actosol®

The Gold Standard of Humic Products

actosol Product Handling & Application Guide

actosol products are formulated with natural organic humic acids. The use of ***actosol*** enhances the soil structure and fertility, increases microbial activity in the soil, increases the moisture holding capacity of the soil, and increases fertilizer and nutrient uptake due to its high cation exchange properties which results in increase of yield and quality depending upon the soil conditions.

actosol is being used for different applications in agriculture, horticulture, floriculture, turf/sod management/maintenance, hydro-seeding, mine/landfill reclamation, dune stabilization, and road/highway erosion control.

All ***actosol*** products are liquid products, but in fact they are not by nature a true liquid solution. The key ingredient of all ***actosol*** products is humic acid, a high molecular weight organic material which makes the product colloidal in nature. ***actosol*** tends to settle and gel up slowly upon storage. This confirms that ***actosol*** contains useful humic acid unlike other products which look similiar but are not made of humic acid. Therefore it has to be mixed properly before use after long storage to avoid clogging of nozzles. All ***actosol*** products should be stored at temperatures above 70 F°.

actosol products are available in 2.5 gallon bottles, 55 gallon drums, 275 gallon totes, and tanker quantities.

Application Rate:

Application rates of ***actosol*** vary with respect to soil conditions and type of application; i.e. golf course, hydro-seeding, landscaping, agriculture, sod farming, etc. Please follow the recommended application rates as mentioned on the interior pages of this guide.

Application Guidance:

1. ***actosol*** needs to be mixed well to make it homogeneous before use. If it is in a 2.5 gallon bottle it can be mixed well by simply shaking the bottle. If it is in a 55 gallon drum or 275 gallon tote then it can be mixed with a mixer by air purging or keeping under internal circulation with the pump. Ensure that the ***actosol*** is uniformly mixed before use.
2. Dilute ***actosol*** with water as per the instructions on the respective ***actosol*** label and mix to make a uniform solution. Continue mixing at the time of application.
3. From the spray system, remove the line filter/strainer and also remove nozzle filters. TeeJet Flat nozzle Spray tip TP8010 with 0.079 inch opening or TP8015 with 0.097 inch opening is recommended for clog free spraying operations.

South Carolina Department of Transportation

USDA ORGANIC

OMRI LISTED For Organic Use

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actosol Rates, Time, & Methods of Application

Agricultural Crops:

All Crops not listed below	1-2 gallons per acre at seedling stage or at transplanting. Use 2 gallons per acre post applications if needed.
Clover	**Rate & methods of application:** Use 2 gallons per acre by spraying. **Time of application:** Spray in case of flood irrigation on soil or use with fertilizers in case of sprinkling irrigation. **1st dose:** Apply 1 gallon per acre during land preparation. **2nd dose:** Reapply 1 gallon per acre after 2 to 3 weeks of seed germinations. *Reapply an additional 0.5 gallon per acre after each cut.*
Cotton & Corn	**Rate & methods of application:** Use 2 gallons per acre by spraying. **Time of application:** Spray 1 gallon per acre on soil during land preparation and before planting. Reapply 1 gallon per acre after 1 month of planting and after thinning
Pastures	**Rate & methods of application:** Apply 1.5 gallons per acre for spring application followed by 1 gallon per acre after each harvesting period.
Rice	**Rate & methods of application:** Use 2 gallons per acre in clay soil by spraying. **Time of application:** Spray 1 gallon per acre on soil after soil plowing and irrigation and before planting the rice seeds. Reapply 1 gallon per acre 1 month after planting the rice seeds.
Soybean & Peanuts	**Rate & methods of application:** Use 3 gallons per acre in sandy soil by spraying or drip irrigation. **Time of application:** Spray in case of flood irrigation on soil or use with fertilizers in case of sprinkling irrigation or drip irrigation. Split the amount into 3 doses: **1st dose:** 1 gallon per acre at planting (seeding). **2nd dose:** 1 gallon per acre after 30 days of planting). **3rd dose:** 1 gallon per acre after 2 weeks. *Soybeans: Can be added with a post-emergence application of Glyphosate or Blazer herbicide, surfactant & manganese during the fourth trifoliate.*
Sugar Beets	**Rate & methods of application:** Use 3 gallons per acre in sandy soil by spraying. **Time of application:** Spray on soil in case of flood irrigation. Split the amount into 3 doses: **1st dose:** 1 gallon per acre at beginning of growing season. **2nd dose:** 1 gallon per acre after 2-3 weeks. **3rd dose:** 1 gallon per acre after 2-3 weeks.
Sugar Cane	**Rate & methods of application:** Use 3 gallons per acre in sandy soil by spraying. **Time of application:** Spray on soil in case of flood irrigation. Split the amount into 3 doses: **1st dose:** 1 gallon per acre at beginning of growing season. **2nd dose:** 1 gallon per acre after 2- 3 weeks. **3rd dose:** 1 gallon per acre after 2- 3weeks.
Tobacco	**Rate & methods of application:** Apply 2 gallons per acre at transplant/seeding stage in transplant water. Greenhouse use 1 gallon in 50 gallons of water in float beds.
Wheat & Barley	**Rate & methods of application:** Use 1.5 gallons per acre at planting to increase tillers & root development. Reapply 1 gallon per acre with liquid nitrogen at feeks 5 stage or 2 quarts per acre if applying nitrogen twice during this stage in the spring.

Ornamentals:

Commercial Nurseries (Container Grower)	**Rate & methods of application:** Use 3 gallons in 100 gallons of water; Drench: 6 " pots -6 to 8 ounces per plant; Drench: 10 " pots -32 ounces per plant .
Container Grown Ornamentals (Newly/Established)	**Rate & methods of application:** Use 15 ounces per tree. **Time of application:** Split the 15 ounces into 5 doses, each 3 ounces per tree during the growing season.
Field Grown Ornamental	**Rate & methods of application:** Use 3 gallons in 100 gallons of water. **Time of application:** Drench or foliar application every 4 weeks.
Landscape (Ornamentals/Flower Beds)	**Rate & methods of application:** Use 3 gallons in 100 gallons of water; 2.5 gallons for foliar. **Time of application:** Drench at transplanting or every 4 weeks.
Landscape (Shrubs & Trees)	**Rate & methods of application:** Use 3 gallons in 100 gallons of water; Drench 1-4 gallons per plant depending on size; Foliar use 2.5 gallons in 100 gallons of water to run off or 9 ounces per 1000 sq ft in 2 gallons of water to run off.
Liner & Seed Beds	**Rate & methods of application:** Use 1.5 gallons in 15 gallons of water. **Time of application:** Drench or foliar application every 4 weeks.

Turf:

Golf Courses	**For greens and tees:** Use 6.0 ounces /1000 sq ft, 4 -6 applications per year **For fairways:** Use 4.0 ounces /1000 sq ft, 4 -6 applications per year May be applied with fertilization and at time of over seeding and sprigging
Hydro seeding	Use 8 gallons in 400-500 gallons of water/acre with the hydro-seeding mix
Landscape Turf	Use 3 gallons in 60 -70 gallons of water /acre. For smaller applications: Use 9 ounces / 1000 in 2 gallons of water. Higher rates may be required on compacted soils
Sod Farming, Commercial Turf, & Athletic Fields	Use 3 gallons in 60 -70 gallons of water /acre. Higher rates may be required on compacted soils

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Horticultural Crops:

Banana	**Rate & methods of application for first time planting in new land & during land preparation using drip irrigation:** Use 1 to 1.5 gallons per acre in clay soil & 1.5 to 2 gallons in Sandy soil. Reapply an additional 3 to 4 gallons **Time of application:** Split the amount into 3 to 4 doses in the beginning of the growing season (before blooming/budding) and then every 15 days. **Rate & methods of application for second year of planting:** Use 3 to 4 gallons.
Banana (Continued)	**Time of application:** Split the amount into 3 to 4 doses in the beginning of the growing season (before blooming/budding) and then every 15 days.
Blueberries	**Rate & Methods of Application:** Can be applied with spray, drip, and irrigation systems. **Greenhouse liners:** Use 1 gallon in 75 gallons of water as soil drench at root initiation. Reapply every 4 weeks. **Containers:** Use 7.5 gallons in 300 gallons of water & apply 12 ounces per plant. Reapply every 4 weeks. **Newly Established/ Field Grown:** Use 2.5 gallons in 100 gallons of water per treated acre. Drench or soil treatment at planting. Reapply every 4 weeks during growing season. **Flowering:** Use 1 gallon in 75 gallons of water pre-bloom.
Date Palm tree	**Rate & methods of application:** Use 15 ounces per tree. **Time of application:** Split the 15 ounces into 5 doses, each 3 ounce per tree during the growing season.
Deciduous fruit trees: *(Shed all leaves annually)* Apricot, Peach, Plum, Apple, Pear, & Pomegranate	**Rate & Methods of Application:** Use 3 gallons per acre with drip irrigation; Use 2 ounces / 6.5 gallons water as foliar application. **Time of application:** Use 1 gallon per acre at the beginning of growing season & before first bloom. **Follow up Applications:** Reapply 1 gallon per acre after fruit set (Apples-Peaches) then every 2 weeks; Reapply 1 gallon per acre after fruit set then every 3 weeks for all others trees.
Evergreen fruit trees: Citrus (Orange, Lemon, Lime, etc.), Mango, Olive, Avocado, Guava	**Rate & Methods of Application:** Use 3 gallons per acre with drip irrigation. **Time of application:** Use 1 gallon per acre with drip irrigation and before flowering **Follow up Applications:** Reapply 1 gallon per acre after fruit set followed by 1 gallon per acre in 3-4 weeks.
Grape vines	**Rate & methods of application:** Use 3 gallons per acre with drip irrigation **Time of application:** Use 1 gallon per acre before budding; Split the rest into 3 doses starting after fruit set and every 15 days under drip irrigation
Other Berries	**Rate & Methods of Application:** Can be applied with spray, drip, and irrigation systems. Apply 1 to 2 gallons soil treatment or incorporated (2-4") at planting. Reapply 1 gallon per acre 4-6 weeks after initial application at prebloom and initial fruit set.
Strawberries	**Rate & Methods of Application:** Can be applied with spray, drip, & irrigation systems. **Transplanting:** Use 6 ounces in 2 gallons of water as root dip before transplanting. **Drip Irrigation:** Use 2.5 gallons per acre on soil surface 1 week after planting; based on 1:20 ratio of injector system. Apply 2.5 gallons per acre in 100 gallons of water drench or soil applied. Reapply 4 to 6 weeks after initial application and 1 gallon per acre at initial fruit set.

Vegetables:

All Vegetable Crops not listed below	3 gallons per acre applied on soil surface or incorporate 2-4" at planting. Reapply 1.5 gallons per acre after the initial application & at prebloom. Reapply 1 gallon per acre at initial fruit set
Generals: Examples: Tomatoes, Peppers, Cucumbers	**Open Field with Flood irrigation: Rate of & methods of application**: Apply 3 gallons by flood irrigation and/or foliar spraying. **Time application:** Add 1 gallon to 100 to 150 gallons water and then spray on soil before planting. Reapply 1 gallon per acre after one month. Reapply 1 gallon per acre in 2-4 weeks. **Open Field/Green Houses with drip irrigation: Rate of & methods of application:** Apply 3 gallons by drip irrigation. **Time application Under drip irrigation:** Apply 0.5 gallon after planting. Add 0.5 gallon every 2 weeks. **Green house/foliar application:** Use 2 ounces in 25 gallons water **With insecticides and fungicides:** Use 4 ounces in 150 gallons water
Potatoes	**Rate & methods of application**: Apply 3 gallons per acre under pivot system. **Time of application:** Split the amount into 4 doses: **1st dose:** 1 gallon at the planting of the tubers; **2nd dose:** 1 gallon at Ridge (after 25 to 30 days of planting); **3rd dose:** 1/2 gallon after 2 weeks after second application; **4th dose:** 0.5 gallon after 2 weeks after third application

actosol **can be used alone or in combination with fertilizers & chemicals as tank mixes. Check compatibility before mixing & use largest nozzle sizes to ensure clog free flow.**

Recommended dilution rates unless otherwise listed: Soil: 20:1 / Foliar: 40:1

actosol Optimum Efficacy Concentrations

Concentration of ***actosol*** at the time of application: The Humic Acid optimum efficacy and its positive effect on increasing yield and quality of plants depends critically on its concentration at the time of application. At high concentration, humic acid has herbicidal effect and can cause phytotoxicity to the plants.

As shown in the following Figure1, application rate ranges from 800 ppm for foliar applications and 1500 ppm for soil applications.

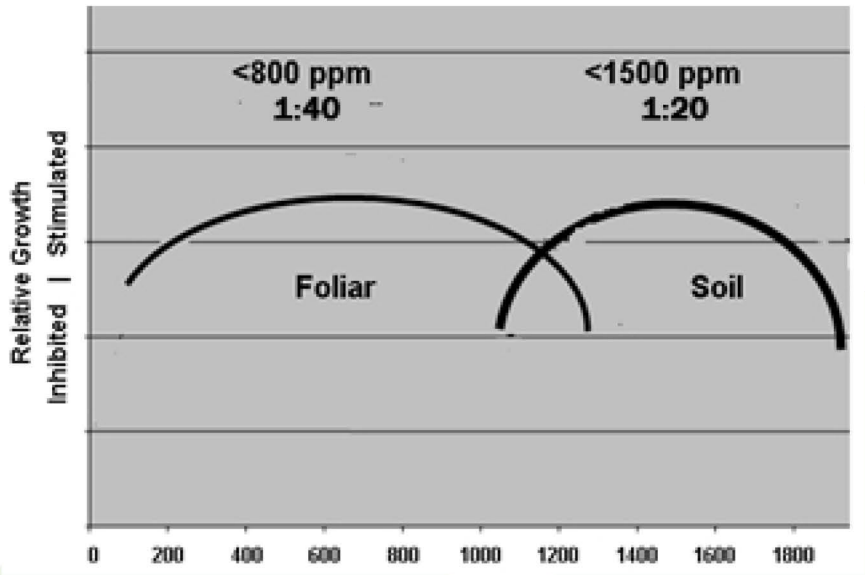

Figure 1 Application rates of humic acid for plant growth

Jar Test for compatibility:

actosol is compatible with most fertilizers, pesticides, fungicides & herbicides, However, a standard jar test is recommended. Combining chemicals to do several jobs with a single spray saves time and labor.

Following is the steps for conducting the jar test:

1. In one gallon container: Add ½ gallon of water and then add actosol and fertilizer, or actosol and pesticide, or actosol and fungicide, or actosol and herbicide in proportion to rates to be used in the field. Then mix well.

2. In another one gallon container: Add ½ gallon of water and 1/2 teaspoonful of an adjuvant; and then add actosol and the pesticide, or fungicide, or herbicide in proportion to rates to be used in the field.

3. Close both jars and shake for 30 seconds.

4. Let the jars stand for at least 5 minutes (30 minutes is better) and check the results. If the mixture without the adjuvant stays mixed, use the combination in the spray tank.

5. If the mixture ***actosol*** with the adjuvant and the pesticide or fungicide or herbicide stays mixed, but the one without the adjuvant does not, be sure to add the adjuvant to the spray tank.

6. Should either mixture separate after 5 minutes, but mixes readily after shaking, the mixture can be used in the spray tank if good agitation is maintained. If a separate oily layer, large oil globules, clumps of solids or sludge forms in the bottom of the jar containing adjuvant; the mixture should not be used.

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