



DATA SHEET #5

FOR TREES AND SHRUBS

# DIEHARD™ Root Dip



*“The Industry's First Complete Bare Root Treatment”*

**DIEHARD™ Root Dip** is formulated as a bare root mycorrhizal inoculant treatment with live beneficial mycorrhizal fungi to inoculate the roots of bare root plants before planting. It contains highly selected species of low host specificity endo- and ectomycorrhizal fungi that will quickly colonize the roots of bare root plants to provide the best possible conditions for the roots to become as effective during and after planting. The mycorrhizal inoculants are combined with humic acids, biostimulants, beneficial bacteria, soluble sea kelp, and yucca plant extracts, to promote rapid root development. The mycorrhizal inoculant is managed with Horta-Sorb® SM which also protects the roots from drying out. The results are better survival and growth rates and less watering for all transplants.

## Product Benefits

### IMPROVES

Survival  
Rooting  
Water Absorption  
Nutrient Availability  
Yields and Production  
Client Satisfaction  
& Goodwill

### REDUCES

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

## Directions For Use

Mix contents of bag with water to form a mixture the consistency of thick gravy. Let stand for 15-20 minutes. Dip or spray roots and plant, or package seedlings for shipment or storage. Adjust thickness of mixture to insure that the gel adheres to the roots when dipping.

Pkg. Size	Water To Mix	No. of Seedlings*
3 oz.	2 ½ gallons	Up to 500
15 oz.	10 gallons	Up to 3,000

\*Depends on the root mass and the size of plants. A 5' bare root whip with a 2' root system would require as much as 10 times as much as a one year old forest seedling.

## Storage & Handling

Store in a cool, dry place. Avoid high temperatures and direct sunlight. Product shelf life is up to 18 months. Ok to sit overnight but use up within 24-36 hours.

## Non Plant Food Ingredients

Endomycorrhizal	92 Propagules per cubic centimeter <i>Glomus mosseae</i> (18.4), <i>Glomus intraradices</i> (18.4), <i>Glomus fasciculatum</i> (18.4), <i>Glomus .dussii</i> (9.2), <i>Glomus clarum</i> (9.2), <i>Glomus deserticola</i> (9.2), <i>Glomus microaggregatum</i> (9.2).
Ectomycorrhizal	1,080,000 Spores per cubic centimeter to include: <i>Pisolithus tinctorius</i> (928,800), <i>Rhizopogon</i> (151,200).
Nitrogen Fixing, Phosphate Solubilizing and Growth Promoting Bacteria	216,000 Colony forming units per cubic centimeter of <i>Genus Bacillus</i> (32 species), <i>Genus Pseudomonas</i> (2 species), <i>Genus Streptomyces</i> (2 species).
<i>Trichoderma</i>	324,000 CFUs <i>Genus Trichoderma</i> (6 species), <i>Gliocladium virens</i> (2 strains), <i>Trichoderma harzianum</i> (2 strains), <i>Trichoderma viride</i> (2 strains)
Humic Acids	1% Derived from <i>Leonardite</i>
Sea Kelp Extract	1% <i>Ascophyllum nodosum</i>
Yucca Plant Extract	1% <i>Yucca schidigera</i>
Root Promoting Vitamin	B, B2, B3, B6, B7, B12, C, K, Biotin, Fulvic Acid
Amino Acids (Protein)	Animal and plant proteins
Horta-Sorb® SM Water Gel	Minimum 55%
Particle Size	0.3 mm to 0.8 mm
Percent Soluble	less than 0.05%
Absorption Rate	300-400 times in distilled water

## Compatibility

**Species:** All plants and shrub species except Rhododendrons, Azaleas, Heather, Blueberries, and Laurels. (These associate with ericoidmycorrhizae.)

**Fungicides:** Non-systemic fungicides normally have no effect. Foliar applied fungicides normally have no effect. Systemic fungicides may be applied 2 weeks before or after use of product. Fungicide use according to label instructions do not extinguish mycorrhizae, they only inhibit development for a short period of time.

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Web Page: <http://www.horticulturalalliance.com>, E-Mail: [info@horticulturalalliance.com](mailto:info@horticulturalalliance.com)



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## Plant Species and Type of Mycorrhizae

### Endomycorrhizae

Arborvitae	Cedar	Ginkgo	Mulberry	Rose
Acacia	Celery	Grapes (all)	Monkey Pod	Russian Olive
Agapanthus	Cherry	Grass	Nasturtium	Ryegrass
Ailanthus	Chokeberry	Gum	Okra	Sassafras
Alder	Chrysanthemum	Hackberry	Olive	Sagebrush
Alfalfa	Citrus (all)	Hawthorn	Onion	Serviceberry
Almond	Clover	Hibiscus	Pacific Yew	Sequoia
Apple	Coconut	Holly	Palms (all)	Silverbell
Apricot	Coffee	Hophornbeam	Palmetto	Sourwood
Artichoke	Coral Tree	Hombear	Pampas Grass	Soybean
Ash	Corn	Horsechestnut	Papaya	Squash
Asparagus	Cotton	Impatiens	Passion Fruit	Strawberry
Avocado	Cottonwood	Jojoba	Paulownia	Sudan Grass
Bamboo	Crabapple	Juniper	Paw Paw	Sugar Cane
Basil	Cryptomeria	Kiwi	Pea	Sumac
Bayberry	Cucumber	Leek	Peach	Sunflower
Bean	Currant	Lettuce	Peanut	Sweet Gum
Begonia	Cypress	Lily	Pear	Sweet potato
Black Locust	Dogwood	Locust	Pecan	Sycamore
Blackberry	Eggplant	London	Pepper	Tea
Box Elder	Elm	Planetree	Pistachio	Tobacco
Buckeye	Eucalyptus	Magnolia	Persimmon	Tomato
Bulbs	Euonymus	Mahogany	Pittosporum	Tree-of-heaven
Burning Bush	Fern	Mahonia	Plum	Tupelo
Cacao	Fescue	Mango	Poinsettia	Walnut
Cactus	Fig	Maples (all)	Potato	Wheat
Camellia	Forsythia	Marigold	Poplar	Willow
Carrot	Fountain Grass	Melons (all)	Raintree	Yam
Casuarina	Fuchsia	Mesquite	Raphiolepis	Yellow poplar
Cassava	Gardenia	Millet	Raspberry	Yucca
Catalpa	Garlic	Mimosa	Redbud	
Ceanothus	Geranium	Morning Glory		

All nut trees except Pecan, Chestnut, Macadamia, and Hazelnut.  
 All fruit trees, grapevines, grasses and many vegetables  
 All berries except blueberry, cranberry and lingonberry.  
 All shrubs and foliage except Laurel, Rhododendron, and Azalea

### Ectomycorrhizae

Alder	Birch	Hemlock	Madrone	Poplar
Aspen	Chestnut	Hickory	Oak	Spruce
Basswood	Chinquapin	Larch	Pecan	Willow
Beech	Fir	Linden	Pine	

### Both Endo and Ectomycorrhizae

Alder	Cottonwood	Poplar
Aspen	Eucalyptus	Willow

## Health & Safety

- Inhalation If dusty conditions exist wear a dust mask.
- Ingestion Drink large amounts of water, induce vomiting, and seek medical attention.
- Eyes Flush with large amounts of water.
- Safety Product becomes very slippery when wet.

## DIEHARD™ Inoculants

### DIEHARD™ Transplant

- For trees and shrubs

### DIEHARD™ Palm

- For transplanting palms

### DIEHARD™ Flower Bed

- For flower beds

### DIEHARD™ Root Reviver

- For established and newly transplanted trees and shrubs

### DIEHARD™ Ecto Root Dip

- For ecto specific plant species such as Oaks, Poplar, and Pines

### DIEHARD™ Injectable

- Ecto and endomycorrhizae for deep root injection

### DIEHARD™ Ecto Injectable

- For ecto specific plant species such as Oaks, Poplar, and Pines

### DIEHARD™ Ecto Nursery Drench

- Custom blend of NINE strains of ecto for large scale nursery inoculation

### DIEHARD™ BioRush®

- Dry, soluble and beneficial bacteria

### DIEHARD™ BioRush® Fe

- Dry, soluble chelated iron and beneficial bacteria

**Limited Warranty:** All information contained herein is offered in good faith. There are no warranties of merchantability of fitness for a particular purpose which extend beyond the information contained herein. Our liability is limited to replacement of any product which does not meet these specifications.

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