



12% HUMIC ACID

LIQUID CONCENTRATE

DERIVED FROM LEONARDITE



DIRECTIONS

May be applied to soils in irrigation/fertigation systems, or applied as a foliar spray.

FOLIAR SPRAY: Apply 1 to 4 quarts per acre (2 to 9 liters/HA in 450 to 900 liters water) in sufficient water for full coverage spray, usually 50 to 100 gallons water per acre.

For smaller areas is 1 Fl. oz. per 1,000 sq. ft. in 10 to 20 gallons water (30 mL per 100 sq./m in 30 to 70 liters water). Agitate before using. Add to the tank when half full. Compatible over full range of tank mix pH. Add 2 to 5 lb. Grow More 20-20-20 to your spray tank to buffer pH in the range of 5.5 Add 20-20-20 to the tank last.

HIGH LEVEL FILTRATION: Insures that 12% Humic Acid is safe for drip irrigation system. Filtered through 500 mesh (16 microns). High efficacy centrifugal filtration system that removes insoluble sand and clay.

SOIL APPLICATION: Apply by itself at 2 to 10 quarts per acre (5 to 23 liters / HA) in ground application equipment or drip irrigation system. May be applied in direct seeded crops, also in combination with starter or pop-up fertilizer at rate of 2 to 3 quarts per acre (5 to 7 liters / HA).

TYPICAL ANALYSIS

Humic Acid :	12 - 14%
Fulvic Acid :	2.1 - 2.4%
Carbon :	5.4 - 9.8%
Total Organics :	16%
Carboxyl Content: (Total Acidity)	2.4 MEQ per gram
Cationic Exchange Capacity:	12-16 MEQ per 100 grams

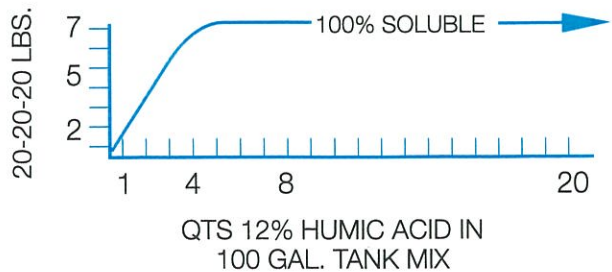
MINERALS:

• Nitrogen	0.175%	• Phosphate	0.018%
• Potassium	2.10%	• Calcium	0.30%
• Magnesium	0.10%	• Sulfur	0.40%
• Iron	0.15%	• Manganese	0.004%

SPECIAL FEATURES:

- Stimulates plant enzymes
- Valuable source organic carbon
- Increases germination and viability of seed.
- Promotes the conversion of Fe³⁺, Cu²⁺, Zn²⁺, Mn²⁺ etc. into forms available to plants
- Improves soil workability
- Increases aeration and porosity of soil
- Increases water holding capacity
- Retains water soluble inorganic fertilizers in the root zones and releases them to plants when needed, Improving soil CEC.

SOLUBILITY 12% HUMIC ACID
100 GALLONS OF WATER
7 LBS. 20-20-20 @ PH 5.5



See back for more information >

Grow More's 12% HUMIC ACID is a concentrated liquid extract derived from Leonardite ore. Weight 9 Lbs. gallon (d=1.08), equivalent to 1.08 Lbs. Humic Acid per gallon.

PESTICIDE COMPATIBILITY: 12% Humic Acid is compatible with most insecticides, herbicides, miticides, fungicides and foliar fertilizers. It may be incorporated into existing spray programs. Add 12% HUMIC ACID to the water prior to the pesticides.

FERTILIZER COMPATIBILITY: 12% HUMIC ACID is compatible with 32 and 28% Nitrogen solution. Before adding to liquid fertilizer or ammonium phosphate, dilute 1 part 12% HUMIC ACID with to 2 parts water. Before using previously untried combinations, perform a jar compatibility test prior to full scale tank mixing.

FOLIAR APPLICATION: For best results, apply this product early morning or late evening. For aerial application, use at least 1 gallon of water for every pint of 12% HUMIC ACID applied. 12% HUMIC ACID may be applied to, but applications are not limited to the following crops.

Alfalfa	Almonds	Apples	Apricots
Asparagus	Avocado	Barley	Beans (all)
Boysenberries	Broccoli	Brussels	Sprouts
Carrots	Celery	Cherries	Citrus
Corn	Cotton	Cranberries	Cucumbers
Figs	Garlic	Grapes	Grass
Hops	Lettuce	Melons	Milo
Mint	Nectarines	Nursery Stock	Oats
Olives	Onions	Ornamentals	Peaches
Pears	Peas	Peanuts	Pecans
Peppers	Plums	Pomegranates	Potatoes
Pasture & Range	Grass	Prunes	Grapes
Rice	Safflower	Sorghum	Soybeans
Spinach	Strawberries	Sugar Beets	Sugar Cane
Sweet Corn	Tomatoes	Turf Grass	Walnuts
Watermelons	Wheat		

GENERAL RECOMMENDATION

Almonds:

Soil: in early spring, apply 1 to 2 gallons per acre (9 to 18 liters per hectare) with pesticide, irrigation water or fertilizer.

Foliage: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) with sufficient water for full coverage spray. Repeat at petal fall and cover spray at 1 to 4 quarts per acre (2.2 to 8 liters per hectare).

Apples & Pears

Soil: In early spring, apply 1 to 2 gallons per acre (9 to 18 liters per hectare) with pesticide, irrigation water or fertilizer.

Foliage: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) with sufficient water for full coverage spray. Repeat at petal fall for full coverage spray at 1 to 4 quarts per acre (2.2 to 9 liters per hectare).

Apricots, Prunes, Nectarines, Plums, Peaches

Soil: In early spring, apply 1 to 2 gallons per acre (9 to 18 liters per hectare) with pesticide, irrigation water of fertilizer.

Foliage: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) with sufficient water. Repeat at petal fall for full coverage spray at 1 to 4 quarts per acre (2.2 to 9 liters per hectare).

CAUTION: Do not apply more than 2 quarts per acre (4.5 liters per hectare) to plums or sensitive varieties for full coverage spray.

Cherries

Soil: In early spring, apply 1 to 2 gallons per acre (9 to 18 liters per hectare) with pesticide, irrigation water of fertilizer.

Foliage: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) with sufficient water for full (coverage spray. Repeat at petal fall and cover spray.

Citrus

Soil: In early spring, apply 1 to 2 gallons per acre (9 to 18 liters per hectare) with pesticide, irrigation water or fertilizer.

Foliage: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) with sufficient water for full coverage spray. Apply during spring and fall.

Grapes

Apply 2 to 6 quarts per acre (1.5 to 14 liters per hectare) before bloom as foliage or soil application. Add 1 to 3 pints per acre (1 to 3.5 liters per hectare) to each pesticide spray. For best results, apply 1 quart per acre (2.2 liters per hectare) near bud swell and 1 quart per acre when shoots are 4 to 6 inches long (10 to 15 cms).

Pecans

Soil: In early spring, apply 1 to 2 gallons per acre (9 to 18 liters per hectare) with pesticide, irrigation water or fertilizer. Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare).

Other Fruit & Nut Crops

Soil: In early spring, apply 1 to 2 gallons per acre (9 to 18 liters per hectare) with pesticide, irrigation water or fertilizer. Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare).

Beans

Soil: Apply 1 to 2 gallons per acre (9 to 18 liters per hectare) with pesticide, irrigation water or fertilizer before the 4th trifoliolate.

Foliage: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) with sufficient water when beans are between the 2nd and 4th trifoliolate stage. Apply 2 to 4 pints per acre (1.1 to 2.2 liters per hectare) with normal pesticide spray program.

Corn

Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) to the foliage or soil. For best results, split application. Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) to the foliage or soil (band or side-dress) within 3 weeks of emergence and apply 1 to 3 pints per acre (1 to 3.5 liters per hectare) with each pesticide, apply prior to bloom.

Cotton

Apply 1 to 2 gallons per acre (9 to 18 liters per hectare). For best results, split application: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) to the soil (band or side-dress) within 3 weeks of emergence and apply 1 to 3 pints per acre (1 to 3.5 liters per hectare) with each pesticide, apply prior to bloom.

Potatoes

Soil: Apply 1 to 2 gallons per acre (9 to 18 liters per hectare) at or near planting.

Foliage: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) with sufficient water for full coverage spray. Repeat application in 2 to 4 weeks.

Rice

Foliage: Apply 2 to 4 quarts per acre (4.5 to 9 liters per hectare) in sufficient water for full coverage. For best results apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) with first pesticide application. Repeat prior to pollination.

Small Grains

Soil: Band or side-dress or broadcast to 1-8 quarts per acre (2.2 to 18 liters per hectare) at planting or within 2 weeks of emergence.

Foliage: Apply 1 quart per acre (2.2 liters per hectare) with sufficient water. Apply within 30 days of planting and before flowering.

Other Field & Vegetable Crops

Apply 1 to 4 quarts (2.2 to 9 liters per hectare) to the foliage or soil. For best results, split application: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) to the foliage or soil (band or side-dress) within 3 weeks of emergence, Apply 1 to 3 pints per acre (1 to 3.5 liters per hectare) with each pesticide application prior to bloom.

Ornamentals, Container-grown, Tree, Shrub, Field, Nursery Stocks

Soil: Apply 1 to 4 ounces per 100 sq. feet (30 to 120 ml per 100 sq. meters) Repeat application at fertilization or regular intervals. Foliage: Apply 1 to 2 quarts per acre (2.2 to 4.5 liters per hectare) as full coverage spray.

Greenhouse

Soil: Apply 1 to 3 ounces per 100 sq. foot (30 to 90 ml per 100 sq. meters) with fertilizer or drip irrigation at regular intervals.

Turf-Grass

Apply 1 quart per acre (2.2 liters per hectare) or 1 to 2 ounces per 100 sq. feet (30 to 60 ml per 100 sq. meters). May be applied with liquid fertilizer, pesticide or water. Make first application in the spring. Repeat as necessary.

APPLICATION IN IRRIGATION WATER**Pivot, Sprinkler, Overhead & Solid Set Irrigation**

Apply 1 to 8 quarts per acre (2.2 to 18 liters per hectare) with irrigation water. May be applied with fertilizer and/or pesticide before injection.

HUMIC ACID

HUMIC ACIDS are complex organic molecules formed by the breakdown of organic matter in the soil. They are not considered to be fertilizers per se, but soil enhancers and improvers. HUMIC ACID biologically stimulates plant growth, chemically changes the fixation properties of soil and physically modifies the soil.

CONCENTRATED LIQUID HUMIC ACIDS

WHY USE HUMATES?

- I. Biologically stimulates the plant.
- II. Chemically changes the fixation properties of the soil, improving CEC.
- III. Physically modifies the soil.

BIOLOGICAL BENEFITS

1. Stimulates plant enzymes
2. Acts as an organic catalyst
3. Stimulates growth and proliferation of desirable soil microorganisms as well as algae and yeasts.
4. Increases root respiration and formation
5. Stimulates root growth, especially lengthwise
6. Increases the permeability of plant membranes; promoting the uptake of nutrients
7. Increases vitamin content of plants
8. Increases germination of seed and viability
9. Stimulates plant growth by accelerating cell division, increasing the rate of development in the root systems, and increasing the yield of dry matter

PHYSICAL BENEFITS

1. Makes soil more friable or crumbly
2. Improves soil workability
3. Increases aeration of soil
4. Increases water holding capacity
5. Improves seed bed
6. Reduces soil erosion

CHEMICAL BENEFITS

1. Increases buffering properties of soil
2. Chelates metal ions under alkaline conditions
3. Rich in both organic and mineral substances essential to plant growth
4. Retains water soluble inorganic fertilizers in the root zones and releases them to plants when needed
5. Possesses extremely high ion-exchange capacity
6. Promotes the conversion of a number of elements into forms available to plants

LITERATURE CITED

1. Senn, T.L. and Kingman, A.R., 1973. A Review of Humus and Humic Acids. Clemson University, Department of Horticulture, Research Series No. 145, March
2. Freeman, P.G., 1969. The Use of Lignite Products as Plant Growth Stimulants. Technology and Use of Lignite, IC Bureau of Mines Information Circular, 8471; 150-153; 160; 162; 164.
3. Burdick, E.M., 1965. Commercial Humates for Agriculture and the Fertilizer Industry. Economic Botany. Vol. 19, NO.2: 152-156.