a true solution:

- There is a high possibility of settling due to insufficient agitation; this settling is then prone to plug application equipment
- Constant agitation is needed in all phases of handling and application
- Settling contaminates successive products and requires adequate cleaning between products
- Variable viscosity causes inconsistent flow and application rates
- High salt content eliminates suspension fertilizer as a highly efficient in-furrow or foliar application
- High salt content is very corrosive to equipment
- Suspension fertilizer contains high levels of impurities from the manufacturing process
- Many times suspension fertilizers contain clay to help keep materials in suspension

NACHURS liquid fertilizer is a true solution





NACHURS® LIQUID FERTILIZERS

MAXIMIZING NUTRIENT EFFICIENCY

Yield potential will vary from farm to farm due to a variety of factors. The key is to provide a balanced fertility program that will allow you to achieve the total benefit from your crop production acres. In the early growth stages of the corn plant there is a definite need for a combination of Nitrogen, Phosphorus and Potassium to set the potential for maximum yields. NACHURS starter fertilizers supply nutrients to the plant during critical stages of development.

Early root development is critical to maximizing yields.



HOW DO WE DO IT?

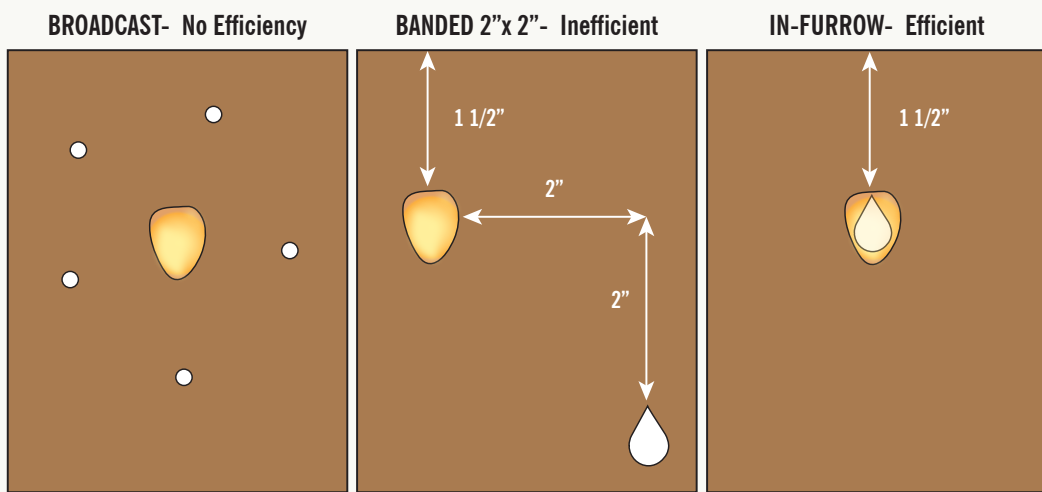
- Precision Placement** – Liquid vs. Dry
- Solubility** – Will Not Settle Out & Available
- Low Salt** – Seed Safe
- Neutral pH** – Non Corrosive
- Quality** – Raw Materials
- Orthophosphate** vs. Polyphosphate
- Specialty** vs. Commodity
- Suspension** vs. True Solution



PRECISION PLACEMENT <<

Placing exact amounts of the proper plant mineral nutrients on the plant at the times they are needed. Support early root development, which is critical to maximizing yields.

Precision Placement



RESEARCH UNIVERSITY OF GUELPH
 Study: 12 lbs. P₂O₅ seed-placed out-yielded 60 lbs. P₂O₅ banded

Leaves plant potentially short of P at a critical growth stage. Crop roots likely will not come in contact with the fertilizer during early growth as P only moves 1/10" in the soil.

Leaves plant potentially short of P at a critical growth stage. Roots may or may not come in contact with fertilizer during critical growth period. Crop roots will come into contact with approximately only 2% of the soil.

Fulfills needs of the young plant in regard to P requirements. Phosphorus placed for maximum plant efficiency. Roots are in immediate contact with the fertilizer.

Broadcast
 400 lbs. P₂O₅

2 x 2
 40 lbs. P₂O₅

Seed Placed
 10 lbs. P₂O₅

SOLUBILITY <<

Nutrients must be in solution and on the plant to be available.

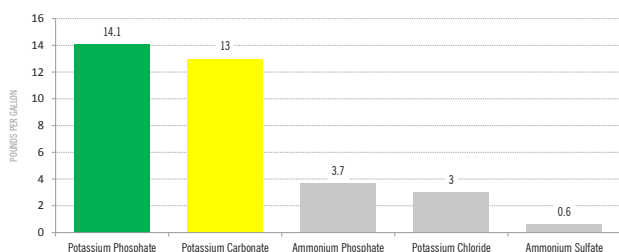
If the nutrient is not in solution or not on the plant, it is not available.

Our products are a true solution liquid fertilizer:

- Each drop has the same ratio of nutrients
- Nutrients will not settle out
- Our fertilizers allow greater flexibility in mixing with other products

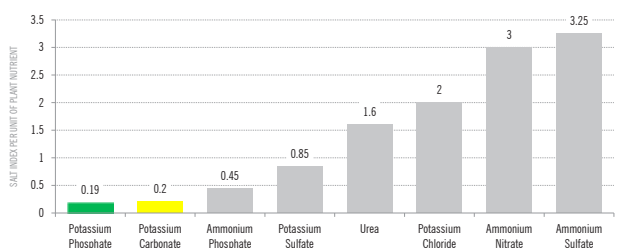
SOLUBILITY

Solubility is the number of pounds of dry fertilizer that will dissolve in 1 Gal of water at 72° F.



SALT INDEX

The higher the salt index, the greater the potential injury to the seed or seedling.



LOW SALT <<

Plants germinate through the process of osmosis. Water enters the seed from the soil.

In a high-salt environment the seed is challenged to get enough H₂O through the seed membrane to germinate.

NEUTRAL PH <<

In addition to a low salt level our products also have a neutral pH. This combination means our products are non-corrosive to equipment and seed safe at recommended rates. Further due to the neutral pH the product is safe to handle.

Low Salt + Neutral pH = Non-Corrosive

Low Salt + Neutral pH = Seed Safe

QUALITY <<

Quality of raw materials must always be considered. One problem with the fertilizer industry, as a whole, is the NPK analysis is the only thing that needs to be guaranteed. The level of impurities and the raw materials used to make the product are not always disclosed. Dry phosphate can even have as much as 10,000 ppm of aluminum, while NACHURS will run closer to 5 ppm.

We have defined specifications with all of our vendors of our raw materials which are much higher than typically found in the fertilizer industry.

We choose the highest quality raw materials to make our product with:

P – We use Purified Phosphoric Acid (PPA). This is the best P source available and is 100% orthophosphate. It is a clear color because it has very minimal impurities compared to other acid sources which have colors caused by impurities.



K – We use KOH which is low salt and a very friendly K source. It is made from the more commonly used KCL which is a high salt source of potassium.

N – We use a higher level of Urea than Ag grade and it has a very low level of biuret (which is toxic). Our Ammonia comes from cleaner sources and is at least NSF60 grade (which is used in drinking water).

S – The form of Sulphur we use is Thio Sulfate. This is a higher quality and more soluble sulphur source than other available options.

Trace Elements – We chelate our micronutrients which keeps them soluble in both the fertilizer and the soil.

We test all of our finished goods when they are made and retain samples for 5 years. We make all of our finished goods in small batches to ensure quality.

All of the products we sell internationally are tested for cold and hot storage for 12 months.



ORTHO VS POLY <<

Polyphosphates are similar to a chain of molecules, and are too large for the plant to uptake. Plants cannot absorb and metabolize phosphates in this form. Polyphosphates have to break down into single chain links (orthophosphates) in order to become available to the plant. Generally, if liquid fertilizer is green in color, it has polyphosphates.

Orthophosphates are in the form of a single chain link. Plants can only absorb and metabolize phosphates in this form. 'P' must be in the ortho form. Plants absorb P as Orthophosphate ions $H_2PO_4^-$ and HPO_4^{2-}

Our products only contain **100% orthophosphate**.

“Phosphorus in the soil solution will be almost exclusively orthophosphate.”

“If polyphosphates are added to the soil solution in the form of fertilizers, they must hydrolyze to orthophosphate in order to be absorbed by the plant root.”

“Therefore, for practical purposes, orthophosphate is the form that is most important.”

- Source: Foth & Ellis,
Michigan State University

Orthophosphate



Polyphosphate



NACHURS General Nutrient Programs by Crop

CROP	ROW SPACING	STARTER	Y SPLITTER
Corn	75 cm	NACHURS P-Focus – 50 Liters/Hectare	
Soybeans	75 cm	NACHURS PK-Focus – 25 Liters/Hectare	Yes
Wheat	18.75 cm	NACHURS P-Focus – 60 Liters/Hectare	
Oats	18.75 cm	NACHURS P-Focus – 60 Liters/Hectare	
Rye	18.75 cm	NACHURS P-Focus – 60 Liters/Hectare	
Barley	18.75 cm	NACHURS P-Focus – 60 Liters/Hectare	
Canola	18.75 cm	NACHURS P-Focus – 40 Liters/Hectare	
Sorghum		NACHURS P-Focus – 40 Liters/Hectare	
Alfalfa		N/A – multiyear crop	
Cotton	90 cm	NACHURS P-Focus – 25 Liters/Hectare	Yes
Sugar Cane		NACHURS PK-Focus – 60 Liters/Hectare-lay out shoots	
Sunflower	75 cm	NACHURS PK-Focus – 40 Liters/Hectare	
Rice	18.75 cm	If direct planting – NACHURS P-Focus – 30 Liters/Hectare If transplanting – NACHURS P-Focus -Ratio to Water 1:100	
Potato	90 cm	NACHURS P-Focus – 50 Liters/Hectare	
Sugar Beets	55 cm	NACHURS PK-Focus – 30 Liters/Hectare	
Tobacco		If direct planting – NACHURS SRN-Focus – 15 Liters/Hectare If transplanting – NACHURS SRN-Focus -Ratio to Water 1:100	
Lentils	75 cm	NACHURS PK-Focus -25 Liters/Hectare	Yes
Edible Beans	75 cm	NACHURS PK-Focus – 25 Liters/Hectare	Yes
Cole Crops (Broccoli, Cabbage, Cauliflower)		If transplanting NACHURS PK-Focus – 15 Liters/Hectare	
Cucurbits (Cucumbers, Pumpkins, Squash, Melons)	125 cm	NACHURS PK-Focus – 20 Liters/Hectare	
Onions		If direct planting – NACHURS PK-Focus – 20 Liters/Hectare If transplanting – NACHURS PK-Focus -Ratio to Water 1:100	
Tomatoes		If direct planting – NACHURS P-Focus – 20 Liters/Hectare If transplanting – NACHURS P-Focus -Ratio to Water 1:100	
Vegetables (Carrots, Lettuce, Peppers, Celery)		Direct and transplant NACHURS P-Focus – 15 Liters/Hectare	
Peanuts	90 cm	NACHURS PK-Focus – 25 Liters/Hectare	Yes
Sesame	90 cm	NACHURS P-Focus – 20 Liters/Hectare	
Safflower	90 cm	NACHURS PK-Focus – 30 Liters/Hectare	
Grapes (Concord)		N/A – multiyear crop	
Pasture/Grasses		N/A – multiyear crop	
Fruit Trees- General		N/A – multiyear crop	
Nut Trees- General		N/A – multiyear crop	

- All starter rates need to be adjusted according to row spacing and soil conditions (CEC, OM%, Moisture). are not getting two streams on the seed and they are in fact going on each side of the seed.
- Some crops require a Y splitter to be used for application because the seed is sensitive. Y splitters are put on the end of the hose so that the liquid goes on each side of the seed instead of directly on it. Make sure it is lined up correctly so you
- Foliar applications can be applied when other chemicals are being applied. Our products mix well although we always recommend a jar test and to mix right before application. If multiple applications are possible then the amount recommend

FOLIAR OPTION 1	FOLIAR OPTION 2
NACHURS SRN-Focus – 30 Liters/Hectare – with high prices this is becoming more popular	
NACHURS SRN-Focus – 20 Liters/Hectare	
NACHURS K-Focus – 30 Liters/Hectare	NACHURS SRN-Focus – 30 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS KA-Focus – 20 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS KA-Focus – 20 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS KA-Focus – 20 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
Not common	
NACHURS PK-Focus – 50 Liters/Hectare – apply 3 days after cutting is best	
NACHURS K-Focus – 30 Liters/Hectare	NACHURS SRN-Focus – 30 Liters/Hectare {Best to do multiple applications at 10 liters each – Maximum on any application should be 20 liters}
NACHURS SRN-Focus – 30 Liters/Hectare	
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
NACHURS K-Focus – 30 Liters/Hectare	NACHURS SRN-Focus – 30 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
NACHURS K-Focus – 30 Liters/Hectare	NACHURS KA-Focus – 30 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS KA-Focus – 20 Liters/Hectare
NACHURS K-Focus – 30 Liters/Hectare	NACHURS KA-Focus – 30 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
NACHURS K-Focus – 15 Liters/Hectare every 7 days	NACHURS KA-Focus – 15 Liters/Hectare every 7 days
NACHURS K-Focus – 15 Liters/Hectare every 7 days	NACHURS KA-Focus – 15 Liters/Hectare every 7 days
NACHURS K-Focus – 30 Liters/Hectare	NACHURS KA-Focus – 30 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
NACHURS K-Focus – 20 Liters/Hectare	NACHURS SRN-Focus – 20 Liters/Hectare
NACHURS K-Focus – 10 Liters/Hectare early 30 Liters/Hectare late	NACHURS KA-Focus – 10 Liters/Hectare early 30 Liters/Hectare late
NACHURS P-Focus – 20 to 50 Liters/Hectare	Use NACHURS PS-Focus if Sulphur deficient
Consult for application rates and timing	
Consult for application rates and timing	

can be split over these applications although make sure there is enough water to ensure complete coverage. Unless specifically noted the foliar application may all be made at once if that is easiest. Make sure you add enough water to get good coverage in all instances. Micronutrients may be added to the foliar applications to correct any deficiencies that exist. The best time to apply any foliar product is in the morning or the evening. If it is extremely dry cut back the application rates.

- These are general recommendations. In some markets, different products may be used due to soil differences and growing conditions. In some markets it may not be common to apply both starter and foliar to the crop. In this case it is fine to apply just one, although applying the full program will yield best results.





www.nachursinternational.com

