



New Charts!

COMPANION[®]

MICROBIAL INOCULANT FOR HORTICULTURE & SPECIALTY CROP USES

- **Easy To Use Liquid Formulation**
- **Colonize Soil With Beneficial Microbes**
- **No Special Handling or Storage**

INGREDIENTS:

Bacillus subtilis GB03
 (not less than 5.5 x 10¹⁰ CFU* per gal.)
 * (CFU) Colony Forming Units
 Sucrose, Monosaccharides, Condensed Fermented Plant Extracts, Dextrin, Natural Organic Sequestrant, Natural Wetting Agent.
 Weight per gallon 9.95 lbs

GENERAL INFORMATION:

Companion is a unique liquid microbial inoculant containing beneficial soil bacteria spores (Bacillus subtilis GB03). It is the only patented liquid microbial product, and the unique formulation keeps the spores stable for more than two years. Companion contains naturally occurring, beneficial Bacillus subtilis GB03 soil bacteria, which improve rooting, growth, and plant vigor. GB03 is a gram-positive (spore-producing) bacteria that quickly colonizes the plant's root hairs. Companion's organic liquid base acts as a food source to help Bacillus subtilis multiply and establish colonies.

Companion can be used to improve the health of a broad variety of plant materials including bedding plants, ornamentals, vegetables, and herbs. As part of their symbiotic relationship with the plant, the GB03 provide enzymes and auxin-like metabolites, which improve rooting, growth, and plant vigor. Research at major universities has shown that GB03 plays an important role in the promotion of a healthy root system, improving plant growth and increasing vegetable yield. Companion's organic solution contains high percentages of natural carbon compounds, which neutralize chemical salts.

This product may be used as a drench at the time of seeding, as a plug drench prior to transplant, and during the plant growth cycle. Companion is most effective when applied throughout the growing cycle to maintain a healthy population of beneficial microorganisms. Since Bacillus subtilis is a bacteria, it can be used in combination with chemical fungicides without detriment to either product. Companion is not phytotoxic to plant materials.

MIXING INSTRUCTIONS:

Companion is not a suspension and does not need to be agitated. It is compatible with fertilizers, fungicides and technical materials. Check the labels of other technical materials for their mixing guidelines. Be sure to apply all of tank mix solu-

- **Contains Food Source For Microbes**
- **University Tested On Root Diseases**
- **2 Years+ Shelf Life**

tion the same day to assure viability of spores.

Incompatibilities: Do not use with bacteriacides or soil fumigants. Wait 48 hours to apply Companion after a bactericide or soil fumigant has been used.

Do not use Companion with products that contain any form of peroxide; allow 8 hours before applying Companion.

APPLICATION THROUGH IRRIGATION SYSTEMS:

Direct Siphon: Companion can be siphoned directly from the original container. This can be done with a variable proportioner that can be set to high ratios. This eliminates the need to mix stock concentrates or stir the mixing barrels. For 100 PPM set injector to 1:800.

Concentration Stock Tank Mixing: See application chart below.

USE AND RATE RECOMMENDATIONS:

Companion may be used on container, bench, or bed-grown ornamentals in greenhouses or outdoor nurseries. It may also be used on ornamentals grown for indoor and outdoor landscaping, or as a drench during seeding and when transplanting. Apply Companion throughout the plant growth cycle. Use on all types of bedding plants, perennials, cut flowers, plugs, woody ornamentals, nursery crops, trees, foliage plants, vegetables, herbs, and container plants. Since Companion is a homogenous solution that is 100% miscible in water it may be applied through drip (trickle) irrigation system, fertigation, and sprayer systems. Companion is most effective as a soil drench and can be utilized in foliar and/or soil applications, as a soil drench, or as a soil surface spray.

HORTICULTURAL APPLICATIONS:

Soil Drench: Mix 16 ounces of Companion with 100 gallons of water. Apply to container grown plants and bed and bench grown plants according to the guidelines below.

Companion Soil Drench		
Plant Type	Companion Per 100 Gallons	Application Notes
Bedding Plants	Mix 16 fl oz with 100 gallons of water (475 ml per 400 L water)	Re-treat at 14 - 28 day intervals
Foliage Plants		
Flowers	Mix 1 teaspoon with 1 gallon of water (5 ml per 4 L water)	
Woody Ornamentals		

**Companion Drench
For Bed & Bench Grown Plants**

Soil Depth	Area Covered Per 100 Gallons	Pints Per Sq. Ft.
3 inches or less less than 10 cm	800 SF ² 74 m ²	1 pint
4-6 inches 10-15 cm	400 SF ² 37 m ²	2 pints
6-12 inches 15-30 cm	200 SF ² 18 m ²	4 pints

**Companion Drench
For Container Grown Plants**

Pot Diameter (inches)	Minimum Drench Volume fl oz per pot	Number of Pots per 100 Gallons
4	2	6,400
6	4	3,200
8	10	1,280
10	20	640
12	30	426

Closed Systems for Ebb and Flow and Hydroponics

Application: Mix 1 oz. per 30 gallons of water for closed continuous recirculation systems used in hydroponics growing or ebb and flow in rock wool and peat/perlite mixtures. Be sure to clean mix tank on a weekly basis. Pre-soak transplants in same solution mix.

Vegetable Plug Production: Begin using Companion at time of seeding at a rate of 16 oz per 100 gallons.

Herbs: Apply just prior to field transplant.

Field and Greenhouse: Apply at time of seeding or sticking cuttings. (See Closed Systems for Ebb and Flow and Hydroponics Application)

Constant Feed: Apply 1 oz of Companion in 100 gallons of water per day.

Interiorscape: Many indoor environments do not allow the use of chemical pesticides because of high pedestrian traffic (especially children). Companion can be easily and safely used on interiorscape plantings to improve the plant's vitality, growth and rooting. Companion's naturally occurring bacteria (*Bacillus subtilis*) are safe to humans. Begin applying Companion at time of planting and continue application once per month as a maintenance program. Mix 1 teaspoon of Companion in 1 gallon of water. For larger volumes, mix 1.6 fluid oz. per 10 gallons of water. Follow the "Drench Rate For Container Grown Plants" to calculate the amount of stock tank that is to be used per pot size. Companion can be stock mixed with fertilizers and pesticides.

Companion Injection Ratio

Injector Ratio	1:100	1:200
Companion Per Gallon	16 fl oz.	32 fl oz.
Companion Per 10 Gallons	160 fl oz.	320 fl oz.

Tissue Cultured Plantlets: Tissue cultured plantlets require special attention. They must acclimate from completely sterile "lab conditions" into the greenhouse environment. Special care must be taken with stage II microcuttings regarding temperature, pH and nutrients. At this stage of transplant the plants are as close to sterile as possible, and as such contain no beneficial bacteria. Once a tray is planted in a peat-based medium, it is important to immediately apply Companion at a low concentration rate of 10 oz. per 100 gallons of water. This will protect the new root structure with the beneficial bacteria contained in Companion. *Bacillus subtilis* GB03 will improve rooting, aid in nutrient uptake and protect the young plants from root rot diseases. Apply every 14 days through the entire plug stage

Although Stage III plants are more mature and less vulnerable to stress, the same conditions apply with regard to beneficial bacteria on their root surfaces. It is important to keep all conditions as sterile as possible and apply Companion immediately at the time of transplant into their new medium. Apply Companion at a rate of 10 oz. per 100 gallons of water. Apply every 14 days through the entire plug stage.

Horticultural Applications

Application	Rate	Frequency/ Notes
Tissue Culture	1.6 oz per 10 gal of water (50 ml per 40 L water)	Drench plug trays until thoroughly soaked every two weeks
Hydroponics, Constant Feed, Ebb and Flood	Charging: 5 oz per 150 gallons of water (240 ml per 550 L water)	Run through system
	Recharging Rate: 3 oz per 150 gallons of water (85 ml per 550 L water)	Replenish every time water is added

Hydroponics: Companion with *Bacillus subtilis* GB03 can be successfully used in hydroponics system to improve plant vigor, root system and plant yield. Companion will encourage and maintain healthy white roots and increase root mass. *Bacillus subtilis* will flourish in this environment, where it quickly adapts and establishes itself on the root systems of plants. Companion is easily injected through all systems either by proportioners or through standard fertilizer injectors. For herbs and leafy crops, soak seeds/plugs with a solution of 4 oz of Companion per one gallon of water before placing them in growing trays. Once they are in the trays, use 5 fl. oz. / 150 gallons water in nutrient tank (42.25 ml / 578liters). In a closed recirculating system, the water is usually changed weekly. Companion should be applied again after each water change.

In open systems, apply 16 oz per 100 gallons of nutrient mix (473 ml / 375.8 liters). Apply the solution with Companion at the end of the watering cycle so that Companion stays in the system longer. Repeat the application every 14 to 21 days, or by checking the quality of the roots.

For tomato crops, mix 4 oz. per two gallons of water. Apply

at the last two feedings in the day. Apply once per month.

Orchids: Use Companion as a dip on orchids at time of transplant. For dip, mix 1-2 oz. of Companion per gallon of water.

For General Propagation of Orchids: Mix 16 oz. per 100 gallons of water. Drench sufficiently to be sure that red wood/bark mix is thoroughly saturated. Apply every 30 days.

AGRICULTURAL APPLICATIONS:

Plug Production: Mix 16 oz. of Companion in 100 gallons of water. Apply as a soil drench until plug is saturated. Repeat at 14-day intervals if additional applications are needed.

Transplants: Mix 16 oz. of Companion in 100 gallons of water. Apply as a pre-plant drench to plugs prior to transplanting in field.

Field Applications: Apply at a rate of 32 oz. in 100 gallons of water sprayed over an acre in a 6" band.

For most field crops the early season applications are banded and directed sprays. For treatment of individual trees or vines, divide per acre rate by the number of trees or vines per acre and apply as a post directed spray.

Following Soil Fumigation: Apply Companion at time of planting or transplanting. Be sure to follow recommended practices following applications of Methyl Bromide.

Band Treatment: Use the following formula to calculate the amount of Companion needed per sprayed acre for band treatment: [Bandwidth (inches)/ inches between rows x [Amount needed for overall broadcast spray treatment] = Companion needed per sprayed acre for banded application.

For 6" band mix 32 oz. of Companion in 100 gallons of water. Spray in a 6" band over the row at planting. Apply every 14 to 21 days thereafter. (Based on 6" rows with 36" row spacing). Can be used with conventional and drill planters.

For Post-Directed Applications: Apply in a 3" band on either side of row using a "High-Boy" with post-directed nozzles. Use same mix rate as with 6" spray.

For No Till Applications: Be sure that Companion is watered into soil and does not remain as surface residue.

Vegetable Crops: Companion can be used on, but not limited to, a broad range of vegetable crops, such as tomatoes, peppers, cucurbits, lettuce, beans, potatoes, celery and field grown herbs.

STORAGE AND DISPOSAL:

In order to maintain a high level of efficacy, this product must be stored with appropriate care. DO NOT FREEZE. Keep out of direct sun light or heat source to prevent overheating.

Sun & Air Sealed Box: Because of the unique character of both the solution and microbial spores, Companion has been

CAUTION: Keep out of reach of children. In case of contact with eyes, flush immediately with copious amounts of water. Contact a physician. Do not take internally.

packaged in our SUN & AIR SEALED container, which protects from UV radiation that can affect product stability and possible contamination from air borne spores.

To Dispense: Remove plastic carton lid. A dispensing tap is tucked inside the carton. Pull out inner plastic container neck with cap on. Remove cap and immediately screw on tap tightly. To open tap turn to left side. No air will be allowed into this container during use while this tap is in place. Do not leave container open.

Container Disposal: Do not re-use empty container.

US Patent Pending

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Manufactured By:

