



FOR TREES, SHRUBS, FLOWER BEDS and TURF

DIEHARD™ HUMATE SP



“Stimulates root growth naturally”

DIEHARD™ Humate SP is potassium-sodium humate powder that acts as a natural soil and plant growth stimulant. It is a dark brown to black powder with an 95% humic acid content. DIEHARD™ Humate SP is 100% soluble in water. It is easily assimilated by plants and some of its main functions include improving plant immunity, improving plant metabolism, improving plant root development, improving the supply of plant nutritional elements and increasing the formation of ferments. DIEHARD™ Humate SP promotes the increased accumulation of chlorophyll, sugar, amino acids and more and improves the efficiency of nitrogen utilization, allowing for reduced fertilizer rates. One of the primary actions of DIEHARD™ Humate SP is to increase the plant's ability to withstand the stresses of heat, drought, cold, disease, insect and other types of environmental or cultural pressures. DIEHARD™ Humate SP also increases general plant productivity, in terms of yield, as well as plant stem strength. Within the soil, DIEHARD™ Humate SP stimulates soil microorganisms, promoting Humus formation.

Advantages Over Conventional Humates

Full Water Solubility Over a Broad pH Range

Both acid & alkaline soluble - pH <0.5 to pH 14.0
Solutions will not precipitate in phosphoric acid

Versatile Product Form

Available as a completely soluble powder.

High Rio-available Humic Acid Assay

Proprietary extraction and modification process maximizes humate content
Made from the highest quality North American leonardite.

High % humate content provides superior performance on a pound per pound basis.

Low solution viscosity at high humic acid concentrations provides for easy mixing and pumping

Superior Redissolving Properties

High solubility prevents build up of insoluble sludges that normally clog lines under low flow
Rapidly redissolves and wets out without leaving insoluble clumps

Dissolved powder performs equivalently to liquid product

Excellent Salt Tolerance

Superior compatibility in all types of fertilizer and pesticide formulations
Does not precipitate out of solution like conventional humates

Effective component in a wide-range of NPK, nutrient or combination fertilizer formulations

High Ion Exchange Capacity

Better stability under varying soil pH conditions
Better at complexing metals
Makes micronutrients more readily available to plants

Complexes Micronutrients

Solution complexes to form 10% Zn, 7% Mn, 5% Cu, 5% Fe, 5% Ca, and 4% Mg nutrient solutions.

Non Plant Food Ingredients

Derived from Leonardine, 95% Humic Acid

Directions For Use

Irrigation Applications

When making soil treatments through irrigation equipment, the total amount of DIEHARD™ HUMATE SP to be used should be thoroughly pre-mixed in a separate container before adding it to the final irrigation tank or system. DIEHARD™ HUMATE SP has a particle size ranging from 50-80 microns and will not block irrigation openings if it is properly pre-mixed with water. It is important to keep the final concentration of DIEHARD™ HUMATE SP to water being emitted to the soil within the parameters listed below. It may be necessary to adjust the irrigation system to deliver more or less water per acre per cycle to deliver the desired amount of DIEHARD™ HUMATE SP listed for the crop you are treating.

Foliar Applications

All crops will benefit from foliar applications of humic acids when it fits into the crop management practice. Foliar applications should be made *in addition* to the soil treatments. Foliar applications should be made at the rate of 3 to 6 ounces of DIEHARD™ HUMATE SP per acre per treatment. Foliar treatments with DIEHARD™ HUMATE SP are strongly recommended during four growth stages of the crop: immediately before the appearance of buds, before blossoming, after the flowers have fallen, and during ripening. When soil treatments are not possible, foliar treatments may be made every 14 days using 3 ounces of DIEHARD™ HUMATE SP per acre. It is important to always use DIEHARD™ HUMATE SP within the concentration parameters listed below.

Maximum Concentration - 1 ounce DIEHARD™ HUMATE SP per 5.5 gallons of water.

Optimal Concentration - 1 ounce DIEHARD™ HUMATE SP per 55 gallons of water

Minimum Concentration - 1 ounce DIEHARD™ HUMATE SP per 110 gallons of water

Additional Notes

When applied together with fertilizers or pesticides, the use of humate increases the efficiency of the companion materials. In most cases, systemic pesticide rates can be reduced by 25% or more when the humate is added to the application. The total annual need for nitrogen can be reduced by 30% or more when the full program of soil treatments using humate are applied to the crop. In all cases, we suggest using personal experience and experimentation to determine the rates of companion products that will provide acceptable performance.

All humate powders contain a small portion of mineral content that is not soluble in water. If humate powders are added directly to a final spray or irrigation tank (not pre-mixed and settled in a separate container), the insoluble portion will settle to the bottom of the tank once any agitation is stopped. When high concentrations of humate powders are added to the final spray or irrigation tank and the liquid is not fully run-out (applied), the insoluble material that settles to the bottom may necessitate more frequent tank and filter cleaning.

Humates have proven compatible with virtually all companion products except those with a very low pH. In laboratory experiments, no problems have been found other than when companion materials have a pH less than 3.0. However, if there is any doubt about compatibility, a jar test is strongly recommended. To be safe, a jar test is recommended with any material that has a pH less than 4.0.

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Horticultural Alliance, Inc., 1550 66th Av. Dr. E., Sarasota, FL 34243 Tel: 941-739-9121, Toll-free: 800-628-6373, Fax: 941-752-1890
Web Page: <http://www.horticulturalalliance.com>, E-Mail: info@horticulturalalliance.com



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Crop	Soil rates per acre per treatment*	Suggestions and Methods
Corn and Sorghum	1.5 to 3 pounds	Apply soil treatment before emergence and again as late as machinery passage allows
Rice – Dryland	1.5 to 3 pounds	Apply soil treatment before emergence and again between joining and early heading
Rice – Lowland	1.5 to 3 pounds	Apply first treatment 7 days before flooding and make foliar treatment at the boot stage
Winter Grains	1.5 to 3 pounds	Apply soil treatment before emergence and again at spring green-up
Spring Grains	1.5 to 3 pounds	Apply soil treatment before emergence and again at the onset of flowering
Beans, field beans, soybeans, peas, and peanuts	1.5 to 3 pounds	Apply soil treatment before emergence and again at the onset of flowering
Cotton	1.5 to 3 pounds	Apply soil treatment before emergence and again at the onset of flowering
Hay and Forages	1.5 to 3 pounds	Apply soil treatment in spring at the beginning of growth and again after each cutting
Pastures	1.5 to 3 pounds	Apply soil treatment in the spring at the beginning of growth, again at midseason and a 3 rd treatment before dormancy
Tropical Grasses	1.5 to 3 pounds	Apply soil treatment every 3 months
Potatoes	1.5 to 3 pounds	Apply soil treatment before emergence and again at the hook stage
Sugar Cane	1.5 to 3 pounds	Apply soil treatment before emergence and again at 3 months and 6 months after planting
Root Crops (beets, radishes, carrots, etc)	1.5 to 3 pounds	Apply soil treatment at or within 15 days of planting
Vegetables (tomatoes, okra, eggplant, cucumbers, cauliflower, broccoli, peppers, etc).	1.5 to 3 pounds	Apply soil treatment at planting or before emergence and then every 6 weeks during active production
Leaf Crops (lettuce, parsley, dill, herbs)	1.5 to 2.5 pounds	Apply before emergence and again 6 weeks after emergence
Citrus	3 pounds	Apply soil treatment every month during the active/productive season
Fruits (apples, peaches, pears, apricots, plums, cherries, walnuts, pecans, etc.)	3 pounds	Apply soil treatment 1-2 weeks prior to leaf emergence and again at the beginning of fruiting
Topical Fruits (mangos, papayas, guavas, bananas, pineapples, pistachios, brazil nuts, etc)	3 pounds	Apply soil treatment every month during the active/productive season
Vineyards (Grapes)	1.5 to 3 pounds	Apply soil treatment at leaf emergence and again when fruit is half mature
Berries (strawberries, raspberries, blackberries, blueberries, etc.)	1.5 to 3 pounds	Apply soil treatment at the beginning of growth and again when fruit is half mature
Melons (watermelons, cantaloupes, etc.)	1.5 to 3 pounds	Apply soil treatment at planting or before emergence, and again at the onset of flowering
Landscape Ornamentals	1 oz per 1,000 square feet of beds	Apply soil treatment in spring at green-up or at transplanting and again prior to dormancy. Year-round climates should make soil applications every 3 months.
Flowers	1 ounce per 55 gallons of irrigation water	Apply weekly in irrigation water
Greenhouse plants	1 ounce per 55 gallons of irrigation water	Apply weekly in irrigation water
Potting Mixes	3 ounces per cubic yard of mix	When moistening the dry potting mix, add enough DIEHARD™ HUMATE SP into the water/fertilizer/fungicide solution to deliver 3 ounces of DIEHARD™ HUMATE SP per cubic yard of potting mix.
Hydroseeding	3 to 8 pounds	Once the water is added to the hydroseeding tank, add enough DIEHARD™ HUMATE SP to deliver 3 pounds of DIEHARD™ HUMATE SP per acre. Allow to mix for at least 5 minutes before spraying. In very harsh environments, add up to 8 pounds of DIEHARD™ HUMATE SP per acre in the hydroseeding solution.

Health, Safety & Storage

Inhalation - If dusty conditions exist, wear a dust mask. **Ingestion** - Drink large amounts of water, induce vomiting, and seek medical attention. Store in a cool, dry place. Avoid high temperatures and direct sunlight. Product shelf life is 5+ years. Rev. 122016

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