



BANNER

SALES AND CONSULTING, INC.

TREE, TURF & ORNAMENTAL SPECIALISTS



PARTNERING FOR SUCCESS



PRODUCT CATALOG

**FERTILIZERS • INSECTICIDES • HERBICIDES • FUNGICIDES
GROWTH REGULATORS • ANTI-DESSICANT • MYCORRHIZAE • EQUIPMENT**



MUCH MORE THAN A DISTRIBUTOR ...

- Industry Experience
- Product Knowledge
- Hands-On Training
With All Our Equipment
- Site Analysis
With Recommendations that Achieve Results
- Soil Analysis
- Latest Technologies
- Evaluation of Current Programs & Methods
- Improve Your Profitability
- Sales Assistance
With Your Staff or Customer
- Consulting Services

SERVING ...

MICHIGAN, OHIO, INDIANA, ILLINOIS, WISCONSIN

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(Illinois-Wisconsin Only)



PRODUCT CATALOG TABLE OF CONTENTS

EZ-Ject Soil Injector.	2
EZ-Ject Herbicide Lance	3
Golf Product Spotlight	4
Tree & Landscape Product Spotlight.	5
FERTILIZERS	6
MYCORRHIZAE	14
FUNGICIDES	17
MITICIDES/INSECTICIDES	20
SPREADER/STICKER	24
HERBICIDES	24
GROWTH REGULATORS	27
REPELLENTS	27
ANTI-DESSICANT	27
Wedgle Direct-Inject QC Tree Injection System	28
Wedgle Direct-Inject QC Injection Equipment	30
Wedgle Direct-Inject Products	31
Parts Chart for Wedgle Direct Inject QC	36
MACRO-INFUSION	38
EQUIPMENT AND SAFETY	39
WOUND DRESSING	41
Rate Conversion Chart	42
Credit Application	43

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***For pesticide and
fertilizer applications
under the soil surface.***

***EZ-JECT™
SOIL INJECTOR™***

EZ-Ject: An ArborSystems Partner

EZ-Ject™ Soil Injector

Urban foresters, arborists and tree care professionals now have an easily transportable way for tree and shrub pesticide and fertilizer applications under the soil surface.

The EZ-Ject Soil Injector has a semi-transparent container for viewing product usage, adjustable injection depth from two to eight inches and a replaceable hardened steel tip.



	Lite	Standard
Pumping systems delivers ½ oz. (15 ml) per stroke (¼ oz. (7.5 ml) per stroke option available)	✓	✓
Narrow handle and profile for dense underbrush	✓	
Adjustable foot plate and probe depth control	✓	✓
One-gallon chemical tank	✓	✓
Wide-mouth screw cap for filling	✓	✓
Adjustable handles for applicator height		✓
Wide handle configuration		✓
Quick interchange containers with zero leakage		✓
Replaceable one-gallon container		✓
Fill stand to help replenish containers		✓
Stainless steel cage for container protection		✓
Garden hose adapter for easy cleaning		✓

✓ Available

EZ-JECT™ HERBICIDE LANCE

EZ-Ject: An ArborSystems Partner

EZ-Ject™ Herbicide System

Foresters, utility managers, and agricultural producers now have an efficient, effective, economical way to kill unwanted trees, stumps, and invasive woody plants.

With one simple movement, the spring-loaded EZ-Ject Herbicide Lance injects a herbicide shell into the base of a tree, stump, or brush and into the cambium layer. The systemic herbicide is absorbed by the tree, effectively killing roots, trunk, and foliage. Dead tree, stump, or vegetation can be removed or left to decompose naturally.

Many diverse uses

- ▶ Control non-compatible species
- ▶ Thin hardwoods
- ▶ Manage juvenile spacing
- ▶ Kill stumps

Control trees in many situations

- ▶ Buffer zones
- ▶ Roadsides
- ▶ Watersheds
- ▶ CPC land
- ▶ Drainage areas
- ▶ Prairies
- ▶ Woodlots
- ▶ Utility right-of-ways

USE YEAR-ROUND

Tree may be injected at any time of the year except when wood is frozen.

Effectively control unwanted trees



Gravity-fed, spring loaded head injects shells through bark with minimal operator effort.



▶ Load up to 400 herbicide shells through the screw-off end cap.

ATV and behind seat friendly!

The **standard EZ-Ject Lance** is 63.5" (161 cm) long and has a capacity of 400 shells, 100 in each of four chambers. Fully loaded, the EZ-Ject Lance weighs less than 10 pounds.

The **short EZ-Ject Lance** is 41.25" (104 cm) long and has a capacity of 228 shells, 57 in each of 4 chambers.

The **Bull Dog EZ-Ject Lance** is 25.25" (64 cm) long & has a capacity of 100 shells, 25 in each of 4 chambers.

Diamondback® Herbicide Shells

Contains Glyphosate

Weedy brush, trees and vines controlled by this product are listed on the product label.

ACTIVE INGREDIENT:

Glyphosate, N-(phosphonomethyl) glycine, in the form of its isopropylamine salt (CAS No. 38641-94-0).....	83.5%
OTHER INGREDIENTS	16.5%
Total	100.0%

EPA Reg. No.: 83220-1

Copperhead® Herbicide Shells

Contains Imazapyr

The species of woody brush, trees and vines controlled by this product are listed on the product label.

ACTIVE INGREDIENT:

Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)*	83.5%
OTHER INGREDIENTS	16.5%
Total	100.0%

* Equivalent to 0.008 ounces (0.23 grams) per shell of Isopropylamine salt of Imazapyr or 0.006 ounces (0.18 grams) of Imazapyr Acid.

EPA Reg. No.: 83220-2

GOLF PRODUCT SPOTLIGHT

Recover RX 3-18-18

Start applications in spring and continue through the fall at a rate of 3-5 oz per 1,000 FT². Superintendents who have tried Recover RX say it's the best new product on the market. Use everywhere to strengthen roots. The natural plant aspirin, salicylic acid, fends off disease by strengthening the plants immune system.



Nitro-22 SRN + Sulfur

Affordable and effective! Get quick green-up and slow release Nitrogen in perfect ratios. For fairways and high cut turf, apply 14 oz per 1,000 FT², and get six weeks of long lasting color thanks to the slow release nitrogen. Works particularly well in high calcareous soils thanks to the 4% sulfur content.



Sodium KnockOut

For fast results with an immediately soluble and 100% available calcium source to neutralize salts! Chronic salt levels are not only bad for turf but also disrupt soil quality. Constant vigilance is needed to

keep salts at a minimum. Poor water quality, high salt fertilizers or environmental factors add to the problem.



Companion Biological Fungicide

Begin applying Companion in the spring and continue throughout the growing season at a rate of 4-6 oz per 1,000 FT². Companion fights a broad spectrum of disease and also builds stronger roots and healthier plants.

Companion's benefits go above and beyond conventional fungicides.



Essential Plus

Push-up greens have unique challenges including compaction and lack of aeration. Use Essential to open up soil colloids, freeing air and water movement. For new golf courses construction high in sand, Essential increases the organic content and cation exchange and will help to retain fertilizer in the soil and prevent leaching.



Green Speed SI (0-2-5)

Strengthens turf blades, helps resistance to disease, pests, heat and drought. Green Speed is a proprietary liquid formula that combines silica, potassium phosphite, and humic acid to give both a faster ball roll & reduces ball marks.



TREE & LANDSCAPE PRODUCT SPOTLIGHT

Micrel Total

A complete micronutrient package in one product! Use on any tree or landscape plant suffering from chlorosis.

Apply as a foliar spray, drench or deep root injection to quickly solve problems.

Safe to apply year long, even during the summer months. Fight yellowing of trees, the most common problem of the oak family.



Autumn Care 6-12-12

Improved! We have upgraded Autumn Care with important micros and organic enhancers to

help trees and shrubs withstand environmental stress. In addition to the Smart Nitrogen we have added chelated iron and manganese, along with sugars and enzymes to help boost your trees winter hardiness.



Banner Sales Custom 18-3-6

50% Slow Release

Nitrogen Plus

Micronutrients and Humic Acid.

Custom formulated to meet (ISA) International Society of Arboriculture's fertilizer specifications.



BioNutrients Total-Pak Injectable with Mycorrhizae

Affordable and easy-to-use and apply. The unique packaging makes Total-Pak easy to be transport from site to site. Two packs per 100 gallons works

great with an injector.



Essential Plus

Essential Plus is a good value and all inclusive product with plant food, soil conditioner, micros, and organics. Will help struggling trees survive by stimulating root growth and overcoming stress. Use Essential on everything,

including shrubs and flowers beds. Two applications per year; one in the spring and another application in the fall.



Iron Max

Fast powerful green-up thanks to the combination of chelated iron, manganese and sulfur. Apply 3-4 ounces per 1,000 FT² and get dense thick turf. The combination of N, Fe and Mn give you the assurance that yellowing, commonly caused by chlorosis will be quickly corrected, with longer lasting results.



FERTILIZERS



AND



We at Banner Sales take pride in providing you the highest quality products designed to give your customer the best possible results while increasing your bottom line. Growth Products custom blends many of our products specifically for tree and shrub application, giving you these benefits: low or no salt, no chlorides, chelated micro nutrients, true liquids that won't harm pumps or clog screens, effective and safe applications by root injection or foliar and soil drench. All Growth Products materials are compatible so you can customize your mix. Please contact us today if you need any help meeting your customer's needs.

BANNER CUSTOM 18-3-6 WITH HUMIC ACID

Liquid Fertilizer Solution with 50% SRN Plus Micronutrients & Humic Acid* for enhanced root development
***Custom Formulation made exclusively for Banner Sales and Consulting!**

The Classic 18-3-6 liquid fertilizer with 50% slow release Smart Nitrogen™ plus micronutrients is a professional liquid fertilizer for use on trees, turf, and ornamentals. It provides quick release nitrogen for initial green up and has 50% SRN for steady feeding. 18-3-6 has an exceptionally low salt index, and contains no harmful chlorides, hydroxides, or high sulfur products. Plus, the highly complex Smart Nitrogen™ polymers contain carbon, which improves soils and feeds beneficial microbes. With The Classic 18-3-6, you're protecting your turf, your soil, and the environment.

- 50% slow release nitrogen
- No chlorides
- Humic Acid for enhanced root development – Banner Sales Custom Formulation
- Fully Chelated Micronutrient package – Cu, Fe, Mn, and Zn

Active Ingredients: Nitrogen, Phosphate, Soluble Potash, Chelated Copper, Chelated Iron, Chelated Manganese, Chelated Zinc and Humic Acid

Packaging: 2.5 gallon jug, 30 gallon drum, 55 gallon drum, and 275 gallon mini-bulk **Rate:** 1.5 gal. / 100 gal. water



18-0-6 50% SLOW RELEASE NITROGEN & MICROS

Phosphorus Free, No Humic Acid Added

Packaging: 2.5 gallon jug, 30 gallon drum

14-7-14

With slow release Methylene Urea Nitrogen plus Micro-nutrients 14-7-14 is a concentrated crystal clear liquid solution in a 2-1-2 ratio. Contains 50% slow release nitrogen from Methylene Urea which is known to remain present and available to your plants for longer. 14-7-14 will produce a more consistent nitrogen feeding curve, extending time between fertilizations. The potassium is completely soluble and ready for uptake. Ideal for fall tree fertilization.

Packaging: 2.5 gallon (5 gal. / cs.), 55 gallon drum

Rate: 1.5 gal. / 100 gal. water



6-12-12 AUTUMN CARE

Improved formula with added sugars, iron, manganese, and vital enzymes to improve stress tolerance, winter hardiness and increase carbohydrate storage. Autumn Care contains 40% slow release nitrogen from Growth Products exclusive Nitro 30 SRN. Safe and reliable with an extremely low salt index for delicate roots.

Active Ingredients: Nitrogen, Phosphate, Soluble Potash, Iron 1%, Manganese .3%, Glucose (Polysaccharide), Enzymes (Protease, Amylase, Cellulase)

Packaging: 2.5 gallon jug

Rate: 2.5 gal. / 100 gal. water 2 gallons mix



FERTILIZERS

ESSENTIAL® PLUS 1-0-1

100% Natural Organic Soil Amendment and Root Stimulator with 21 L-Amino Acids and Carbons

Essential® Plus is a 100% organic liquid that works both as an amendment for soils and as a safe, effective root stimulant for all turf and ornamentals. Essential® Plus is easy to use, safe to handle, and compatible with all fertilizers. Derived from potassium humate, 21 natural L-amino acids, enzymes, simple and complex sugars, vitamins, kelp extracts, carbohydrates, hydrolyzed organic proteins, a natural wetting agent and natural biostimulants, Essential® Plus has all the “building blocks” for plant and soil nutrition. Its broad variety of high quality ingredients dwarfs competitive products which typically contain only two or three ingredients at most. The high concentrations of active, soluble humic acid and cellulose fiber help replenish soils that have been depleted of organic matter. Regular use of Essential® Plus also reduces the effects of soil compaction, improves water penetration and neutralizes excess salt accumulations.

- 100% natural organic soil amendment
- 21 Natural L-Amino Acids
- Food source for microbial activity
- Rejuvenates soil structure
- Removes salt from the soil
- Helps trees / plants recover faster from damage

Active Ingredients: nitrogen, soluble potash, iron, humic acid, cellulose fiber, kelp extract, carbohydrates, natural wetting agent, ligin, mono/disaccharide, ash, riboflavin (B2), Vitamin B6, gibberellic acid, Natural rooting substance and 21 L-Amino Acids

Packaging: 2.5 gallon jug, 30 gallon drum

Rate: 0.5 gal. / 100 gal. water



PH REDUCER A CITRIC ACID SOLUTION

Growth Products pH Reducer is a gentle but effective citric acid solution. With its non-burning formula, you won't run into problems like root pruning, which is quite common when using harsher acids such as phosphoric and sulfuric acid. pH Reducer is also very safe for YOU. Corrosive acids bring with them inherent risks such as chemical burns on skin and destroyed clothes. Where safety is concerned, working with our citric acid is almost like handling common vinegar. And our citric acid will NOT eat through your clothes. Mineral acids (like phosphoric, nitric, sulfuric, and hydrochloric acids) are classified HazMats. They are not only harmful to you, but will also wreak havoc on your soil's beneficial microbe populations. Unlike mineral acids, pH Reducer will not change your N-P-K ratio, as other commonly used pH adjusters will. Nitric acid contains nitrogen, phosphoric acid contains phosphorus, and sulfuric acid contains sulfur, so they affect a soil's nutrient profile. But with the citric acid in pH Reducer, you'll get acidifying benefits without adding additional nutrient sources, so there's no need to re-think your N-P-Ks after application. Note that pH Reducer can also be used as a tank mix buffer solution.

- Non-burning formula
- Safe for applicators
- Safe for soil microbe populations
- Will not change your N-P-K fertilizer ratio
- Acts as a natural chelating agent
- Buffer solution for tank mixes

Active Ingredient: Citric Acid **Packaging:** 2.5 gallon jug, 30 gallon drum **Rate:** 32–64 oz. /100 gal. water, see label



Many of you have seen the video, “Emerald Ash Borer, The Michigan Experience” (If you haven't, log onto www.treereseach.org). The video showcases many, many ash trees that were attacked by EAB and saved using the (non-drilling) Wedgle and Pointer Insecticide. Since all of these trees were damaged and under stress from EAB, the Banner Boys also recommended a special fertilizer combination (18-3-6 and Essential Plus) to help these ash trees recover. The results of this holistic approach were fantastic. Not only did the ash trees survive, they thrived! To this day, the ash trees under this treatment protocol are some of the most beautiful and healthy trees in the area. Building on this success, the Banner Boys have teamed with Growth Products to develop other “**FERTILIZER FORMULATIONS**” to combat/treat other tree and ornamental problems arborists and landscapers face every day. The formulation components are completely compatible and designed to be easily applied.



BANNER “FERTILIZER FORMULATIONS”

YEARLY FERTILIZATION/TREE RECOVERY FORMULATION

18-3-6 Liquid Fertilizer

Mix Rate: 1.5 gal. / 100 gal. water

Essential Plus liquid soil amendment – Mix Rate: 0.5 gal. / 100 gal. water

Recommended Application Rate: 2 to 2.5 gallons of soil injected mix per DBH of Tree

Note: The following products can be added to this formulation to enhance its effectiveness.

- 1) Mycorrhizae Fungi (for trees not previously treated with mycorrhizae)
- 2) pH Reducer (recommended for tank water with a high pH level and /or soils with a high pH level.)
- 3) Hydro Max (for clay and/or compacted soil).



**BANNER
TIP**

FERTILIZERS

MICREL TOTAL 5-0-0 Cover Your Micronutrient Needs in One Easy Step



Micrel Total 5-0-0 contains a horticulturally correct ratio of magnesium, sulfur, boron, iron, manganese, molybdenum and zinc (Mg, S, B, Fe, Mn, Mo, and Zn) that quickly and safely corrects chlorosis and other micronutrient problems. Its eight essential micronutrients can be immediately absorbed and utilized by trees and other plants for preventing and correcting problems, and it can be applied year-round.

What's the key to Micrel Total's success? The chelation of its micronutrients. Chelated micros are inorganic micronutrients that have been enclosed by an organic molecule. When chelated, micronutrients become more mobile in soil and in plants, are less prone to leaching, and do not become locked-up by inhospitable pH levels in the soil. When applied as a foliar spray, chelated micros - unlike unchelated micros - are able to rapidly penetrate a leaf's waxy coating and enter into the plant, working to quickly correct deficiencies.

- Helps correct chlorosis
- Eight Chelated Micros
- Foliar & Root Absorbed

Active Ingredients: Nitrogen, Magnesium, Sulfur, Boron, Copper, Iron, Manganese, Molybdenum, Zinc

Packaging: 2.5 gallon jug

Rate: 40 oz. / 100 gal. water

0-0-25 LIQUID POTASSIUM SOLUTION

Growth Products Liquid Potassium (0-0-25) is a concentrated potassium fertilizer solution made from only the highest quality technical grade potassium carbonate. Liquid Potassium provides you with 100% soluble potassium for immediate plant and turf uptake through both foliar and root feeding. Liquid Potassium can be applied throughout the growing season to correct potassium deficiencies quickly. As a fall fertilization product, it provides the maximum amount of potash in solution, and will help to improve stress tolerance from drought, winter and traffic.

- No chlorides / low salt index
- Improves stress tolerance
- Immediately available potassium
- Foliar and root uptake

Active Ingredient: Soluble Potash

Packaging: 2.5 gallon jug

Rate: See Label



0-30-0 LIQUID PHOSPHORUS SOLUTION

Growth Products Liquid Phosphorus (0-30-0) is a concentrated phosphorus solution made from the highest quality raw material. This 100% soluble phosphorus will quickly correct phosphorus deficiencies. 0-30-0 also acts as a buffer activator in tank mixtures with other chemicals (insecticides).

- Improves root growth
- High phosphorus Source
- Corrects deficiencies quickly
- Buffer activator

Active Ingredient: Phosphorus

Packaging: 2.5 gallon jug

Rate: See Label

MANGANESE CHELATE 5% Organic Chelate with 2% Sulfur

Manganese Chelate 5% is an organic chelate, which keeps the manganese soluble for plant uptake. This chelate is ideal for both soil and foliar uptake, since this chelate is absorbed through foliar spray. Use this product for correction of deficiencies in turf and ornamentals and to enhance microbial activity. Manganese Chelate 5% has a pH of 6.5 making it perfect for mixing with acid sensitive products and it's compatible with all other professional fertilizers.

- Assists in enzyme formulation
- Foliar and root applications
- For turf and ornamentals
- Correction of deficiencies

Active Ingredients: Manganese, sulfur

Packaging: 2.5 gallon jug

Rate: 1- 1.5 gals. / 100 gal. water



MAGNESIUM CHELATE 3% Organic Chelate

Magnesium Chelate 3% liquid organic chelate is a soluble magnesium solution for quick uptake through soil and foliar application. Use for correction of deficiencies in turf and ornamentals and to enhance microbial activity.

Magnesium Chelate also assists in chlorophyll production. Magnesium Chelate 3% is a near neutral pH of 6.5 and is ideal for mixing with pH acid sensitive products and is compatible with all other professional fertilizers.

- Assists in Chlorophyll Production
- For turf and ornamentals
- Foliar and root application
- Natural Organic Chelating Agent

Active Ingredient: Magnesium

Packaging: 2.5 gallon jug

Rate: 24 - 36 oz. / 100 gal. water

FERTILIZERS

“TKO” PHOSPHITE 0-29-26 100% PHOSPHITE

“TKO” Phosphite (0-29-26) is a highly concentrated P/K nutrient containing mono- and di-potassium salts of phosphorous acid. This clear solution is highly soluble and is rapidly absorbed either through leaf tissue or roots, quickly correcting deficiencies and improving plant growth and vigor. Phosphite nutrients are known to improve overall plant growth. “TKO” Phosphite can be used as soil and/or foliar application. Phosphorus is second only in importance to nitrogen and is known to play a key role in photosynthesis and root development.

Active Ingredient: Phosphate, Soluble Potash **Packaging:** 2.5 gallon jug **Rate:** 32 oz./100 gal. water



COMPANION® BIOLOGICAL FUNGICIDE FIRST-EVER EPA LABELED BIOLOGICAL FUNGICIDE



Companion® Biological Fungicide received a new EPA label for all landscape and turfgrass use. Companion® effectively prevents, controls and suppresses a broad range of root and foliar diseases. Companion®'s GB03 strain of Bacillus Subtilis has multiple modes of action in preventing and controlling plant disease. It produces a broad-spectrum antibiotic (IturA) that disrupts pathogen cell-wall formation. It is a competitive and fast colonizing rhizobacterium that crowds out pathogens, preventing their growth and antagonistic effects. In addition, GB03 triggers induced Systemic Resistance (ISR) in plants by activating their natural immune system to fight disease. Companion®'s multiple and unique methods of battling pathogens are environmentally friendly and inhibit pathogens' ability to develop resistance to fungicides.

- Activates plant's defense/immune system
 - A rhizosphere bacterium
 - Quickly establishes beneficial colonies on roots and leaves
 - Stimulates healthier roots and accelerates plant growth
- Here are some of the diseases Companion® helps prevent, control and suppress: Anthracnose, Root Rot, Fire Blight, Tip Blight, Wilt, Bacteria leaf Spot, Phytophthora, Rhizoctonia

Active ingredient: GB03 Bacillus Subtilis **Mode of Action:** Systemic **Rate:** 32 – 64 oz. / 100 gal. water

Packaging: 1 gallon Container Box, 2.5 gallon Container Box



BANNER DISEASE PREVENTION COCKTAILS

SOIL AND FOLIAR DISEASE PREVENTION, CONTROL AND SUPPRESSION FORMULATION

(Anthracnose, Root Rot, Fire Blight, Tip Blight, Wilt, Bacterial Leaf Spot, Phytophthora, Rhizocotinia)

Companion liquid biological fungicide - Mix Rate: 0.5 gal. / 100 gal. water

Essential Plus liquid soil amendment - Mix Rate: 0.5 gal. / 100 gal. water

pH Reducer liquid citric acid solution - Mix Rate: 40 oz. / 100 gal. water

TKO 0-29-26 liquid (100% Phosphite) - Mix Rate: .25 gal. / 100 gal. water

Recommended Application Rate: 2 gallons of soil injected mix per DBH of Tree or
4-5 gallons per 1000 sq. ft. for ground application.

ORGANIC TREE FERTILIZATION FORMULATION

Micrel Total 5-0-0 – Mix Rate: 32 oz. / 100 gal. water

Essential Plus liquid soil amendment – Mix Rate: 64 oz. / 100 gal. water

Companion liquid – Mix Rate: 32 oz. / 100 gal. water

Bionutrient Total Pak Mycorrhizal Fungi: (2) 8 oz. pkts. / 100 gal. water

Recommended Application Rate: 2 gallons of soil injected mix per 1 inch of DBH



CHLOROTIC TREE FERTILIZATION FORMULATION

• **Iron X-Xtra Iron 10% for Oak where pH is normal - Mix Rate:** 0.5-1 gal. / 100 gal. water

• **Organic Iron 5% for Oaks in high pH soil - Mix Rate:** 0.5-1 gal. / 100 gal. water

• **Micrel Total liquid fertilizer for maples – Mix Rate:** 30 oz. / 100 gal. water

• **Essential Plus liquid soil amendment – Mix Rate:** 0.5 gal. / 100 gal. water

• **pH Reducer liquid citric acid solution – Mix Rate:** 0.5 gal./ 100 gal. water

• **Mycorrhizal Fungi – Mix Rate:** 8oz. / 100 gal. water

Recommended Application Rate: 2 gallons of soil injected mix per DBH of Tree

FERTILIZERS

X-XTRA IRON 6-0-0 High Iron 10% - Low Nitrogen 6%



X-Xtra Iron 6-0-0 contains more iron than the closest competitive product on the market. X-Xtra Iron provides 100% soluble, chelated iron in an immediately available form for both foliar and root applications. With its low nitrogen-to-iron ratio, X-Xtra Iron provides rapid green-up without any harmful surge growth. X-Xtra Iron contains the three most essential nutrients for photosynthesis: iron, nitrogen and sulfur. These elements combine to give trees and ornamentals a strong root system. X-Xtra Iron is formulated with citric acid as the chelating source. Because the citric acid chelate is quickly absorbed through plant tissue, X-Xtra Iron is good not only for rapid green up but also for correcting iron deficiencies and chlorosis. X-Xtra Iron is amine compatible and can be mixed with herbicides, fungicides pesticides, and other N-P-K fertilizers. X-Xtra Iron is very effective when applied with PGRs since its low nitrogen content will not counteract growth reduction but will prevent yellowing.

- Fast green up, no surge growth
- Compatible with PGRs
- Corrects Iron Chlorosis

Active Ingredients: Nitrogen, sulfur, iron

Packaging: 2.5 gallon jug, 30 gallon drum

Rate: 0.5 – 1 gal. / 100 gal. water

IRON MAX AC 6% 15-0-0 with 2% Chelated Manganese and 3.5% Sulfur

Iron Max AC 6% 15-0-0 is a chelated iron and manganese chelate that promotes faster green up and is perfect for turf, tree and ornamental general maintenance and chlorosis correction. 15-0-0 is compatible with technical materials and contains four essential nutrients. 15-0-0 also promotes root development and green-up in high traffic and high stress areas.

- Promotes Rapid Green-up
- 100% Chelated Iron & Manganese
- Compatible with technical materials
- Four Essential Nutrients

Active Ingredients: Nitrogen, sulfur, iron, manganese

Packaging: 2.5 gallon jug, 30 gallon drum

Rate: 1 – 1.5 gal. / 100 gal. water



ORGANIC IRON 5% Glucheptonate Chelate with 2% Sulfur



Organic Iron 5% is a new Organic Chelate made from a glucheptonate chelating agent. Organic iron 5% is formulated for year round application on all varieties of turf grasses. It can be used in early spring for soil injection of trees and ornamentals. Organic Iron 5% is a very stable chelate and is a perfect choice for higher pH soils. Organic Iron 5% will remain available longer than other types of chelates.

- Non-staining
- Excellent source of sulfur
- For foliar and root applications
- Ideal for soil with pH over 7

Active Ingredients: sulfur, iron

Packaging: 2.5 gallon jug, 30 gallon drum

Rate: 24oz. / 100 gal. water foliar, 1.5 gal. / 100 gal. water soil

MILLER IRON 13.2%

Miller Iron Chelate 13.2% is for the treatment of soils and crops where iron deficiency is diagnosed or suspected. Miller Iron is particularly suitable for foliar application, inclusion in liquid feeds and hydroponic mixes and for soil applications where soil pH does not exceed 6.5. To improve foliar absorption and effectiveness, add Nu-Film P to foliar spray.

Packaging: 25 pound bag

Rate: See Label



IRON CHELATE

FERTILIZERS

NITRO-22 (22-0-0) with 40% Smart Nitrogen and 4% Sulfur

Nitro-22 (22-0-0) is a “best of both worlds” liquid fertilizer. It has a great price, it is easy and economical to apply, and it produces excellent on-the-ground results. A clear liquid fertilizer, Nitro-22 has 40% slow release nitrogen and 60% quick release nitrogen. This combination gives you the benefits of a rapid green-up and then a slow, continuous feed of nitrogen. Nitro-22 also contains two forms of sulfur, one of which provides immediately available sulfur, while the other provides a longer-term sulfur release. Sulfur is an important nutrient for many types of turf since it aids in protein synthesis, helps in the utilization of nitrogen, and helps turf maintain a dark green appearance. Because of its sulfur content, Nitro-22 is an ideal fertilizer for all areas of the country with alkaline soils. The sulfur in Nitro-22 helps reduce soil pH, and thus prevents any deficiencies caused by too high a soil pH. Nitro-22 mixes and applies easily and is compatible with most other fertilizers and pesticides. It works well even at low soil temperatures.



- American raw materials, Nitro-22 is particularly cost-efficient.
- Economical nitrogen source
- Readily available Sulfur
- Corrects soil alkalinity
- Benefits of SRN – the smart nitrogen

Active Ingredients: Nitrogen, Sulfur

Packaging: 2.5 gallon jug, 30 gallon drum, 55 gallon drum

Rate: See Label

HYDRO-MAX ALL NATURAL WETTING AGENT PLUS HUMIC ACID

Hydro-Max is a natural wetting agent and soil penetrant derived from the Mohave Yucca plant. Yucca provides a wide range of multi-functional benefits to both plants and soil conditions. Hydro-Max can be mixed with N-P-K fertilizers to improve foliar nutrient absorption. It is compatible with all liquid and soluble fertilizers, herbicides, pesticides, fungicides and absorbent gels. It is environmentally friendly product that can be applied to all plant materials either as a soil or foliar application. It is non-phytotoxic and can even be applied during hot, dry weather conditions.

- Increases water and fertilizer penetration
- Loosens compacted soils
- Reduces surface tension of pesticide sprays
- Helps leach salts
- Alleviates Dry Spots
- Increases Cell Wall Permeability

Active Ingredients: Yucca Schidigera Extract, Humic Acid

Packaging: 2.5 gallon jug

Rate: See Label, 100 oz. / 100 gal. water for trees and shrubs



BANNER – TURF PROGRAM FOR CLAY SOILS

This program will add organic matter to the soil while lowering the soil pH and maintaining a beautiful dark green turf that is more disease-resistant:

BioNutrient Soluble 8-0-9 (USDA Certified BioBased Product)

Rate: 1 – 8oz pkt per acre

Iron Max AC 6% 15-0-0 plus 2% Manganese, 3.5% Sulfur

Rate: 4oz per 1,000 sq. ft.

PH Reducer

Rate: 2oz per 1,000 sq. ft.

Essential (USDA Certified Bio Based Product)

Rate: 5oz per 1,000 sq. ft.

MACROGANICS 4-3-2

Macroganics 4-3-2 is a plant-based, 100% soluble, liquid, natural organic fertilizer, and is Organic Materials Review Institute (OMRI) listed. It is for use on turf and ornamentals for supplemental feeding. Macroganics serves as both a fertilizer and a soil conditioner. It contains 18 L-amino acids and the natural wetting agent from Yucca.

Active Ingredients: 100% plant-based, no animal byproducts

Packaging: 2.5 gallon jug

Rate: See label

FERTILIZERS

BIONUTRIENTS SOLUBLE 8-0-9 For Fairways, Sports Turf & Lawn Care

BioNutrients is a unique, dry 100% soluble blend of humic acid, natural wetting agent, kelp, natural L-amino acids and exclusive beneficial soil bacteria along with fortified natural carriers that add rich organic materials to soils to promote strong rooting. The BioNutrients formulation is designed to improve soil quality. The powerful natural wetting agents insures deep penetration in the most difficult and compacted soil. For use on all fairway grasses, sport turf, lawn care and hydroseeding applications.

Active Ingredients: Nitrogen, Soluble Potash, Iron, Zinc, Bacillus Bacteria, Yeast, Kelp Extract, Natural Wetting Agent (Yucca), Gibberellic Acid, L-Amino Acids

Packaging: 30 / 8 oz. Pkts

Rate: 1-2 - 8 oz. pkt / 20-50 gal., per acre



STARTER PLUS BLOOMTASTIC 8-32-5, LIQUID FERTILIZER SOLUTION with 50% Slow Release Nitrogen



Starter Plus Bloomtastic 8-32-5 with 50% SRN is a high phosphorus solution, ideal for newly seeded areas. Starter Plus provides a continuous, steady source of nitrogen from methylene urea (MDU) along with quickly available nitrogen to promote top growth with limited thatch formation. Both the P and K are readily available to assure good rooting. Starter Plus is ideal for foliar spray applications, hydroseeding and as a soil drench.

Active Ingredients: Nitrogen, Phosphate, Soluble Potash

Packaging: 2.5 gallon

Rate: 11-22 oz. / 1,000 sq. ft., 32-64 oz. / 100 gal. water

RECOVER RX (3-18-18), RX FOLIAR FORMULATION with Salicylic Acid and a Unique Blend of Phosphorus Sources

Recover RX 3-18-18 is a highly soluble foliar, low salt index formulation developed to supplement standard soil fertility practice. It also provides a full 8 oz. of Trigger SA (Salicylic Acid) in every gallon. Recover RX is designed to be used in concert with soil and tissue tests and professional recommendations to manage the nutrient levels and nutrient balance. Helps plant rejuvenate from damage.

- 8 oz. of Salicylic Acid in Every Gallon enhances the plants immune and defense system.
- Contains 1/2 lb. Phosphite in each gallon
- Helps bring trees out of stress and decline
- Helps rejuvenate from damage
- Important for Plant Growth & Development

Active Ingredients: Nitrogen, Phosphoric Acid, Water Soluble Potash, Salicylic Acid

Packaging: 2.5 gallon **Rate:** 3-5 oz. / 1,000 sq. ft. turf, 40 oz. / 100 gal. water foliar, 1/2 gal. / 100 gal. water soil appl.



SALICYLIC ACID IN RECOVER RX

Salicylic acid (active ingredient in aspirin) is a monohydroxybenzoic acid, a type of phenolic acid and a beta hydroxyl acid. This colorless crystalline organic acid is widely used in organic synthesis and functions as a plant hormone. Spraying this naturally-occurring compound onto some plants triggers natural defenses that keep harmful fungi, bacteria and viruses at bay. Plants make salicylic acid, particularly after encountering a pathogen, but only recently have companies begun marketing salicylic acid.

FERTILIZERS

SODIUM KNOCKOUT 5-0-0 5% Nitrogen, 6% Calcium, plus Yucca

KnockOut is a new and unique combination product that contains readily available calcium and a natural surfactant/wetting agent from yucca. It is an effective tool to reduce sodium levels in soils or bicarbonate accumulation from irrigation water. KnockOut quickly penetrates even the most difficult soils. It will also increase the permeability of soils while reducing soluble salts that build up in soils from high water salinity. KnockOut's calcium is in a 100% soluble form that is immediately available to react with the sodium, unlike gypsum based products. It is a much safer alternative to chlorides and sulfates.

Active Ingredients: Nitrogen, Calcium, Natural Wetting Agent (Yucca schidigera)

Packaging: 2.5 gallon

Rate: 1 -2 gallons per acre or 2-3 oz. per gallon water

Application Recommendations:

Correcting harmful saline-sodic soils must be carried out in steps beginning with restoration, followed by continued maintenance. Make repeated applications 2-4 weeks apart. Following application, wash product into soil with irrigation.



BANNER TIP

BANNER RECOMMENDATION

Salt will kill beneficial soil microbes and their food source. After salt remediation, treat soil with Essential at the rate of 8 oz. / 1,000 sq. ft. Essential is a 100% natural organic product derived from plant and vegetative products that provide a rich carbon source of organic matter. Essential contains 21 L-amino acids that promote nutrient absorption and stimulate the plants' essential metabolic activities. It also becomes an available food source for soil microorganisms. High concentrates of active, soluble humic acid, humus and cellulose fiber will help to replenish soils that have been depleted of organic matter.



GREEN-SPEED SI (0-2-5) 7% Potassium Silicate with Phosphite and 2% Humic Acid

- Strengthens Turf Blades, Helps increase resistance to disease, pests, heat and drought
- Fast Ball Roll/Reduces ball Marks, Better Cut by Green Mowers
- Humic Acid Accelerates Absorption

Green-Speed is a proprietary formula with silica, potassium phosphate and humic acid as the active ingredients. Silica hardens the leaf and helps strengthen the xylem vessels during times of high transpiration, reducing water loss. Green-Speed Si contains Potassium Phosphite which promotes turf health and increases the turf's resistance to disease and pests. The humic acid increases nutrient uptake through the leaf and root tissue. It is designed for foliar application on all turf varieties on greens, tees and roughs. It is also great for sports turf, ornamentals grasses and regular maintenance of lawns. It is best to apply Green Speed prior to heavy traffic or prior to times of heat stress.

Packaging: 2.5 gallon

Rate: 3 - 4 oz. per 1,000 sq. ft.

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What You Need To Know About Mycorrhizal Fungi and Beneficial Bacteria

For millions of years, plants have been in a mutualistic, symbiotic relationship with a group of soil organisms called Mycorrhizal Fungi. Serving as a secondary life support system, these unique fungi live in and around the roots of almost 99% of Earth's terrestrial plants. By attaching themselves to the roots of a plant, the Mycorrhizae can extend out into the soil, gathering water and nutrients for the host in exchange for the plant's sugars. Trees and plants with prosperous Mycorrhizal root systems are better able to adapt and flourish in harsh and stressful man-made environments.

Besides Mycorrhizal fungi, there are certain species of beneficial bacteria that support healthy plant growth and help protect them from certain soil-born diseases. These good bacteria are called Trichoderma and Rhizobacteria. These valuable bacteria are common in a tree or plant's natural setting. However, in man-made environments, the populations of these species are low or even non-existent.

To help alleviate this lack of both Mycorrhizae and beneficial bacteria in urban type settings, special cocktails of products have been made containing the endo / ectomycorrhizae and the beneficial bacteria, as well as an array of micronutrients, biostimulants, soil conditioners, super-absorbent gels, amino acids and vitamins & minerals.

MYCORRHIZAL PRODUCTS

Ectomycorrhizae:

Species of mycorrhizal fungi with hyphae that grow only between the cells and over the surface (outside) of the roots, but do not penetrate the plant cell. Benefits conifers and hardwoods.

Endomycorrhizae:

Species of mycorrhizal fungi with hyphae that penetrate and live inside the cortical cells of the plant root. Benefits turf grasses, hardwoods, most ornamentals, shrubs, and fruit & nut trees.

Improves
Survival
Rooting
Flowering
Water Absorption
IBA Effectiveness
Improves Fe-Efficiency
Nutrient Availability
Yields and Production



Mycorrhizal Fungi



Reduces
Plant Losses
Fertilizer Use
Need Of Pesticides
Heat Stress Damage
Irrigation Frequency
Losses From
Drought Conditions

Mycorrhizal Fungi Facts:





1. Mycorrhizae benefit more than 95% of the Earth's terrestrial plants.
2. Increases absorptive surfaces of root systems up to 700%.
3. Can occupy 100 times more soil volume than a non-mycorrhizal plant's entire root system.
4. Depression of many root diseases caused by pathogenic fungi and nematodes.

MYCORRHIZAE

DIEHARD MYCORRHIZAE PRODUCTS



DIEHARD mycorrhizal inoculants are formulated as transplant soil amendments, injectables, and bare root preparations to inoculate landscape trees and shrubs, flowerbeds, established trees and shrubs, and bare root seedlings with live beneficial mycorrhizal fungi. The inoculant contains highly selected strains of low host specificity endo- and ectomycorrhizal fungi that will quickly colonize the roots of new transplants to provide the best possible conditions for the roots to become mycorrhizal during the establishment period and beyond. The mycorrhizal inoculants are combined with other beneficial fungi (Trichoderma), humic acids, biostimulants, beneficial bacteria, soluble sea kelp, yucca plant extracts and organic soil conditioners to promote rapid root development.

Item No.	Packaging	Description	Rate*
DIEHARD INJECTIBLE			
 DHI8OZX4	(4) 8 oz. Bags	Treat mature and newly planted landscape trees and shrubs with live beneficial mycorrhizal fungi. It contains highly selected strains of low host specificity endo (7) - ectomy- corrhizae (9) fungi and are combined with complete package of humic acids. For soil injection.	8 oz. / 100 gal. water
DIEHARD BIORUSH FE			
 DHBRFE1X8	(8) 1 lb. bags 8 lb. box 4 / cs.	A dry, water soluble root growth stimulant, fully chelated iron micronutrient with nitrogen fixing, phosphorus solubilizing and growth promoting beneficial bacteria The product contains humic acid extracts, soluble sea kelp, and essential amino acids to "energize" the microbial activity.	1 lb. / 100 gal water
DIEHARD TRANSPLANT			
 DHT 8OZX20X4 ----- DHT 8OZX50	(20) 8 oz. Bags 10 lb. box 4 / cs. ----- (50) 8 oz. Bags 25 lb. case	A transplant amendment to inoculate landscape trees and shrubs with live beneficial mycorrhizal fungi, which nursery plants do not have. It contains highly selected endo and ecto-mycorrhizal fungi combined with humic acids, Trichoderma, stimulants, beneficial bacteria, soluble sea kelp, & yucca plant extracts, to promote rapid root development.	8 oz. / 2" caliper
DIEHARD ROOT REVIVER			
 DHRR25	25 lb. case	Use as a preparation to inoculate the roots of tree and shrubs when planting. It contains highly selected endo and ectomy- corrhizae fungi, offering quick colonization of roots on new transplants, and is combined with humic acids, Trichoderma, biostimulants, beneficial bacteria, soluble sea kelp, yucca plant extracts, amino acids, and vitamins to promote rapid root development.	3 - 6 oz. / hole (2" wide x 10" deep in a 3 ft. grid.)

***Follow Label Directions at All Times**

MYCORRHIZAE



Top Performing Endo and Ecto Mycorrhizae that are able to propagate in a broad range of soil temperatures including cold northern climates. Exceptional performance in soil pH of 7 and above!

BIONUTRIENTS TOTAL-PAK INJECTABLE - for Trees and Ornamentals



BioNutrients Total-Pak contains Endo and Ecto Mycorrhizae Fungi, Rhizosphere beneficial bacteria, micronutrients, biologically active soil conditioners, natural wetting agent and rich organic supplements. It is formulated for easy application for existing trees and ornamentals to reduce stress and improve overall health. Bacillus bacteria rapidly colonize the root's surface and stimulate root growth, maintain healthy root system and crowd out invading pathogens.

- Contains Endo and Ecto Mycorrhizal Fungi
- Beneficial Rhizosphere Bacteria and Yeast
- Complete Micronutrient Package

Active Ingredients: Nitrogen, Soluble Potash, Boron, Copper, Iron, Manganese, Magnesium, Molybdenum, Zinc, Bacillus Bacteria, Yeast, Endo and Ecto Mycorrhizae Fungi, Humic Acid, Kelp Extract, Malto3Dextrin, L-Amino Acids

Packaging: 30 - 8 oz. packets

Rate: 8 oz. / 50 gal.

THE LANDSCAPER'S BIONUTRITION, 3-0-3 GRANULAR with Mycorrhizal Technology for Transplanting Trees and Ornamentals

The Landscaper's BioNutrition will provide biologically active soil conditioners, natural wetting agent and rich organic supplements with Rhizosphere beneficial bacteria and Endo and Ecto Mycorrhizae Fungi. The Bacillus strains produce a variety of enzymes, PGRs and metabolites that aid in the breakdown of organic fertilizers and organic matter.

Landscaper's BioNutrients contains "Viterra Gelscape," a unique water-control polymer gel that absorbs and holds water for gradual release to plants. It also contains 17 Natural L-amino acids which act as a natural chelating agent and a food source for soil microbes.

- Now contains Endo & Ectomycorrhize
- Easy to use 8 oz. Packs
- Contains Water Control Agent "Viterra Gelscape" Polymer Gel
- 475 Million Bacillus Subtiles Spores
- 17 Natural L-Amino Acids

Active Ingredients: Nitrogen, Soluble Potash, Iron, Bacillus Bacteria, Endo and Ecto Mycorrhizae Fungi, Humic Acid, Kelp Extract, Yucca, L-Amino Acids

Packaging: Box, 30 - 8 oz. pkts. / pair

Rate: - See Table Below -



TREE, SHRUB AND PALM RATES: Use 4 ounces per caliper inch or 1 foot of root ball.

1. Mix evenly into the upper 8-10 inches of the backfill soil and no more than 8-10 inches away from the root ball.
2. Pack the treated backfill firmly around the root ball.
3. Mulch and water to soil saturation.



**BANNER
TIP**

BANNER RECOMMENDATION – Check the pH of your fill water!

The pH of your fill water greatly influences the efficacy of your spray. For example, if the pH of your tank mix is an 8.0 or higher (7 is neutral, 8 is alkaline), then your fungicides and insecticides may only perform for a matter of hours, instead of weeks. If you are experiencing breakthrough from your sprays, chances are the pH of your tank mix is high. It is a simple procedure to check using a test strip and comparing the color on the strip to a chart to determine the pH. Adjustments are made using pH Reducer (see fertilizer section) to lower your pH to a range of 6.5 to 7.0. Start with a gallon of your mix water and add small measured amounts to attain the desired pH. Now multiply that by the size of your tank and you will know how much pH Reducer is needed to buffer your tank using neutral chemicals. If the pH of the chemical you are mixing is acidic or alkaline, check the mix after adding the chemical to see how it influenced your reading and adjust the amount of pH Reducer accordingly. pH test strips and pH meters for soil are in the equipment section of this catalog.

FUNGICIDES

TEBUCONAZOLE 3.6 F



Tebuconazole provides preventative and curative control on a broad-spectrum of disease pathogens. This product is for use on turf and ornamental issues such as Black Spot, Powdery mildew, Rust, Leaf spot, Scab, Anthracnose, Petal Blight and others. Its low use rates and easy to mix formulation makes Tebuconazole 3.6F convenient to apply.

Active Ingredient: Tebuconazole
Mode of Action: Systemic

Packaging: 1 gallon jug
Rate: 5-10 oz / 100 gallons water

TM 4.5 FLOWABLE FUNGICIDE

TM 4.5 is a broad spectrum systemic fungicide, preventative protection against major turf and ornamental diseases.

- Excellent tank mix partner with most other fungicides
- Can be used on cool and warm season grasses and on all labeled ornamentals
- University tested

Systemic, preventative disease protection against major turf and ornamental diseases including: Leaf spots and blights, Anthracnose, Scab, Powdery Mildew and Stem, Crown and Root Rots.

Mode of Action: Systemic **Active Ingredient:** Thiophanate Methyl

Equivalent Brands: Cleary's 3336 WSP, Olympic 6672 WSP

Packaging: 2.5 gallon jug **Rate:** 20 oz. / 100 gal. water



T-METHYL E-PRO 50 WSB

T-Methyl E-Pro WSB Fungicide prevents and cures a wide range of diseases with effective, systemic disease control. The active ingredient, thiophanate-methyl, is one of the most widely-used fungicides in the world. T-Methyl E-Pro WSB prevents and cures new growth from a wide range of diseases including: Anthracnose, Blight, Scab, Leaf Spot, Powdery Mildew, Rusts, Fusarium plus many more.

Active Ingredient: Thiophanate Methyl

Equivalent Brands: Cleary's 3336 WSB

Packaging: 6 x 4 x 8oz. Box

Mode of Action: Systemic

Rate: 8-24 oz. / 100 gal. water

PROPICONAZOLE 14.3 MICROEMULSION FUNGICIDE



Propiconazole 14.3 is an economical, broad-spectrum disease control for trees, shrubs, flowers and turf. Propiconazole 14.3 controls 49 Ornamental and turf diseases including: Anthracnose, Leaf Spot, Powdery Mildew, Rusts, Scab, Blight, Oak Wilt and Dutch Elm.

- Microemulsion formulation for less order, better tank stability and excellent plant coverage
- Locally systemic mode of action for long-lasting disease control
- Excellent tank mix partner with most other fungicides

Active Ingredient: Propiconazole

Equivalent Brands: Syngenta Banner MAXX and Alamo

Packaging: 2.5 gallon jug, 1 gallon jug

Mode of Action: Systemic

Rate: 2-24 oz. / 100 gal. water

VINTAGE SC (Replacement for Rubigan EC, Discontinued)

Vintage is a locally systemic fungicide that provides excellent preventative control of Powdery Mildew in Grapes, Apples, Pears, and Cherries. Vintage also provides curative control of Scab in Apples and Pears, plus control of several other important diseases in these crops.

- Compatible with most insecticides and adjuvants
- Vintage is rainfast after spraying once it is dry on the leaf

Active Ingredient: Fenarimol

Packaging: .5 gallon container

Mode of Action: Sterol Demethylation Inhibitor (DMI)

Rate: 3 – 4 oz. / 100 gal. water

FUNGICIDES

MYCLOBUTANIL 20EW T&O FUNGICIDE

Myclobutanil 20EW T&O Fungicide is a broad spectrum systemic fungicide for curative and preventative control of fungal diseases, scab, powdery mildew, rust and leafspot in fruit trees as well as turfgrass and ornamentals.

- Labeled for golf course greens, tees, fairways and roughs.
- Labeled for landscape, nursery and greenhouse ornamentals
- Labeled for residential and commercial fruit trees, apple trees and grapes

A single application delivers up to 28 days of control for a wide range of diseases including: Leaf Spot, Scab, Powdery Mildew, Rust plus other persistent fungal diseases.

Active Ingredient: Myclobutanil

Equivalent Brand: Dow Agrosciences Eagle

Packaging: 1 gallon jug

Mode of Action: Demethylation inhibitor (DMI)

Rate: See Label



SUBDUE MAXX

Subdue Maxx is a systemic fungicide for use on ornamentals, turf and non-fruit bearing citrus in both nurseries and landscape plantings. Use Subdue Maxx as a soil application for control of soil born diseases. On ornamentals grown for indoor and outdoor landscaping, use for control of damping off, root and stem rot diseases caused by Pythium and Phytophthora.

Mode of action: Systemic

Packaging: 1 quart

Rate: See label

Active Ingredient: (R)-2-(2,6-dimethylphenyl)-methoxyacetyl-amino-propionic acid methyl ester 21.3%

AGRI-MYCIN® 17

Agri-Mycin® is a protectant bactericide designed to combat difficult diseases such as fire blight, bacterial blight, bacterial leaf rot, bacterial wilt and bacterial spot. Agri-Mycin® is compatible with most pesticides and offers 3-4 days of dependable protection when applied correctly.

- Protectant Bactericide
- Easy on plants and animals

- Suppresses Fire Blight in Apples and Pears
- Organic Materials Review Institute (OMRI) Certified

Mode of Action: Contact

Mode of Action: Streptomycin Sulfate

Packaging: 2 lb. bag

Rate: 8- 16 oz. / 100 gal. water

CHLOROTHALONIL 720 SFT FLOWABLE FUNGICIDE

Chlorothalonil 720 SFT is an economical, cost-effective, broad-spectrum disease control for cool and warm season grasses, trees, shrubs, and flowers.

- Excellent tank mix partner with most other fungicides.
- Labeled for use on cool and warm season grasses and on all labeled ornamentals
- Multi-Site activity means no disease resistance with repeated use.

Preventative disease protection against major turf and ornamental diseases including: Needle cast, Tip-Blight, Anthracnose, Rust, Powdery Mildews, Scab, Leaf Spot plus many other fungal diseases.

Mode of Action: Multi-Site, Contact, Preventative

Active Ingredient: Chlorothalonil

Packaging: 2.5 gallon jug

Rate: See Label

Equivalent Brands: Syngenta Daconil Weatherstik



MANZATE MAX T&O (MANCOZEB)



Manzate Max T&O is a broad-spectrum fungicide for the effective control of many fungal diseases on ornamentals and turf. Some of the fungal diseases controlled by Manzate Max are Anthracnose, Cercospora, Rust, Scab, Leaf Spot, Downy Mildew, Phomopsis, Septoria and many more.

- Excellent tenacity, provides rainfastness and residual activity necessary for disease control
- No dye, will not stain equipment or clothing
- Multi-site mode of action, no resistance development
- Water-based, won't settle out as easy

Active Ingredient: Mancozeb

Packaging: 2.5 gallon jug

Mode of Action: Multi-site, Contact, Preventative

Rate: 0.8 – 1.6 qts / 100 gallons water

Equivalent Brand: Dow AgroSciences Fore 80 WP, Cleary's Protect T&O, Dithane 75 DF

FUNGICIDES

JUNCTION FUNGICIDE/BACTERICIDE



Junction is a unique combination of two chemistries combined to create a broad-spectrum fungicide/bactericide, Junction is a high-quality dry flowable formulation providing a convenient solution to disease control.

Disease Controlled: Anthracnose, Fireblight, Blight, Bacterial & Fungal Leaf Spot, Scab, Rust, Powdery Mildew, Tar Spot, Needle Cast, Dothistroma Needle Blight, plus many more.

- Broad-spectrum fungicide/bactericide
- Control of a wide range of bacterial and fungal diseases
- Two proven active ingredients
- Effective tool in resistance management

Active Ingredient: Mancozeb and Copper Hydroxide

Mode of Action: Contact

Packaging: 6 lb bag, 4 x 6 lb case

Rate: 1.5 - 3.5 lbs. / 100 gal. water

DUTCH ELM DISEASE (DED)

DED is a wilt disease with an extremely high fatality rate among elms. The disease is caused by a fungus that rapidly reproduces and spreads toxins throughout the tree. The fungus blocks the vascular system of the tree, preventing water and minerals from reaching the branches and leaves. This causes them to wilt and eventually die. The fungus can be spread by beetle or through root grafting.

TREATMENT OPTIONS

Macro Infusion is one method, utilizing a pump and injection harness to push the fungicide into the Elm.



ARBOTECT 20S



Arbotect 20S is a Thibendazole hypo-phosphite that offers a scientifically-proven two years of protection in healthy trees.

Packaging: 1 gallon

Rate: DED 12oz. for each 5 inches of trunk diameter diluted in 6 gallons of water

Rate: Sycamore Anthracnose, 4oz. for each 5 inches of trunk diameter diluted in one gallon of water.

PROPICONIZOLE 14.3



Propiconazole 14.3 is also labeled for up to 2 years of prevention in healthy trees. Banner Sales recommends re-treating in the third year. The advantage is a great reduction in quantity and cost of the chemical and a much faster application time because the water required is reduced by 80%.

Rate: DED 6 - 20ml (.2-.68oz) per diameter inch in 1 Liter (approximately a quart) of water.

Rate: Sycamore Anthracnose, 6 - 10ml per inch of diameter in 1 Liter of water

Rate: Oak Wilt 10 - 20ml per inch of dbh in 1 Liter of Water

MACRO-INFUSION EQUIPMENT

Macro - Infusion System Kit

Whole Kits and
Parts Available



OPTION

If the tree has sustained substantial damage from drilling treatments, you can use the Wedge Direct-Injection equipment with the setter and Portle needles, along with Shepherd Fungicide, which contains the active ingredient Propiconazole. The Wedge has a much smaller wound profile than macro infusion.

MITICIDES/INSECTICIDES

DAMOIL-DORMANT OIL

Dormant and summer spray oil is an especially refined phytonomic oil contact insecticide. It is for use on plants in foliage or dormant stages.

Mode of Action: Contact, smothers

Packaging: 2.5 gallon jug, 55 gallon drum

Active Ingredient: 98% petroleum Oil

Rate: 1 gal. per 100 gallons water in foliage
2 gal. per 100 gallons water when dormant



ABAMECTIN 0.15 EC



Abamectin 0.15 EC is an emulsifiable concentrate containing 0.15 lb. abamectin per gallon. When mixed with water according to the directions for use, Abamectin 0.15 EC will control mites and leafminers, and suppress thrips, aphids, and whiteflies on the following ornamental plants: Greenhouse-, shadehouse- and field-grown ornamentals; foliage plants; Christmas trees and other woody ornamentals.

To control mites, apply Abamectin 0.15 EC when mites initially appear, then repeat as needed to maintain control. To control leafminers, apply Abamectin 0.15 EC and repeat every 7 days or as needed to maintain control.

To suppress whiteflies, thrips, and aphids, apply Abamectin 0.15 EC when the young/immature stages of these pests are first seen, then repeat once per week for 2-3 weeks.

Packaging: 1 quart (4 qt./cs.) **Rate:** 4-8 oz. per 100 gal./water

Reliable, long-lasting control of mites and Leafminers. Abamectin can be used for the suppression of whitefly, thrips, and aphids on foliate plants, woody ornamentals and Christmas trees.

FLORAMITE SC



FloramiteSC is a selective miticide that provides outstanding control of mite pests on ornamental plants. FloramiteSC produces quick knockdown through contact activity and long residual control of more than 21 days. It is effective on a variety of species of mites and all life stages of Tetranychidus spider mites.

Packaging: 1 quart (8 qt./cs.) **Rate:** 4-8 oz. /100 gal. water*



HEXYGON DF (Ovicide/Miticide)

Hexygon DF (Ovicide / Miticide) provides long residual control which means mite control at a lower cost per day. Control up to 60 days. Highly selective for spider mites, Hexygon breaks the mite life cycle effectively by stopping development of eggs and immature mite stages without causing flare-ups. Because of its unique chemistry, Hexygon is ideal in an IPM program. Use Hexygon for ornamental plants, as well as nonbearing trees and vines growing in nurseries and greenhouses. It's also ideal for established ornamental landscape plantings. Available in a granular formulation for easier measuring, mixing and handling.

Packaging: 6 ounce jar (10 jar / cs.)

Rate: 1 - 2 oz. / 100 gal. water*



MITICIDES/INSECTICIDES

FORBID 4F MITICIDE

Forbid 4F Miticide is another product for the control of mites and whiteflies. Forbid offers control of mites and whiteflies in all stages with fast knockdown and up to 30 days of residual control. The active ingredient, spiromesifen, is a lipid biosynthesis inhibitor that prevents the insects from maintaining a water balance necessary to sustain life. A tetramic acid, the active ingredient blocks fat synthesis which causes the target pests to dry out and die. This mode of actions mean that Forbid has a lower potential for resistance development.



FORBID™

When Forbid 4F Miticide is applied to the host plant, it offers a translaminar activity, allowing it to penetrate the leaf and enter the vascular system, making the active ingredient available at the bottom of the leaf where whiteflies and mites primarily feed.

Packaging: 6 x 8 oz. bottles / box **Rate:** 2-4oz. / 100 gal. water

***Follow Label Directions at All Times**

More Products Available Upon Request 248-366-7799

BIFENTHRIN I/T

Bifenthrin I/T is the equivalent to Talstar Pro Multi-Insecticide with active ingredient bifenthrin that has long residual control of termites and 75 other pests. Its broad label includes everything from pre- and past construction termite treatment, indoor and outdoor pest control, turf and ornamental applications, and food-handling areas. Common pests include Termites, Ants, Gypsy Moth Caterpillars, Adelgids, Aphids, Mites, Pine Shoot Beetles, Japanese Beetles, Leafhoppers, Mosquitoes, etc.



Packaging: 1 gallon (4 gal. / cs.)

Rate: 5.4 - 21.7 oz. / 100 gal. water*

BIFENTHRIN GRANULAR INSECTICIDE

For use on lawns, landscaped areas and perimeters around residential, institutional, public, commercial and industrial buildings, parks, recreational areas and athletic fields. Controls armyworms, cutworms, webworm, weevil, billbugs, ataenius adult, leafhoppers, mealybugs, ants, centipedes, chinch bugs, fleas, fire ants, millipedes, mole cricket, ticks, pillbugs, sowbugs, European Crane Flies and Mosquitoes.

Active Ingredient: Bifenthrin .2% **Rate:** 50 to 200 lbs. per acre, see label

Packaging: 25lb. bag

BIFEN XTS (Equivalent brand: Onyx Insecticide)



Bifen XTS is an oil based insecticide that contains 25.1% Bifenthrin and provides water-resistant, long lasting residual control, even during watering and rainfall. Broad label Bifen XTS is an excellent choice for trunk spray applications. This product provides a high performance, cost effective Bifenthrin product for outdoor perimeter pest control, turf and ornamentals. Bifen XTS controls a variety of pests including: Ants, Aphids, Borers, Cinch Bugs, Crickets, Fleas, Spiders and others.

Active Ingredient: Bifenthrin

Packaging: 1 gallon jug

Mode of Action: Contact or ingestion

Rate: 6.4 – 12.8 oz / 100 gallons water (see label for full instruction)

MITICIDES/INSECTICIDES

TEMPO SC ULTRA



Tempo SC Ultra Insecticide is a broad-spectrum control for over 50 species of indoor / outdoor insects including: Elm Leaf Beetles, Box Elder Bugs, Cockroaches, Japanese Beetles, Webworms, etc.

Packaging: 240 mL bottle (6 btl. / cs)

Rate: 45-160 mL / 100 gal. water*

TEMPO[®] SC
ULTRA

IMIDACLOPRID INSECTICIDE

Imidacloprid is a broad-spectrum ornamental, turf & landscape insecticide that is highly systemic. It is a proven performer and provides excellent and long-lasting pest control. Here are just some of the pests Imidacloprid controls: Japanese Beetle larvae, Japanese Beetle, Cutworm larvae, Green June Beetle Larvae, Adelgids, Leaf Beetles, Leafhoppers, Mealy bugs, Sawfly Larvae, Leafminer, Emerald Ash Borer, Bronze Birch Borer, plus many more. Imidacloprid is offered in three formulations (Water-Soluble Bags, Liquid Flowable and Granular) for your specific needs.

- Provides excellent systemic control and long-lasting residual
- Low use rates for cost-efficient, highly-effective control
- Proven performer, Imidacloprid, provides excellent broad spectrum control

Active Ingredient: Imidacloprid

Mode of Action: Systemic



IMIDACLOPRID 75 WSB INSECTICIDE

(Equivalent Brand: Bayer Merit 75 WSB)

Packaging: 4x(4 x 1.6) ounce bags, 88 x 1.6 ounce bags/ mini drums

Rate: 4 – 1.6oz pkts / 100 gal. Water soil, 1- 1.6oz. pkt. / 100 gal. Water foliar



IMIDACLOPRID 2F INSECTICIDE

(Equivalent Brand: Bayer Merit 2F)

Packaging: 1 gallon jugs / quart

Rate: 3 to 6 mL per DBH



IMIDACLOPRID 0.5G INSECTICIDE

(Equivalent Brand: Bayer Merit 0.5G)

Packaging: 30 pound bag

Rate: 1.2 to 1.8 lbs / 1,000 sq. ft.

ZYLAM LIQUID



A liquid formulation of dinotefuran, Zylam[®] Liquid Systemic Insecticide provides exceptional control of a broad spectrum of listed chewing and sucking insects. Used as a drench, soil injection, or bark banding application, Zylam Liquid features translaminar activity to quickly move through the leaf and control insects that hide on the underside of leaf surfaces. Some of the pests Zylam controls: Scale, Flat-headed borers, Leaf hoppers, Bagworms, Mealybugs, Japanese beetles, Aphids, and more.

Active Ingredient: Dinotefuran

Packaging: 1 quart

Mode of Action: Systemic

Rate: Follow label instructions

SAFARI INSECTICIDE

Safari Insecticide, a new generation, super-systemic insecticide with quick uptake and knockdown, controls a broad spectrum of invasive pests. Safari is super-flexible and can be applied as a drench, soil injection, foliar spray or via chemigation systems. As a foliar spray, Safari provides quick knockdown and excellent translaminar control of pests that feed on the underside of leaves. Some of the pests Safari controls: Adelgids, Flathead Borers, leaf hoppers, leafminer, Mealybugs, Oriental Beetle, Scale (armored & soft), rounded-headed bores, and whiteflies.

Active Ingredient: Dinotefuran

Packaging: 3 lb jug

Mode of Action: Systemic

Rate: 12 – 24 oz. / 100 gal. Water for spray, .75 – 1.5 lbs. / 100 gals. water for Soil

Safari
INSECTICIDE



MITICIDES/INSECTICIDES

ASTRO INSECTICIDE

Astro insecticide provides excellent control of borers, beetles, leafhoppers, chinch bugs, cutworms and over 40 other damaging tree and lawn pests. Astro is formulated for quick knockdown and longer residual. On trees, Astro insecticide penetrates into the bark and doesn't wash away with rainfall or irrigation. Unlike other pyrethroids labeled for lawn and ornamental use, Astro insecticide doesn't typically cause skin or throat irritation. And Astro doesn't produce an offensive odor like organophosphates and carbamates can.

Active Ingredient: Permethrin **Packaging:** 1 gallon jug **Rate:** See Label



PERMETHRIN SFR INSECTICIDE

Permethrin SFR is a broad-spectrum insecticide that offers a quick knockdown of target pests, as well as a long lasting residual. This product may be used indoors and outdoors on turf, lawns, and ornamentals. Permethrin SFR targets: ants, aphids, Japanese beetles, bagworms, caterpillars, fleas, flies, mosquitoes, wasps, ticks, ground beetles, termites and sod webworms.

Active Ingredient: Permethrin **Packaging:** 1.25 gallon
Rate: Foliar Feeding Insects 4-8 oz. / 100 gal. Water; Borers 1-2 Qts. / 100 gal. water

DIPEL PRO DF

Registered for use on a variety of ornamentals, DiPel PRO DF delivers outstanding control of more than 30 species of insects, including tent caterpillar, webworm, bagworms, gypsy moth and tussock moth. Its dry flowable formulation is dust free and easy to measure and mix. DiPel PRO DF is biodegradable and has minimal effect on humans, non-target animals or the environment. DiPel DF is listed by the Organic Materials Review Institute (OMRI) for use in organic production.

Active Ingredient: Bacillus thuringiensis, subsp. kurstaki **Packaging:** 1 lb bag
Rate: .25 to 2lb. / acre or 100 gal.



CONSERVE® SC



Quick knockdown and effective control of lepidopterous larvae such as Bagworms, Gypsy Moth, Tent Caterpillars, Spruce Budworm and more. Also controls Leafminer, Pine Tip Moth, Thrips, Midges and many turf insects.

Active Ingredient: Spinosad **Rate:** 6 oz. / 100 gal., 24 oz. / acre



TALUS 70DF INSECT GROWTH REGULATOR

Talus 70DF is the only IGR labeled for control of Whitefly, Mealybug, Scale, and Glassy-winged Sharpshooter that has Chitin Synthesis Inhibition as its mode of action. Talus disrupts molting by blocking the formation of chitin, the building block of insect exoskeleton. The exoskeleton, the insect's skin and bones, must be absorbed and then re-formed during each successive molt. Without the ability to synthesize chitin, molting is incomplete, resulting in malformed pests that soon die. Talus delivers toxicity to pests via contact, ingestion and vapor activity. There is little or no systemic movement of Talus in plants. But its vapor activity allows Talus to reach leaf undersides where many pest species dwell, and it helps protect new growth. In addition to its primary mode of action, Talus also suppresses egg-laying and causes egg sterility in treated adults through secondary hormonal activity. Talus has also shown to be fully compatible to a broad variety of beneficial insects making it ideal for IPM programs.

Active Ingredient: Buprofezin **Packaging:** 3 lb. **Rate:** 14 oz. / 100 gal. water

Talus® Insect Growth Regulator



SPREADER/STICKER

NU-FILM-P



Nu-Film-P is a superior sticking agent (also known as a spray adjuvant) designed for use with all pesticides on trees. It is compatible in the tank with all commercially-used pesticide products and soluble fertilizers. Nu-Film P forms a sticky, elastic film which tenaciously holds the Pesticide on the foliage and greatly reduces erosion of spray residue from rainfall or watering. It will not freeze, foam or clog spray equipment and can withstand around one inch of rain for a 7-10 day period. The active ingredient is Poly-1-p-Methene, which is derived from pine.



Packaging: 1 gallon (4 gal. / cs.)

Rate: 4 - 6 oz. / 100 gal. water

HERBICIDES

PRODIAMINE 65 WDG PRE-EMERGENT HERBICIDE



Prodiamine pre-emergent grass and broadleaf weed control. Flexible application allows for both spring and fall use providing season long crabgrass control.

- Non-Staining
- Excellent tank mix partner with fertilizers and iron solutions.
- Low solubility and volatility – stays in the weed germination zone.
- Active ingredient rate as low as 1/4 the rate of other pre-emergent herbicide.

Pre-Emergent control of Crabgrass and 31 other problem weeds including: Henbit, Knotweed, Chickweed, Spurge, Annual Bluegrass, Foxtail, Goosegrass.

Active Ingredient: Prodiamine

Packaging: 5 pound jug

Rate: 0.5 - 1.5 lbs. / acre

Equivalent Brand: Syngenta Barricade 65 WDG

Mode of Action: Pre-Emergent

QUINCLORAC 75 DF HERBICIDE (Equivalent Brand: Drive 75 DF)

Quinclorac 75 DF Herbicide is a dependable post-emergent control of both broadleaf and grassy weeds in a wide variety of turf species from residential and commercial to golf courses, sports fields and sod farms.

- Long-lasting control of weeds and grasses – from one month up to 90 days.
- Excellent control of crabgrass, even in its mature stages
- Eliminates a broad spectrum of broadleaf and grassy weed without harming turf
- Application and seeding flexibility – ideal for seeding and overseeding before or after application

Controls a wide variety of broadleaf and grassy weeds, including: Crabgrass, Clover, Foxtail, Dandelion, Black Medic, English Daisy, Morning glory, Dollarweed, Speedwell, Torpedograss, Kikuyugrass, Barnyardgrass, Bindweed, Signalgrass, Violet.

Active Ingredient: Quinclorac

Equivalent Brand: Drive 75 DF

Packaging: 1 pound bottle

Mode of Action: Post-emergent-- absorbed by roots and foliage, active ingredient translocates to interfere with plant growth and cellulose production, which quickly causes plants to die.

Rate: See Label



HERBICIDES

HYVAR® X-L HERBICIDE

DuPont™ Hyvar® X-L non-selective herbicide provides residual control of many of your toughest annual, perennial and brush species. It's offered as a water-soluble liquid that is mixed in water and applied as a spray to control weeds in non-crop areas and industrial sites.

Active Ingredient: Lithium salt of bromacil **Packaging:** 1 Gallon **Rate:** See Label



SEDGEHAMMER HERBICIDE



SedgeHammer herbicide knocks out nutsedge without injury to turfgrass, established ornamentals, shrubs, and/or trees. SedgeHammer provides post-emergence control of both purple and yellow nutsedge. SedgeHammer also controls many broadleaf weeds and suppresses kyllinga.

Active Ingredient: Halosulfuron-methyl
Rate: 0.9g. / 1-2 gal. water / 1000 sq. ft

Packaging: 1.3 oz. bottle



ORNAMEC GRASS HERBICIDE

Ornamec Grass Herbicide provides outstanding post-emergent control of unwanted grasses in groundcovers, shrubs and trees. The majority of the nearly 500 species and varieties of plants on the label may be treated with Ornamec applied "over-the-top". Ornamec can be used in evergreen wildflower and groundcover beds to remove unsightly grass. Some of the unwanted grasses controlled are: crabgrass, quackgrass, bermudagrass, goosegrass and foxtail.

Active Ingredient: Fluazifop -P-butyl

Packaging: 1 quart (packaged with a non-ionic surfactant)

Rate: 1/2 pint / 25 gal. water



ROUNDUP PRO HERBICIDES



Roundup Pro herbicides penetrates the leaves and moves to the roots or weeds faster to provide complete control with virtually no regrowth, thus minimizing call backs and return trips. The product also has favorable environmental characteristics, binding tightly to soil particles and with low volatility, and requires only one application control of labeled weeds. Roundup Pro® is ideal for trim and edge applications, turf renovation, weeding shrub beds and removing brush and vines.

Packaging: 2.5 gallon (5 gal. / cs.) **Rate:** 1.3 oz. / 1 gal. water



QUIKPRO HERBICIDE



QuikPRO herbicide, powered by Roundup technology is the latest, and most anticipated, turf and ornamental herbicide development from Monsanto. Combining quick symptoms - in as little as 24 hours - and the complete weed control applicators have trusted for years, QuikPRO is the true, all-in-one product. QuikPRO is formulated as a water-soluble granule and packaged in easy-measure bottles.

Packaging: 6.8 pound jug (4 / cs.)

Rate: 3 oz. / 6 gal. water



HERBICIDES

GLYPHOSATE T&O Non-Selective Post-Emergent Herbicide



Complete broad-spectrum professional herbicide for weed control in Nursery, Greenhouse, Landscape, Turf and Non-crop Areas.

- Proven broad-spectrum control in turf and ornamental applications
- Mixes readily with water and tank-mix compatible with registered products
- Always apply the higher rate of this product per acre within recommended ranges when weed growth is heavy or dense.

Formulation: 4 lb. a.i. per gallon soluble liquid

Active Ingredient: Glyphosate

Equivalent Brand: Monsanto Roundup® Original

Packaging: 2.5 gallon jugs, 30 gallon drum

Application Rates: 1.3 oz / 1 gallon water

Mode of Action: Systemic



BANNER TIP

This is the original glyphosate with no additives that cause root absorption in heavily mulched trees and shrubs with surface fibrous roots. Please reference label.

TRIMEC 992 BROADLEAF HERBICIDE



Trimec 992 Broadleaf Herbicide is the 'applicator formula' Trimec complex. Trimec 992 contains a little extra 2,4-D for the quick, visual response and lower cost required by the professional lawn care operator. Dandelion curl is almost immediate, which is just what is needed to let homeowners and other property owners know that their weeds are dying. Trimec 992 is labeled for use in warm and cool-season grasses including Bermudagrass, zoysiagrass, St. Augustinegrass, Kentucky bluegrass, fescue and perennial ryegrass. Spray volume range — 20 to 220 gpa — is suited to all types of spray equipment and accommodates tank mixtures containing fertilizer, iron, or PGRs.

Packaging: 55 gallon drum

Rate: 1.8 - 4 pints / acre *

2.5 gallon / (5 gal. / cs.)



Q4® PLUS TURF HERBICIDE FOR GRASSY AND BROADLEAF WEEDS

The ideal replacement for the loss of MSMA on residential turf! Post-emergence control of both grassy and broadleaf weeds, like Crabgrass, Foxtail, Yellow Nutsedge and Bermudagrass. Provides an extra knockout power on grassy weeds. Contains 0.75 lbs ai/acre of quinclorac. Provides fast visual response and rapid activity and death of broadleaf weeds. Wide window of application for broadleaf weeds. Suitable for applications up to 90°F.

Active Ingredient: Quinclorac, Sulfentrazone, 2, 4-D and Dicamba

Packaging: 1 quart, 1 gallon, 2.5 gallon

Rate: See Label



CYGNET PLUS



Cygnet Plus is a 100% active nonionic surfactant which is made from natural limonene taken from the bark of pine trees. Cygnet Plus, when added to herbicides or pesticides, will enhance their activity, reduce surface tension for better wetting, and has a natural sticking action. Cygnet Plus helps break down the waxy cuticle on the leaf surface allowing a more effective uptake of the herbicide. For turf or aquatic use only. **NOT FOR USE ON TREES!**

Packaging: 2.5 gallon (5 gal. / cs.)
30 gallon drum

Rate: 1 pint - 2 quarts / acre



GROWTH REGULATORS

SHORTSTOP® GROWTH REGULATOR FOR TREES AND SHRUBS

ShortStop® (paclobutrazol) slows the growth of trees and woody shrubs at the growing point of the branches (apical meristem). Shortstop holds the growth at approximately 10% of its normal growth and the control lasts for a minimum of three years. ShortStop generates secondary benefits in treated trees. The redirection of energy from growth creates a healthier plant. The Biology of ShortStop® is able to reduce the plant's growth by interfering with the production of the hormone, gibberellin. The product is soil applied, either by soil injection or basal drench, and is water-immiscible (won't leach from site). The application can be done any time of the year, except when the soil is frozen or saturated (heavy rain).

Active ingredient: paclobutrazol

Packaging: 1 gallon container

Rate: See Label/Slide Chart

REPELLENTS

HINDER DEER & RABBIT REPELLENT

Hinder Deer & Rabbit Repellent Protects flowers, trees, shrubs and crops from deer damage. Can be sprayed directly on plants or used as a perimeter treatment to protect larger areas. The active ingredients are ammonium soaps of higher fatty acids. The subtle ammonia smell is only slightly detectable by the human nose but is highly offensive to deer and other browsing animals. Will not harm pets when used as directed. Mixes easily with water. Quart bottle makes 5 gallons of spray. Hinder can also be diluted with an equal amount of water and painted on the trunks of trees and vines to repel rabbits. Hinder's effect can last up to four weeks depending on rainfall or irrigation.

For best results, apply before deer begin to feed. Hinder is EPA registered for use on food crops.

Packaging: 1 gallon

Rate: 1-2 pints / 5 gal. water



ANTI-DESSICANT

AQUATROLS LEAFSHIELD™

Aquatrols Leafshield provides a safe, effective, and affordable solution to maintaining foliage quality. Leafshield reduces moisture stress, and protects against desiccating weather conditions. When applied to foliage or leaf blade, Leafshield dries to a thin waxy layer that will not discolor foliage. It is safe for use on all plant types, including blue spruce, arbovitae and other sensitive varieties.

Packaging: 5 gallon case
30 gallon drum
55 gallon drum

Rate: 5-6 gal. / 100 gal. water
(winter rate)



The Quick-Connect™ **Wedgle® Direct-Inject QC** **TREE INJECTION SYSTEM**

**Easy, fast, proven-effective, and the only
no-drilling trunk injection method**



**Items not
included in
Standard Kit*

Everything you need to treat trees in one convenient case

The rugged, high-impact-plastic carrying case is included at no extra charge with every Wedgle® Direct-Inject™ System purchase. The all-in-one case with custom foam inserts holds the injection unit, all tools, and up to four 120 ml chemical packs. Case without contents also available for those who already own a Wedgle Injection Unit.

Deluxe Kit Includes:

- Wedgle Direct-Inject Injection Unit
- Six Wedgle® Tips: two 1.5" tips, four .75" tips
- WedgeChek™ Punch • 40 WedgeChecks
- Tip Setter*
- Twelve Portle® Tips: * five 1.5" tips, five .75" tips, two .5" tips
- Parts container, tips container
- Two water packs for priming
- Tape measure • Deflector shield
- Garden hose adapter for cleaning
- Safety glasses • ArborSystems ball cap
- Multipurpose maintenance tool
- Maintenance kit
- Instruction guide with parts chart

Wedgle® Direct-Inject QC Injection Unit

Two Quick-Connect (QC) couplers provide super-fast setup.



Quick-Connect™ Chemical Packs

The top QC coupler lets you quickly attach chemical packs to the injector.

Preset application rates

The injector is preset to release 1 ml of chemical with each full stroke of the handles. Easily adjusts to deliver .5 ml dose.

Easy to use and maintain

Sealed injector will not lose prime while in use. Annual maintenance limited to O-ring replacement.

Quick-Connect™ Injection Tips

The front QC coupler accepts a variety of injection tips for treating hardwoods, conifers, and palms.

Closed system

Virtually eliminates exposure concerns. No mixing, no caplets, no spraying or soil drenching concerns.



Upgrade Your Wedgle

If you own a Wedgle Direct-Inject unit, you can easily upgrade to Direct-Inject QC standards.

Don't Drill... Direct-Inject!

Prevent drilling damage

With no drilling needed, the Direct-Inject QC prevents long-term wounding, protecting tree health and vitality. No power, drills, or pumps needed.

Increased effectiveness at a lower cost per tree

The Direct-Inject QC unit injects chemical directly into the cambial zone, right where the tree can use it. You get proven results from less chemical, lowering your cost per tree.

Treat almost any tree in five minutes or less

There is no waiting for uptake. You'll treat more trees in less time, reducing labor costs and boosting profits.



Direct-Inject:
*The smarter way
to treat trees*

Direct-Inject protects trees...



- Inject through bark only without damage to sapwood
- Chemical in cambial zone (dyed red for visibility)

- Inject chemical directly through the bark without drilling. No air enters the sapwood, so chemical is readily absorbed.
- Vascular system is undisturbed, maintaining nutrient movement upward and laterally.
- Chemical is placed in the cambial zone, where it is used most effectively—you'll see improved results from less chemical.
- Multiple or annual treatments can be made without injuring the tree.

from drilling damage

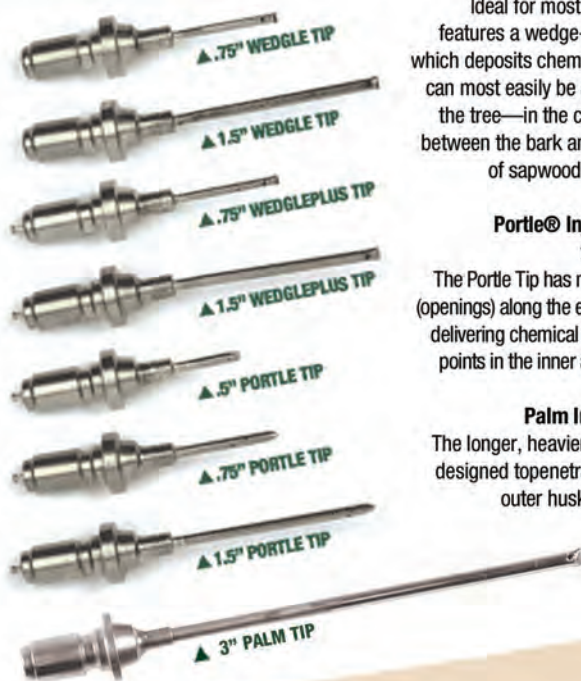


Photo courtesy Shigo and Trees, Associates

- Drilling wounds compartmentalize, disrupting nutrient movement
- Drilled holes allow pest and fungi entry.
- Drilling for injections allows air into the sapwood, disrupting translocation and reducing chemical effectiveness.
- Air entering the vascular system disrupts water and nutrient movement.
- Drilled holes often extend beyond active layers, so chemical is lost in non-active wood where the tree cannot use it.
- Drilling wounds cause permanent damage. Repeated drilling can seriously impact tree vitality.

Quick-Connect™ Injection Tips

Treat more types of trees,
more effectively



Wedge® Injection Tips
Ideal for most hardwoods, features a wedge-shaped end which deposits chemical where it can most easily be absorbed by the tree—in the cambial zone between the bark and outer ring of sapwood (the xylem).

Portle® Injection Tips for Conifers
The Portle Tip has multiple ports (openings) along the end of the tip, delivering chemical to numerous points in the inner active layers.

Palm Injection Tip
The longer, heavier Palm Tip is designed to penetrate a palm's outer husk and deliver



NEW SpeedChek Punch

*Details on
page 35*



Tip Setter

The Tip Setter is used to set and remove Portle and Portle Palm Tips deeper into trees and palms with a sliding, tapping action.

The High-Volume Kit

Treat hundreds of trees nonstop

Make up to 1,000 injections without reloading chemical. Simply attach the transfer line to the 1000 ml chemical pack and the Direct-Inject unit. Heavy-duty nylon backpack* has padded shoulder straps and carrying handle.

*Product picture may differ from actual product.

Chemical pack cage, with snap pin lock, holds and protects 1000 ml chemical pack. Cage fits inside backpack and keeps transfer line firmly attached. ▼



Wedgle® Direct-Inject™ Products

Boxer™

Insecticide - Miticide

Chemical: Enamectin Benzoate

BOXER™ Insecticide-Miticide is for the control of mature and immature insect and mite pests of deciduous and coniferous trees and palm trees including, but not limited to, those growing in residential and commercial landscapes, parks, plantations, seed orchards and forested sites in private, municipal, state, tribal and national areas. BOXER™ Insecticide-Miticide contains the active ingredient Enamectin Benzoate and is formulated to translocate in the tree's vascular system when injected. This product must be placed into active sapwood and will actively control pests for up to two years.

Pests controlled

- Ambrosia Beetles
- Aphid
- Bagworm
- Clearwing Borers
- Cone Beetle (Conophthra spp.)
- Conifer Mites
- Cynipid Gall Wasp
- Fall Webworm
- Flatheaded Borers (such as adult and larvae of Bronze Birch Borer¹, Emerald Ash Borer and Two-lined Chestnut Borer)
- Gypsy Moth
- Honeylocust Plant Bug
- Japanese Beetle
- Leafminers
- Mimosa Webworm
- Oak Worm
- Pine Cone Seed Bug
- Pine Coneworm (Dioryctria spp.)
- Pine Needle Scale
- Pinewood Nematode
- Red Palm Mite
- Roundheaded Borers (excluding Asian Longhorn Beetles)
- Sawfly (such as Elm, Pine)
- Tent Caterpillars (such as Eastern, Forest, Pacific and Western)
- Tussock Moth
- Western Spruce Budworm
- Winter Moth



Retriever™

Insecticide

Chemical: Acetamiprid

For tree injection application using the Wedgle direct-inject system to ornamental or non-bearing fruit and nut trees. Retriever™ Insecticide may be applied by injection directly into ornamental or non-bearing fruit and nut trees.



Insects Controlled

- Adelgids
- Adult leaf eating beetles (including European chafer, Japanese beetle and Oriental beetle)
- Aphids
- Borers (including Flathead apple, but not Emerald ash or Asian longhorned beetles)
- Caterpillars
- Citrus and other thrips
- Crane fly larvae
- European pine sawfly
- Fungus gnat larvae
- Hard and soft scales (including Cottony maple, Magnolia scale, Oyster shell, Pine needle, San Jose and Tea)
- Hemlock wooly adelgids
- Leaf miners
- Leafhoppers
- Mealybugs
- Psyllids
- Strawberry weevils
- Swede midge
- Tentiform leaf miner
- Whiteflies

Timing of Insecticide Injections

As a preventative, apply in the early spring, prior to insect activity in the tree. As a curative, apply as needed spring through fall, as long as bark is pliable enough to accept the chemical injections. Combine with PK Pro® Nutriboosters™ injections to speed tree recovery. One application provides season-long control.



Pointer[®] Insecticide

Chemical: Imidacloprid

Application rate

Inject 1 ml every 4" to 6" around the base (flare) of the tree.

Insects controlled

- Adelgids (including Hemlock Woolly Adelgids)
- Flatheaded Borers (including Alder-Birch, Bronze Birch, and Emerald Ash Borers)
- Aphids
- Elm Leaf Beetles
- Black Vine Weevil Larvae
- Eucalyptus Longhorned Borer
- Japanese Beetles
- Lacebugs
- Leafhoppers
- Leafminers
- Mealybugs
- Sawfly Larvae
- Pine Bark Beetles
- Pine Tip Moth Larvae
- Psyllids
- Royal Palm Bugs
- Soft Scale Insects
- Whiteflies

Pointer also provides suppression of Thrips and Armored Scales.

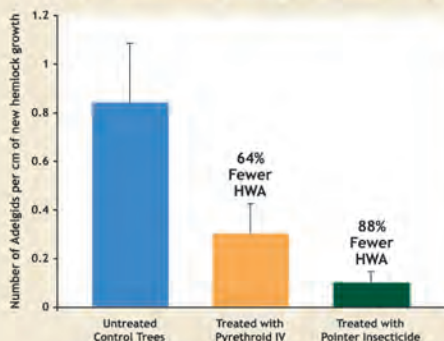
Research Reports

Control Hemlock Woolly Adelgids and other pests

Untreated tree with HWA damage.



Pointer-treated tree is protected from damage.



"This two trunked limber pine had a heavy infestation of pine needle scale. The left side was treated with Pointer. The right side was untreated. As you can see, the treated side is thriving, the other is dead."

*Bureau of Forestry Assistance,
Idaho Department of Lands
Coeur d'Alene, ID*

A 2005 research report published by the Department of Entomology, Virginia Tech (Virginia Polytechnic Institute and State University), Blacksburg, concludes that:

"Pointer Insecticide offers a significant opportunity to control Hemlock Woolly Adelgids. Not only does this chemical provide sufficient control of this devastating pest, but the ArborSystems Direct-Inject unit allows large numbers of trees to be treated quickly making it a desirable treatment option."

See the full report at ArborSystems.com



Protect Scots Pine against Pine Wilt

**3-year
Protection**



Pine Wilt, caused by Pinewood Nematodes, is a condition found primarily in Scots pine trees, also called Scotch pine (*Pinus sylvestris*).

Once symptoms appear, Pine Wilt typically kills trees quickly—within a few weeks to a few months. There is no cure for Pine Wilt, although a preventative treatment has emerged; Greyhound[™] Insecticide.

Research Report

One application reduces Pine Wilt risk for up to 3 years

A test was conducted in a large block planting of Scots pine at Horning State Farm near Plattsmouth, Nebraska, from 2003 to 2005. Many trees within the planting and surrounding areas had died from Pine Wilt in the previous three years. Symptomless trees were selected for the test; some received one application of Greyhound Insecticide, others were left untreated. At the end of three years, the survival rate of treated trees exceeded that of untreated trees by nearly 300%.

*Research conducted by the Nebraska Forest Service, University of Nebraska, Lincoln.
See the full report at ArborSystems.com*



Portle[®] Injection Tips improve conifer treatments

Multiple ports along the end of the tip deposit chemical at numerous points in the inner active layers of the tree, improving chemical retention and absorption. Portle Tips are inserted with the new Tip Setter, which easily drives tips deep into the tree, optimizing treatment effectiveness.

Greyhound[™] Insecticide

Chemical: Abamectin

Application rate

For most insects: Inject 1 ml every 4" to 6" around the base (flare) of the tree.

For Pine Wilt (Pinewood Nematodes): Inject 5 ml every 4" around the base of the tree.

Insects controlled

A single application provides effective season-long control of many problematic pests.

- Lepidoptera insects such as Gypsy Moth, Bagworm, Mimosa Webworm, Tent Caterpillars, etc.
- Elm Leaf Beetles
- Lace Bugs
- Mites
- Leafminers
- Nematodes



Gypsy moth photo courtesy of USDA/ForestryImages.org

Shepherd[®]

Fungicide

Chemical: Propiconazole

Indications

Shepherd provides suppression of the diseases listed below. See label for detailed application instructions and recommendations.

Disease	Application rate
Oak Wilt	8-10 ml every 4" of trunk circumference.
Anthrachnose in Sycamores	2 ml every 4" of trunk circumference.
Dutch Elm Disease	8-10 ml every 4" of trunk circumference.
Leaf diseases in Crabapple	1 ml every 4" of trunk circumference.
Diplodia Tip Blight	2-4 ml every 4" of trunk circumference.

Terrier[™]

Systemic Antibiotic

An ArborSystems[™] Direct-Inject[™] Chemical

For suppression of certain diseases including bacterial leaf scorch, fire blight, yellows diseases and phloem necrosis on ornamental trees.

ACTIVE INGREDIENT:

Oxytetracycline hydrochloride 4.3%

OTHER INGREDIENTS 95.7%

Total 100.0%

PRODUCT INFORMATION

TERRIER[™] Systemic Antibiotic is a ready-to-use antibiotic for non-crop bearing ornamental trees and large woody shrubs. TERRIER[™] Systemic Antibiotic provides seasonal suppression of a variety of diseases including bacterial leaf scorch, fire blight, yellows diseases, phloem necrosis, mycoplasmas, xylem-limited bacteria (*Xylella fastidiosa*, BLS) and some bacterial blight diseases. Late summer or early fall applications provide disease suppression the following season. Some diseases may require repeated yearly application.

Application rate

1-2 ml every 4" around trunk circumference at flare

Prevent a variety of devastating tree diseases

A single application of Shepherd Fungicide provides season-long protection against the devastation of Oak Wilt as well as Dutch Elm disease, leaf disease in Crabapple, and Anthracnose in Sycamores. Application in late summer/early fall provides protection for the following year.

Each Shepherd Direct-Inject application delivers proven results with far less chemical, so you'll save time, money, and delight your customers with this effective, no-mess approach.

Whippet[™]

Fungicide

Chemical: Mono- and di-potassium salts of Phosphorous Acid

Indications

Whippet provides effective control of *Phytophthora* spp. and *Pythium* diseases associated with Stem and Canker Blight (Sudden Oak Death *Phytophthora ramorum*), Beech Decline, Fireblight and Needlecast.

Application rate

Inject 2-4 ml every 4" around the base (flare) of the tree. Injections may be made any time during the growing season, but are more effective when made early in the season.

* Use in California limited to oaks (Coastal, Live, Shreve, Black Canyon)

PK Pro[®]

Nutriboosters[™] 0-36-26

Contains: 36% Phosphorus and 26% Potassium

Indications

PK PRO is used to counter the effects of stress due to drought, transplanting, or construction damage.

- Phosphorus encourages stem elongation and is essential for root growth, vegetative growth, and fruit set.
- Potassium promotes overall tree health.

Application rate

Inject 1 ml every 4" around the base (flare) of the tree.

Controls
**DIPLODIA TIP
BLIGHT!**

Protect against Sudden Oak Death



Photo courtesy of USDA/ForestryImages.org

Tree species*

Use on trees such as Almond, Apple, Avocado, Beech, Cedar, Chestnut, Conifers, Crabapple, Dogwood, Elm, Fir, Hawthorne, Juniper, Linden, Macadamia Nut, Monterey Pine, Oaks (Coastal, Live, Shreve, Black Canyon), Oriental Pear, Ornamental Pear, Ornamentals, Pineapple, Pyracantha, Stone Fruit, Sweet Birch, Sweet Gum, Tan Oaks, White Pine, White Cedar and Willow.

Boost your tree recovery program

Compatible with most products!

Timing of PK Pro injections



Injections can be any time during the growing season, preferably in the spring or early summer. Do not apply more than once a year. Can be applied at the same time as other ArborSystems curative treatments.

Green up fast with Nutriboosters™

Trees suffering from slow or incomplete leaf-out? Trees looking yellow or tired? Nutriboosters promote leaf growth and help trees overcome chlorosis. Watch your trees change from sickly to darker-green healthy in days. Choose from six formulations.

Iron

Nutriboosters™

Contains: 12.5% Iron

Application rate

Inject 1 ml every 4" around the base (flare) of the tree.

Indications

Relieves symptoms of iron chlorosis, the general yellowing of foliage. Helps leaves turn green which improves tree health.

Symptoms of iron chlorosis and manganese deficiency

- Iron deficiency in conifers is indicated when the needles turn yellow.
- In deciduous trees, the leaves yellow while the veins remain green. When fine veins become chlorotic (yellow), and/or if leaf edges are wavy, crinkled, or curled, tree may also have manganese deficiency.
- The degree of yellowing indicates the severity of the deficiency.
- Ornamental trees sensitive to iron deficiencies include American Elm, Cottonwood, Jack Pine, London Plane, Magnolia, Maples, Mountain Ash, Oaks, Walnut, White Pine, and Yellow Birch.
- Ornamental trees susceptible to manganese deficiencies include Birch, Dogwood, Maples (especially Red and Sugar) Flowering Cherry, Sweetgum, and Sergeant Crab.

Boost health, leaf-out, and green-up

Application rate

Inject 1 ml every 4" around the base (flare) of the tree.

Indications

GreenTree Pro Nutriboosters® helps stressed, weak, and yellowing trees regain health and vitality. One application will help trees quickly green up, leaf out, and recover from drought, construction, or transplant stress. Results are often seen within two weeks, especially when treatments are made in the late spring or early summer.

GreenTree Pro is a unique formulation of three compounds which boost tree vigor.

- Phosphorus encourages stem elongation, root growth, and vegetative growth.
- Potassium promotes overall tree health.
- Iron promotes the development of darker green, healthy leaves, relieving the symptoms of chlorosis.

GreenTree Pro

Nutriboosters 0-15-10

With IRON

Contains: 15% Phosphorus, 10% Potassium, and 8% Iron



Before treatment



Two weeks after treatment



Pin Oak before treatment (top) and 10 days after treatment (right).



Iron/Manganese

Nutriboosters™

Contains: 12.5% Iron and 3.5% Manganese

Application rate

Inject 1 ml every 4" around the base (flare) of the tree.

Indications

Relieves symptoms of iron chlorosis and manganese deficiencies in trees.

Manganese

Nutriboosters™

Contains: 5% Manganese

Application rate

Inject 1 ml every 4" around the base (flare) of the tree.

Indications

Relieves symptoms of manganese deficiency in trees.

Timing of Nutriboosters injections

Injectations may be made any time during the growing season. However, as summer ends, green-up will be less likely to occur because the leaves become less responsive as they age. The best time to inject is before leaves are hardened off.



Upgrade to the *NEW* SpeedChek Punch tool

For use with the ArborSystems Wedgle Direct-Injection system, this upgraded tool holds the new-style WedgeChek strips, which saves the applicator time by no longer requiring individual WedgeCheks to be ripped off one at a time.



Directions for use:

1. Remove bark with the punch tip
2. Eject bark from punch tip by pulling the trigger
3. Line up the tapered tip to the hole
4. Depress plunger, pushing the WedgeChek into the hole
5. Pull the strip to advance to the next WedgeChek



Pinscher® PGR

Chemical: Dikegulac-sodium

Not available in all states. Contact your distributor for details.

Pinscher PGR greatly reduces flowering and fruit/seed set without compromising tree health. Annual applications of Pinscher PGR will substantially reduce cleanup, maintenance labor, and associated costs.

Indications

Use on ornamental trees with undesirable fruit or seed production that requires ongoing cleanup or causes turf maintenance problems.

Application rate

Trees 18" to 30" circumference
0.5-1 ml every 4" around the base (flare) of the tree.

Trees over 30" circumference
1-2 ml every 4" around the base (flare) of the tree.



End messy fruit and seed cleanup

Recommended Timing of Pinscher Injections

Green = Recommended time to inject
Tan = Not recommended time to inject

Tree	Early Spring	Late Spring	Late Summer	Early Fall
Crab Apple				
Catalpa				
Coffee Tree				
Cottonwood				
Ginko				
Locust				
Mulberry				
Sweetgum				
Walnut				



Timing of Pinscher injections



The best results on most deciduous trees are obtained when trees are injected with Pinscher PGR in the late summer (one month prior to the typical first frost). First year treatments will be more effective if injections are made in the early spring **and** again in late summer. In following years make injections in the late summer for control the following year. Some exceptions to this rule are late fruiting trees such as Locust, Walnut, and Ginkgo trees, in which fruiting/seeding is better controlled by injecting in early spring.

This mature Ginkgo tree used to produce nearly 100 gallons of seed pods each year, requiring extensive cleanup. Now, with annual Pinscher PGR applications, seed production has been reduced to less than one quart.



#	Part #	Description	#	Part #	Description
02	PASW202	QC Coupler Outer O-Ring	73	PAWP73	WedgeChek Adapter, Rubber Sleeve
	PASW203	QC Coupler Inner O-Ring (not shown)	74	PAWP270	Tip Setter
04	PASW204	Replaceable Outlet Check Valve	75	Wedgle.75	.75" Wedgle Tip
09	PASW209	Screw Lever Pivot	76	Wedgle1.5	1.5" Wedgle Tip
10	PASWT002	Multi-purpose Tool	77	Palm3	3" Palm Tip
11	PASWT003	Garden Hose Adapter	78	Portle.5	.5" Portle Tip
12	PASW12	Lock Nut	79	Portle.75	.75" Portle Tip
13	PASW13	Piston O-Ring	80	Portle1.5	1.5" Portle Tip
17	PASW217	Front QC Coupler	81	WedglePlus.75	.75" WedglePlus Tip
18	PASW218	Dust Plugs	82	WedglePlus1.5	1.5" WedglePlus Tip
23	PASW23	Piston Spring		PASWK201	Annual Maintenance Kit (1) Piston O-Ring—#13 (2) QC Coupler Outer O-Ring—#02 (2) QC Coupler Inner O-Rings—#03 (1) WedgeChek Punch Tip—#71
25	PASW25	Dose Adjustment Ring		PASWK203	Annual Maintenance Kit for units with Replaceable Outlet Check Valve (1) Piston O-Ring—#13 (1) QC Coupler Outer O-Rings—#02 (2) QC Coupler Inner O-Rings—#03 (1) WedgeChek Punch Tip—#71 (1) Replaceable Outlet Check Valve—#04
26	PASW226	Piston Connector Rod		PASWK202	Small Parts Kit (1) Dose Adjustment Ring—#25 (1) Piston Connector Rod—#26 (1) Screw Lever Pivot—#09 (1) Lever Nut—#28
28	PASW28	Lever Nut			
41*	PASW241	Handle and Lever Assembly			
43	PASW243	Main Body			
44	PASW244	Piston and Cap Piece			
46	PASW246	Deflector Shield			
48	PASW248	Top QC Coupler			
52		.5 ml Dose Adjustment Groove			
66	PASW66	Rear Hand Grips			
70	PAWP70	WedgeChek Punch (includes 70, 71, 73)			
71	PAWP71	WedgeChek Punch Tip			
72*		WedgeChek™			

*Not sold separately.

High-Volume Kit (Sold separately)

Make up to 1000 injections without reloading chemical. Simply attach the hose to the Wedge Direct-Inject unit and the 1000 ml chemical pack, prime, and inject. No other tools, equipment, or power supply are needed.

1. Remove the yellow cap from the hose guide by unscrewing. Remove the adaptor sleeve from inside the hose guide.
2. Slide the High-Volume hose through the yellow cap and into the hose guide, pulling the hose through the chemical pack cage and out the top of the backpack.



3. Attach the hose to a 1000 ml chemical pack using the same method as you attach a 120 ml chemical pack to the injection unit (see instruction on page 1).

4. Carefully pull the hose and chemical pack into the cage inside the backpack until the chemical pack rest snugly against the hose guide.

5. Secure the chemical pack in the cage with the closure pin.
6. Place the adaptor sleeve over the hose and slide the sleeve into the hose guide.

7. Screw the yellow cap onto the hose guide and hand tighten.

8. Attach the hose to the top QC coupler on the injection unit.
9. Prime and you are ready to begin injecting.



MACRO-INFUSION



ArborSystems

TreeMec® Inject Emamectin Benzoate in one-quart bottles

Designed to be used with higher volume tree injection devices that meet the label and dose requirements for the control of listed insects and mite pests.



Emerald Ash Borer



Ambrosia Beetle*



Winter Moth



Bagworm



Gypsy Moths



Japanese Beetles



Conifer Mites*



Honeylocust Plant Bug

See the label for a full list of pests controlled.

TreeMec Inject can be used as formulated or diluted with water (low, medium, medium-high and high rates).

Active Ingredient: Emamectin Benzoate 4%

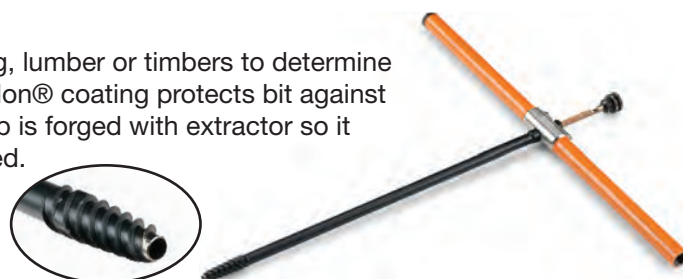
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EQUIPMENT & SAFETY

INCREMENT BORERS - 1400

Extract cores of woods from trees or freshly treated poles, piling, lumber or timbers to determine growth rate, age, tree soundness and chemical penetration. Teflon® coating protects bit against rust and resin build-up and reduces friction. Hardens rubber cap is forged with extractor so it won't work loose. Increment borer use and care booklet included.

3-Thread Increment Borer 10" Complete Kit
3-Thread Replacement Bit 10"
Replacement Extractor 10"



AMS SOIL/TURF PROBE - PROBE'S SMALL DIAMETER MINIMIZES DAMAGE TO TURF

Made of chrome molybdenum and chrome-plated for durability and corrosion resistance. Takes samples 1/2" and 7" long. Cutaway side allows for easy inspection of samples in the probe. 9" Welded handle. **Overall length: 20.5"** AMS Soil / Turf Probe 20.5"



KELWAY SOIL pH AND MOISTURE METER

3050 • On-the-spot soil pH and moisture percentages. A sensitive electrode measures pH values from 3.5 to 8, soil moisture from 0 to 100%. Requires no chemical, distilled water, or outside electric power source. Numerous readings can be easily taken over a large area. 6-1/2" L. Leather-like case with belt loop, conditioning film and full instruction included. **pH Accuracy: ± 0.2 . Moisture Accuracy: $\pm 10\%$** Kelway Soil pH & Moisture Meter

10X MAGNIFICATION POCKET LOUPE 5264

Compact pocket loupe is great for quick, close-up magnifying! 3/4" Diameter lens is protected by a strong, metal case.

10x pocket Loupe 3 oz.



LAMOTTE INSTA-TEST® STRIPS #3001-G-12

These test strips instantly check for pH, Alkalinity and Copper. 25 strips per bottle.



BEST N-DEX 4 MIL. NITRILE GLOVES

Ideal for performing sprayer maintenance, tree injections or when the chemical you are handling only requires a water-proof glove. This disposable nitrile exam glove provides good tear resistance, strength and chemical resistance. Low powder.

Sizes: XL and 2XL **Packaging:** 1 box (100 gloves / box)



BEST NITRI-SOLVE 100% NITRILE FLOCK-LINED GLOVES

Flock-lined for Added Comfort

These comfortable 15 mil, 13" 100% nitrile gloves have chemical, abrasion, puncture, cut and snag resistant features. Flock lining absorbs perspiration, making these gloves cooler to wear and easier to put on and remove. Ergonomically designed for comfort. Non-slip grip. Compliance: EPA 40 CFR 170. **Sizes:** XL **Packaging:** 1 pair

EQUIPMENT & SAFETY

ARBORICULTURAL AIR-SPADE®

AIRSPADE®
PNEUMATIC SOIL EXCAVATION

The Arbor Kit contains:

- One AIR-SPADE® with a 150 scfm / 90 psig nozzle, 4 foot barrel, and ergonomic handle
- 45 degree angled adapter
- 10 ft. comfort hose
- Storage case with lock



Since its earliest trials in 1998 at Gainsborough Farms, KY, the AIR-SPADE® has become the premier air tool for advanced tree care. Leading arborists worldwide have evaluated and found multiple uses for the AIR-SPADE® including:

- Aeration
- Locating roots for utility line installation
- Radial Trenching
- Root collar excavation
- Root damage investigation
- Root locating for pruning
- Soil compaction reduction
- Transplanting / bare rooting
- Vertical mulching
- Checking the adequacy of the root structure before climbing the tree for pruning

Seminars conducted for local and national TCI and ISA meetings and print articles by industry leaders including Bartlett Tree, now provide guidance and procedures for the individual arbor practitioner.

GREEN GARDE JD9-C / JD9-CT HIGH PRESSURE SPRAY GUNS

Green Garde JD9 model heavy duty spray gun can help make your operation more effective and profitable. Adjustability: quickly and easily adjusts from a fine mist to a long-distance pencil-like stream... effective for virtually any operation. Reliability: ruggedly built and precision machined... Designed for all-day use, day in and day out. Easy and comfortable to use: crafted for comfortable use all day long. Trigger lock for continuous spraying; drip free shut-off. Versatility: wide choice of tips and nozzles; heavy-duty root feeder attachment; and accessory fittings that allow you to use Hudson and Spraying Systems wands and nozzles. The JD9-CT has all the features of model JD9-C but tapped for use with a gauge to calibrate pressure settings. More accurate than calibrating line loss from a pump gauge.



JD9-C
Spray Gun

**Flood Jet
Nozzle Now
Available!**



Root Feeder

Item No.	Description	Item No.	Description
HD38500	JD9-C Spray Gun	HD38534	Barrel Adj. Nut for JD9
HD38501	JD9-CT Spray Gun tapped w/Gauge	HD38602	Large Nozzle for JD9
HD38518	Whirler for JD9	HD38603	X-Large Nozzel for JD9
HD38525	Teflon Valve for JD9	HD38901	4 Hole Tip for Root Feeder
HD38527	Valve Spring for JD9	HD38918	3 Hole Tip for Root Feeder
HD38528	Stainless Steel Valve for JD9	HD38919	Root Feeder w/ 2 Hole Tip
HD38634	Floodjet Nozzle 2 GPM		

EQUIPMENT & SAFETY

MINUTEMAN SPILL RESPONSE KIT

Keep your spill response items organized and ready for use with this kit! Fits easily in any vehicle sprayer, nurse tank or chemical transport truck, and can be wall hung around your plant and warehouse for visibility and easy access. The Minuteman Kit comes in a portable, highly visible orange nylon duffel pack. Packed with the key products you need to clean up a hazardous spill up to 6 gallons and now contains more items: 2 CHEMSORB Sorbent Pillows (26" x 16" x 2"), 3 CHEMSORB 48" Diking Tubes, a pair of 15 mil nitrile gloves, a pair of safety goggles, Tychem SL Saranex boot covers and 3 HazMat disposal bags with labels.

Compliance: OSHA 29 CFR 1910.119-120. **Packaging:** 1 bag



COMMANDO™ SPILL RESPONSE KIT

This slim, mobile spill response kit fits easily in your vehicle and may be hung on the warehouse or shop wall to give you immediate response to chemical spills. Ideal for pesticide-hauling vehicles, chemical handlers and haulers, around mixing and storage areas. The kit is packed in a highly visible yellow, chemical resistant carry bag. Pickup rating is 5 gallons of liquid per kit. Each kit includes: 2 CHEMSORB® Diking Tubes (3"x48"), 4 CHEMSORB® Pillows (16"x9"x2"), 2 HazMat disposal bags, 1 pair 15 mil Nitrile gloves, 1 pair safety goggles, 1 pair Tychem SL Saranex boot covers and an instruction sheet. Compliance: OSHA 29 CFR 1910.119-120.



WOUND DRESSING



Finding New Ways to Improve the Treatment of Trees and Plants.

- * Forms a "breathable" film for air transpiration on the wound
- * Contains wound protective UV inhibitors
- * Prevents fungi entry into wounds
- * Prevents insect invasion into wounds
- * Signals plants to form callus protective tissue in and around the wound
- * Contains no "black asphalt petroleum"
- * Environmentally friendly formulation
- * Remains flexible on the wound for 12-18 months

Biologically active product that aids in the healing of plant wounds caused by pruning, cutting, string trimmers and accidental damage.



Soap and Water Clean Up!

AVAILABLE IN:
• 16 oz w/applicator container



RATE CONVERSION CHART

Fluid		
1/6 fl. oz.	=	1 teaspoon
1/2 fl. oz.	=	1 tablespoon
1 tablespoon	=	3 teaspoons
1 fl. oz.	=	2 tablespoons
8 fl. oz.	=	1 cup
1 cup	=	1/2 pint
16 fl. oz.	=	2 cups
2 cups = 1 pint = 1/2 quart = 1/8 gallon		
4 cups = 2 pints = 1 quart = 1/4 gallon		
32 fl. oz.	=	1 quart
128 fl. oz. = 16 cups = 8 pints = 4 quarts		
128 fl. oz.	=	1 gallon

Miscellaneous		
Diameter of a circle x 3.1416 = circumference		
3.1416 x radius squared = area of circle		
U.S. Gallon	=	0.1337 cu. ft.
U.S. Gallon	=	8.3453 lbs. of water
1 cu. ft. water	=	62.427 lbs.
°C x 9/5 + 32 = °F		

English	to	Metric
1 gal.	=	3.785 L
1 fl. oz.	=	29.57 ml.
1 lb.	=	453.6 g.
1 lb.	=	0.454 kg.
1 oz. (wt.)	=	28.35 g.
1 ft.	=	0.305 m.
1 acre	=	0.405 hectare-meters
43,560 sq. ft.	=	4,052 sq. m.
1 acre-foot	=	0.123 hectare-meters
43,560 cu. ft.	=	1,235 cu. m.

Volume & Weight Relationships of Water		
1 gal	weighs	8.345 lbs.
1 L	weighs	1,000 g.
1 metric ton = 1,000 L = 1 m ³ = 264 gals.		

Area		
9 sq. ft.	=	1 sq. yard
43,560 sq. ft.	=	1 acre
4,840 sq. yd.	=	1 acre
640 acres	=	1 sq. mile
1 acre	=	0.0015625 sq. miles

Volume & Weight		
27 cu. ft.	=	1 cu. yd.
1 ton	=	2,000 lbs
16 oz.	=	1 lb.
8 oz.	=	1/2 lb.
4 oz.	=	1/4 lb.

Parts Per Million (ppm) Calculations		
1 ppm	=	1 mg / L
1 ppm	=	1 mg. / kg.
1 ppm	=	1 g. / metric ton
1 ppm	=	2.72 lbs. / acre-foot
1 ppm	=	3.78 mg. / gal.
1 ppm	=	8.34 lbs. / million gal.

Metric	to	English
1 L	=	0.264 gal.
1 ml.	=	0.034 fl. oz.
1 g.	=	0.0022 lbs.
1 kg.	=	2.20 lbs.
1 g.	=	0.035 oz. (wt.)
1 m.	=	3.28 ft.
1 hectare	=	2.47 acres
1 hectare-meter	=	8.1 acre-feet
1 metric ton	=	2,204.623 lbs

1 cu. ft.	contains	7.48 gals.
1 acre-foot	contains	1,234 metric tons
1 hectare-meter	contains	10,000,000 L
1 hectare-meter	weighs	10,000 metric tons

More conversions available at <http://www.onlineconversion.com/>



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Email: bannersales360@gmail.com
www.bannersales.net

CONFIDENTIAL COMMERCIAL CREDIT APPLICATION

ABOUT YOUR COMPANY

Company Name: _____
Billing Address: _____
City: _____ State: _____ Zip: _____
Shipping Address: _____
City: _____ State: _____ Zip: _____
Business Type: ☐ Sole Proprietorship ☐ Partnership ☐ Corporation
Years in Business: _____ Dunn & Bradford No: _____
Phone: _____ Fax: _____
Email: _____

PLEASE LIST 3 PARTNERS OF CORPORATE OFFICERS

Name 1: _____ Title: _____
Phone: _____
Name 2: _____ Title: _____
Phone: _____
Name 3: _____ Title: _____
Phone: _____

PERSON TO CONTACT REGARDING ORDERS AND INVOICE PAYMENTS

Name: _____ Title: _____
Address: _____ City: _____
State: _____ Zip: _____ Email: _____
Phone: _____ Fax: _____

PLEASE PROVIDE 2 BANK REFERENCES

Bank 1: _____ Account No.: _____
Address/City/St/Zip: _____
Contact: _____ Phone: _____
Bank 2: _____ Account No.: _____
Address/City/St/Zip: _____
Contact: _____ Phone: _____

** Please see reverse side*

PLEASE PROVIDE 3 TRADE REFERENCES

Company 1: _____ Contact: _____

Address/City/St/Zip: _____

Phone: _____ Fax: _____

Company 2: _____ Contact: _____

Address/City/St/Zip: _____

Phone: _____ Fax: _____

Company 3: _____ Contact: _____

Address/City/St/Zip: _____

Phone: _____ Fax: _____

PLEASE READ AND SIGN

Credit Terms: Unless otherwise specified, terms are: **NET 30 DAYS FROM THE INVOICE DATE.**

A finance charge of 1.5% per month (18% per annum) will be assessed on all past due accounts. Banner Sales & Consulting, Inc. reserves the right to cancel credit at any time.

The above information is submitted specifically and for the sole purpose of opening an account. I hereby certify the above information to be true and authorize disclosure of credit information from references given above.

Signature: _____

Title: _____

Date: _____

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A Winning Partnership Bringing You The Best Solutions!

COMPANION LIQUID BIOLOGICAL FUNGICIDE

- For Turf and Professional Landscape Use
- For Prevention, Control and Suppression of Soil and Foliar Diseases
- Activates ISR (Induced Systemic Resistance) in Plants



ESSENTIAL[®] PLUS 1-0-1 **100% NATURAL ORGANIC SOIL AMENDMENT**

- Rejuvenates Soil Structure
- Food Source For Microbial Activity
- Stimulates Root & Plant Growth
- Contains 21 Natural L-Amino Acids



BIONUTRIENTS[™] SOLUBLE 8-0-9 **FOR FAIRWAYS, SPORTS TURF, & LAWN CARE**

- Packed in Easy-To-Use 8 oz Packs
- Organic Biostimulant & Soil Conditioner
- Contains A Natural Rhizosphere Bacteria
- Revitalizes Soil



18-3-6 With HUMIC ACID

- Custom Banner Mix
- Root and Foliar Feeding
- Non Abrasive - True Clear Solution
- No Chlorides/No Nitrates



www.GrowthProducts.com



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FOR TREES AND TURF



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