Performance Nutrition was established in 1999 to develop new eco-responsible products and programs for the Turf & Ornamental market. The Performance Nutrition product line of specialty performance products is tailored to meet the ever-increasing demand for new and safer plant disease control and nutritional products.

Through the innovation of its staff of technical and product development professionals, the Performance Nutrition division has assembled an ever-expanding array of unique and powerful bio-pesticides, patented chelated micronutrient solutions, specialty fertilizers, soil inoculants and fertilizer additives that are not only effective but environmentally and applicator friendly as well.

Performance Nutrition fertility and specialty products are sold across the country by local independent distributors familiar with local growing practices and problems.

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Agricultural and T & O Products
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Corporate Office
LidoChem, Inc
20 Village Court • Hazlet, New Jersey 07730
Phone: (732) 888-8000 • Fax: (732) 264-2751
info@pnfertilizers.com
LidoChem®, Inc., a family-owned business, was established in 1981 to secure and distribute water-soluble nutrients and related products for the specialty fertilizer industry from new off-shore sources. LidoChem, Inc. takes great pride in its role in facilitating the growth of the water-soluble fertilizer industry from its infancy to its current predominance.

LidoChem, Inc.’s Industrial Division continues to distribute raw materials for the specialty fertilizer, detergent and related industries from strategically located distribution centers, and, remains a trusted name for almost four decades.

LidoChem, Inc. established the Performance Nutrition® Division in 1999 to pursue its vision of more sustainable and eco-responsible practices in the agricultural, turf and ornamental markets. Performance Nutrition’s unique patented and proprietary specialty products allow growers to “bio-rationalize” their fertility and pest control programs by integrating organic and microbial-based products into conventional programs. Beginning in the year 2000, Performance Nutrition was amongst the first to bring this concept to market with chemical-free NutriSmart® Soil Inoculant, which delivers season-long N, P, K and Si through microbial activity.

Performance Nutrition has assembled an ever-expanding array of specialty performance fertilizers, chelated micronutrient solutions, bio-pesticides, soil inoculants, soil amendments and organic-based products. This diverse product line corrects conditions that inhibit plant health and supports conditions that enhance plant health and productivity, while utilizing and protecting the ecosystem.

These products are used together in an ecosystem management program comprising patented Performance Treatments, which address the critical parameters of healthy ecosystems. Performance Treatments are available for soil health, plant health and seed treatments. Custom programs can also be developed to deliver season-long fertility and pest management.

Performance Nutrition® products are sold throughout the USA by local independent distributors familiar with local growing practices and challenges.
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Implementing the 4R Approach

The Right Time for NUTRIENT STEWARDSHIP IS RIGHT NOW*

4R Nutrient Stewardship represents an innovative approach to fertilize best management practices (BMPs). The 4Rs imply there are four aspects to every fertilizer application and it provides a framework to assess whether a given plant has access to the necessary nutrients. Asking “Was the plant given the right source at the right rate, at the right time, and in the right place?” helps identify opportunities to improve fertilizer efficiency and prevent nutrient movement from each property.

Benefits of using the 4Rs include:

**Improving plant productivity**
- Optimizing nutrient management is key when dealing with fertilizer and other input price fluctuations.
- Improved plant health has been documented with better plant and soil management

**Minimizing the impact to the environment**
- Adopting nutrient stewardship contributes to the preservation of natural ecosystems.
- Retaining nutrients within the applied area greatly reduces the amount that is not utilized by plants and escapes into the environment as pollution.

*Content taken from The Fertilizer Institute (https://www.nutrientstewardship.com/4rs/)
While most turf managers know that all plants require varying amounts of the three primary nutrients - Nitrogen, Phosphorus and Potassium, the impact of secondary nutrient and micronutrient deficiencies can be surprising to even veteran turf managers. Strange coloration, stunted growth and multiple buds are just a few signs that the soil is lacking in an essential element.
Nitrogen:
Used most out of the three primary macronutrients and is the major constituent in chlorophyll. It affects shoot and root growth, density, color, disease resistance and stress tolerance.

Phosphorus:
Second most important primary macronutrient. Essential part of photosynthesis and impacts the rate of seedling development, maturation and root growth.

Potassium:
Third most important primary macronutrient, and typically occurs naturally in the soil. Essential for cell division, cell electrolyte balance and the functioning of the stomates and influences drought tolerance, cold hardiness and disease resistance.

Calcium:
Buffers the soil pH, making it more alkaline, and is essential for root health, growth of new roots and root hairs and the development of leaves.

Magnesium:
Essential for photosynthesis (part of chlorophyll), improves utilization and mobility of phosphorus and acts as an activator of many plant enzymes.

Sulfur:
Found in amino acids that make up plant proteins, and activates certain enzyme systems.

Boron:
Aids production of sugar and carbohydrates and in cell division and cell wall formation.

Chlorine:
Required for photosynthesis.

Copper:
Involved in photosynthesis, respiration and the formation of lignin. Regulates cell wall construction and cell growth and division.

Iron:
Essential for the formation of chlorophyll, photosynthesis and nitrogen metabolism.

Manganese:
Stimulates enzymatic activity, helps chloroplast production and enhances root growth and fruit development. May influence resistance to certain diseases.

Molybdenum:
Helps in nitrogen fixation and is required for protein synthesis.

Nickel:
Essential component of the plant’s natural defense system.

Zinc:
Required for the synthesis and functioning of chlorophyll, is involved in the plant hormone system and is a catalyst for auxin.
The Performance Ecosystem Management® Program (PEMP) is a pro-active, comprehensive system for turf management that is safe, effective, easy-to-use and simple to manage. PEMP consists of our patented Performance Treatments, each of which targets specific components of an ecosystem:

- Soil
- Turf Nutrition and Micronutrition
- Microbial Populations
- Water & Soil Solutions

Each Performance Treatment corrects conditions that negatively impact the ecosystem, and, enhances conditions that favor vigorous, more stress resistant and sustainable turf.

With continued use, the Performance Treatments will balance plant nutrition and micronutrition, support healthy populations of diverse microorganisms, and reduce the need for chemical fertilizers and pesticides. In addition, Performance Treatments improve availability and uptake of soil nutrients, increase levels of soil organic matter, enhance the soil's water-holding capacity, build thick, deep roots and maintain healthy, stress-resistant turf.
Performance Ecosystem Management Programs

PERFORMANCE AERIFICATION TREATMENT® (PAT®)

Fortifies the root zone with enriched permanent and semi-permanent Eco-stations and soil amendments.

Performance Eco-stations release organic nitrogen and organic extracts that unlock P and K in the soil and make micronutrients more bio-available for turf uptake. Performance Eco-stations also absorb plant nutrients, micronutrients and organic compounds whenever soil applications are made; re-charging and releasing beneficial compounds all season long.

BENEFITS OF THE PERFORMANCE AERIFICATION TREATMENT

• Improves Nutrient-Use Efficiency by supplementing or replacing up to 50% of soil-applied NPKs.
• Improves Water-Use Efficiency by increasing the water-holding capacity of the soil, keeping moisture in the root zone longer.
• Improves soil structure to help water movement and facilitates gas exchange within the root zone.
• Adds organic matter where it is needed to supply carbon to living organisms.
• Increases root mass for enhanced nutrient uptake.

PERFORMANCE AERIFICATION TREATMENT PRODUCT OPTIONS

Ormanica Plant Compost
For improved C.E.C., soil structure and water holding capacity.

Organic amendment (alternative to peat) for sand based root zone mixes: To meet USGA guidelines, blend Ormanica with sand at a 95:5 to 90:10 ratio of Ormanica:sand for the desired root zone mix.

Green and Tee Renovation and Construction: Add 5% Ormanica by volume to topdressing sand or broadcast after aerification at topdressing rate.

NutriSmart®-B
For the replacement of 25 - 50% of nitrogen applications and the addition of humic substances.

For use as an aerification amendment: Broadcast 4.5 - 8.0 lb. per 1,000 ft² (200 - 350 lb. per acre) and drag into holes. Top-dress as normal and irrigate.

For use with conventional and organic fertilizers: Replace 20 - 50% of soil applied granular NPK with an equal amount by weight of NutriSmart®-B.

Z.One VitaSmart (SGN 150)
For all the benefits of Performance Eco-Stations and NutriSmart-B.

New Construction Recommendation: Incorporate 100 - 200 lb. per ton of root zone mix.

Aerification Application Recommendation: Broadcast 5 - 10 lb. per 1,000 ft² (218 – 435 lb. per acre) and drag into holes. Top-dress as normal and irrigate.

Fairways, Sports turf, etc.: Broadcast 10 - 20 lb. per 1,000 ft² (435 - 870 lb. per acre) 1 to 2 times per year. Irrigate thoroughly after application.
PERFORMANCE SOIL TREATMENT® (PST®)

The Performance Soil Treatment® improves the condition and composition of the soil, enhances microbial populations, improves nutrient efficiency and delivers an arsenal of amino acids, enzymes, sugars and organic substances. Incorporating PST® into turf management regimens supports a vigorous ecosystem and enhances conditions that contribute to turf quality and sustainability.

The Performance Soil Treatment contains several beneficial active ingredients that work together to maintain a healthy and productive soil environment. PST products include KaPre® ExAlt Polyelectrolyte Solution, KaPre® RemeD8-WSP Soil Inoculant, and Pennamin® Amino Acid products.

**BENEFITS OF THE PERFORMANCE SOIL TREATMENT**

- Provides a solid foundation for building healthy turfgrass and will enhance any nutrient program
- Unlocks nutrients found in the soil (Ca, P, Mg, etc.)
- Increases the bio-availability of minerals
- Provides organic nitrogen with free amino acids
- Improves the diversity of beneficial soil microbes
- Provides food sources for native microbial populations
- Helps balance the sodium to potassium ratio of the soil to aid in the prevention of sodium-induced wilt
- Alleviates compacted soils, reduces bicarbonates and eliminates black layer

**PERFORMANCE SOIL TREATMENT PRODUCT OPTIONS**

**KaPre® ExAlt**

*Maintenance Rate (To prevent and correct mineral buildup):*

Apply KaPre® ExAlt at a rate of 16-32 fl. oz. per acre (0.35 - 0.70 fl. oz. per 1,000 ft²) every month throughout the growing season.

*Curative Rate (For the treatment and rejuvenation of highly compacted soils, salt-contaminated soils, damaged soils affected by hydrophobicity and to aid in the recovery of soil damaged by soil borne pathogens):*

Apply KaPre® ExAlt at a rate of 16-32 fl. oz. per acre (0.35 - 0.70 fl. oz. per 1,000 ft²) every week for the first month followed by applications every month throughout the season. Apply labeled rates of KaPre® RemeD8 WSP Soil Inoculant as a tank mix with KaPre® ExAlt or within 3-7 days after the KaPre® ExAlt application.

**Pennamin®**

*Pennamin® High K*

Apply 0.4 - 2 oz. per 1000 ft² (1 - 5 lb. per acre). Substitute other Pennamin® products depending on turf or soil requirements.

**KaPre® RemeD8-WSP Soil Inoculant**

*Greens, tees and other low-cut turf:*

Apply one 8 oz. packet of KaPre® RemeD8-WSP per 1.0 - 1.25 acres. Apply every 14 days throughout the season.

*Fairways, roughs, sports turf and other high-cut turf:*

Apply one 8 oz. packet of KaPre® RemeD8-WSP per 2.0 - 2.5 acres. Apply every 14 days throughout the season.

**Kelpene™ GPX**

*Maintenance Rate:*

Make 4 applications of Kelpene GPX at a rate of 15 fl. oz. per acre (0.3 fl. oz. per 1,000 ft²) during the spring and early season every 2-3 weeks, followed by 1 mid-season application and 1 fall dormancy application.

*Recovery/High Stress Rates:*

Make 12 - 18 applications of Kelpene GPX at a rate of 15 fl. oz. per acre (0.3 fl. oz. per 1,000 ft²) during the season. Apply every 2 weeks during the key growing period and then every 30-60 days at other times.
PERFORMANCE FOLIAR TREATMENT® (PFT®)

The Performance Foliar Treatment® safely and efficiently delivers foliar nutrition, micronutrition and disease suppression. Turf treated with the PFT® develops highly fibrous and branched root systems, stays greener longer and is more stress tolerant.

As with other Performance Treatments, PFT is easy to use and apply. No pre-mixing or pre-soaking is required and all of the products are compatible with each other and most fertilizers and chemicals. Most PFT applications require 5 products or less – KaPre® KelpPlus, Nutrol®, Prudent® and the choice of Vibrant® Foliar Fertilizers and Krystal Klear® Chelated Micronutrients. Treatments can be tailored to meet the specific requirements of the turf.

BENEFITS OF THE PERFORMANCE FOLIAR TREATMENT

- Controls and suppresses foliar and soil-borne pathogens
- Supports turf’s natural defenses with organic supplements
- Prevents alkaline hydrolysis and optimizes pesticide applications
- Provides quicker uptake of nutrients through foliar application
- Delivers a wide array of micronutrients and trace elements to quickly correct micronutrient deficiencies for optimum turf growth

PERFORMANCE FOLIAR TREATMENT PRODUCT OPTIONS

**KaPre® KelpPlus**

**Turfgrass:** Apply 1.5 to 6 fl. oz. per 1,000 ft² every 2 weeks throughout the season.

**Ornamental Plant Maintenance:** Dilute 1 to 100 in water (1 oz./gal.) and apply as a soil drench for stressed plants or spray diluted solution on foliage to runoff every 30 - 60 days to promote flowering.

Apply 6 fl. oz. KaPre KelpPlus per 1000 ft².

**Krystal Klear®**

**Krystal Klear® Fe:** Apply 0.75 - 2 fl. oz. per 1,000 ft² every 2 weeks throughout the growing season.

**Krystal Klear® Turf Mix:** Apply 0.75 - 2 fl. oz. per 1,000 ft² every 2 weeks throughout the growing season.

**Krystal Klear® ResQ:** Apply 3 - 6 fl. oz. per 1,000 ft² every 2 weeks throughout the growing season.

**Prudent® 44 & Prudent® 42CW or Prudent® 40PLUS**

Apply 0.5 - 2 fl. oz. per 1,000 ft². Begin applications in the spring and continue on a 7 to 14 day schedule throughout the growing season.

**NUTROL®**

**Nutritional Applications:**
Apply 2 - 4 oz. per 1,000 ft² (6 - 11 lb. per acre) per application. Apply every 7 to 14 days throughout the season. If used as a starter fertilizer during transition periods to cool season grasses, apply 4 - 6 oz. per 1,000 ft².

**Disease Control Applications:**
Mix 8 - 11 lb. of Nutrol® with labeled rates of Prudent® fertilizers per 100 gal. and apply as necessary. DO NOT exceed one application every 7 days.

**Vibrant®**

**Vibrant® Red:** Apply 3 - 6 fl. oz. per 1,000 ft² every 2 weeks throughout the growing season.

**Vibrant® Green:** Apply 4 - 8 fl. oz. per 1,000 ft² every 2 weeks throughout the growing season.
PERFORMANCE LAWN CARE TREATMENT (PLT)

The Performance Lawn Care Treatment delivers foliar nutrition, beneficial microbes as well as stress management with the application of plant extracts and terpenes for healthy soil and lush, greener lawns.

BENEFITS OF THE PERFORMANCE LAWN CARE TREATMENT

- Improves stress tolerance
- Supports turf’s natural defenses with organic supplements
- Enhances root development and germination rates
- Nitrogen fixation to supplement applied nitrogen

PERFORMANCE LAWN CARE TREATMENT PRODUCT OPTIONS

**LidoQuest® 30-0-0 or LidoQuest® 18-3-6**

Apply at rates of 8 - 16 fl. oz. per acre (1 - 4 fl. oz. per 1,000 ft²)

**KaPre® RemeD8-LCP Soil Inoculant**

Apply one 4 oz. packet per 0.5 to 0.75 acres. Apply as needed throughout the season.

**KaPre® Embella**

Foliar-apply 8 - 16 fl. oz. per acre (0.2 – 0.36 fl. oz. per 1,000 ft²) every 14 – 28 days.

**Kelpene™ GPX**

**Maintenance Rate:** Make 4 foliar applications of Kelpene GPX at a rate of 15 fl. oz. per acre (0.3 fl. oz. per 1,000 ft²) during the spring and early season every 2-3 weeks, followed by 1 mid-season application and 1 fall dormancy application.

**Recovery/High Stress Rates:** Make 12 - 18 foliar applications of Kelpene GPX at a rate of 15 fl. oz. per acre (0.3 fl. oz. per 1,000 ft²) during the season. Apply every 2 weeks during the key growing period and then every 30-60 days at other times.
PERFORMANCE ORNAMENTAL TREATMENTS (POT)

Performance Ornamental Treatments deliver nutrition, beneficial microbes and organic supplements designed specifically for ornamental plants, shrubs and trees.

FLOWERS AND SHRUBBERY:

Foliar applications:

**Vibrant**® Red – Applications should be made at rates of 1.0 - 1.5 gallons of Vibrant Red per 100 gallons of spray solution. Apply 5 gallons of spray solution per diameter inch.

**Prudent**® 44 - Use a minimum of 1 gallon of water per 1 ounce of Prudent 44

**Nutrol**® - For control of powdery mildew, including but not limited to *Microsphaeri alni* and *Erysiphe cichoracearum* on woody and herbaceous ornamentals, use 8 to 40 lb. of Nutrol per acre.

**Kelpene**™ GPX - Apply 7.5 - 15 fl. oz. per acre

Soil applications – products can be tank mixed and applied as a drench to the treatment area:

- **KaPre**® RemeD8-LCP – Apply 4 oz. per 50 gallons
- **KaPre**® Tree & Flower Mix – Apply 1 lb. per 100 gallons
- **KaPre**® Embella – Apply 16 fl. oz. per 100 gallons

TREE CARE:

- **KaPre**® RemeD8-LCP – Apply 4 oz. per 50 gallons
- **KaPre**® Tree & Flower Mix – Apply 1 lb. per 100 gallons
- **KaPre**® Embella – Apply 16 oz. per 100 gallons

PERFORMANCE SEED TREATMENT

The patented Performance Seed Treatment is designed to promote and support thorough and more uniform seed germination and supplement seeds early stage nutrient and micronutrient requirements.

The Performance Seed Treatment is customized to suit the specific requirements of the customer. Several patented technologies, including Krystal Klear® chelated micronutrients, Prudent® phosphite fertilizers, and KaPre® Seed Treatment Additives are available to create the right product for the seeds being treated.

*Contact your Performance Nutrition® representative for more details.*

BENEFITS OF THE PERFORMANCE SEED TREATMENT

- Initiates faster germination
- Improves uniformity of seed germination
- Supplements nutritional need of young seedlings
**application instructions**

**turf:** apply with fertilizer at a rate of 8 - 16 fl. oz. per acre (0.18 - 0.36 fl. oz. per 1000 ft²) at planting or sod-laying. follow with foliar fertilizer applications at a rate of 16 fl. oz. per acre every 30 – 45 days. 

**Benefits of KaPre Embella**

**to the soil**

- Provides nutrition for native microbial populations, the driving force of any ecosystem
- Improves soil conditions and nutrient availability by unlocking nutrients that may be tied-up in the soil
- Encapsulates nutrients and keeps them in the root zone for plant uptake
- Improves the water holding capacity of the soil
- Reduces leaching
- Nutrients stay in the root zone where plants can use them and out of ground water, aquifers and other waterways
- Improves soil aeration

**to the plant**

- Improves nutrient uptake
- Strengthens cell walls
- Increases root depth and mass
- Enhances drought, disease and stress tolerance
- Supports plant’s immune response
**Application Instructions**

**Maintenance Rate (To prevent and correct mineral buildup):**
Apply KaPre ExAlt at a rate of 16 - 32 fl. oz. per acre (0.35 - 0.70 fl. oz. per 1,000 ft²) every month throughout the growing season.

**Curative Rate (For the treatment and rejuvenation of highly compacted soils, salt-contaminated soils, damaged soils affected by hydrophobicity and to aid in the recovery of soil damaged by soil borne pathogens):**
Apply KaPre ExAlt at a rate of 16 - 32 fl. oz. per acre (0.35 - 0.70 fl. oz. per 1,000 ft²) every week for the first month followed by applications every month throughout the season.

Apply labeled rates of KaPre RemeD8-WSP Soil Inoculant as a tank mix with KaPre ExAlt or within 3 - 7 days after the KaPre ExAlt application.

**Note: Do Not Mix With Selective Herbicides**

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**BENEFITS OF KaPre ExAlt**

- Solubilizes and releases soil-bound ions, such as calcium, magnesium, iron, manganese, phosphorus and sulfur
- Flushes sodium from the root zone without indiscriminately stripping the soil of nutrients
- Improves soil drainage
- Stimulates deeper root systems
- Reduces crusting and penetrates hard pan
- Reduces soil compaction
- Increases soil aggregation
- Improves efficiency of fertilizers and other chemicals
- Improves soil aeration

---

**Guaranteed Analysis**

**Active Ingredients**
- Humic Acids . . . . . . . . . . . . . . . . . . . . . . . 35%
- Water . . . . . . . . . . . . . . . . . . . . . . . . . . . . 65%

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**PROVEN PERFORMANCE**

Jack Birdwell has been Golf Course Superintendent at Comanche Trail Golf Course in Big Spring, Texas for more than 15 years. Managing salt levels in the soil is a constant obstacle at the course due to its location in a high drought area.

“During the winter months, average rainfall is about 3 inches if we are lucky so salt accumulates on the greens and you can even see crystals forming if you don’t manage it.”

Over the years Jack tried a variety of techniques, including gypsum applications, to manage the winter buildup of salts on his greens.

About 18 months ago Jack tried KaPre® ExAlt on his greens and really noticed a difference. Jack applies KaPre® ExAlt at 32 oz. per acre for the first 3 or 4 applications in the spring and then cuts that to the 16 oz. per acre rate every 2 to 3 weeks through the rest of the season. He alternates weekly applications with Pennamin® High K at 2 pounds per acre and noticed a big difference in the look and play of the turf.

“My greens are better, remarkably better. I get comments now about how good the greens are.”
**BENEFITS OF KaPre KelpPlus**

- Provides a nutritional supplement through the release of naturally occurring plant nutrients and trace minerals.
- Accelerates and improves seed germination
- Promotes vigorous rooting and overall plant health

**The KaPre KelpPlus Advantage**

**Amino Acids** - 100% of these amino acids are free amino acids so they are quickly available to the plant  
*Amino acids can complex micronutrients tied up in the soil, making them available for plant uptake*

**Vitamins** - play important roles in plant health and growth, nutrient transport systems in cold temperatures and root regeneration.  
*A, B, B1, B12, C, E, K and PP*

**Naturally Occurring Growth Promoters**  
*Gibberellins, Auxins, Cytokinins, Glycol kinetin, Betaines and Carotene*

---

**1-1-1 Guaranteed Analysis**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen (N)</td>
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</tr>
<tr>
<td>1.0% Water Soluble Nitrogen</td>
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</tr>
<tr>
<td>Available Phosphate (P₂O₅)</td>
<td>1.0%</td>
</tr>
<tr>
<td>Soluble Potash (K₂O)</td>
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</tr>
</tbody>
</table>

Derived from kelp and amino acids.

---

**Application Instructions**

**Turfgrass:**  
Apply 1.5 to 6 fl. oz. per 1,000 ft² every 2 weeks throughout the season.

**Ornamental Plant Maintenance:**  
Dilute 1 to 100 in water (1 oz./gal.) and apply as a soil drench for stressed plants or spray diluted solution on foliage to runoff every 30 - 60 days to promote flowering.  
Apply 6 fl. oz. KaPre KelpPlus per 1000 ft².

**Tree Maintenance:**  
Mix 1 gallon per 400 gallons of water and apply with fertilizer to root zone with injection feeding equipment.

---

**AMINO ACID PROFILE**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Content</th>
<th>Amino Acid</th>
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<tbody>
<tr>
<td>Alanine</td>
<td>0.22%</td>
<td>Isoleucine</td>
<td>0.13%</td>
<td>Threonine</td>
<td>0.21%</td>
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<td>Arginine</td>
<td>0.27%</td>
<td>Leucine</td>
<td>0.32%</td>
<td>Tryptophan</td>
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<td>Aspartic Acid</td>
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<td>Lysine</td>
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<td>Tyrosine</td>
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<td>Cystine</td>
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<td>Phenylalanine</td>
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<td>Glutamic Acid</td>
<td>0.49%</td>
<td>Methionine</td>
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<tr>
<td>Glycine</td>
<td>0.37%</td>
<td>Proline</td>
<td>0.49%</td>
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<tr>
<td>Histidine</td>
<td>0.05%</td>
<td>Serine</td>
<td>0.56%</td>
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</table>

**Total Amino Acids**  
*4.15%*
KaPre® Spectra
CONCENTRATED FULVIC ACID SOLUTION

KaPre® Spectra improves the foliar uptake of nutrients and micronutrients and can improve fertilizer performance when added to starter or foliar fertilizer applications.

Non-Plant Food Ingredients

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Fulvic Acid</td>
<td>20%</td>
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<tr>
<td>Other Ingredients</td>
<td>80%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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</tbody>
</table>

BENEFITS OF KaPre Spectra

Increases nutrient absorption
- Makes nutrients more absorbable by complexing them into organic, ionic forms that are easily transported through cell membranes

Improves fertilizer efficiency
- Increases plant uptake of soil and foliar applied nutrients. The low molecular weight formulation improves mobility through cell walls to plant growth points

Application Instructions

With Herbicides
Apply KaPre Spectra at rates of 2 - 12 fl. oz. per acre with NON-SELECTIVE herbicides only.

Transplanting and Cuttings
Blend 2 - 4 fl. oz. of KaPre Spectra per 20 gal. of solution.

Cool Season Grasses
Include KaPre Spectra with all foliar nutrient applications at a rate of 2 fl. oz. per 25 gal. of spray solution.
Use KaPre Spectra alone to reduce plant stress before, during or after stressful periods at a rate of 0.5 fl. oz. per 1,000 ft² or 2 - 6 fl. oz. per 25 gal. of spray solution.

Trees, Shrubs, Woody Ornaments and Bedding Plants
Include KaPre Spectra with all foliar nutrient applications at a rate of 2 fl. oz. per 25 gal. of spray solution.
Use KaPre Spectra alone to reduce plant stress before, during or after stressful periods at a rate of 0.25 fl. oz. per 1,000 ft² or 2 - 6 fl. oz. per 25 gal. of spray solution.

Warm Season Grasses and Ornamentals
Inject into irrigation or broadcast spray at a rate of 10 - 20 fl. oz. per acre 1 to 3 times during the growing season.
Mix with root injections at a rate of 4 - 6 fl. oz. per 10 gal. of injection solution.
KaPre® Tree & Flower Mix<sub>WSP</sub>

CONCENTRATED BLENDE OF FISH HYDROLYSATE, AMINO ACIDS, HUMIC ACID, SEA KELP AND MYCORRHIZAE

KaPre® Tree & Flower Mix<sub>WSP</sub> is a concentrated, long-lasting blend of fish hydrolysate, amino acids, humic acid, sea kelp and mycorrhizae, specifically designed to be easily absorbed and to support and maintain healthy and productive trees. KaPre Tree & Flower Mix<sub>WSP</sub> is rich in protein, enzymes, oils and trace elements, and, has a fresh fish scent, unlike fish emulsions.

3-1-3

Guaranteed Analysis

<table>
<thead>
<tr>
<th>Component</th>
<th>Guaranteed Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen (N)</td>
<td>3.0%</td>
</tr>
<tr>
<td>3.0% Other Water Soluble Nitrogen</td>
<td></td>
</tr>
<tr>
<td>Available Phosphate (P&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;5&lt;/sub&gt;)</td>
<td>1.0%</td>
</tr>
<tr>
<td>Soluble Potash (K&lt;sub&gt;2&lt;/sub&gt;O)</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

Derived from feather meal, kelp, leonardite, potassium hydroxide and fish protein hydrolysate

BENEFITS OF KaPre Tree & Flower Mix<sub>WSP</sub>

- Feeds beneficial soil microbes and creates a more fertile soil environment
- Encapsulates and protects the roots with mycorrhizae for improved absorption of water & minerals
- Increases root mass
- Builds organic matter in soil
- Rich in natural enzymes, oils and trace elements for improved plant health
- Helps protect trees against drought and dehydration
- Fortifies trees with naturally occurring phyto-hormones
- Results in a thicker, greener canopy, which provides a larger area for photosynthetic activity.
- Low odor compared to fish emulsions

Application Instructions

**Tree and Shrub Maintenance:**
Mix 1 pound of KaPre Tree & Flower Mix<sub>WSP</sub> per 200 gallons of water. Inject every 3 to 4 feet for 4 seconds at 150 PSI at the drip line and halfway between the drip line and trunk as practical.

**Tree and Shrub Revitalization:**
Mix 1 pound of KaPre Tree & Flower Mix<sub>WSP</sub> per 100 gallons of water. Inject every 3 to 4 feet for 4 seconds at 150 PSI at the drip line and halfway between the drip line and trunk as practical.

**Drench Applications:** Mix 1 pound of KaPre Tree & Flower Mix<sub>WSP</sub> per 200 gallons of water. Thoroughly drench soil in treatment area.
Agra-Rouse™
BLENDED PHYTOHORMONE SOLUTION

Agra-Rouse™ is a blend of bio-stimulants containing naturally-occurring and synthetic plant growth regulators and plant hormones known to encourage root development and propagation, promote cell division and enhance plant yields. The phytohormones work with the plant’s own natural physiology to stimulate growth, increase vigor and improve overall plant health.

BENEFITS OF Agra-Rouse
- Faster seed germination
- Plants are more tolerant of heat, cold and drought
- Deeper roots
- Promote healthier turf that is more resistant to disease

Incite™
BLENDED PHYTOHORMONE SOLUTION

Incite™ is a blend of bio-stimulants containing naturally-occurring and synthetic plant growth regulators and plant hormones known to promote cell division, shoot initiation, and bud formation, and, stimulate chlorophyll synthesis and leaf expansion from cell enlargement. They work with the plant’s own natural physiology to stimulate top growth, increase vigor and improve overall plant health.

BENEFITS OF Incite
- Increase leaf growth in turf grass
- Help recovery from both winter and summer damage
- Increase turf growth during the season
- Accelerate growth in newly seeded areas

Agra-Rouse contains:
0.09% Indole-3-Butyric Acid (IBA) – Auxin
0.05% Gibberellins
0.05% Cytokinins

Application Instructions
Foliar and Soil: Ornamentals, Trees and Turf: 4 - 8 fl. oz. per acre
Seed Treatment: 1 - 4 fl. oz. per 100 pounds of seed
Transplant and Rooting Solutions, Nursery/Container Use: 1 - 2 fl. oz. per 5 gallons of solution

Incite contains:
0.05% Indole-3-Butyric Acid (IBA) – Auxin
0.05% Gibberellins
0.09% Cytokinins

Application Instructions
Foliar and Soil: Ornamentals, Trees and Turf: 4 - 8 fl. oz. per acre
Seed Treatment: 1 - 4 fl. oz. per 100 pounds of seed
Transplant and Rooting Solutions, Nursery/Container Use: 1 - 2 fl. oz. per 5 gallons of solution
**Plant Hormones**

**VitaGib®**

**40% WATER SOLUBLE PLANT GROWTH REGULATOR**

*For use on Bermudagrass ONLY*

VitaGib® products deliver growth-inducing gibberellic acid that increases growth on bermudagrass.

**ACTIVE INGREDIENT:**

Gibberellic Acid GA<sub>3</sub> . . . . . . 40.0% w/w
OTHER INGREDIENTS: . . . . . . . 60.0% w/w
TOTAL: . . . . . . . . . . . . . . . 100.0% w/w

**BENEFITS OF VitaGib**

- Increases stem elongation through the elongation/enlargement of plant cells.
- Initiates or maintains growth
- Prevents color change during periods of cold stress and light frosts
- Maintains or enhances regrowth of golf course bermudagrass during summer months

**Application Instructions**

**Bermudagrass (Tifdwarf, Tifgreen):**
To maintain or enhance regrowth of Bermudagrass during summer months. Under hot conditions apply 1 - 3 grams a.i. per acre weekly in 25 - 100 gallons of water per acre.

**Bermudagrass (Tifdwarf, Tifgreen and other cultivars):**
To initiate or maintain growth and prevent color change during periods of cold stress and light frosts. Under cool conditions apply 10 grams a.i. per acre weekly or 25 grams a.i. per acre biweekly in 25 - 100 gallons of water per acre.
WHAT ARE CHELATES?

The word chelate (pronounced: “key-late”) is derived from the Greek word “chele” which literally means “claw”. Hence, chelate refers to the pincer-like manner in which a metal nutrient ion is encircled by the larger organic molecule (the claw), usually called a ligand or chelator.

Chelated micronutrients are protected from oxidation, precipitation, and immobilization in certain conditions because the organic molecule (the ligand) can combine and form a ring encircling the micronutrient. The pincer-like manner in which the micronutrient is bonded to the ligand changes the micronutrient’s surface property and favors the uptake efficiency of foliarly applied micronutrients.

Chelation occurs when certain large molecules form multiple bonds with a micronutrient, protecting it from reacting with other elements in the nutrient solution and increasing its availability to the plant.

Why are Krystal Klear micronutrient solutions so effective?

Dual Chelation: Utilizes patented, biodegradable IDS in conjunction with EDTA to maximize the benefits of both chelating agents.

Stability Constant: Refers to the equilibrium state of a metal cation and a ligand to form a chelating complex: A good stability constant is one in which the bond is strong enough to hold the metal in solution but not so strong that it doesn’t release the metal when applied.

Number of ligands: This refers to the ligands or “legs” that bond the metal to the chelating agents. For example, EDTA has 6 and LidoQuest® IDS-40 has 5 ligands while citric acid has 3 carboxylic ligands and glucoheptonate has 1. The higher the number of legs means more cation surface area is covered.

That is why both EDTA and LidoQuest® IDS-40 chelated metals are stable in orthophosphate solutions for an extended period while others fall apart and precipitate over time.
### CHELATED MICRONUTRIENTS FOR TURF & ORNAMENTALS

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Krystal Klear® Fe</strong></td>
<td>4% chelated Fe</td>
<td><strong>Maintenance Applications:</strong> Apply at a rate of 0.75 - 2 fl. oz. per 1,000 ft² each spray. Begin applications in the spring on a 14 to 21 day interval.</td>
</tr>
<tr>
<td><strong>Krystal Klear® Turf Mix</strong></td>
<td>Chelated 3% Fe, 1% Mn, 0.25% B, 0.25% Cu &amp; 0.25% Zn solution</td>
<td><strong>Maintenance Application:</strong> Apply 0.75 - 2 fl. oz. per 1,000 ft² every 2 weeks. <strong>Moderate Deficiency:</strong> Apply 2 - 3 fl. oz. per 1,000 ft² every 2 weeks. <strong>Severe Deficiency:</strong> Apply 4 fl. oz. per 1,000 ft² every 2 weeks.</td>
</tr>
<tr>
<td><strong>Krystal Klear® ResQ</strong></td>
<td>8-0-2 solution with chelated 2% Fe, 0.5% Mg, 0.5% Mn, 0.25% B, 0.25% Cu, 0.25% Zn plus kelp</td>
<td><strong>Turf Applications:</strong> Apply 3 - 6 fl. oz. per 1,000 ft² every 7 to 14 days throughout the season. <strong>Trees, Shrubs and Ornamentals Applications:</strong> Apply 1 gal. of Krystal Klear ResQ per 100 gal. of spray solution. Apply as needed throughout the season.</td>
</tr>
<tr>
<td><strong>Krystal Klear® B</strong></td>
<td>5% complexed boron solution</td>
<td>Complexed boron for quick corrections of boron deficiency. Boron is essential for optimal root and tissue levels.</td>
</tr>
<tr>
<td><strong>Krystal Klear® Cu</strong></td>
<td>5% chelated copper solution</td>
<td>Quickly corrects copper deficiencies. Copper is essential for crop growth and the activation of many enzymes.</td>
</tr>
<tr>
<td><strong>Krystal Klear® Mg</strong></td>
<td>3% chelated magnesium solution</td>
<td>Magnesium is essential for photosynthesis in plants and prevents yellowing of leaves.</td>
</tr>
<tr>
<td><strong>Krystal Klear® Mn</strong></td>
<td>5% chelated manganese solution</td>
<td>Quickly corrects manganese deficiencies. Manganese activates enzymes required for amino acid production.</td>
</tr>
<tr>
<td><strong>Krystal Klear® Zn</strong></td>
<td>9% chelated zinc solution</td>
<td>Quickly corrects zinc deficiencies. Zinc controls the synthesis of indoleacetic acid, which regulates plant growth.</td>
</tr>
</tbody>
</table>

**READ THE LABEL:**

Don’t be fooled by products with trade names that sound as if they contain only chelated or complexed micronutrients. All Krystal Klear micronutrients, except boron, which is complexed, are completely chelated.
LidoQuest®
PATENTED CHELATED MICRONUTRIENT SOLUTIONS

LidoQuest® liquid fertilizers are formulated with premium sources of nutrients and patented micronutrients. LidoQuest fertilizers are ideal for soil or foliar spray applications.

<table>
<thead>
<tr>
<th>PATENTED LIDOQUEST® TURF PRODUCTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LidoQuest® 15-3-7</strong></td>
</tr>
<tr>
<td>15-3-7 with 0.5% Fe, 0.1% Cu, Mg, Mn &amp; Zn &amp; 0.025% B and 3% sea kelp extract</td>
</tr>
<tr>
<td><strong>LidoQuest® 18-3-6</strong></td>
</tr>
<tr>
<td>18-3-6 with 0.1% Fe, 0.01% B &amp; 0.05% Mn and 9% Slow Release Nitrogen</td>
</tr>
<tr>
<td><strong>LidoQuest® 6-6-12</strong></td>
</tr>
<tr>
<td>6-6-12 with 3% SRN, 0.5% Fe, 0.1% each of Mg, Mn, Zn &amp; Cu and 0.025% B and 3% sea kelp extract</td>
</tr>
<tr>
<td><strong>LidoQuest® 30-0-0 SRN</strong></td>
</tr>
<tr>
<td>30-0-0 with 15% SRN</td>
</tr>
</tbody>
</table>

**Application Instructions**

**Turf applications:** LidoQuest chelated micronutrient solutions can be applied throughout the growing season on warm, transitional, and cool season grasses. Applications should begin in early spring and continue through the late fall at rates of 1 - 4 fl. oz. per 1,000 ft² (0.34 - 1.36 gal. per acre).

**Ornamentals:** LidoQuest chelated micronutrient solutions can be applied throughout the growing season as a foliar spray at rates of 1 - 4 fl. oz. per gallon of spray mix.
LidoQuest®

**PATENTED CHELATED MICRONUTRIENT POWDERS**

LidoQuest® water-soluble micronutrient powders are designed for use on golf course fairways, sports turf and commercial and residential lawns. Applications can quickly correct mineral deficiencies and maintain turf color for several weeks. Economical, compatible and easy to use.

### PATENTED LIDOQUEST® PRODUCTS WITH KRYSTAL KLEAR® MICRONUTRIENTS

<table>
<thead>
<tr>
<th>LidoQuest®</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-20-20</td>
<td>20-20-20 with 0.05% Mg, 0.025% B, 0.055% Cu, 0.14% Fe, 0.06% Mn, 0.0005% Mo, 0.055% Zn</td>
</tr>
<tr>
<td>21-3-31</td>
<td>21-3-31 with 0.025% B, 0.055% Cu, 0.24% Fe, 0.12% Mn, 0.0005% Mo, 0.055% Zn</td>
</tr>
<tr>
<td>25-0-25</td>
<td>25-0-25 with 0.025% B, 0.055% Cu, 0.14% Fe, 0.07% Mn, 0.0005% Mo, 0.055% Zn</td>
</tr>
<tr>
<td>28-8-18</td>
<td>28-8-18 with 0.05% Mg, 0.025% B, 0.055% Cu, 0.14% Fe, 0.07% Mn, 0.0005% Mo, 0.055% Zn</td>
</tr>
<tr>
<td>12-6-36</td>
<td>12-6-36 with 0.5% Mg, 0.025% B, 0.055% Cu, 0.5% Fe, 0.15% Mn, 0.0005% Mo, 0.05% Zn</td>
</tr>
</tbody>
</table>

### PATENTED LIDOQUEST® PRODUCTS

<table>
<thead>
<tr>
<th>LidoQuest®</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe&amp;Mn</td>
<td>10% Fe and 3% Mn</td>
</tr>
<tr>
<td>Mg&amp;Fe&amp;Mn</td>
<td>2% Mg, 4.33% Fe and 4.33% Mn</td>
</tr>
</tbody>
</table>

**Application Instructions**

**LidoQuest® products with Krystal Klear® micronutrients**

**Foliar Spray:** Apply 25 pounds per 100 gallons per acre. Do not exceed a concentration of 10 lb. of LidoQuest per 10 gallons of water. For best results, repeat every 7 to 10 days.

**LidoQuest FeMn and LidoQuest MgFeMn**

Apply 0.37 – 0.74 oz. per 1000 ft² (1 – 2 lb. per acre) using a minimum of 30 gallons of solution per acre. Apply every 14 to 21 days.
Amino Acids

Pennamin®

PATENTED AMINO ACID SPRAYABLE POWDERS

Pennamin® amino acids and micronutrients safely and efficiently deliver foliar micronutrition and non-leaching organic nitrogen. Pennamin products improve the efficiency of fertilizers, support turf & ornamental vigor, enhance root development and improve stress tolerance.

*All Pennamin products contain a blend of 18 free L-amino acids and biodegradable LidoQuest® IDS-40.*

---

**Application Instructions**

**Pennamin Ca, CaMg, Fe&Mn, Mg, Driver-P, High K, Perfect K**
Apply 0.40 – 2 oz. per 1000 ft² (1 – 5 lb. per acre).
Apply every 14 to 28 days as needed. Applications on turf and ornamentals can be made throughout the growing season.

**Pennamin Si**

**Cool Season** – Apply 0.2 - 0.5 oz. per 1,000 ft² (0.5 - 1.5 lb. per acre)
**Warm Season** – Apply 0.2 - 0.9 oz. per 1,000 ft² (0.5 - 2.5 lb. per acre)

*See Appendix C for Complete Amino Acid Profiles for Pennamin Products*

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**THE PENNAMIN ADVANTAGE**

- Pennamin products are readily absorbed by turf and ornamental foliage.
- Pennamin products have a low C:N ratio (6:1), which assures that the organic nitrogen is utilized by turf and ornamentals.
- Pennamin products help chelate soil micronutrients, making them more available.

---

**CHOOSE THE RIGHT PENNAMIN PRODUCT TO SUIT SPECIFIC TURF NEEDS**

<table>
<thead>
<tr>
<th>Products</th>
<th>Analysis</th>
<th>Total Amino Acid %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennamin® Ca</td>
<td>7-0-0 with 14% Ca</td>
<td>48%</td>
</tr>
<tr>
<td>Pennamin® CaMg</td>
<td>8-0-0 with 8% Ca and 8% Mg</td>
<td>51%</td>
</tr>
<tr>
<td>Pennamin® FeMn</td>
<td>9-0-0 with 4% Fe &amp; 3% Mn</td>
<td>57%</td>
</tr>
<tr>
<td>Pennamin® Mg</td>
<td>10-0-0 with 12% Mg</td>
<td>64%</td>
</tr>
<tr>
<td>Pennamin® Driver- P</td>
<td>12-0-0</td>
<td>80%</td>
</tr>
<tr>
<td>Pennamin® High - K</td>
<td>6-0-15 with 9% Ca</td>
<td>40%</td>
</tr>
<tr>
<td>Pennamin® Perfect-K</td>
<td>8-0-9+5% Ca with 2% Mg, 0.1% Fe, 0.05% Cu, 0.05% Mn, 0.05% Zn and 0.02% B</td>
<td>64%</td>
</tr>
<tr>
<td>Pennamin® Si</td>
<td>10-0-0 with 4% Si</td>
<td>64%</td>
</tr>
</tbody>
</table>
PRUDENT PRODUCTS ARE UNIQUE!

- Contain one of the highest percentages of PO₃ of any phosphite fertilizer
- Formulated with very little water allowing the PO₃ to remain stable in the jug; won’t convert to PO₄ the way other phosphites can
- Can be used at much lower rates per acre than most phosphite fertilizers, making them more economical and effective
- Contain a surfactant for improved spreading and nutrient uptake
- Can be used in combination with Nutrol EPA registered fungicide for effective control of soil borne and foliar diseases

BENEFITS OF PRUDENT PRODUCTS

- Improve plant strength and ability to tolerate unfavorable environmental conditions
- Increase integrity of plant cell walls, improving plant strength and resistance
- Improve ability to absorb water and nutrients
- Stimulate key pathways in the plant, which produce compounds responsible for defending the plant against environmental stress
- Keep un-chelated metals stable in solution
- Reduce scale build-up in spray tanks and other equipment

DID YOU KNOW?

Urea phosphite is a eutectic because it contains two solids - urea and phosphorus acid - that form a liquid eutectic composition. This allows for a high concentration of phosphorus acid to be solubilized without the addition of water.

Application Instructions for Prudent 42cw, Prudent 44 and Prudent 40PLUS

Apply 0.5 - 2 fl. oz. per 1,000 ft². Begin applications in the spring and continue on a 7 to 14 day schedule throughout the growing season.

Foliar Applications:
Prudent 42CW, Prudent 44 and Prudent 40PLUS may be applied with all types of ground spraying equipment or by air. DO NOT exceed a rate of fl. oz. of product per gallon of water when using less than 20 gallons of solution per acre.
Prudent® 42CW and Prudent® 44 highly concentrated phosphite fertilizer are effective at very low use rates. They are ideal partner products with Nutrol® EPA registered fungicide for control of soil borne and foliar diseases.

Prudent 42CW and Prudent 44 (15-0-0 with 42% PO$_3$) fertilizers are formulated with patented urea phosphite. Urea phosphite is a “eutectic”, which allows a high concentration of phosphite in the Prudent family of specialty fertilizers.

**15-0-0**

**Guaranteed Analysis**

- Total Nitrogen (N) . . . . . . . . . . . .15%
- 2.5% Ammoniacal Nitrogen
- 12.5% Urea Nitrogen

Derived from aqua ammonia and urea phosphite

**13-0-0**

**Guaranteed Analysis**

- Total Nitrogen (N) . . . . . . . . . . . .13%
- 0.5% Ammoniacal Nitrogen
- 12.13% Urea Nitrogen
- 0.37% Other Water Soluble Nitrogen

Derived from aqua ammonia, amino acids and urea phosphite

Prudent®40 PLUS highly concentrated phosphite fertilizer (40% PO$_3$, expressed as P$_2$O$_5$), is formulated with patented urea phosphite and Pennamin Driver-P amino acids. The amino acids aid in building tolerance against environmental stresses, help move nutrients into the plant, and, play important roles in almost every plant function. And, since they are free amino acids they are readily plant-available. This saved energy can then be used for other plant functions.

Prudent® 40 PLUS, highly concentrated phosphite fertilizer (40% PO$_3$, expressed as P$_2$O$_5$), is formulated with patented urea phosphite and Pennamin Driver-P amino acids. The amino acids aid in building tolerance against environmental stresses, help move nutrients into the plant, and, play important roles in almost every plant function. And, since they are free amino acids they are readily plant-available. This saved energy can then be used for other plant functions.
SOIL INOCULANTS
For MAXIMUM Performance

HOW DO NutriSmart PRODUCTS WORK?

- NutriSmart products elicit higher populations of native N-fixing microbes
- The yeast contained in each NutriSmart product form a symbiotic community of mutually interdependent, nutrient-releasing microbes
- When the yeast are signaled by the plant that it requires nutrients, NutriSmart products initiate the conversion and delivery process

NutriSmart PRODUCTS SUPPLY NUTRIENTS BY:

- Nitrogen fixation – microbial conversion of nitrogen into available forms
- NutriSmart yeast have shown higher N-fixing ability than common free-living N-fixing microbes
- Microbial solubilization of phosphate into soluble forms of phosphorus
- Unlocking potassium in the soil into exchangeable potassium
- Solubilizing silicon and trace minerals for better plant uptake

PLANT BENEFITS FROM NutriSmart APPLICATIONS

- Provide consistent, uniform slow-release of nitrogen
- Eliminate growth surges – nitrogen is released gradually throughout the plant’s growth cycle, which results in precise feeding that lasts up to 18 weeks
- Improve plant growth, quality and yield
- International and U.S. commercial use and trials have demonstrated equivalent or better performance with NutriSmart-B applications vs. conventional fertilizer programs

SOIL AND ENVIRONMENTAL BENEFITS FROM NutriSmart APPLICATIONS

- Improve the Nutrient Use Efficiency (NUE) of chemical fertilizers blended with NutriSmart-B. Can effectively replace up to 20-50% of soil applied fertilizer
- Improve soil fertility
- Reduce the leaching of chemical fertilizers
- Increase soil organic matter
- Improve the soil environment for beneficial microbes
PATIENTED OMRI LISTED

SOIL INOCULANT & HUMATE GRANULES

NutriSmart®-B is a patented, environmentally friendly granular soil inoculant and humate soil amendment that fixes nitrogen from the atmosphere, solubilizes phosphate and unlocks potassium from the soil.

Application Instructions

Turf and Ornamentals:
1. For use as an Aerification Amendment: On golf course greens, tees and fairways, commercial & residential lawns and sports turf:
   Aerify surface to be treated.
   Broadcast 5 - 10 lb. of NutriSmart B per 1,000 ft² (218 - 436 lb. per acre)
   Drag NutriSmart B into holes.
   Top dress as normal.
   Note: Apply NutriSmart B at each aerification.
2. For use with conventional and organic fertilizers:
   Replace 20 - 30% of soil applied granular NPK with an equal amount by weight of NutriSmart B.
   Apply as normal and follow same application method and schedule as normal fertility program.

PATENTED

WATER SOLUBLE POWDER

NutriSmart® WSP is a patented, water soluble yeast powder for liquid formulations. NutriSmart WSP should be applied with humic acids and can be used as a re-inoculation tool after application of NutriSmart-B.

Application Instructions

Nursery and Ornamentals: Drip irrigation or drench applications: Apply NutriSmart WSP at a rate of 3 - 6 oz. per acre every 2 - 4 weeks.
Trees and Bushes:
Transplant Water: Apply NutriSmart WSP at a rate of 3 - 6 oz. per acre (0.07 - 0.15 oz. per 1,000 ft²)
Drip irrigation/Drench applications: Apply NutriSmart WSP at a rate of 2 to 6 oz. (0.05 - 0.15 oz. per 1,000 ft²) per acre every 2 - 4 weeks.
Turf:
Initial Application: Apply NutriSmart WSP at a rate of 6 - 9 oz. per acre (0.15 - 0.21 oz. per 1,000 ft²). Product should be applied using flood jet nozzles.
Follow-up Applications: Apply NutriSmart WSP at a rate of 3 - 6 oz. per acre (0.07 - 0.15 oz. per 1,000 ft²) every 2 - 4 weeks, preferably every 2 weeks. For monthly applications, use the high rate. Product should be applied using flood jet nozzles.
KaPre® RemeD8®-WSP and RemeD8®-LCP MICROBIAL SOIL INOCULANTS

KaPre® RemeD8®-WSP and RemeD8®-LCP water-soluble soil inoculants are designed to improve nutrient use efficiency, maintain turf health and vigor, and improve stress tolerance.

KAPRE REMED8-WSP AND LCP MICROBES ARE:

- **Durable and sustainable**: All are spore formers, which can survive adverse conditions such as heat, cold, low/high pH, etc.
- **Rhizosphere competent**: All were sourced from the soil, so they can thrive in soil.
- **Quality Assured**: All are professionally fermented, identified through DNA analysis and backed by Certificate of Analyses documenting cfu/gram counts.
- **Prolific Enzyme Producers**: Together, they produce a wide range of beneficial enzymes and bio-active compounds that offer a number of plant health benefits.

WHAT TO EXPECT FROM KAPRE REMED8-WSP AND LCP APPLICATIONS

- A more vigorous soil ecosystem
- Higher Cation Exchange Capacity (C.E.C.)
- Enhanced root development, germination rates and stress tolerance
- Faster nitrification process for better uptake of nitrogen
- Nitrogen fixation to supplement applied nitrogen
- Enhanced stress tolerance
- Quicker recovery from pathogen attack
- Prevention of excessive hydrophobic organic matter
- And much more
**Argosy®-RF**  
**WATER-SOLUBLE ADJUVANT**

Argosy®-RF is a rain-fast, environmentally safe spreader/sticker that makes pesticides work better and virtually eliminates re-sprays. It encapsulates pesticides keeping them on the target even through rain events and irrigation. Since Argosy-RF is amphoteric, it can react with both acids and bases. When tank mixed, Argosy-RF enhances wetting and adhesion, as well as facilitates uniform foliar distribution of the active ingredient.

**BENEFITS OF ARGOSY PRODUCTS**

**STICKER**

When sprayed on the leaf surface, Argosy products enhance the adhesion of spray droplets to the leaf. It also keeps the pesticide on the leaf surface longer even when irrigation or rainfall occurs, extending the life of chemical applications. This means fewer applications and longer efficacy, which ELIMINATES RE-SPRAYS.

**Draws ambient moisture from atmosphere to leaf.**

**SPREADER**

When combined with a pesticide, Argosy products encourage uniform coverage of the product across the leaf allowing the active ingredient to be better absorbed by the plant.

**ELASTICITY**

The revolutionary elastic nature of Argosy products allows the material to stretch as the plant leaf grows, protecting new growth.

**DROUGHT TOLERANCE**

Argosy products are retention agents. They have the ability to bind with water, which keeps moisture on a targeted substrate longer, keeps moisture in the plant longer and helps plants recover from drought conditions more quickly.

**DRIFT CONTROL**

Argosy RF forms heavier, larger drops that reach the target wet and holds it there. Trials have shown that up to 100% of applied aerial applications hit their target.

---

**Ingredient Disclosure:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inert ingredients</td>
<td>4.32%</td>
</tr>
<tr>
<td>Water</td>
<td>95.68%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.00%</td>
</tr>
</tbody>
</table>

**Application Instructions**

Apply as a 0.125 – 1.25 % solution (1 pint to 1 gallon per 100 gallons of solution)

*See product label for complete directions for use.
Evaluation of chemical compatibility is the sole responsibility of the user.*
NUTROL®
BIO-PESTICIDE-
WATER-SOLUBLE PK FERTILIZER - TANK BUFFER

Nutrol® is a biopesticide effective against powdery mildew, a true tank buffer that can prevent alkaline hydrolysis and a highly concentrated, yet very gentle, water soluble PK fertilizer.

Nutrol, when used with any Prudent® fertilizer, can also control soil borne and foliar pathogens.

FUNGICIDE
• Bio-pesticide labeled for use to control and eradicate powdery mildew and other soil-borne and foliar diseases
• Prevents the formation of resistant strains of powdery mildew when used in alternation with other labeled fungicides

TANK BUFFER
• Ensures optimal performance by preventing alkaline hydrolysis, which is the breakdown of pesticides by alkaline pH
• True buffer and can maintain the pH of tank solutions (The pH of a 1% aqueous solution of Nutrol in distilled water is 4.5 +/- 0.3)

NUTRIENT
• Highly concentrated, water-soluble fertilizer containing over 50% P₂O₅ and 32% K₂O
• Safe to use, has the lowest salt index of any fertilizer and will not cause phytotoxicity even at high concentrations
• Suitable for foliar, soil and drip irrigation applications

Turf Application Instructions
Nutritional (Cool and Warm Season):
Apply 2 - 4 oz. per 1,000 ft² (6 - 11 lb. per acre). Apply every 7 to 14 days throughout the season. If used as a starter fertilizer during transition periods to cool season grasses, apply 4 - 6 oz. per 1,000 ft².
Powdery Mildew Control:
Apply 8 - 40 lb. Nutrol per acre. Start sprays in early spring when conditions become favorable for disease development and continue sprays every 7 to 14 days for the entire season.

Control of diseases caused by Pythium, Fusarium and Rhizoctonia when applied with Prudent® fertilizers:
Mix 8 - 11 lb. of Nutrol with labeled rates of Prudent fertilizers per 100 gal. and apply as necessary. DO NOT exceed one application every 7 days.

Ornamental Application Instructions
Nutritional:
Apply 1 lb. in 10 gal. of water and spray until wet. Apply at bloom, spring shoot push or shortly after transplant and repeat every 14 to 21 days.

Powdery Mildew Control:
Oramentals: Apply 8 - 40 lb. Nutrol per acre. Start spraying when conditions become favorable for disease development and continue sprays every 7 to 14 days throughout the season.

Roses: Apply 5 - 10 lb. Nutrol per acre. Apply at 5 to 7 day intervals as needed. Best performance is achieved with full wetting of leaves without run-off.

Additional Disease Control for Ornamentals and Bedding plants when applied with Prudent fertilizers:
Control of diseases caused by Pythium, Fusarium and Rhizoctonia: Mix 8 - 11 lb. of Nutrol with labeled rates of Prudent fertilizers per 100 gal. and apply as necessary. DO NOT exceed one application every 7 days.

Control of Phytophthora Root Rot - Dip Treatments for Conifers in Nurseries: Dip in a mix of 8 - 11 lb. of Nutrol with labeled rates of Prudent fertilizers per 100 gal. of water and immediately transplant. DO NOT exceed one application every 30 days.

Control of Phytophthora Root Rot - Foliar Applications for Conifers: Mix 8 - 11 lb. of Nutrol with labeled rates of Prudent fertilizers per 100 gal. of water and immediately transplant. DO NOT exceed one application every 30 days.

Control of Peronospora sparsa on Roses: Mix 8 - 11 lb. of Nutrol with labeled rates of Prudent fertilizers per 100 gal. of water and apply as necessary. DO NOT exceed one application every 7 days.

0-50-32
Guaranteed Analysis:
Available Phosphate (P₂O₅) ......................... 50%
Soluble Potash (K₂O) ................................. 32%
Derived from: Monopotassium Phosphate
**Vibrant® PATENTED FOLIAR FERTILIZER SOLUTIONS**

Vibrant® fertilizer solutions are designed to support healthy turf throughout the growing season. Vibrant fertilizer solutions can be blended together to create a variety of analyses.

Vibrant patented foliar fertilizer solutions are formulated with premium sources of NPK, Krystal Klear® micronutrients and proprietary organic supplements.

**BENEFITS OF VIBRANT**

- Independent university studies have demonstrated that Vibrant fertilizer solutions provide long lasting turf color and quality, even during the height of summer stress periods.
- Vibrant fertilizer solutions are compatible with most fungicides, herbicides and insecticides.
- Vibrant fertilizer solutions have exceptional tank mix capabilities.

**VIBRANT PORTFOLIO OF PRODUCTS**

<table>
<thead>
<tr>
<th>Vibrant® Blue</th>
<th>Provides quick green-up and turf color and quality, even during the height of summer stress.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-3-5 - with 0.5% Fe, 0.1% Mn, Cu and Zn &amp; 0.025% B plus organic extracts</td>
<td></td>
</tr>
<tr>
<td>Applications: Apply at a rate of 4.0 – 7.0 fl. oz. per 1,000 ft² (1.4 – 2.4 gallons per acre) every 2 – 4 weeks throughout the season.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Vibrant® Green</th>
<th>Designed to deliver a significant color response with a limited growth response.</th>
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</thead>
<tbody>
<tr>
<td>18-3-4 - with 10% SRN and 1% Fe, 0.1% Mn and Zn, 0.025% B plus organic extracts</td>
<td></td>
</tr>
<tr>
<td>Maintenance Applications: 4 - 5 fl. oz. per 1,000 ft² (1.4 - 1.7 gallons per acre)</td>
<td></td>
</tr>
<tr>
<td>Severe Deficiencies: 6 - 8 fl. oz. per 1,000 ft² (2 - 2.7 gallons per acre)</td>
<td></td>
</tr>
<tr>
<td>Timing: Apply throughout the growing season beginning in the early spring and continue through the late fall.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Vibrant® Red</th>
<th>Formulated to help tolerate environmental conditions such as heat and drought stress during tough summer months.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-6-12 - with 0.1% Cu, Fe, Mn and Zn, 0.05% Si, 0.025% B plus organic extracts</td>
<td></td>
</tr>
<tr>
<td>Maintenance Applications: 3 - 6 fl. oz. per 1,000 ft² (1 - 2 gallons per acre)</td>
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<tr>
<td>Timing: Apply throughout the growing season beginning in the early spring and continue through the late fall.</td>
<td></td>
</tr>
</tbody>
</table>

**Trees, Shrubs and Ornamentals Rates for all Vibrant Products:** Apply as needed throughout the year. Apply at rates of 1 - 1.5 gal. of Vibrant per 100 gal. of spray solution. Apply 5 gal. per diameter inch.
Z.ONE VitaSmart Eco-Stations

ENHANCED SOIL AMENDMENTS

Z.One Eco-Stations improve soil water holding capacity and nutrient use efficiency as well as provide extended release of beneficial bacteria compounds in the turf root zone.

Z.One VitaSmart is a mixture of NutriSmart and zeolite granules enriched with KaPre RemeD8 WSP, KaPre Embella and KaPre Exalt for sustained release of humic substances, amino acids, organic extracts and sugars. Z.One VitaSmart can replace up to 5-10% of soil applied NPK.

Application Instructions

Z.One VitaSmart is designed for broadcasting as an aerification amendment or as a component of construction blends.

New Construction Recommendation: Incorporate 500 – 1,000 lb. per 1,000 ft³ of root zone mix.

Aerification Application Recommendation: Broadcast 5 – 10 lb. per 1,000 ft² (218 – 435 lb. per acre) and drag into holes. Top-dress as normal and irrigate.

Fairways, Sports turf and other long cut turf: Broadcast 11.5 – 23 lb. per 1,000 ft² (500 – 1,000 lb. per acre) 1 to 2 times per year. Irrigate thoroughly after application.

BENEFITS OF VitaSmart Eco-Stations

- Improves the structure and water-holding capacity of the soil
- Safely houses beneficial microbes that fix nitrogen from the atmosphere and generate beneficial enzymes, where there is the greatest demand..... in the root zone.

PROVEN PERFORMANCE

Steve Garner is the Golf Course Superintendent at Pinnacle Peak Country Club in Scottsdale, Arizona. He used Z.One VitaSmart and raked it into the sand under the sod when they rebuilt a tee complex.

“The turf rooted down in a couple of days which was 3 or 4 days quicker than an area we left as a control. There was no shrinkage around the edges of the sod and it held great color. We are very happy with the way the product performed. Since the renovation, despite high temps and irrigation system challenges the tee has held up extremely well.”
KELPENE® GPX
PLANT EXTRACT SOLUTIONS

KELPENE® GPX applications have been shown to support plant health, improve nutrient uptake and encourage robust root development. Turf, ornamentals and nursery crops become more resilient and adaptive during periods of environmental stress, such as high heat, intense sunlight, shade, unexpected cold, drought, salinity, anaerobic conditions and water stress, etc.

Application Instructions

Maintenance Rate:
Make 4 foliar applications of 15 fl. oz. of KELPENE GPX per acre during spring and early season every 2 – 3 weeks, followed by 1 application mid-season and 1 fall dormancy application.

Recovery/High Stress Rates:
Make 12 – 18 foliar applications of 15 fl. oz. of KELPENE GPX per acre during the season. Apply every two weeks during the key growing period and then every 30 – 60 days at other times.

Nursery Crops:
Foliar apply or soil drench 7.5 – 15 fl. oz. of KELPENE GPX every other month.

WHAT IS KELPENE GPX?
KELPENE GPX is a blend of sea kelp extracts, and plant extracts, primarily terpenes, derived via a unique proprietary extraction process. KELPENE GPX plant extracts are derived from plants that thrive in diverse environments.

BENEFITS OF KELPENE GPX

- Establishes environmental adaptability
- Improves stress management
- Increases plant and turf resilience
- Increases root mass and root tips
- Improves nutrient uptake
- Enhances tissue responsiveness
- Elevates Nutrient Use Efficiency
- Allows better allocation of energy
- Fortifies turf and plants with naturally-occurring phyto-hormones
- Nourishes turf, plants and soil microbes with organic carbon
Natural Products

**Ormanic™ Xtrakt**

LIQUID WORM CASTING EXTRACT

Ormanic™ Xtrakt premium low-salt organic fertilizer is derived exclusively from earthworm castings, and, is rich in a proprietary blend of soil microbes and mycorrhizae that rejuvenate the soil and support healthy plants and turf. Our worms are raised indoors in a climate-controlled environment and fed a consistent diet free of animal and yard waste, assuring consistent quality all season long.

Ormanic Xtrakt is safe and easy to use for both soil and foliar applications – the low salt formulation will not burn or damage plants. In addition, it is free of pathogens, and, produced without any animal or yard waste.

Contains 0.13% Nitrogen, 0.01% Phosphorus, 0.016% Potassium. Also contains 0.0013% B, 0.004% Ca, 0.006% Fe, 0.0008% Mg and 0.0003% Mn.

**BENEFITS OF ORMANIC XTRAKT**

- Enriches the soil to feed the plant
- Promotes soil fertility and inoculates the soil with beneficial microbes and mycorrhizae
- Encourages biological activity in the soil by cultivating the growth of beneficial soil microbes.
- Enhances the efficiency of applied fertilizers by increasing C.E.C
- Increases availability and uptake of essential nutrients
- Accelerates root establishment and increases root mass
- Enhances plant growth
- Improves disease, drought and stress tolerance
- Increases water holding capacity of the soil
- Reduces transplant shock
- Helps degrade thatch

**Application Instructions**

Ormanic Xtrakt can be applied to ornamental plants (flowers and shrubs), turfgrass (golf courses, lawns and sports turf) and trees.

**Horticultural Foliar Spray:** Mix a 1:100 solution of Ormanic Xtrakt. Apply as a spray to cover the entire leaf canopy until run-off.

**Turfgrass:** Apply 6 - 8 fl. oz. per 1,000 ft² (2 - 2.75 gallons per acre) every 2 weeks or 12 to 16 fl. oz. per 1,000 ft² (4 - 5.5 gallons per acre) every month throughout the season and again in late fall.

**Transplanting/Cutting:** Mix 1 - 3 quarts of Ormanic Xtrakt per 20 gallons of water. Apply at time of transplanting or cutting.

**Deep Root Fertilization for Arboriculture Applications:** Mix 2 - 5 gallons of Ormanic Xtrakt per 100 gallons of water. Injection sites should be 2 to 3 feet apart and 12 - 15 inches deep for established trees on a radial grid pattern. Apply in early Spring and again in late Fall.

**Root Dip:** Dip roots of all transplants in a 50:50 dilution of Ormanic Xtrakt and water. Apply immediately before planting.
Ormanica (1% N, 0.5% P₂O₅ and 0.5% K₂O) is an all natural, low odor, non-compacting refined premium plant compost manufactured with a proprietary process that utilizes earthworms, vegetable matter, agricultural grade mulch and beneficial bacteria. This process generates easy-to-apply uniform small particles. Their small size and large surface area allows them to break down rapidly and release its stored nutrients easily.

**1-0.5-0.5**

**Guaranteed Analysis**

- Total Nitrogen (N) ............. 1%
- 1% Water Insoluble Nitrogen (N)
- Available Phosphate (P₂O₅) . . 0.5%
- Soluble Potash (K₂O) . ........ 0.5%

Derived from composted yard trimmings and recycled food

**BENEFITS OF Ormanica**

- More cost effective than peat and richer in nutrients than compost produced by other methods
- Fully composted, eliminating the need for sterilization. Contains no animal waste
- Rich in microbial life, which diversifies the soil microbial community
- Improves and sustains soil physical properties
- Enhances the availability of plant nutrients – increases CEC
- Increases the water holding capacity of root zone mixes reducing irrigation frequency
- Improves stress tolerance
- Accelerates root initiation, establishment and development.
- Enhances germination and plant growth

**Application Instructions**

Organic amendment for sand mixes (re-seeding, over-seeding, divot-mixes, green sand, greens construction) as well as direct application to lawns, fairways and sports turf:

**Soil Preparation:** Incorporate Ormanica depending on soil type.
- Sandy Soil ~ 75 - 100 lb. per 1,000 ft² of bed
- Clay Loam Soil ~ 50 - 75 lb. per 1,000 ft² of bed
- Silt, Clay Loam Soil ~ 25 - 50 lb. per 1,000 ft² of bed

**Renovation of compacted turf in conjunction with aerification for greens, tees, around soccer goalmouths and on sports fields:** Add 5% Ormanica by volume to topdressing sand or broadcast after aerification at the topdressing rate.

**Top-dressing:** Add Ormanica at a rate of 10 - 12 lb. per 1,000 ft² (435 - 525 lb./acre) in the fall and spring as a top-dressing for golf, sports turf and lawns.

**Seeding, re-seeding and over-seeding:** Use as a mulch on top of seed. Apply Ormanica at a rate of 10 - 25 lb. per 1,000 ft² (435 - 1,085 lb./acre) over the entire area to be seeded.

**Divot mixes, green sand, etc.:** Blend 50 - 150 lb. Ormanica with 1 ton of sand.

**Organic amendment (alternative to peat) for sand based root zone mixes:** To meet USGA guidelines, blend Ormanica with sand at a 95:5 to 90:10 ratio of Ormanica:sand for the desired root zone mix.
JustFischen™ LIQUID FISH HYDROLYSATE

JustFischen™ liquid fish hydrolysate is produced through a specialized, cold-process enzymatic digestion of fresh water fish (rainbow trout). There are no chemicals used in this process, resulting in a 100% natural, liquefied fish, with none of the beneficial oils and proteins removed.

It is a rich source of natural protein and mineral nutrients for both plants and soil microbes. JustFischen has a fresh fish scent, unlike the offensive odor of fish emulsions.

BENEFITS OF JustFischen

- Low salt, chlorine free, naturally extracted organic fertilizer
- Low odor compared to fish emulsions
- Easy to apply; won't clog equipment
- Concentrated and long lasting – doesn't need to be applied as often as other fertilizers
- Source of nitrogen, phosphate, potassium and other minerals
- Rich in natural enzymes, amino acids, oils and trace elements for improved plant health
- Improves disease resistance to soil-borne pathogens
- Feeds beneficial soil microbes and creates a more fertile soil environment
- Helps rebuild overworked and unproductive soil

2-3-1

Guaranteed Analysis

Total Nitrogen (N) ............... 2.0%
  1.7% Water Soluble Nitrogen
  0.3% Water Insoluble Nitrogen
Available Phosphate (P₂O₅) ... 3.0%
Soluble Potash (K₂O) .......... 1.0%

Derived from fish hydrolysate (stabilized with phosphoric acid) and Sulfate of Potash

Application Instructions

Can be used on all crops as a foliar or soil application at a rate of 4 fl. oz. JustFischen per 1 gallon of water.

Fruit and Shade Trees: Apply to the soil 1 - 2 times per month with supplemental foliar applications between soil applications.

Cuttings and Transplants: Soak the soil around the root zone and/or spray roots at transplanting with a solution of JustFischen.

Seed and Bulb soak: Soak seeds or bulbs in a solution of JustFischen for approximately 12 hours.

Compost Enhancer: Mix 1/3 cup of JustFischen per gallon of water and apply every 2 - 3 weeks over the compost.

Hydroponics: Mix 1 quart of JustFischen per 50 gallon tank or 1.5 quarts per 75 gallon tank. Apply as needed.
OMRI LISTED
Organic Products

BLACK SEA KELP
Black Sea Kelp 1-1-10 organic liquid sea kelp is derived from sustainably farmed seaweed that is rich in potassium, trace minerals and naturally occurring phytohormones.
Black Sea Kelp nourishes plants and soil microbes with organic carbon, strengthens cell walls with potassium, fortifies plants with naturally-occurring phyto-hormones, chelates micronutrients with mannitol (a natural sugar) into forms that are readily available for plant uptake and stimulates root growth and beneficial microbe activity, allowing plants to absorb nutrients more efficiently.

LIQUID HUMATE PLUS
Liquid Humate Plus liquid is rich in humic acids, complex organic molecules that provide a slow-release source of carbon. Unlike many humic acids that are derived from leonardite, which are often contaminated with heavy metals, Liquid Humate Plus is an extract derived from fossilized plant matter.
Liquid Humate Plus improves soil texture and water holding capacity, improves soil structure and texture: increasing aggregation and water infiltration, helps break down soil primary minerals, provides an environment and stimulus for microbial activity and serves as natural chelators that organically complex nutrients, making them bio-available to plants.

FISH HYDROLYSATE
Fish Hydrolysate is produced through a specialized, cold-process enzymatic digestion of fresh water fish (rainbow trout). There are no chemicals used in this process, resulting in a 100% natural, liquefied fish, with none of the beneficial oils and proteins removed.
It is a rich source of natural protein and mineral nutrients for both plants and soil microbes. Fish Hydrolysate has a fresh fish scent, unlike the offensive odor of fish emulsions.

VERMACAST®
Vermacast® premium worm castings are mother nature's purest form of slow release natural organic plant food produced by earthworms. Derived from a proprietary process and blend of pure organics, vermacast premium worm castings are raised in a controlled vermiculture feeding process and microbial enhancements, resulting in a consistent, bio-diverse, living organic fertilizer and conditioner for safe use in everything that grows. No human, animal or food wastes are used in the process. Vermacast premium worm castings poses no risks to the end user. No odor!

NUTRISMART®-B
NutriSmart®-B is a patented, environmentally friendly granular soil inoculant and humate soil amendment that fixes nitrogen from the atmosphere, solubilizes phosphate and unlocks potassium and silica from the soil.

MICROBAC®
MicroBac® is a concentrated suspension of fungi that provides support for over-worked or stressed soils (i.e. soils affected by drought stress, heavy equipment compaction, chemical runoff) as well as soils depleted by intensive growing, erosion and weathering.

VERMAPLEX®
VermaPlex® premium low-salt organic fertilizer is derived exclusively from earthworm castings, and, is rich in a proprietary blend of soil microbes and mycorrhizae that rejuvenate the soil and support healthy plants and turf.

Black Sea Kelp, Fish Hydrolysate, Microbac, Liquid Humate Plus, Vermacast and VermaPlex are manufactured by Southern Organics & Supply
Warm Season Monthly Fairway Program
KaPre® ExAlt – 16 fl. oz. per acre (0.37 fl. oz. per 1,000 ft²)
Pennamin® Perfect K, Pennamin CaMg or Pennamin® High K – 1 - 5 lb. per acre (0.4 - 2.0 oz. per 1,000 ft²)
SRN Source – 4.4 - 11 lb. per acre (0.10 - 0.25 lb. per 1,000 ft²)

Cool Season Monthly Fairway Program
KaPre® ExAlt – 16 fl. oz. per acre (0.37 fl. oz. per 1,000 ft²)
Pennamin® High K – 1 - 5 lb. per acre (0.4 - 2.0 oz. per 1,000 ft²)
KaPre® RemeD8-WSP – One 8 oz. packet per 2.15 acres
Kelpene™ GPX – 15 fl. oz. per acre (0.35 fl. oz. per 1,000 ft²)

Seed Establishment Programs
Seeding
Ormanica Plant Compost (prior to seeding) – 10 - 20 lb. per 1,000 ft² (435 - 870 lb. per acre)
Agra Rouse™ – 4 fl. oz. per acre (0.1 fl. oz. per 1,000 ft²)
Nutrol® – 8 lb. per acre (3 oz. per 1,000 ft²)
Prudent® 44 – 1.4 qt. per acre (1 fl. oz. per 1,000 ft²)
Krystal Klear® – 1.4 qt. per acre (1 fl. oz. per 1,000 ft²)

Overseeding
Ormanica Plant Compost (prior to seeding) – 10 - 20 lb. per 1,000 ft² (435 - 870 lb. per acre)
Agra Rouse™ – 4 fl. oz. per acre (0.1 fl. oz. per 1,000 ft²)
Nutrol® – 8 lb. per acre (3 oz. per 1,000 ft²)
Kelpene™ GPX – 5 gal. per acre (15 fl. oz. per 1,000 ft²)

Construction/New Seeding
Ormanica Plant Compost – 100 lb. per ton of sand
Z.One VitaSmart – Incorporate 500 – 1,000 lb. per 1,000 ft³ of root zone mix
Nutrol® – 8 lb. per acre (3 oz. per 1,000 ft²)
Agra Rouse™ – 4 fl. oz. per acre (0.1 fl. oz. per 1,000 ft²)

Saline, Compacted and Bicarbonate/Black Layer Solution
KaPre® ExAlt – 32 fl. oz. per acre (0.75 fl. oz. per 1,000 ft²) per month

Tournament Program
Tournament conditions can be maintained on a daily basis with the use of our programs and overall Ecosystem Management Approach.
<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Pennamin® Driver-P</th>
<th>Pennamin® Fe&amp;Mn</th>
<th>Pennamin® High K</th>
<th>Pennamin® Mg</th>
<th>Pennamin® Perfect-K</th>
<th>Pennamin® Si</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alanine</td>
<td>4.2%</td>
<td>3.0%</td>
<td>0.6%</td>
<td>1.0%</td>
<td>2.7%</td>
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<tr>
<td>Arginine</td>
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<td>Aspartic Acid</td>
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<td>Cystine</td>
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<tr>
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<td>5.1%</td>
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<td>5.8%</td>
<td>4.7%</td>
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<td>Histidine</td>
<td>0.9%</td>
<td>0.7%</td>
<td>0.5%</td>
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<td>Isoleucine</td>
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<td>Leucine</td>
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<td>3.1%</td>
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<td>Tyrosine</td>
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<td>Valine</td>
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<td>Total Amino Acids</td>
<td>80.4%</td>
<td>56.8%</td>
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Steve Keller has been superintendent at Juliette Falls Golf Course in Dunnellon, Florida since it opened in 2007. He has been using a variety of Performance Nutrition® products over the past several years. "When I had stressed turf, my sales representative recommended KaPre® RemeD8; I have also used their Vibrant® products and KaPre® ExAlt."

After using other similar products on the market, Steve decided to try some of the Performance Nutrition® products as they are easy to apply, have beneficial amino acids and are more cost effective. He is on a regular program of Pennamin® High K and LidoChem Inc.’s Chelated Iron and Manganese product. He applies them, usually together, about every 7 – 10 days. "I plan on continuing to use LidoChem’s Performance Nutrition® products as they have a lot of great formulations and they are easy to use. They use the best resources to give us the best products. I am excited to see what they have coming next."

Sam Mueller is the Superintendent at Vasari Country Club in Bonita Springs, Florida. In 2010, the entire course was renovated and rebuilt, which included some very unique greens construction with elevation changes of 2 to 3 feet. Just one year later, Sam began observing problems in the health and growth of the greens. Sam was introduced to the Performance Soil Treatment® by the local Performance Nutrition® sales rep and began regularly applying KaPre® RemeD8, KaPre® ExAlt and Pennamin® products.

"I noticed my greens getting better and better and I had not made any other changes in my management regimen. There is now 100% turf coverage and the members are happy."

Stonecrest Golf Club located in Summerfield, Florida is a semi-private, 18 hole course with modified push up greens. Rick Watts has been the Superintendent there for 10 years. A few years ago, Rick did some Performance Nutrition® product trials on 9 of his greens. "There was an overall improvement on disease control and nematode pressure, without me having to spray fungicides."

Over the past two seasons, Rick has implemented Performance Nutrition®’s PST® - Performance Soil Treatment® on his course which includes a bi-monthly application of KaPre® ExAlt, KaPre® RemeD8 and Pennamin® High K. He continues to see good results and an overall decrease in disease pressure on his greens.

In addition to the products in the PST®, Rick uses Prudent® 44, Nutrol®, Vibrant® Green and Krystal Klear® ResQ. "I’m very pleased with the performance of the products and the look of the course."

John Stach is Golf Course Superintendent at Olde Hickory Golf and Country Club in Fort Myers, Florida. "We have enjoyed working with the Performance Nutrition® products for almost a year as they have shown to give very positive results with our Tiff Eagle Greens. Specifically, KaPre® ExAlt, Prudent® 44, Nutrol®, Krystal Klear® ResQ, and Vibrant® Green have proven to give a better, more consistent color and excellent turf health."

"We have received good technical support from the Performance Nutrition® technical team to address specific issues we face here at Olde Hickory on a daily basis. I would recommend all of these products to anyone who works with professional grade turf who is looking for dependable products, cost effective applications as well as excellent technical support."
**Country Club of Ocala, Florida** is a private, 18 hole course built in 1994 with mostly modified USGA greens. Reed Orr has been the Superintendent there since 2000.

With 2011-2012 being the warmest winter in years, disease issues in the area were prevalent. Reed began using KaPre® RemeD8 every two weeks at 2 gal/acre. Reed knew things were in check and didn’t see any “outbreaks” on his course.

Reed began using the PST® - Performance Soil Treatment® combining KaPre® RemeD8, KaPre® ExAlt and Pennamin® High K. In addition Reed uses a combo of Prudent® 44 and Nutrol® and he is amazed that he has not seen any sign of Fairy Ring or fungal activity. “I have not had to make any of the emergency “high dollar” fungicidal applications that are normal this time of year as the plants are just healthier with the PST program.” Reed stated “I also saved on my fertility products as well- the soil is in better condition to grow healthier turf.”

Additionally, two years ago after Reed began using Vibrant® products, which includes patented Krystal Klear® micronutrients, he had a soil test done. “The results came back and the analyst had no recommendations to give, he was surprised as everything was in check, my soil condition was all in balance.”

**Rum Pointe Seaside Golf Links** is an 18 hole straight sand greens, mostly bay front, course in the **Ocean City, Maryland** area. Joel McTavish has been superintendent there since 2000.

Over the years Joel used foliar programs incorporating NutraMaxx® and more recently Florantine® products. About two seasons ago, Joel was looking for a change as he wasn’t totally happy with his program “It didn’t seem that the benefit of the program was lasting more than 4 -5 days.”

Joel started using Vibrant® Green in the spring and fall and Vibrant® Red in the summer. He also uses Krystal Klear® Turf Mix every two weeks from May to September. In addition, he uses the Pennamin® High K product for his calcium application and applies Prudent® 44 every two weeks with his fungicide throughout the season.

“Last year I started to see better overall turf health and playability; the ball rolls nice and smooth on the green. Aesthetically the color and conditions of the greens are nice without a lot of extra growth. I don’t have the localized dry spots that I had in the years before using Performance Nutrition®’s products. In addition, Performance Nutrition®’s products last as long as they say they will, where other products seemed to wear off too soon.”

Shawn Emerson is the Director of Agronomy for the six courses at **Desert Mountain**, located in the high **Sonoran Desert of Arizona**. Desert Mountains’ Cochise Course was home to the 2012 Charles Schwab Cup Championship. Prior to the tournament, Shawn sat down with his long time vendor partner, Brian Smith of Arizona Sports Turf. Over the years, Brian and Shawn have worked together developing a variety of innovative solutions to various agronomic issues on the courses. Shawn explained to Brian that in preparation for the 2012 Charles Schwab Cup Championship, the members wanted the Cochise course overseeded, yet the PGA expected a dry course for improved playability. Shawn believes that you shouldn’t have to turn the water off to have a good playing surface and you shouldn’t have to turn the water on to keep it looking green. Shawn told Brian that his goal was to have a course that “looks like Augusta but plays like the US Open.” After listening to Shawn, Brian suggested a new line of products from Performance Nutrition® that were safe, easy to handle and would not need to be watered in.

Considering Brian’s suggestions, Shawn decided to move ahead with a program on his 30 acres of native soil (decomposed granite) fairways. A sixty day regimen was followed to ensure that the turf could withstand the stress of the tournament, as well as stay in good condition for member play when the tournament was over. Shawn made six, bi-weekly applications of 16 ounces of KaPre® ExAlt, 0.5 gallon of KaPre® Germin8, and 4 pounds of Nutrol® per acre. The results from the use of Performance Nutrition®’s products exceeded Shawn’s expectations and he felt his aforementioned goal was accomplished. In fact, one tournament player stated; “It was the best condition golf course I ever played.” The PGA confirmed that statement giving the course the highest rating - ever.