



## Greenhouse and Nursery Insecticide, Miticide and Fungicide Options for Edible Crops 2017

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Not all of the products mentioned in this bulletin are registered in all states. Some pesticides are restricted use in some states or regions and not others. Contact GGSPRO if there is a question about a specific product

Products were included in this list if they had at least one edible crop on their label. It should not be assumed that any of these products are labeled for all edible crops. The labels include complete listings of approved crops.

This bulletin is intended to help applicators plan pesticide programs, but it does not replace the need to read the entire pesticide label. Pesticide labels contain more essential information than can be included in this guide, including Personal Protection Equipment (PPE), special precautions, maximum yearly application rates and more. Information in this bulletin is believed to be correct, but it is the responsibility of the applicator to read and follow all label directions. Labels do change without notice. Pesticides other than those listed may be safe, legal and effective.

Many pesticide labels contain resistance management instructions. These instructions are legal requirements and are essential for helping to preserve the effectiveness of the chemistry. Please contact the GGSPRO Technical Services department for guidance on practices that will limit the development of resistance by pests and diseases.

All recommendations for insecticides are for foliar spray unless noted otherwise. Most foliar sprays listed will perform better with a surfactant, such as CapSil to increase coverage and reduce visible residue. Some product labels state that surfactants should not be added. CapSil rates: 1/4-1/2 tsp/gal or 4-8 oz/100 gal.







### **Mode of Action Groups**

In order to help growers make effective and responsible pesticide choices, Griffin references Mode of Action designations (MOA) for insecticides and fungicides. The codes are established by the Insecticide Resistance Action Committee (IRAC; <http://www.ircac-online.org/>) and the Fungicide Resistance Action Committee (FRAC; <http://www.frac.info/home>). Pesticides with the same MOA group number share the same mode of action and therefore should not be used in rotation with each other. Griffin's GGSPRO Technical Services department is available to help you integrate this information into your pesticide decision making process.

## GGSPro Bee Safety Codes

GGSPro has assigned Bee Safety Codes per information EPA information presented on the product labels. Bee Safety Codes are intended to provide a quick and easy reference to guide grower in initial decision-making and do not replace to read the label application details and restrictions with respect to bees and other pollinators. Please note that some application methods (ex. granular) and some product classes (ex. fungicides, surfactants) do not currently require inclusion of bee hazard information on the label. Therefore, the lack of a Bee Safety Code should not be considered an indication of complete lack of risk. The GGSPro team is available to discuss specific concerns.

Table 1. Key to GGSPro Bee Safety Codes

<p><b>Toxicity Key</b></p> <p> <b>Highly Toxic</b> EPA describes as very highly toxic, highly toxic or very toxic to bees.</p> <p> <b>Toxic</b> EPA describes as toxic to bees.</p> <p> <b>Low Toxicity</b> EPA describes as a potential pathogen or with low toxicity to bees.</p> <p> <b>Special Case</b> Special use notes per label; contact GGSPro for more information.</p>	<p><b>Exposure Key</b> (adapted from the North American Pollinator Protection Campaign)</p> <ol style="list-style-type: none"> <li>1 Toxicity risk through direct exposure only - avoid treatment when <i>bees are actively visiting or actively foraging</i> in the treatment area. <i>Actively visiting the treatment area refers to bees you see on the plants and pertains to products that do not show residual effect. Bees are protected when bees are absent during treatment.</i></li> <li>2 Toxicity risk through residual exposure only - avoid treatment when <i>bees are visiting</i> the treatment area. <i>Visiting the treatment area refers to bees that may visit the plants after treatment. Bees are protected when bees are absent from the area following treatment. Avoid use of these products when crops and/or weeds are in bloom.</i></li> <li>3 Toxicity risk through both direct exposure and residual exposure - avoid treatment when <i>bees are visiting</i> the treatment area. <i>Visiting the treatment area refers to bees that may visit the plants after treatment. Bees are protected when bees are absent from the treatment area both during and following treatment. Avoid use of these products when crops and/or weeds are in bloom.</i></li> </ol> <p><b>Bee Code Examples and Appropriate Grower Actions:</b></p> <p> Do not apply this product to plants when bees are present or if bees may come into contact with associated flowers in the landscape in the following weeks. For example, do not apply this product to budded or flowering plants in a greenhouse if they will be sold for outdoor use in the subsequent weeks. The duration of residual exposure risk varies by product and cannot be generalized by MOA; contact GGSPro for guidance on the duration of residual risk.</p> <p> Do not apply this product to plants when bees are present. This product may be safely applied in a greenhouse or late in the day outdoors (after bee foraging has ceased) to budded or flowering plants that will be sold for outdoor use the next day.</p>
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## Insecticides and Miticides

### Aphids

Altus- (EPA Reg. # 432-1575)

Active Ingredient: Flupyradifurone

Foliar sprays at 1/2 tsp per gal or 8 oz per 100 gal. Translaminar activity effective against all life stages with 2-3 week residual. Insects stop feeding quickly but may take several days to die. Many vegetable transplants and certain vegetables grown to harvest are on the label. 4 hr REI. 12 REI in CA. MOA 4D. Not registered in NY or HI.

Ancora- (EPA Reg. # 70051-19-59807) 

Active Ingredient: *Isaria fumosoroseus* Apopka Strain 97

Naturally occurring fungus for use on ornamentals, herbs, fruits and vegetables grown in containers in greenhouses, shade houses, hydroponics and field-grown nursery stock. Foliar spray rate: 1 oz per 5 gals or 28 oz per 100 gal. Repeat applications are recommended at 3-10 day intervals depending on pest pressure. Most effective when relative humidity is 80% or higher for 8-10 hours. May be drenched for root aphids at the same rates. Drench volumes based on pot size on the label. 4 hr REI. MOA UN. Not registered in CA, CT, KS, ME, MN, NY, UT.

AzaGuard- (EPA Reg. # 70299-17)


Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 1/2-1 tsp per gal or 8-16 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. Good plant safety. For aphids, best control is achieved when tank mixed with M-Pede at a rate of 1 oz per gal or 100 oz per 100 gal. 0 day PHI. 4 hr REI. MOA UN. OMRI Listed.

Azatin O- (EPA Reg. # 70051-9-59807)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 2/3 tsp per gal or 10.66 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. For aphids, best control is achieved when tank mixed with M-Pede at a rate of 1 oz per gal or 100 oz per 100 gal. Labeled for edible crops. No residue and safe on most blooms. 4 hr REI. 0 day PHI. MOA UN. OMRI listed

Benefit 60 WP- (EPA Reg. # 42750-153-58185) 

Active Ingredient: Imidacloprid

The label includes directions for drenching based on pot diameter. Some vegetable bedding plants are on the label. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

BioCeres WP- (EPA Reg. # 89600-2) 

Active Ingredient: *Beauveria bassiana* strain ANT-03

Naturally occurring bioinsecticide used on herb and vegetable crops in greenhouses and outdoor production. Foliar spray rates: 1 tsp-1 Tbls per gal or 15-25 oz per 100 gal. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. Do not tank mix with fungicides within 4 days of application. 4 hr REI. 0 PHI. OMRI listed. Not registered in ME, NH, VT, MA, RI as of 10.16.

BotaniGard ES- (EPA Reg. # 82074-1) 

Active Ingredient: *Beauveria bassiana* strain GHA

2-4 tsp per gal or 32-64 fl oz per 100 gal as a foliar spray. Naturally occurring fungus. Use a minimum of three times in a row at 3-5 day intervals. Labeled for vegetables and herbs. May damage tomato foliage. Very little visible residue but burns some open blooms. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. 0 day PHI. 4 hr REI. MOA UN.

BotaniGard 22WP- (EPA Reg. # 82074-2) 

Active Ingredient: *Beauveria bassiana* strain GHA

Naturally occurring fungus for use on herb and vegetable crops in greenhouses and outdoor production. Greater safety for biological control agents and tomatoes than the ES formulation. Foliar spray rates: 2-4 tsp per gal or 1-2 lb per 100 gal. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. 0 day PHI. 4 hr REI. MOA UN.

BotaniGard MAXX (EPA Reg. # 82074-5) 

Active Ingredient: Pyrethrins and *Beauveria bassiana* strain GHA

Natural pyrethrum combined with a naturally occurring fungus. Foliar spray rates: ½-4 tsp per gal or 8-32 oz per 100 gal (higher rates on vegetables outside). Labeled for ornamentals, herbs, vegetables, in greenhouses, shadehouses, nursery, field, landscape, turf and interiorscapes. Use caution on open blooms. Check compatibility with fungicides prior to tank mix. 0 day PHI, 12 hr REI. MOA 3A/UN

Flagship 25WG- (EPA Reg. # 100-955) 

Active Ingredient: Thiamethoxam

2 week residual from a foliar spray Very slight residue. Safe on most open blooms. Certain vegetable transplants added to the label as a foliar spray only. Rate varies by pest and crop. Chart is located at the end of the insecticide section. Restricted use pesticide in CT, MA, MD and NY. (Not labeled for use in Nassau and Suffolk County NY. Indoor greenhouse use only in the rest of NY). 12 hr REI. MOA 4A.

Fulfill- (EPA Reg. # 100-912) 

Active Ingredient: Pymetrozine

2-3 week residual control from one foliar spray. Rate: 5.0 fl oz per 100 gal or 1 Tbls per 5 gal. Takes 2-4 days to kill. Certain vegetable crops on the label. No visible residue. Safe on open blooms. PHI depends on crop, check label. 12 hr REI. MOA 9B. Not registered in VT

Grandevo PTO- (EPA Reg. # 84059-17-87865) 

Active Ingredient: *Chromobacterium subtsugae* Strain PRAA4-1T

Biological insecticide for use on certain edible crops. Naturally occurring bacteria. Foliar spray rate at 2.5 tsp-2.5 Tbls per gal or 1-3 lb per 100 gal. Make three applications one week apart. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Kontos- (EPA Reg. # 432-1471-59807) 

Active Ingredient: Spirotetramat

True systemic activity that may be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal. The label does permit up to 1 tsp per 5 gal or 3.4 fl oz per 100 gal. Includes many vegetable transplants. It can also be drenched per the chart found on the label. GGSPro also has a drench volume calculator available. Slow acting –can take 1 week from a foliar spray and 2-3 weeks from a drench. Other crop cautions: phytotoxicity has been noted on dracaena, ferns, geraniums, orchids, palms, schefflera and verbena. Check label for plant safety warnings. 24 hr REI. 0 hr REI for drenches if label conditions are met. MOA 23.

Mallet 2F T & O- (EPA Reg. # 228-695) 

Active Ingredient: Imidacloprid

May be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal or. 2 week residual control with excellent plant and bloom safety. It can also be drenched per the chart found on the label. Some vegetable bedding plants are on the label. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Marathon G- (EPA Reg. # 59807-15)


Active Ingredient: Imidacloprid

The label has rates based on pot diameter. May be applied to certain vegetable transplants. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Marathon 60 WP- (EPA Reg. # 432-1361-59087) 

Active Ingredient: Imidacloprid

The label includes directions for drenching based on pot diameter. Some vegetable bedding plants are on the label. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Marathon II- (EPA Reg. # 432-1369-59807) 

Active Ingredient: Imidacloprid

May be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal. 2 week residual control with excellent plant and bloom safety. It can also be drenched per the chart found on the label. Some vegetable bedding plants are on the label. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Molt-X- (EPA Reg. # 68539-11)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. Label for vegetables. Foliar spray rates: 1/2-1 tsp per gal or 8-16 fl oz per 100 gal. Labeled for edible crops. Good plant safety. For aphids, best control is achieved when tank mixed with M-Pede at a rate of 1 oz per gal or 100 oz per 100 gal. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

M-Pede- (EPA Reg. # 10163-324)

Active Ingredient: Potassium salts of fatty acids

Foliar spray at 1.0 fl oz per gal or 100 oz per 100 gal. Tank mix M-Pede with a neem based IGR such as Azatin O, AzaGuard or Molt-X for best results. Do not tank mix with surfactants. Labeled for vegetables and some herbs. Burns some tender growth and most open blooms. Trial for phytotoxicity before large-scale use. 0 day PHI. 12 hr REI. MOA UN. OMRI listed.

Mycotrol ESO-(EPA Reg. # 82074-1) 

Active Ingredient: *Beauveria bassiana*, strain GHS

Emulsifiable suspension mycoinsecticide used on herb and vegetable crops in greenhouses, field, interiorscapes and commercial landscapes. Naturally occurring fungus. Foliar spray rates 1-4 tsp per gal or 16-64 oz per 100 gal. Additional surfactant is not needed. Use a minimum of three times in a row at 3-5 day intervals. May be more effective when tank mixed with Azatin O, AzaGuard, or Molt-X. 0 day PHI. 4 hr REI. MOA UN.

Mycotrol WPO- (EPA Reg. # 82074-2) 


Active Ingredient: *Beauveria bassiana*, strain GHS

Wettable powder mycoinsecticide used on many edible crops and ornamentals in greenhouses, field, interiorscapes and commercial landscapes. Naturally occurring fungus. Foliar spray rates 1-4 tsp per gal or 1/2-2 lb per 100 gal. Additional surfactant is not needed. Use a minimum of three times in a row at 3-5 day intervals. May be more effective when tank mixed with Azatin O, AzaGuard, or Molt-X. 0 day PHI. 4 hr REI. MOA UN.

Pyganic 5.0 Specialty- (EPA Reg. # 1021-1772) 

Active Ingredient: Pyrethrin

Foliar spray applied at 1-2 tsp per gal or 16-32 oz per 100 gal. Labeled for many vegetables and herbs. Test small numbers of plants before large scale use. 0 day PHI. 12 hr REI. MOA 3A. OMRI listed.

TriStar 8.5 SL- (EPA Reg. # 8033-106-1001) 

Active Ingredient: Acetamiprid

2-4 week translaminar systemic control from one foliar spray application. 1/4 tsp per gal or 4 fl oz per 100 gal. May be applied to certain vegetable transplants. Supplemental label adds drench treatment for tomatoes grown to harvest. Good plant and bloom safety with no visible residue. Other crop caution: phytotoxicity has been noted on verbena. 1 day PHI. 12 hr REI. MOA 4A. Restricted use pesticide in MD and NY.

## Beetles

BioCeres WP- (EPA Reg. # 89600-2) 

Active Ingredient: *Beauveria bassiana* strain ANT-03

Naturally occurring bioinsecticide used on herb and vegetable crops in greenhouses and outdoor production. Foliar spray rates: 1 tsp-1 Tbls per gal or 15-25 oz per 100 gal. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. Do not tank mix with fungicides within 4 days of application. 4 hr REI. 0 PHI. OMRI listed. Not registered in ME, NH, VT, MA, RI as of 10.16.

BotaniGard MAXX (EPA Reg. # 82074-5) 

Active Ingredient: Pyrethrins and *Beauveria bassiana* strain GHA

Natural pyrethrum combine with a naturally occurring fungus. Foliar spray rates: 1/2-4 tsp per gal or 8-32 oz per 100 gal (higher rates on vegetables outside). Labeled for ornamentals, herbs, vegetables, in greenhouses, shadehouses, nursery, field, landscape, turf and interiorscapes. Use caution on open blooms. Check compatibility with fungicides prior to tank mix. 0 day PHI, 12 hr REI. MOA 3A/UN

Conserve SC- (EPA Reg. # 62719-291) 

Active Ingredient: Spinosad

Apply 1/2 tsp per gal or 8 fl oz per 100 gal as a foliar spray. Short residual control. No visible residue or bloom safety concerns. Labeled for certain outdoor edible crops. PHI varies by crop; see label. 4 hr REI. MOA 5.

Entrust 22.5- (EPA Reg. # 62719-291) 


Active Ingredient: Spinosad

Apply 1 tsp per 6 gal, 3 oz per 100 gal as a foliar spray. Short residual control. No visible residue or bloom safety concerns. Labeled for ornamentals in greenhouses and outdoors and certain outdoor edible crops. PHI varies by crop; see label. 4 hr REI. MOA 5. OMRI listed.

Flagship 25WG- (EPA Reg. # 100-955) 


Active Ingredient: Thiamethoxam

2 week residual from a foliar spray. Very slight residue. Safe on most open blooms. Certain vegetable transplants added to the label as a foliar spray only. Rate varies by pest and crop. Chart is located at the end of the insecticide section. Restricted use pesticide in CT, MA, MD and NY. (Not labeled for use in Nassau and Suffolk County NY. Indoor greenhouse use only in the rest of NY). 12 hr REI. MOA 4A.

Safari 20 SG- (EPA Reg. # 86203-11-59639) 

Active Ingredient: Dinotefuran

Many edible crops are on the label for foliar spray treatments only at 1 tsp per gal or 8 oz per 100 gal. Excellent plant and bloom safety. 12 hr REI. Special Local Need (SLN) label for NY; consult label for use restrictions. Restricted use pesticide in CT, MA, MD and NY. MOA 4A.

TriStar 8.5 SL- (EPA Reg. # 8033-106-1001) 

Active Ingredient: Acetamiprid


Foliar spray rate 1 1/2 tsp per gal or 25 fl oz per 100 gal. May be applied to certain vegetable transplants. Good plant and bloom safety with no visible residue. Other crop caution: phytotoxicity has been noted on verbena. 1 day PHI. 12 hr REI. MOA 4A. Restricted use pesticide in MD and NY.

### **Broad and Cyclamen Mites-**

Akari 5SC- (EPA Reg. # 71711-4-67690)


Active Ingredient: Fenpyroximate

Labeled for greenhouse cucumbers and tomatoes. 1 tsp per gal or 16 oz per 100 gal. 21-28 day residual control on motile stages. No visible residue and good plant safety. 12 hr REI. MOA 21A.

Ancora- (EPA Reg. # 70051-19-59807) 

Active Ingredient: Isaria fumosoroseus Apopka Strain 97

Naturally occurring fungus for use on ornamentals, herbs, fruits and vegetables grown in containers in greenhouses, shade houses, hydroponics and field-grown nursery stock. Foliar spray rate: 1 oz per 5 gals or 28 oz per 100 gal. Repeat applications are recommended at 3-10 day intervals depending on pest pressure. Most effective when relative humidity is 80% or higher for 8-10 hours. 4 hr REI. MOA UN. Not registered in CA, CT, KS, ME, MN, NY, UT.

Pylon- (EPA Reg. # 241-374) \*\* Not for outdoor use \*\* 

Active Ingredient: Chlorfenapyr


1/3 tsp per gal or 5.2 fl oz per 100 gal applied as a foliar spray. 14-21 day control of motile stages. A second application can be made 5-7 days later for heavy infestations. No visible residue but may burn some open blooms. Do not add any surfactant. Certain fruiting greenhouse vegetables may be treated. Other crop caution: phytotoxicity has been noted on Poinsettia. Read phytotoxicity cautions on the label. 0 day PHI. 12 hr REI. MOA 13. Restricted use pesticide in NY.

Pylon TR- (EPA Reg. # 499-544)

Active Ingredient: Chlorfenapyr

A total release aerosol insecticide labeled for certain fruiting vegetables in greenhouses. One can treats 3000 sq ft. Other crop caution: phytotoxicity has been noted on poinsettia. 0 day PHI. 12 hr REI. MOA 13. Restricted use pesticide in NY.

### **Caterpillars**

Ancora- (EPA Reg. # 70051-19-59807) 

Active Ingredient: Isaria fumosoroseus Apopka Strain 97

Naturally occurring fungus for use on ornamentals, herbs, fruits and vegetables grown in containers in greenhouses, shade houses, hydroponics and field-grown nursery stock. Foliar spray rate: 1 oz per 5 gals or 28 oz per 100 gal. Repeat applications are recommended at 3-10 day intervals depending on pest pressure. Most effective when relative humidity is 80% or higher for 8-10 hours. May be drenched for soil dwelling caterpillars and rootworms at the same rates. Drench volumes based on pot size on the label. 4 hr REI. MOA UN. Not registered in CA, CT, KS, ME, MN, NY, UT.

BioCeres WP- (EPA Reg. # 89600-2) 


Active Ingredient: *Beauveria bassiana* strain ANT-03

Naturally occurring bioinsecticide used on herb and vegetable crops in greenhouses and outdoor production. Foliar spray rates: 1 tsp-1 Tbls per gal or 15-25 oz per 100 gal. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. Do not tank mix with fungicides within 4 days of application. 4 hr REI. 0 PHI. OMRI listed. Not registered in ME, NH, VT, MA, RI as of 10.16.

BotaniGard MAXX (EPA Reg. # 82074-5) 

Active Ingredient: Pyrethrins and *Beauveria bassiana* strain GHA

Natural pyrethrum combine with a naturally occurring fungus. Foliar spray rates: ½-4 tsp per gal or 8-32 oz per 100 gal (higher rates on vegetables outside). Labeled for ornamentals, herbs, vegetables, in greenhouses, shadehouses, nursery, field, landscape, turf and interiorscapes. Use caution on open blooms. Check compatibility with fungicides prior to tank mix. 0 day PHI, 12 hr REI. MOA 3A/UN

Conserve SC- (EPA Reg. # 62719-291) 

Active Ingredient: Spinosad

Apply 1/2 tsp per gal or 8 fl oz per 100 gal as a foliar spray. Short residual control. No visible residue or bloom safety concerns. Labeled for certain outdoor edible crops. PHI varies by crop; see label. 4 hr REI. MOA 5.

DiPel Pro DF- (EPA Reg. # 73049-39)


Active Ingredient: *Bacillus thuringiensis kurstaki*

Naturally occurring bacteria. 2 tsp per gal or 1 lb per 100 gal as a foliar spray. Works best on immature caterpillars. Slight residue, safe on open blooms. Many edible crops are on the label. 0 day PHI. 4 hr REI. MOA 11A. OMRI listed.

Entrust 22.5- (EPA Reg. # 62719-291) 


Active Ingredient: Spinosad

Apply 1 tsp per 6 gal, 3 oz per 100 gal as a foliar spray. Short residual control. No visible residue or bloom safety concerns. Labeled for ornamentals in greenhouses and outdoors and certain outdoor edible crops. PHI varies by crop; see label. 4 hr REI. MOA 5. OMRI listed.

Grandevo PTO- (EPA Reg. # 84059-17-87865) 

Active Ingredient: *Chromobacterium subtsugae* Strain PRAA4-1T

Biological insecticide for use on certain edible crops. Naturally occurring bacteria. Foliar spray rate at 2.5 tsp-2.5 Tbls per gal or 1-3 lb per 100 gal. Make three applications one week apart. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Preferal- (EPA Reg. # 70051-19-67690) 

Active Ingredient: *Isaria fumosoroseus* Apopka Strain 97

Naturally occurring fungus for use on herbs, spices, vegetables, and many other food crops including bearing and nonbearing fruit trees and grape vines. Foliar spray rate: 1½ Tbls per gal or 28 oz per 100 gal. Most effective when relative humidity is 80% or higher for 8-10 hours. May be drenched for thrips pupae at the same rates. Drench volumes based on pot size on the label. 4 hr REI. MOA UN. OMRI listed.

Pyganic 5.0 Specialty- (EPA Reg. # 1021-1772) 

Active Ingredient: Pyrethrin

Foliar spray applied at 1-2 tsp per gal or 16-32 oz per 100 gal. Labeled for many vegetables and herbs. Test small numbers of plants before large scale use. 0 day PHI. 12 hr REI. MOA 3A. OMRI listed.



Pyrethrum TR- (EPA Reg. # 499-479)

Active Ingredient: Pyrethrins

Total release aerosol. One 2 oz can per 1500-2000 sq ft. The label contains several precautions for safe and effective use. Labeled for many herbs and vegetables. 12 hr REI. MOA 3A. Restricted use pesticide in NY.

Safari 20 SG- (EPA Reg. # 86203-11-59639)



Active Ingredient: Dinotefuran

Many edible crops are on the label for foliar spray treatments only at 1 tsp per gal or 8 oz per 100 gal. Excellent plant and bloom safety. 12 hr REI. Special Local Need (SLN) label for NY; consult label for use restrictions. Restricted use pesticide in CT, MA, MD and NY. MOA 4A.

TriStar 8.5 SL- (EPA Reg. # 8033-106-1001)



Active Ingredient: Acetamiprid

2 week translaminar systemic control from one foliar spray application. 1 tsp per gal or 16.5 fl oz per 100 gal. May be applied to certain vegetable transplants. Good plant and bloom safety with no visible residue. Other crop caution: phytotoxicity has been noted on verbena. 1 day PHI. 12 hr REI. MOA 4A. Restricted use pesticide in MD and NY.

### **Fungus Gnats and Shoreflies-**

AzaGuard- (EPA Reg. # 70299-17)

Active Ingredient: Azadirachtin Botanical (neem) insect growth regulator. Soil drench rates: 2/3 tsp-1 tsp per gal or 10-16 fl oz per 100 gal. Insect growth regulator activity. No visible residue and safe on most open blooms. Herbs and vegetables on the label. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Azatin O - (EPA Reg. # 70051-9-59807)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. Soil drench rates: 0.5-1 tsp per gal or 8- 16 fl oz per 100 gal. Insect growth regulator activity. No visible residue and safe on most open blooms. Herbs and vegetables on the label. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Citation- (EPA Reg. # 100-667)

Active Ingredient: Cyromazine

Labeled as a soil surface spray on certain vegetable transplants. 1/2 tsp per gal or 2.66 oz packet per 100 gal. This formulation is labeled for chemigation (injectors). Repeat at 14 day intervals to maintain control. 12 hr REI. MOA 17.

Distance- (EPA Reg. # 59639-96)

Active Ingredient: Pyriproxyfen

Soil surface spray to control the larval stages of fungus gnats and shoreflies. 1/2 tsp per gal or 8 fl oz per 100 gal. The label allows for a soil drench at 2 fl oz per 100 gal applied to wet up only the top 1-1.5" of soil. Can be used on certain fruiting vegetables. Other crop cautions: phytotoxicity has been noted on salvia, Boston fern, schefflera, heuchera, or poinsettia bracts. 1 day PHI. 12 hr REI. MOA 7C.

Exhibitline sf-

Active Ingredient: *Steinernema feltiae*

Beneficial nematode applied to the soil as a spray or drench to control the fungus gnat larval stage. Repeat applications at 14-21 day intervals. 50 million per 550-1100 sq ft or 250 million per 2700-5400 sq ft. Can be used on all crops including vegetables and herbs. Does not control shorefly larvae. 0 hr REI.

Gnatrol WDG- (EPA Reg. # 73049-56)

Active Ingredient: *Bacillus thuringiensis israelensis*

Drench soil to control larvae by applying 26 oz per 100 gal to wet only the top 1-1.5 inch of soil. Can be used on certain vegetables. Three applications at 7 day intervals are needed for heavy infestations. Treat crops and under benches. Does not control shorefly larvae. 0 day PHI. 4 hr REI. MOA 11A. OMRI listed.

Millenium-

Active Ingredient: *Steinernema carpocapsae*

Beneficial nematode for the control of larval stages of shorefly. Rate: 250 million per 2700-5400 sq ft. Repeat at 14-21 day intervals. Can be used on all crops including vegetables and herbs. Does not control fungus gnat larvae. 0 hr REI.

Molt-X- (EPA Reg. # 68539-11)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. Drench rate: 1/2 tsp per gal or 8 fl oz per 100 gal. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Nemasys or Nemashield-

Active Ingredient: *Steinernema feltiae*

Beneficial nematode applied to the soil as a spray or drench to control the fungus gnat larval stage. Repeat applications at 14-21 day intervals. 50 million per 550-1100 sq ft or 250 million per 2700-5400 sq ft. Can be used on all crops including vegetables and herbs. Does not control shorefly larvae. 0 hr REI.

Pylon- (EPA Reg. # 241-374) \*\* Not for outdoor use \*\* 

Active Ingredient: Chlorfenapyr

1/3 tsp per gal or 5.2 fl oz per 100 gal applied as a foliar spray. No visible residue but may burn some open blooms. Read phytotoxicity cautions on the label. Do not add any surfactant. Certain fruiting greenhouse vegetables may be treated. Other crop caution: phytotoxicity has been noted on Poinsettia. 0 day PHI. 12 hr REI. MOA 13. Restricted use pesticide in NY.

Pylon TR- (EPA Reg. # 499-544)

Active Ingredient: Chlorfenapyr

A total release aerosol insecticide labeled for ornamentals and certain fruiting vegetables in greenhouses. One can treats 3000 sq ft. Other crop caution: phytotoxicity has been noted on Poinsettia. 0 day PHI. 12 hr REI. MOA 13. Restricted use pesticide in NY.

Sentry-

Active Ingredient: *Steinernema feltiae*

Does not control shorefly larvae. Beneficial nematode applied to the soil as a spray or drench to control the larval stage. Repeat applications at 14-21 day intervals. 25 million per 800 sq ft, 35 million per 1,100 sq ft or 50 million per 1600 sq ft. Can be used on all crops including vegetables and herbs. 0 hr REI. OMRI listed.

## Leafminers

### Blotch (*Amauromyza maculosa*) and Serpentine (*Chrysanthemum* leafminer; *Liriomyza trifolii*)

The Chrysanthemum leafminer is resistant to many pesticides. Consult with GGSPRO for help in designing a control program.

#### Adult stage

Conserve SC- (EPA Reg. # 62719-291) 


Active Ingredient: Spinosad

Apply 1 1/4 tsp per gal or 22 fl oz per 100 gal as a foliar spray. No visible residue or bloom safety concerns. Labeled for certain outdoor edible crops. PHI varies by crop; see label. 4 hr REI. MOA 5. Best tank mixed with Azatin O, AzaGuard or Molt-X.

Entrust 22.5- (EPA Reg. # 62719-291) 

Active Ingredient: Spinosad


Apply 1 tsp per 6 gal, 3 oz per 100 gal as a foliar spray. Short residual control. No visible residue or bloom safety concerns. Labeled for ornamentals in greenhouses and outdoors and certain outdoor edible crops. PHI varies by crop; see label. 4 hr REI. MOA 5. OMRI listed.

Preferal- (EPA Reg. # 70051-19-67690) 

Active Ingredient: *Isaria fumosoroseus* Apopka Strain 97

Naturally occurring fungus for use on herbs, spices, vegetables, and many other food crops including bearing and nonbearing fruit trees and grape vines. Foliar spray rate: 1 1/2 Tbls per gal or 28 oz per 100 gal. Most effective when relative humidity is 80% or higher for 8-10 hours. 4 hr REI. MOA UN. OMRI listed.

#### Larval stage

Ancora- (EPA Reg. # 70051-19-59807) 

Active Ingredient: *Isaria fumosoroseus* Apopka Strain 97

Naturally occurring fungus for use on ornamentals, herbs, fruits and vegetables grown in containers in greenhouses, shade houses, hydroponics and field-grown nursery stock. Foliar spray rate: 1 oz per 5 gals or 28 oz per 100 gal. Repeat applications are recommended at 3-10 day intervals depending on pest pressure. Most effective when relative humidity is 80% or higher for 8-10 hours. 4 hr REI. MOA UN. Not registered in CA, CT, KS, ME, MN, NY, UT.

AzaGuard- (EPA Reg. # 70299-17)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 1/2-1 tsp per gal or 8-16 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI Listed.

Azatin O- (EPA Reg. # 70051-9-59807)


Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 2/3 tsp per gal or 10.66 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. No residue and safe on most blooms. 4 hr REI. 0 day PHI. MOA UN. OMRI listed.

Citation- (EPA Reg. # 100-667)

Active Ingredient: Cyromazine

Labeled as a foliar spray on certain vegetable transplants. 1/2 tsp per gal or 2.66 oz packet per 100 gal. This formulation is labeled for chemigation (injectors). Repeat at 14 day intervals to maintain control. 12 hr REI. MOA 17.

Kontos- (EPA Reg. # 432-1471-59807) 

Active Ingredient: Spirotetramat

True systemic activity that may be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal. The label does permit up to 1 tsp per 5 gal or 3.4 fl oz per 100 gal. Includes many vegetable transplants. It can also be drenched per the chart found on the label. GGSPro also has a drench volume calculator available. Slow acting –can take 1 week from a foliar spray and 2-3 weeks from a drench. Other crop cautions: phytotoxicity has been noted on dracaena, ferns, geraniums, orchids, palms, schefflera and verbenas. Check label for plant safety warnings. MOA 23. 24 hr REI. 0 hr REI for drenches if label conditions are met.

Molt-X- (EPA Reg. # 68539-11)

Active Ingredient: Azadirachtin


Botanical (neem) insect growth regulator. Foliar spray rates: 1/2-1 tsp per gal or 8-16 fl oz per 100 gal. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

TriStar 8.5 SL- (EPA Reg. # 8033-106-1001) 

Active Ingredient: Acetamiprid

Foliar spray rate: 1 1/2 tsp per gal or 25 fl oz per 100 gal. May be applied to certain vegetable transplants. Good plant and bloom safety with no visible residue. Other crop caution: phytotoxicity has been noted on verbenas. 1 day PHI. 12 hr REI. MOA 4A. Restricted use pesticide in MD and NY.

### **Spider Mites- (see also Broad and Cyclamen Mites)**

Ancora- (EPA Reg. # 70051-19-59807) 

Active Ingredient: Isaria fumosoroseus Apopka Strain 97

Naturally occurring fungus for use on ornamentals, herbs, fruits and vegetables grown in containers in greenhouses, shade houses, hydroponics and field-grown nursery stock. Foliar spray rate: 1 oz per 5 gals or 28 oz per 100 gal. Repeat applications are recommended at 3-10 day intervals depending on pest pressure. Most effective when relative humidity is 80% or higher for 8-10 hours. 4 hr REI. MOA UN. Not registered in CA, CT, KS, ME, MN, NY, UT.

Akari 5SC- (EPA Reg. # 71711-4-67690)

Active Ingredient: Fenpyroximate

Labeled for greenhouse cucumbers and tomatoes. 1 tsp per gal or 16 oz per 100 gal. 21-28 day residual control on motile stages. No visible residue and good plant safety. 12 hr REI. MOA 21A.

Floramite SC- (EPA Reg. # 400-508-59807) 


Active Ingredient: Bifenazate

1/2 tsp per gal or 8 fl oz per 100 gal as a foliar spray. Controls eggs and adults for up to 21 days. Safe on most open blooms. Greenhouse tomatoes 1" or larger at maturity can be treated. 3 day PHI. 12 hr REI. MOA 20.

Kontos- (EPA Reg. # 432-1471-59807) 


Active Ingredient: Spirotetramat

True systemic activity that may be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal. The label does permit up to 1 tsp per 5 gal or 3.4 fl oz per 100 gal. Includes many vegetable transplants. It can also be drenched per the chart found on the label. GGSPro also has a drench volume calculator available. Slow acting –can take 1 week from a foliar spray and 2-3 weeks from a drench. Other crop cautions: phytotoxicity has been noted on dracaena, ferns, geraniums, orchids, palms, schefflera and verbena. Check label for plant safety warnings. 24 hr REI. 0 hr REI for drenches if label conditions are met. MOA 23.

Preferal- (EPA Reg. # 70051-19-67690) 

Active Ingredient: *Isaria fumosoroseus* Apopka Strain 97

Naturally occurring fungus for use on herbs, spices, vegetables, and many other food crops including bearing and nonbearing fruit trees and grape vines. Foliar spray rate: 1 ½ Tbls per gal or 28 oz per 100 gal. Most effective when relative humidity is 80% or higher for 8-10 hours. 4 hr REI. MOA UN. OMRI listed.

Pylon- (EPA Reg. # 241-374) \*\* Not for outdoor use \*\* 

Active Ingredient: Chlorfenapyr

1/3 tsp per gal or 5.2 fl oz per 100 gal applied as a foliar spray. 14-21 day control of motile stages. A second application can be made 5-7 days later for heavy infestations. No visible residue but may burn some open blooms. Read phytotoxicity cautions on the label. Do not add any surfactant. Certain fruiting greenhouse vegetables may be treated. Other crop caution: phytotoxicity has been noted on Poinsettia. 0 day PHI. 12 hr REI. MOA 13. Restricted use pesticide in NY.

Pylon TR- (EPA Reg. # 499-544)

Active Ingredient: Chlorfenapyr

A total release translaminar and contact aerosol insecticide for ornamentals and certain fruiting vegetables in greenhouses. One can treats 3000 sq ft. MOA 13. Other crop caution: phytotoxicity has been noted on Poinsettia. 0 day PHI. 12 hr REI. Restricted use pesticide in NY.

Shuttle O- (EPA Reg. # 66330-38-59807)

Active Ingredient: Acequinocyl

Combines a quick knockdown and long residual control. Shows activity against all life stages of susceptible mites. Labeled for greenhouse tomatoes. Foliar spray rates are 3/4 tsp per gal or 12.8 fl oz per 100 gal. 1 day PHI. 12 hr REI. MOA 20B.

SuffOil-X- (EPA Reg. # 48813-1-68539)

Active Ingredient: Horticultural oil

1.25 fl oz per gal or 1 gal per 100 gal as a foliar spray. Full coverage is essential, acts as a suffocant. Apply when rapid drying will occur and when air temperatures are below 85° F to avoid phytotoxicity. Labeled for many vegetables. Leaves a shiny residue behind and burns some open blooms. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

TetraSan 5 WDG- (EPA Reg. # 59639-108)

Active Ingredient: Etoxazole


One 2-oz water-soluble packet per 12.5-25 gal as a foliar spray. Mite growth regulator and ovicide with 4 weeks or more of residual control. Strong translaminar movement. Supplemental label allows use on greenhouse tomatoes. 1 day PHI. 12 hr REI. MOA 10B. Restricted use pesticide in NY.

Ultra-Pure Oil- (EPA Reg. # 69526-5-499)

Active Ingredient: Horticultural oil

1.25 fl oz per gal or 1 gal per 100 gal as a foliar spray. Full coverage is essential, acts as a suffocant. Apply when rapid drying will occur and when air temperatures are below 85 degrees F to avoid phytotoxicity. Keep agitated as it wants to separate. Labeled for some vegetables. Leaves a shiny residue behind and burns some open blooms. 0 day PHI. 4 hr REI. MOA UN.

### **Scale and Mealybugs**

Ancora- (EPA Reg. # 70051-19-59807) 

Active Ingredient: Isaria fumosoroseus Apopka Strain 97

Naturally occurring fungus for use on ornamentals, herbs, fruits and vegetables grown in containers in greenhouses, shade houses, hydroponics and field-grown nursery stock. Foliar spray rate: 1 oz per 5 gals or 28 oz per 100 gal. Repeat applications are recommended at 3-10 day intervals depending on pest pressure. Most effective when relative humidity is 80% or higher for 8-10 hours. 4 hr REI. MOA UN. Not registered in CA, CT, KS, ME, MN, NY, UT.

AzaGuard- (EPA Reg. # 70299-17)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 1/2-1 tsp per gal or 8-16 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Azatin O- (EPA Reg. # 70051-9-59807)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 2/3 tsp per gal or 10.66 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. No residue and safe on most blooms. 4 hr REI. 0 day PHI. MOA UN. OMRI listed.

Benefit 60 WP- (EPA Reg. # 42750-153-58185) 

Active Ingredient: Imidacloprid

The label includes directions for drenching based on pot diameter. Some vegetable bedding plants are on the label. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Distance- (EPA Reg. # 59639-96)

Active Ingredient: Pyriproxyfen

Insect growth regulator applied as a foliar spray. Make 2 applications 14-21 days apart. 2/3 tsp per gal or 12 fl oz per 100 gal. May burn some open blooms, no visible residue. Can be used on certain fruiting vegetables. Other crop cautions: phytotoxicity has been noted on salvia, Boston fern, schefflera, heuchera, or poinsettia bracts. 1 day PHI. 12 hr REI. MOA 7C.

Flagship 25WG- (EPA Reg. # 100-955) 

Active Ingredient: Thiamethoxam

2 week residual from a foliar spray Very slight residue. Safe on most open blooms. Certain vegetable transplants added to the label as a foliar spray only. Rate varies by pest and crop. Chart is located at the end of the insecticide section. Restricted use pesticide in CT, MA, MD and NY. (Not labeled for use in Nassau and Suffolk County NY. Indoor greenhouse use only in the rest of NY). 12 hr REI. MOA 4A.

Kontos- (EPA Reg. # 432-1471-59807) 

Active Ingredient: Spirotetramat

True systemic activity that may be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal. The label does permit up to 1 tsp per 5 gal or 3.4 fl oz per 100 gal. Includes many vegetable transplants. It can also be drenched per the chart found on the label. GGSPro also has a drench volume calculator available. Slow acting –can take 1 week from a foliar spray and 2-3 weeks from a drench. Other crop cautions: phytotoxicity has been noted on dracaena, ferns, geraniums, orchids, palms, schefflera and verbena. Check label for plant safety warnings. 24 hr REI. 0 hr REI for drenches if label conditions are met. MOA 23.

Mallet 2F T & O- (EPA Reg. # 228-695) 

Active Ingredient: Imidacloprid

May be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal or. 2 week residual control with excellent plant and bloom safety. It can also be drenched per the chart found on the label. Some vegetable bedding plants are on the label. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Marathon G- (EPA Reg. # 59807-15)

Active Ingredient: Imidacloprid

The label has rates based on pot diameter. May be applied to certain vegetable transplants. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Marathon 60 WP- (EPA Reg. # 432-1361-59087) 

Active Ingredient: Imidacloprid

The label includes directions for drenching based on pot diameter. Some vegetable bedding plants are on the label. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Marathon II- (EPA Reg. # 432-1369-59807) 

Active Ingredient: Imidacloprid

May be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal. 2 week residual control with excellent plant and bloom safety. It can also be drenched per the chart found on the label. Some vegetable bedding plants are on the label. 12 hr REI. MOA 4A. Restricted use pesticide in CT, MD and NY.

Molt-X- (EPA Reg. # 68539-11)


Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. Foliar spray rates: 1/2-1 tsp per gal or 8-16 fl oz per 100 gal. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Preferal- (EPA Reg. # 70051-19-67690) 

Active Ingredient: *Isaria fumosoroseus* Apopka Strain 97

Naturally occurring fungus for use on herbs, spices, vegetables, and many other food crops including bearing and nonbearing fruit trees and grape vines. Foliar spray rate: 1 ½ Tbls per gal or 28 oz per 100 gal. Most effective when relative humidity is 80% or higher for 8-10 hours. Drench volumes for root mealybugs is based on pot size on the label. 4 hr REI. MOA UN. OMRI listed.

Safari 20 SG- (EPA Reg. # 86203-11-59639) 

Active Ingredient: Dinotefuran

Many edible crops are on the label for foliar spray treatments only at 1 tsp per gal or 8 oz per 100 gal. Excellent plant and bloom safety. 12 hr REI. Special Local Need (SLN) label for NY; consult label for use restrictions. Restricted use pesticide in CT, MA, MD and NY. MOA 4A.

SuffOil-X- (EPA Reg. # 48813-1-68539)


Active Ingredient: Horticultural oil

1.25 fl oz per gal or 1 gal per 100 gal as a foliar spray. Full coverage is essential, acts as a suffocant. Apply when rapid drying will occur and when air temperatures are below 85° F to avoid phytotoxicity. Labeled for many vegetables. Leaves a shiny residue behind and burns some open blooms. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Talus 70 DF- (EPA Reg. # 71711-21-67690)

Active Ingredient: Buprofezin

Insect growth regulator with 2-3 week residual control from one foliar application. 2 1/8 tsp per gal or 9 oz per 100 gal. Excellent plant and bloom safety. May be used on greenhouse tomatoes. 1 day PHI. 12 hr REI. MOA 16. Restricted use pesticide in NY. Prohibited use in Nassau and Suffolk counties, NY.

TriStar 8.5 SL- (EPA Reg. # 8033-106-1001) 

Active Ingredient: Acetamiprid


2-4 week translaminar systemic control from one foliar spray application. 1 tsp per gal or 16.5 fl oz per 100 gal. May be applied to certain vegetable transplants. Good plant and bloom safety with no visible residue. Other crop caution: phytotoxicity has been noted on verbena. 1 day PHI. 12 hr REI. MOA 4A. Restricted use pesticide in MD and NY.

Ultra-Pure Oil- (EPA Reg. # 69526-5-499)

Active Ingredient: Horticultural oil

1.25 fl oz per gal or 1 gal per 100 gal as a foliar spray. Full coverage is essential, acts as a suffocant. Apply when rapid drying will occur and when air temperatures are below 85 degrees F to avoid phytotoxicity. Keep agitated as it wants to separate. Labeled for some vegetables. Leaves a shiny residue behind and burns some open blooms. 0 day PHI. 4 hr REI. MOA UN.

### Thrips

Ancora- (EPA Reg. # 70051-19-59807) 

Active Ingredient: *Isaria fumosoroseus* Apopka Strain 97

Naturally occurring fungus for use on ornamentals, herbs, fruits and vegetables grown in containers in greenhouses, shade houses, hydroponics and field-grown nursery stock. Foliar spray rate: 1 oz per 5 gals or 28 oz per 100 gal. Repeat applications are recommended at 3-10 day intervals depending on pest pressure. Most effective when relative humidity is 80% or higher for 8-10 hours. May be drenched for thrips pupae at the same rates. Drench volumes based on pot size on the label. 4 hr REI. MOA UN. Not registered in CA, CT, KS, ME, MN, NY, UT.

AzaGuard- (EPA Reg. # 70299-17)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 1/2-1 tsp per gal or 8-16 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI Listed.

Azatin O- (EPA Reg. # 70051-9-59807)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 2/3 tsp per gal or 10.66 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. No residue and safe on most blooms. 4 hr REI. 0 day PHI. MOA UN. OMRI listed.



BioCeres WP- (EPA Reg. # 89600-2) 

Active Ingredient: *Beauveria bassiana* strain ANT-03

Naturally occurring bioinsecticide used on herb and vegetable crops in greenhouses and outdoor production. Foliar spray rates: 1 tsp-1 Tbls per gal or 15-25 oz per 100 gal. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. Do not tank mix with fungicides within 4 days of application. 4 hr REI. 0 PHI. OMRI listed. Not registered in ME, NH, VT, MA, RI as of 10.16.

BotaniGard ES- (EPA Reg. # 82074-1) 

Active Ingredient: *Beauveria bassiana* strain GHA

2-4 tsp per gal or 32-64 fl oz per 100 gal as a foliar spray. Naturally occurring fungus. Use a minimum of three times in a row at 3-5 day intervals. Labeled for vegetables and herbs. May damage tomato foliage. Very little visible residue but burns some open blooms. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. 0 day PHI. 4 hr REI. MOA UN.

BotaniGard 22WP- (EPA Reg. # 82074-2) 

Active Ingredient: *Beauveria bassiana* strain GHA

Naturally occurring fungus for use on herb and vegetable crops in greenhouses and outdoor production. Foliar spray rates: 2-4 tsp per gal or 1-2 lb per 100 gal. Greater safety for biological control agents and tomatoes than the ES formulation. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. 0 day PHI. 4 hr REI. MOA UN.

BotaniGard MAXX (EPA Reg. # 82074-5) 

Active Ingredient: Pyrethrins and *Beauveria bassiana* strain GHA

Natural pyrethrum combine with a naturally occurring fungus. Foliar spray rates: ½-4 tsp per gal or 8-32 oz per 100 gal (higher rates on vegetables outside). Labeled for ornamentals, herbs, vegetables, in greenhouses, shadehouses, nursery, field, landscape, turf and interiorscapes. Use caution on open blooms. Check compatibility with fungicides prior to tank mix. 0 day PHI, 12 hr REI. MOA 3A/UN.

Conserve SC- (EPA Reg. # 62719-291) 

Active Ingredient: Spinosad

Apply 1/2 tsp per gal or 8 fl oz per 100 gal as a foliar spray. Short residual control. No visible residue or bloom safety concerns. Labeled for certain outdoor edible crops. PHI varies by crop; see label. 4 hr REI. MOA 5.

Entrust 22.5- (EPA Reg. # 62719-291) 


Active Ingredient: Spinosad

Apply 1 tsp per 6 gal, 3 oz per 100 gal as a foliar spray. Short residual control. No visible residue or bloom safety concerns. Labeled for ornamentals in greenhouses and outdoors and certain outdoor edible crops. PHI varies by crop; see label. 4 hr REI. MOA 5. OMRI listed.

Exhibitline sf-

Active Ingredient: *Steinernema feltiae*

Beneficial nematode applied as a drench to control the pupal stage. 50 million per 550-1100 sq ft or 250 million per 2700-5400 sq ft. Repeat applications at 14-21 day intervals. Can be used on all crops including vegetables and herbs. 0 hr REI.

Grandevo PTO- (EPA Reg. # 84059-17-87865) 

Active Ingredient: *Chromobacterium subtsugae* Strain PRAA4-1T

Biological insecticide for use on certain edible crops. Naturally occurring bacteria. Foliar spray rate at 2.5 tsp-2.5 Tbls per gal or 1-3 lb per 100 gal. Make three applications one week apart. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Kontos- (EPA Reg. # 432-1471-59807) 

Active Ingredient: Spirotetramat

True systemic activity that may be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal. The label does permit up to 1 tsp per 5 gal or 3.4 fl oz per 100 gal. Includes many vegetable transplants. It can also be drenched per the chart found on the label. GGSPro also has a drench volume calculator available. Slow acting –can take 1 week from a foliar spray and 2-3 weeks from a drench. Other crop cautions: phytotoxicity has been noted on dracaena, ferns, geraniums, orchids, palms, schefflera and verbena. Check label for plant safety warnings. 24 hr REI. 0 hr REI for drenches if label conditions are met. MOA 23.

Met 52 EC- (EPA Reg. # 70127-10)

Active Ingredient: *Metarhizium anisopliae* Strain F52

Naturally occurring fungus for spraying multiple life stages or for drenching the pupal stage of thrips. Certain vegetables on label. Foliar Spray Rate: 1-2 tsp per gal or 16-32 fl oz per 100 gal. Drench rate: 2.5 tsp per gal or 40 fl oz per 100 gal. 4 hr REI as a spray. 0 hr REI as a drench. 0 day PHI. MOA UN.

Molt-X- (EPA Reg. # 68539-11)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. Foliar spray rates: 1/2-1 tsp per gal or 8-16 fl oz per 100 gal. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Mycotrol ESO-(EPA Reg. # 82074-1) 

Active Ingredient: *Beauveria bassiana*, strain GHS

Emulsifiable suspension mycoinsecticide used on herb and vegetable crops in greenhouses, field, interiorscapes and commercial landscapes. Naturally occurring fungus. Foliar spray rates 1-4 tsp per gal or 16-64 oz per 100 gal. Additional surfactant is not needed. Use a minimum of three times in a row at 3-5 day intervals. May be more effective when tank mixed with Azatin O, AzaGuard, or Molt-X. 0 day PHI. 4 hr REI. MOA UN.

Mycotrol WPO- (EPA Reg. # 82074-2) 

Active Ingredient: *Beauveria bassiana*, strain GHS

Wettable powder mycoinsecticide used on many edible crops and ornamentals in greenhouses, field, interiorscapes and commercial landscapes. Naturally occurring fungus. Foliar spray rates 1-4 tsp per gal or 1/2-2 lb per 100 gal. Additional surfactant is not needed. Use a minimum of three times in a row at 3-5 day intervals. May be more effective when tank mixed with Azatin O, AzaGuard, or Molt-X. 0 day PHI. 4 hr REI. MOA UN.

Nemasys or Nemashield-

Active Ingredient: *Steinernema feltiae*

Beneficial nematode applied as a soil drench to control the thrips pupal stage. 50 million per 550-1100 sq ft or 250 million per 2700-5400 sq ft. Repeat applications at 14-21 day intervals. Can be used on all crops including vegetables and herbs. 0 hr REI.

Preferal- (EPA Reg. # 70051-19-67690) 


Active Ingredient: *Isaria fumosoroseus* Apopka Strain 97

Naturally occurring fungus for use on herbs, spices, vegetables, and many other food crops including bearing and nonbearing fruit trees and grape vines. Foliar spray rate: 1½ Tbls per gal or 28 oz per 100 gal. Most effective when relative humidity is 80% or higher for 8-10 hours. May be drenched for thrips pupae at the same rates. Drench volumes based on pot size on the label. 4 hr REI. MOA UN. OMRI listed.

Pyganic 5.0 Specialty- (EPA Reg. # 1021-1772) 

Active Ingredient: Pyrethrin

Foliar spray applied at 1-2 tsp per gal or 16-32 oz per 100 gal. Labeled for many vegetables and herbs. Test small numbers of plants before large scale use. 0 day PHI. 12 hr REI. MOA 3A. OMRI listed.

Pylon- (EPA Reg. # 241-374) \*\* Not for outdoor use \*\* 

Active Ingredient: Chlorfenapyr

1/3 tsp per gal or 5.2 fl oz per 100 gal applied as a foliar spray. 14-21 day control of motile stages. A second application can be made 5-7 days later for heavy infestations. No visible residue but may burn some open blooms. Read phytotoxicity cautions on the label. Do not add any surfactant. Certain fruiting greenhouse vegetables may be treated. Other crop caution: phytotoxicity has been noted on Poinsettia. 0 day PHI. 12 hr REI. MOA 13. Restricted use pesticide in NY.

Pylon TR- (EPA Reg. # 499-544)

Active Ingredient: Chlorfenapyr

A total release aerosol insecticide labeled for ornamentals and certain fruiting vegetables in greenhouses. Do not use on poinsettias. One can treats 3000 sq ft. Other crop caution: phytotoxicity has been noted on Poinsettia. 0 day PHI. 12 hr REI. MOA 13. Restricted use pesticide in NY.

Pyrethrum TR- (EPA Reg. # 499-479)

Active Ingredient: Pyrethrins

Total release aerosol. One 2 oz can per 1500-2000 sq ft. The label contains several precautions for safe and effective use. Labeled for many herbs and vegetables. 12 hr REI. MOA 3A. Restricted use pesticide in NY.

Safari 20 SG- (EPA Reg. # 86203-11-59639) 


Active Ingredient: Dinotefuran

Many edible crops are on the label for foliar spray treatments only at 1 tsp per gal or 8 oz per 100 gal. Excellent plant and bloom safety. 12 hr REI. Special Local Need (SLN) label for NY; consult label for use restrictions. Restricted use pesticide in CT, MA, MD and NY. MOA 4A.

Sentry-

Active Ingredient: *Steinernema feltiae*

Beneficial nematode applied to the soil as a spray or drench to control the thrips pupal stage. Repeat applications at 14-21 day intervals. 25 million per 800 sq ft, 35 million per 1,100 sq ft or 50 million per 1600 sq ft. Can be used on all crops including vegetables and herbs. 0 hr REI. OMRI listed.

TriStar 8.5 SL- (EPA Reg. # 8033-106-1001) 

Active Ingredient: Acetamiprid

Foliar spray rate 1 1/2 tsp per gal or 25 fl oz per 100 gal. May be applied to certain vegetable transplants. Supplemental label adds drench treatment for tomatoes grown to harvest. Good plant and bloom safety with no visible residue. Other crop caution: phytotoxicity has been noted on verbena. 1 day PHI. 12 hr REI. MOA 4A. Restricted use pesticide in MD and NY.

## Whiteflies-

Altus- (EPA Reg. # 432-1575)

Active Ingredient: Flupyradifurone

Foliar sprays at 3/4 tsp per gal or 12 oz per 100 gal. Translaminar activity effective against all life stages with 2-3 week residual. Insects stop feeding quickly but may take several days to die. Many vegetable transplants and certain vegetables grown to harvest are on the label. 4 hr REI. 12 REI in CA. MOA 4D. Not registered in NY or HI.

AzaGuard- (EPA Reg. # 70299-17)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 1/2-1 tsp per gal or 8-16 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI Listed.

Azatin O- (EPA Reg. # 70051-9-59807)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. 2/3 tsp per gal or 10.66 fl oz per 100 gal applied as a foliar spray. Labeled for edible crops. No residue and safe on most blooms. 4 hr REI. 0 day PHI. MOA UN. OMRI listed.

BioCeres WP- (EPA Reg. # 89600-2) 


Active Ingredient: *Beauveria bassiana* strain ANT-03

Naturally occurring bioinsecticide used on herb and vegetable crops in greenhouses and outdoor production. Foliar spray rates: 1 tsp-1 Tbls per gal or 15-25 oz per 100 gal. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. Do not tank mix with fungicides within 4 days of application. 4 hr REI. 0 PHI. OMRI listed. Not registered in ME, NH, VT, MA, RI as of 10.16.

BotaniGard ES- (EPA Reg. # 82074-1) 


Active Ingredient: *Beauveria bassiana* strain GHA

2-4 tsp per gal or 32-64 fl oz per 100 gal as a foliar spray. Naturally occurring fungus, not a quick kill. Use a minimum of three times in a row at 3-5 day intervals. Labeled for vegetables and herbs. May damage tomato foliage. Very little visible residue but burns some open blooms. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. 0 day PHI. 4 hr REI. MOA UN.

BotaniGard 22WP- (EPA Reg. # 82074-2) 

Active Ingredient: *Beauveria bassiana*

Naturally occurring fungus for use on herb and vegetable crops in greenhouses and outdoor production. Naturally occurring fungus, not a quick kill. Foliar spray rates: 2-4 tsp per gal or 2 lb per 100 gal. Use a minimum of three times in a row at 3-5 day intervals. Greater safety for biological control agents and tomatoes than the ES formulation. More effective when tank mixed with AzaGuard, Azatin O, Molt-X, or horticultural oil. 0 day PHI. 4 hr REI. MOA UN.

BotaniGard MAXX (EPA Reg. # 82074-5) 

Active Ingredient: Pyrethrins and *Beauveria bassiana* strain GHA

Natural pyrethrum combine with a naturally occurring fungus. Foliar spray rates: 1/2-4 tsp per gal or 8-32 oz per 100 gal (higher rates on vegetables outside). Labeled for ornamentals, herbs, vegetables, in greenhouses, shadehouses, nursery, field, landscape, turf and interiorscapes. Use caution on open blooms Check compatibility with fungicides prior to tank mix. 0 day PHI, 12 hr REI. MOA 3A/UN.

Distance- (EPA Reg. # 59639-96)

Active Ingredient: Pyriproxyfen

Insect growth regulator applied as a foliar spray. One application provides controls for up to 30 days. 1/2 tsp per gal or 8 fl oz per 100 gal. Resistance reported for the Q biotype whiteflies. May burn some open blooms. No visible residue. Can be used on certain fruiting vegetables. Other crop cautions: phytotoxicity has been noted on salvia, Boston fern, schefflera, heuchera, or poinsettia bracts. 1 day PHI. 12 hr REI. MOA 7C.

Flagship 25WG- (EPA Reg. # 100-955) 

Active Ingredient: Thiamethoxam

2 week residual from a foliar spray Very slight residue. Safe on most open blooms. Certain vegetable transplants added to the label as a foliar spray only. Rate varies by pest and crop. Chart is located at the end of the insecticide section. Restricted use pesticide in CT, MA, MD and NY. (Not labeled for use in Nassau and Suffolk County NY. Indoor greenhouse use only in the rest of NY). 12 hr REI. MOA 4A.

Fulfill- (EPA Reg. # 100-912)

Active Ingredient: Pymetrozine

2-3 week residual control from one foliar spray. Rate: 5.0 fl oz per 100 gal or 1 Tbls per 5 gal. Takes 2-4 days to kill. Certain vegetable crops on the label. No visible residue. Safe on open blooms. PHI depends on crop, check label. 12 hr REI. MOA 9B. Not registered in VT

Grandevo PTO- (EPA Reg. # 84059-17-87865) 

Active Ingredient: *Chromobacterium subtsugae* Strain PRAA4-1T

Biological insecticide for use on certain edible crops. Naturally occurring bacteria. Foliar spray rate at 2.5 tsp-2.5 Tbls per gal or 1-3 lb per 100 gal. Make three applications one week apart. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Kontos- (EPA Reg. # 432-1471-59807) 

Active Ingredient: Spirotetramat

True systemic activity that may be applied as a foliar spray at 1/2 tsp per 5 gal or 1.7 fl oz per 100 gal. The label does permit up to 1 tsp per 5 gal or 3.4 fl oz per 100 gal. Includes many vegetable transplants. It can also be drenched per the chart found on the label. GGSPro also has a drench volume calculator available. Slow acting –can take 1 week from a foliar spray and 2-3 weeks from a drench. Other crop cautions: phytotoxicity has been noted on dracaena, ferns, geraniums, orchids, palms, schefflera and verbena. Check label for plant safety warnings. 24 hr REI. 0 hr REI for drenches if label conditions are met. MOA 23.

Met 52 EC- (EPA Reg. # 70127-10)

Active Ingredient: *Metarhizium anisopliae* Strain F52 Naturally occurring fungus applied as a spray for

whiteflies. Ornamentals and certain vegetables are on the label. Foliar Spray Rate: 1-2 tsp per gal or 16-32 fl oz per 100 gal. 0 PHI. 4 hr REI as a spray. MOA UN.

Molt-X- (EPA Reg. # 68539-11)

Active Ingredient: Azadirachtin

Botanical (neem) insect growth regulator. Foliar spray rates: 1/2-1 tsp per gal or 8-16 fl oz per 100 gal. Labeled for edible crops. Excellent plant safety. For heavy infestations or dense foliage use the maximum rates. For tank mixing use the lowest rates. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Mycotrol ESO-(EPA Reg. # 82074-1) 


Active Ingredient: *Beauveria bassiana*, strain GHS

Emulsifiable suspension mycoinsecticide used on herb and vegetable crops in greenhouses, field, interiorscapes and commercial landscapes. Naturally occurring fungus. Foliar spray rates 1-4 tsp per gal or 16-64 oz per 100 gal. Additional surfactant is not needed. Use a minimum of three times in a row at 3-5 day intervals. May be more effective when tank mixed with Azatin O, AzaGuard, or Molt-X. 0 day PHI. 4 hr REI. MOA UN.

Mycotrol WPO- (EPA Reg. # 82074-2) 

Active Ingredient: *Beauveria bassiana*, strain GHS

Wettable powder mycoinsecticide used on many edible crops and ornamentals in greenhouses, field, interiorscapes and commercial landscapes. Naturally occurring fungus. Foliar spray rates 1-4 tsp per gal or ½-2 lb per 100 gal. Additional surfactant is not needed. Use a minimum of three times in a row at 3-5 day intervals. May be more effective when tank mixed with Azatin O, AzaGuard, or Molt-X. 0 day PHI. 4 hr REI. MOA UN.

Safari 20 SG- (EPA Reg. # 86203-11-59639) 

Active Ingredient: Dinotefuran

Many edible crops are on the label for foliar spray treatments only at 1 tsp per gal or 8 oz per 100 gal. Excellent plant and bloom safety. 12 hr REI. Special Local Need (SLN) label for NY; consult label for use restrictions. Restricted use pesticide in CT, MA, MD and NY. MOA 4A.

SuffOil-X- (EPA Reg. # 48813-1-68539)


Active Ingredient: Horticultural oil

1.25 fl oz per gal or 1 gal per 100 gal as a foliar spray. Full coverage is essential, acts as a suffocant. Apply when rapid drying will occur and when air temperatures are below 85° F to avoid phytotoxicity. Labeled for many vegetables. Leaves a shiny residue behind and burns some open blooms. 0 day PHI. 4 hr REI. MOA UN. OMRI listed.

Talus 70 DF- (EPA Reg. # 71711-21-67690)

Active Ingredient: Buprofezin

Insect growth regulator with 2-3 week residual control from one foliar application. 2 1/8 tsp per gal or 9 oz per 100 gal. Excellent plant and bloom safety. May be used on greenhouse tomatoes. 1 day PHI. 12 hr REI. MOA 16. Restricted use pesticide in NY. Prohibited use in Nassau and Suffolk counties, NY.

TriStar 8.5 SL- (EPA Reg. # 8033-106-1001) 

Active Ingredient: Acetamiprid

2-4 week translaminar systemic control from one foliar spray application. 1 tsp per gal or 16.5 fl oz per 100 gal. May be applied to certain vegetable transplants. Good plant and bloom safety with no visible residue. Other crop caution: phytotoxicity has been noted on verbena. 1 day PHI. 12 hr REI. MOA 4A. Restricted use pesticide in MD and NY.

Ultra-Pure Oil- (EPA Reg. # 69526-5-499)

Active Ingredient: Horticultural oil

1.25 fl oz per gal or 1 gal per 100 gal as a foliar spray. Full coverage is essential, acts as a suffocant. Apply when rapid drying will occur and when air temperatures are below 85 degrees F to avoid phytotoxicity. Keep agitated as it wants to separate. Labeled for some vegetables. Leaves a shiny residue behind and burns some open blooms. 0 day PHI. 4 hr REI. MOA UN.

## Flagship WG Vegetable Transplant Small Volume Rates:

<b>Fruiting</b>	<b>oz per 5000 sq ft</b>	<b>tsp per 3 gal*</b>
Aphids, Colorado Potato Beetle, Flea beetles, Leafhoppers	0.23-0.34	1/3-1/2 tsp per <u>3 gal</u>
Whiteflies, Pepper Weevil, Stink Bugs	0.34-0.63	1/2 - 7/8 tsp per <u>3 gal</u>
<b>Cucurbits</b>		
Aphids, Flea Beetles	0.17-0.34	1/4-1/2 tsp per <u>3 gal</u>
Cucumber beetles (suppression), Leafminers (suppression), Whiteflies	0.34-0.63	1/2 - 7/8 tsp per <u>3gal</u>

\* Rates based on a spray volume of 1 gal per 200 sq ft.

## Fungicides and Bactericides

### Bacterial Diseases

Bacterial pathogens are spread by movement of water and can become systemic in plants. They can be brought into the greenhouse on cuttings and/or seed. Cultural controls play an important part in keeping bacteria at bay. Start clean by purchasing certified disease free stock. Disinfect tools after use. Attempt to keep splashing water to a minimum. Avoid handling and pruning plants when wet, wash hands after handling disease plants, and promptly remove diseased plants from growing areas.

Agri-Mycin 17- (EPA Reg. # 55146-96)

Active Ingredient: Streptomycin Sulfate

1/2-1 tsp per gal, 8-16 oz per 100 gal = 100-200ppm. Bactericide used preventively for protection against bacterial leaf spots, blights and wilts on several edible crops. Causes phytotoxicity to crucifers. 12 hr REI. MOA 25.

Alude- (EPA Reg. # 55146-83)

Active Ingredient: Mono & dibasic sodium, potassium & ammonium phosphites

Foliar spray at 2-4 tsp per gal or 32-64 fl oz per 100 gal. Excellent plant safety, no visible residue, trial on open blooms before use. Many edible crops are on the label. 0 day PHI. 4 hr REI. MOA 33.

Camelot O- (EPA Reg. # 67702-2-67690)

Active Ingredient: Copper Octanoate

Foliar spray rate 0.5 fl oz per gal or 50 fl oz per 100 gal. Repeat sprays every 7-10 days. Leaves some visible residue and burns most open blooms. Do not allow this product to come in contact with aluminum sprayer or irrigation parts. Labeled for several edible crops. More effective when tank mixed with Cease or Protect DF. 4 hr REI. 0 day PHI. MOA M1. OMRI listed.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide foliar spray applied at 1.25-2.5 fl oz per gal or 1-2 gal per 100 gal. Naturally occurring bacteria. Preventative control effective for about 7 days. Good plant safety including open blooms and no visible residue. Tank mixable with most common pesticides. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Companion- (EPA Reg. # 71065-3)

Active Ingredient: *Bacillus subtilis* GB03

Naturally occurring bacteria. 1 tsp per gal or 16 fl oz per 100 gal applied as a foliar spray. Excellent plant safety and no visible residue. Labeled for application to many edible crops up to the day of harvest. 0 day PHI. 4 hr REI. MOA 44.

Fosphite- (EPA Reg. # 68573-2)

Active Ingredient: Mono- and di-potassium salts of Phosphorous Acid

Foliar spray rate: 4 tsp per gal or 64 fl oz per 100 gal. Do not apply less than 20 days before or after a copper fungicide treatment to avoid copper toxicity. Many edible crops on the label. 0 day PHI. 4 hr REI. MOA 33. Restricted use pesticide in NY.

Nordox 75 WG- (EPA Reg. # 48142-4)

Active Ingredient: Cuprous Oxide

Labeled for certain edible crops in greenhouse and outdoor crops. Foliar spray applied as 1/3 tsp per gal or 10.66 oz per 100. Do not tank mix with Aliette or any phosphonate fungicides such as Agri-Phos, Alude, or Fosphite. 0 day PHI. 12 hr REI. MOA M1. OMRI listed.

Phyton 35- (EPA Reg. # 49538-5)

Active Ingredient: Copper Sulfate Pentahydrate

Foliar spray rates: 1 1/4-3 tsp per gal or 20-50 fl oz per 100 gal. Translaminar systemic copper bactericide labeled for *Erwinia*, *Pseudomonas* and *Xanthomonas*. Labeled for use on many edible crops in greenhouses and nurseries. Avoid spraying when leaves will stay wet for a long time to reduce chance of phytotoxicity. Do not add surfactant. Avoid spraying within 7 days of B-Nine to avoid burning. 0 day PHI. 48 hr REI. MOA M1.

Protect DF- (EPA Reg. # 1001-77)

Active Ingredient: Mancozeb

1 Tbls per gal or 24 oz per 100 gal, leaves a visible residue but is safe on most open blooms. Most effective when tank mixed with a copper fungicide. Certain vegetable transplants are on the label. Other crop caution: phytotoxicity has been noted on marigolds or geraniums due to manganese toxicity 24 hr REI. MOA M3.

Regalia PTO- (EPA Reg. # 84059-3-87865)

Active Ingredient: *Reynoutria sachalinensis*

Foliar spray rates: 4-8 tsp per gal or 64-128 fl oz per 100 gal. Good plant safety. A botanical fungicide that stimulates plants natural defenses. Labeled for use in greenhouses and nurseries. 0 day PHI. 4 hr REI. MOA P5. OMRI listed.

Triathlon BA- (EPA Reg. # 58044-3-59807)

Active Ingredient: *Bacillus amyloliquefaciens* strain D747

Biofungicide foliar spray applied at 2 tsp-2 Tbls per gal or 16-96 oz per 100 gal. Naturally occurring bacteria. Good plant safety including open blooms and no visible residue. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.



## Botrytis-

All recommendations are for foliar sprays except as noted. Most foliar sprays listed will perform better with a surfactant such as CapSil added at 1/2 tsp per gal (8 oz per 100 gal), to increase coverage and reduce visible residue. Some product labels state that surfactants should not be added.

Affirm WDG- (EPA Reg. # 68173-3-1001)

Active Ingredient: Polyoxin D zinc salt

1/2-1 tsp per gal or 4-8 oz per 100 gal applied as a foliar spray. Some edible crops on the label. Excellent plant safety. 4 hr REI. 0 day PHI. MOA 19.

Camelot O- (EPA Reg. # 67702-2-67690)

Active Ingredient: Copper Octanoate

Foliar spray rate 0.5 fl oz per gal or 50 fl oz per 100 gal. Repeat sprays every 7-10 days. Leaves some visible residue and burns most open blooms. Do not allow this product to come in contact with aluminum sprayer or irrigation parts. Labeled for several edible crops. More effective when tank mixed with Cease or Protect DF. 4 hr REI. 0 day PHI. MOA M1. OMRI listed.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide foliar spray applied at 1.25 fl oz per gal or 1 gal per 100 gal. Naturally occurring bacteria. Preventative control effective for about 7 days. Good plant safety including open blooms and no visible residue. Tank mixable with most common pesticides. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Companion- (EPA Reg. # 71065-3)

Active Ingredient: *Bacillus subtilis* GB03

Naturally occurring bacteria. 2 tsp per gal or 32 fl oz per 100 gal applied as a foliar spray. Excellent plant safety and no visible residue. Labeled for application to many edible crops. 0 day PHI. 4 hr REI. MOA 44.

Decree- (EPA Reg. # 66330-35-67690)

Active Ingredient: Fenhexamid

1-2 tsp per gal or 12-24 oz per 100 gal. Safe on open blooms with minimal visible residue. Many edible crops are on the label. Resistance has been reported. 3 day PHI. 12 hr REI. MOA 17.

Emblem- (EPA Reg. # 228-723)

Active Ingredient: Fludioxonil

Labeled for some vegetables and herbs. Foliar spray rates: 1/4-1/2 tsp per 4 gal or 1-2 fl oz per 100 gal. Good plant safety. 7 day PHI. 12 hr REI. MOA 12.

MilStop- (EPA Reg. # 70870-1-68539)

Active Ingredient: Potassium bicarbonate

1 Tbls per gal or 40 oz per 100 gal as a foliar spray. Fast acting product that is labeled for many vegetable crops. Formulated with a surfactant so do not add another. Leaves some residue. Best tank mixed with Cease. 0 day PHI. 1 hr REI. MOA NC. OMRI listed.

Mural- (EPA Reg. # 100-1479)

Active Ingredients: Benzvidflupyr (Solatenol) and Azoxystrobin

Translaminar systemic movement. Labeled for some for vegetables at a foliar spray rate of: 1/2 tsp per 2.5-3.5 gal or 2.33-3.33 oz per 100 gal. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 12 hr REI. MOA 7 & 11. Not registered NY.

Pageant Intrinsic- (EPA Reg. # 7969-251)

Active Ingredients: Boscalid and Pyraclostrobin

Foliar spray rate: 1-1 1/2 tsp per gal or 12-18 oz per 100 gal. Supplemental label allows for use on greenhouse tomatoes grown for harvest and as vegetable transplants. Additional improved plant health benefits include increased cold, heat and drought tolerance. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 0 day PHI. MOA 7 & 11. 12 hr REI. Restricted use pesticide in NY.

Protect DF (EPA Reg. # 1001-77)

Active Ingredient: Mancozeb

Foliar spray rate: 1 Tbls per gal or 24 oz per 100 gal. Leaves a visible residue but is safe on most open blooms. Certain vegetable transplants added to the label. Other crop caution: phytotoxicity has been noted on marigolds or geraniums due to manganese toxicity 24 hr REI. MOA M3.

Regalia PTO- (EPA Reg. # 84059-3-87865)

Active Ingredient: *Reynoutria sachalinensis*

Foliar spray rates: 4-8 tsp per gal or 64-128 fl oz per 100 gal. Good plant safety. A botanical fungicide that stimulates plants natural defenses. Labeled for use in greenhouses and nurseries. 0 day PHI. 4 hr REI. MOA P5. OMRI listed.

Triathlon BA- (EPA Reg. # 58044-3-59807)

Active Ingredient: *Bacillus amyloliquefaciens* strain D747

Biofungicide foliar spray applied at 2 tsp-2 Tbls per gal or 16-96 oz per 100 gal. Naturally occurring bacteria. Good plant safety including open blooms and no visible residue. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Zero-Tol 2.0- (EPA Reg. # 70299-12)

Active Ingredient: Hydrogen dioxide and Peracetic acid

0.5 fl oz per gal or 50 fl oz per 100 gal spray on young tender plants and 1.25 fl oz per gal or 128 fl oz per 100 gal spray on established plants. No visible residue and safe on most open blooms. Contact control with no residual. Labeled for many edible crops. 0 day PHI. 1 hr REI. MOA NC. OMRI listed.

### Downy Mildew-

This is a very difficult disease to control. Consult the Griffin GGSPRO Technical Services department for cultural practices, treatment intervals and rotation strategies.

Alude- (EPA Reg. # 55146-83)

Active Ingredient: Mono & dibasic sodium, potassium & ammonium phosphites.

Foliar spray at 2-4 tsp per gal or 32-64 fl oz per 100 gal. Excellent plant safety, no visible residue, trial on open blooms before use. Many edible crops are on the label. 0 day PHI. 4 hr REI. MOA 33.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide foliar spray applied at 1.25 fl oz per gal or 1 gal per 100 gal. Naturally occurring bacteria. Preventative control effective for about 7 days. Good plant safety including open blooms and no visible residue. Most effective when tank mixed with MilStop. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Fosphite- (EPA Reg. # 68573-2)

Active Ingredient: Mono- and di-potassium salts of Phosphorous Acid

Foliar spray rate: 4 tsp per gal or 64 fl oz per 100 gal. Do not apply less than 20 days before or after a copper fungicide treatment to avoid copper toxicity. Many edible crops on the label. 0 day PHI. 4 hr REI. MOA 33. Restricted use pesticide in NY.

Heritage- (EPA Reg. # 100-1093)

Active ingredient: Azoxystrobin

1 tsp per 2.5 gal or 4 oz per 100 gal as a foliar spray. Most effective as a protectant. No visible residue and safe on most open blooms. Labeled for many vegetable and herb transplants. Do not use with CapSil or other silicone containing surfactants. 4 hr REI. MOA 11. Restricted use pesticide in VT. Cannot be used through ultra-low volume applicators.

Micora- (EPA Reg. # 100-1388)

Active Ingredient: Mandipropamid

Foliar spray at 1/2 tsp per gal or 8 fl oz per 100 gal. Translaminar fungicide allows treatment to several fruiting vegetables transplants. 4 hr REI. MOA 40.

MiiStop- (EPA Reg. # 70870-1-68539)

Active Ingredient: Potassium bicarbonate

1 Tbls per gal or 40 oz per 100 gal as a foliar spray. Fast acting product that is labeled for many vegetable crops. Formulated with a surfactant so do not add another. Exempt from food tolerances. Leaves some residue. Best tank mixed with Cease. 0 day PHI. 1 hr REI. MOA NC. OMRI listed.

Mural- (EPA Reg. # 100-1479)

Active Ingredients: Benzivdiflupyr (Solatenol) and Azoxystrobin

Translaminar systemic movement. Labeled for some for vegetables at a foliar spray rate of: 1/2 tsp per 2.5-3.5 gal or 2.33-3.33 oz per 100 gal. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 12 hr REI. MOA 7 & 11. Not registered in NY.

Nordox 75 WG- (EPA Reg. # 48142-4)

Active Ingredient: Cuprous Oxide

Labeled for certain edible crops in greenhouse and outdoor crops. Foliar spray applied as 1/3 tsp per gal or 10.66 oz per 100. Do not tank mix with Aliette or any phosphonate fungicides such as Alude, Agri-phos or Fosphite. 0 day PHI. 12 hr REI. MOA M1. OMRI listed.

Pageant Intrinsic- (EPA Reg. # 7969-251)

Active Ingredients: Boscalid and Pyraclostrobin

Foliar spray rate: 1-1 1/2 tsp per gal or 12-18 oz per 100 gal. Supplemental label allows for use on greenhouse grown tomato transplants. Additional improved plant health benefits include increased cold, heat and drought tolerance. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 0 day PHI. 12 hr REI. MOA 7 & 11. Restricted use pesticide in NY.

Phostrol- (EPA Reg. # 55146-83)

Active Ingredient: Mono and Di-Potassium Salts of Phosphorous Acid

Foliar spray rate: 2-4 tsp per gal or 32-64 fl oz per 100 gal. Apply lower rate preventatively at 2-4 week intervals and higher rate at 2-3 week intervals. Do not apply less than 20 days before or after a copper fungicide treatment to avoid copper toxicity. Many edible crops on the label. 0 day PHI. 4 hr REI. MOA 25.

Protect DF- (EPA Reg. # 1001-77)

Active Ingredient: Mancozeb

1 Tbls per gal or 24 oz per 100 gal, leaves a visible residue but is safe on most open blooms. Certain vegetable transplants are on the label. Other crop caution: phytotoxicity has been noted on marigolds or geraniums due to manganese toxicity 24 hr REI. MOA M3.

Ranman 400 SC- (EPA Reg. # 71512-3-88783)

Active Ingredient: Cyazofamid

Can only be applied as a foliar spray for downy mildew on Basil and Cucurbits crops grown to harvest in a greenhouse. Spray rate: 1/2 tsp per 3-4 gal or 2.1-2.75 fl oz per 100 gal. 0 day PHI. 12 hr REI. MOA 21.

Subdue Maxx- (EPA Reg. # 100-796)

Active ingredient: Mefenoxam

Section 24(c) Special Local Need label for the following states only: AL, CA, FL, MI, NE, NJ, PA, TX, VA  
Only for downy mildew control on basil transplants for re-sale to consumers. Apply as a soil surface spray to plug production trays after seeding and before seedling emergence in sufficient water to provide uniform coverage. Irrigate lightly after application to move the product into growing media profile, but not to the point of leaching. One soil surface spray per crop at 3.75 oz per 5,000 sq ft. 21 day PHI, 0 hr REI if applied before seedling emergence as specified on the label. MOA 4.

Regalia PTO- (EPA Reg. # 84059-3-87865)

Active Ingredient: *Reynoutria sachalinensis*

Foliar spray rates: 4-8 tsp per gal or 64-128 fl oz per 100 gal. Good plant safety. A botanical fungicide that stimulates plants natural defenses. Labeled for use in greenhouses and nurseries. 0 day PHI. 4 hr REI. MOA P5. OMRI listed.

Triathlon BA- (EPA Reg. # 58044-3-59807)

Active Ingredient: *Bacillus amyloliquefaciens* strain D747

Biofungicide foliar spray applied at 2 tsp-2 Tbls per gal or 16-96 oz per 100 gal. Naturally occurring bacteria. Good plant safety including open blooms and no visible residue. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

### **Fungal Leaf Spots**

The most common pathogens that cause leaf spots and blights are *Alternaria*, *Botrytis* (see *Botrytis* section), *Anthracnose/Colletotrichum*, *Cercospora*, *Phyllosticta*, *Septoria* and Rust (see rust section). Controlling leaf spots can be challenging because symptoms can vary from plant to plant. Signs of a pathogen may not be visible without a hand lens or microscopic examination. It is recommended that you always acquire a lab test from your state diagnostic lab or university to confirm that there is a pathogen associated with the leaf spots or blight. Many abiotic conditions can cause similar spotting. Cultural practices that will help reduce infection include: minimizing leaf wetness and reducing humidity, improving air circulation, and removing diseased leaf debris.

Affirm WDG- (EPA Reg. # 68173-3-1001)

Active Ingredient: Polyoxin D zinc salt

1/2-1 tsp per gal or 4-8 oz per 100 gal applied as a foliar spray. Some edible crops on the label. Excellent plant safety. 4 hr REI. 0 day PHI. MOA 19.

Camelot O- (EPA Reg. # 67702-2-67690)

Active Ingredient: Copper Octanoate

Foliar spray rate 0.5 fl oz per gal or 50 fl oz per 100 gal. Repeat sprays every 7 to 10 days. Leaves some visible residue and burns most open blooms. Do not allow this product to come in contact with aluminum sprayer or irrigation parts. Labeled for several edible crops. 4 hr REI. 0 day PHI. MOA M1. OMRI listed.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide foliar spray applied at 1.25 fl oz per gal or 1 gal per 100 gal. Naturally occurring bacteria. Preventative control effective for about 7 days. Good plant safety including open blooms and no visible residue. Tank mixable with most common pesticides. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Companion- (EPA Reg. # 71065-3)

Active Ingredient: *Bacillus subtilis* GB03

Naturally occurring bacteria. 2 tsp per gal or 32 fl oz per 100 gal applied as a foliar spray. Excellent plant safety and no visible residue. Labeled for application to many edible crops. 0 day PHI. 4 hr REI. MOA 44.

Emblem- (EPA Reg. # 228-723)

Active Ingredient: Fludioxonil

Labeled for some vegetables and herbs. Foliar spray rates: 1/4-1/2 tsp per 4 gal or 1-2 fl oz per 100 gal. Good plant safety. 7 day PHI. 12 hr REI. MOA 12.

Heritage- (EPA Reg. # 100-1093)

Active ingredient: Azoxystrobin

1 tsp per 2.5 gal or 4 oz per 100 gal as a foliar spray. Most effective as a protectant. No visible residue and safe on most open blooms. Labeled for many vegetable and herb transplants. Do not use with CapSil or other silicone containing surfactants. 4 hr REI. MOA 11. Restricted use pesticide in VT. Cannot be used through ultra-low volume applicators.

Mural- (EPA Reg. # 100-1479)

Active Ingredients: Benzivdiflupyr (Solatenol) and Azoxystrobin

Translaminar systemic movement. Labeled for some for vegetables at a foliar spray rate of: 1/2 tsp per 2.5-3.5 gal or 2.33-3.33 oz per 100 gal. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 12 hr REI. MOA 7 & 11. Not registered in NY.

Pageant Intrinsic- (EPA Reg. # 7969-251)

Active Ingredients: Boscalid and Pyraclostrobin

Foliar spray rate: 1-1 1/2 tsp per gal or 12-18 oz per 100 gal. Supplemental label allows for use on greenhouse grown tomato transplants. Additional improved plant health benefits include increased cold, heat and drought tolerance. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 0 day PHI. 12 hr REI. MOA 7 & 11. Restricted use pesticide in NY.

Phyton 35- (EPA Reg. # 49538-5)

Active Ingredient: Copper Sulfate Pentahydrate

Foliar spray rates: 1-1 3/4 tsp per gal or 15-30 fl oz per 100 gal. Translaminar systemic copper fungicide against many foliar diseases. Labeled for use on many edible crops in greenhouses and nurseries. Avoid spraying when leaves will stay wet for a long time to reduce chance of phytotoxicity. Do not add surfactant. Avoid spraying within 7 days of B-Nine to avoid burning. 0 day PHI. 48 hr REI. MOA M1.

Protect DF- (EPA Reg. # 1001-77)

Active Ingredient: Mancozeb

1 Tbls per gal or 24 oz per 100 gal, leaves a visible residue but is safe on most open blooms. Certain vegetable transplants are on the label. Other crop caution: phytotoxicity has been noted on marigolds or geraniums due to manganese toxicity 24 hr REI. MOA M3.

Regalia PTO- (EPA Reg. # 84059-3-87865)

Active Ingredient: *Reynoutria sachalinensis*

Foliar spray rates: 4-8 tsp per gal or 64-128 fl oz per 100 gal. Good plant safety. A botanical fungicide that stimulates plants natural defenses. Labeled for use in greenhouses and nurseries. 0 day PHI. 4 hr REI. MOA P5. OMRI listed.

Triathlon BA- (EPA Reg. # 58044-3-59807)

Active Ingredient: *Bacillus amyloliquefaciens* strain D747

Biofungicide foliar spray applied at 2 tsp-2 Tbls per gal or 16-96 oz per 100 gal. Naturally occurring bacteria. Good plant safety including open blooms and no visible residue. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Zero-Tol 2.0- (EPA Reg. # 70299-12) 

Active Ingredient: Hydrogen dioxide and Peracetic acid

0.5 fl oz per gal or 50 fl oz per 100 gal spray on young tender plants and 1.25 fl oz per gal or 128 fl oz per 100 gal spray on established plants. No visible residue and safe on most open blooms. Contact control with no residual. Labeled for many edible crops. 0 day PHI. 1 hr REI. MOA NC. OMRI listed.

### **Fusarium-**

All of the following recommendations are for soil drenches. Fungicides have limited success controlling *Fusarium*, but they can be used to help protect healthy plants.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide soil drench at 1.25-2.5 fl oz per gal or 1-2 gal per 100 gal. Naturally occurring bacteria. Labeled for certain edible crops. Re-application interval 21-28 days. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Companion- (EPA Reg. # 71065-3)

Active Ingredient: *Bacillus subtilis* GB03

Naturally occurring bacteria. Drench rate 1 tsp per gal or 16 fl oz per 100 gal repeated every 14-28 days. Protectant. Compatible with most traditional fungicides. Excellent plant safety. Labeled for some edible crops. 0 day PHI. 4 hr REI.

Emblem- (EPA Reg. # 228-723)

Active Ingredient: Fludioxonil

For control of diseases in ornamentals and some vegetables and herbs. Drench rates: 1/4-1/2 tsp per 4 gal or 1-2 fl oz per 100 gal. Good plant and bloom safety with exceptions below. Do not use as a drench or seedling treatment for N.G. Impatiens or impatiens. Geraniums can be sensitive to sprays or drenches. Sensitivity has been reported on Coralberry Punch calibrachoa. Use restrictions: can only be used on ornamental crops in enclosed structures in Suffolk and Nassau County NY. 7 day PHI. 12 hr REI. MOA 12.

RootShield G- (EPA Reg. # 68539-3)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22

Incorporation rate: 1.5 lb per cu yd of soil mix. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. 0 hr REI. MOA NC. OMRI listed.

RootShield WP- (EPA Reg. # 68539-7)

Active Ingredient: *Trichoderma harzianum* Rifai strain KRL-AG2

Drench rate: 2 Tbls per 5 gal or 5 oz per 100 gal applied as early in the crop cycle as possible. Naturally occurring fungus that grows along with the roots to protect them. Labeled for vegetables and herbs. Typically only one application per growing season is needed. Long term crops should be retreated with a half-rate application midway through the crop. 0 hr REI. MOA NC. OMRI listed.

RootShield Plus G- (EPA Reg. # 68539-10)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41

Incorporation rate: 2-3.0 lb per cu yd of soil mix. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. 0 hr REI. MOA NC. OMRI listed.

RootShield Plus WP- (EPA Reg. # 68539-9)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41

Drench rates: 1.5-2 Tbls per 5 gal or 5-8 oz per 100 gal. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. Approved for hydroponic applications. Long term crops should be retreated with a half-rate application midway through the crop. 4 hr REI. MOA NC. OMRI listed.

Subtilex NG- (EPA Reg. # 71840-8)

Active Ingredient: *Bacillus subtilis* MBI 600

Biofungicide drench applied at 1Tbls per 100 gal. Naturally occurring bacteria. Consult label for drench volumes per pot. Labeled for certain edible crops. 0 day PHI. 4 hr REI. MOA 44.

### **Powdery Mildew-**

All recommendations are for foliar sprays. Most foliar sprays listed will perform better with a surfactant such as CapSil added at 1/2 tsp per gal, (8 fl oz per 100 gal), to increase coverage and reduce visible residue. Some product labels state that surfactants should not be added.

Affirm WDG- (EPA Reg. # 68173-3-1001)

Active Ingredient: Polyoxin D zinc salt

1/2-1 tsp per gal or 4-8 oz per 100 gal applied as a foliar. Spray. Some edible crops on the label. Excellent plant safety. 0 day PHI. 4 hr REI. MOA 19.

Camelot O- (EPA Reg. # 67702-2-67690)

Active Ingredient: Copper Octanoate

Foliar spray rate 0.5 fl oz per gal or 50 fl oz per 100 gal. Repeat sprays every 7-10 days. Leaves some visible residue and burns most open blooms. Do not allow this product to come in contact with aluminum sprayer or irrigation parts. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA M1. OMRI listed.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide foliar spray applied at 1.25 fl oz per gal or 1 gal per 100 gal. Naturally occurring bacteria.

Preventative control effective for about 7 days. Good plant safety including open blooms and no visible residue. Tank mixable with most common pesticides. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Companion- (EPA Reg. # 71065-3)

Active Ingredient: *Bacillus subtilis* GB03

Naturally occurring bacteria. 2 tsp per gal or 32 fl oz per 100 gal applied as a foliar spray. Excellent plant safety and no visible residue. Labeled for application to many edible crops. 0 day PHI. 4 hr REI. MOA 44.

Heritage- (EPA Reg. # 100-1093)

Active ingredient: Azoxystrobin

1 tsp per 2.5 gal or 4 oz per 100 gal as a foliar spray. Most effective as a protectant. Label allows one application before alternating with another MOA. No visible residue and safe on most open blooms. Labeled for many vegetable and herb transplants. Do not use with CapSil or other silicone containing surfactants. 4 hr REI. MOA 11. Restricted use pesticide in VT. Cannot be used through ultralow volume applicators.

MiiStop- (EPA Reg. # 70870-1-68539)

Active Ingredient: Potassium bicarbonate

1TbIs per gal or 40 oz per 100 gal as a foliar spray. Fast acting product that is labeled for many vegetable crops. Formulated with a surfactant so do not add another. Leaves some residue but has good plant safety. 0 day PHI. 1 hour REI. MOA NC. OMRI listed.

Mural- (EPA Reg. # 100-1479)

Active Ingredients: Benzivdiflupyr (Solatenol) and Azoxystrobin

Translaminar systemic movement. Labeled for some for vegetables at a foliar spray rate of: 1/2 tsp per 2.5-3.5 gal or 2.33-3.33 oz per 100 gal. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 12 hr REI. MOA 7 & 11. Not registered and NY.

Nordox 75 WG- (EPA Reg. # 48142-4)

Active Ingredient: Cuprous Oxide

Labeled for certain edible crops in greenhouse and outdoor crops. Foliar spray applied as 1/3 tsp per gal or 10.66 oz per 100. Do not tank mix with Aliette or any phosphonate fungicides such as Agri-phos, Alude, or Fosphite. 0 hr PHI. 12 hr REI. MOA M1. OMRI listed.

Pageant Intrinsic- (EPA Reg. # 7969-251)

Active Ingredients: Boscalid and Pyraclostrobin

Foliar spray rate: 1-1 1/2 tsp per gal or 12-18 oz per 100 gal. Supplemental label allows for use on greenhouse grown tomato transplants. Additional improved plant health benefits include increased cold, heat and drought tolerance. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 0 day PHI. 12 hr REI. MOA 7 & 11. Restricted use pesticide in NY.

Phyton 35- (EPA Reg. # 49538-5)

Active Ingredient: Copper Sulfate Pentahydrate

Foliar spray rates: 3/4-1 1/2 tsp per gal or 13-25 fl oz per 100 gal. Labeled for use on many edible crops in greenhouses and nurseries. Avoid spraying when leaves will stay wet for a long time to reduce chance of phytotoxicity. Do not add surfactant. Avoid spraying within 7 days of B-Nine to avoid burning. 0 day PHI. 48 hr REI. MOA M1.

Protect DF- (EPA Reg. # 1001-77)

Active Ingredient: Mancozeb

1 Tbls per gal or 24 oz per 100 gal, leaves a visible residue but is safe on most open blooms. Certain vegetable transplants are on the label. Other crop caution: phytotoxicity has been noted on marigolds or geraniums due to manganese toxicity 24 hr REI. MOA M3.

Regalia PTO- (EPA Reg. # 84059-3-87865)

Active Ingredient: *Reynoutria sachalinensis*

Foliar spray rates: 4-8 tsp per gal or 64-128 fl oz per 100 gal. Good plant safety. A botanical fungicide that stimulates plants natural defenses. Labeled for use in greenhouses and nurseries. 0 day PHI. 4 hr REI. MOA P5. OMRI listed.

Triathlon BA- (EPA Reg. # 58044-3-59807)

Active Ingredient: *Bacillus amyloliquefaciens* strain D747

Biofungicide foliar spray applied at 2 tsp-2 Tbls per gal or 16-96 oz per 100 gal. Naturally occurring bacteria. Good plant safety including open blooms and no visible residue. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.



Zero-Tol 2.0- (EPA Reg. # 70299-12) 

Active Ingredient: Hydrogen dioxide and Peracetic acid

0.5 fl oz per gal or 50 fl oz per 100 gal spray on young tender plants and 1.25 fl oz per gal or 128 fl oz per 100 gal spray on established plants. No visible residue and safe on most open blooms. Contact control with no residual. Labeled for many edible crops. 0 day PHI. 1 hr REI. MOA NC. OMRI listed.

### **Pythium and Phytophthora -**

All recommendations are for soil drenches except as noted. Rotation by mode of action is essential due to resistance issues.

Alude- (EPA Reg. # 55146-83)

Active Ingredient: Mono & dibasic sodium, potassium & ammonium phosphites

Foliar spray at 2-4 tsp per gal or 32-64 fl oz per 100 gal. Excellent plant safety, no visible residue, trial on open blooms before use. Many edible crops are on the label. 0 day PHI. 4 hr REI. MOA 33.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide soil drench at 1.25-2.5 fl oz per gal or 1-2 gal per 100 gal. Naturally occurring bacteria. Labeled for certain edible crops. Re-application interval 21-28 days. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Companion- (EPA Reg. # 71065-3)

Active Ingredient: *Bacillus subtilis* GB03

Naturally occurring bacteria. Drench rate: 1 tsp per gal or 16 fl oz per 100 gal repeated every 14-28 days. Protectant. Compatible with most traditional fungicides. Excellent plant safety. Labeled for some edible crops. 0 day PHI. 4 hr REI. MOA 44.

Fosphite- (EPA Reg. # 68573-2)

Active Ingredient: Mono- and di-potassium salts of Phosphorous Acid

Foliar spray rate: 4 tsp per gal or 64 fl oz per 100 gal for aerial *Phytophthora*. Drench rate:  $\frac{3}{4}$  tsp per gal or 12 fl oz per 100 gal. Do not apply less than 20 days before or after a copper fungicide treatment to avoid copper toxicity. Many edible crops on the label. 0 day PHI. 4 hr REI. MOA 33. Restricted use pesticide in NY.

Micora- (EPA Reg. # 100-1388)

Active Ingredient: Mandipropamid

\*\*Does not control *Pythium*\*\*  
Foliar spray only. Rates 1/2 tsp per gal or 8 fl oz per 100 gal. Translaminar fungicide labeled as a foliar spray for aerial *Phytophthora*. Labeled for many leafy and fruiting vegetables transplants, including late blight of tomato. 4 hr REI. MOA 40.

Phostrol- (EPA Reg. # 55146-83)

Active Ingredient: Mono and Di-Potassium Salts of Phosphorous Acid

Foliar spray rate: 2-4 tsp per gal or 32-64 fl oz per 100 gal for aerial *Phytophthora*. Drench rate: 3/4-1.5 tsp per gal or 12-24 fl oz per 100 gal. Apply lower rate preventatively at 2-4 week intervals and higher rate at 2-3 week intervals. Do not apply less than 20 days before or after a copper fungicide treatment to avoid copper toxicity. Many edible crops on the label. 0 day PHI. 4 hr REI. MOA 25.

Ranman 400 SC- (EPA Reg. # 71512-3-88783)

Active Ingredient: Cyazofamid

Can only be applied as a foliar spray for aerial *Phytophthora* on Basil and Cucurbits crops grown to harvest in a greenhouse. Spray rate: 1/2 tsp per 3-4 gal or 2.1-2.75 fl oz per 100 gal. Can only be applied as a soil drench for *Phytophthora* on greenhouse tomato transplants at 1/2 tsp per 2.5 gal or 3 fl oz per 100 gal. 0 day PHI. 12 hr REI. MOA 21.

RootShield G- (EPA Reg. # 68539-3)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22

\*\* Not labeled for *Phytophthora*\*\* Incorporation rate: 1.5 lb per cu yd of soil mix. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. 0 hr REI. MOA NC. OMRI listed.

RootShield WP- (EPA Reg. # 68539-7)

Active Ingredient: *Trichoderma harzianum* Rifai strain KRL-AG2

\*\* Not labeled for *Phytophthora*\*\* Drench rate: 2 Tbls per 5 gal or 5 oz per 100 gal applied as early in the crop cycle as possible. Naturally occurring fungus that grows along with the roots to protect them. Protectant. Labeled for vegetables and herbs. Typically only one application per growing season is needed. Long term crops should be retreated with a half-rate application midway through the crop. 0 hr REI. MOA NC. OMRI listed.

RootShield Plus G- (EPA Reg. # 68539-10)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41

Incorporation rate: 2-3.0 lb per cu yd of soil mix. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled many edible crops in greenhouses and nurseries. 0 hr REI. MOA NC. OMRI listed.

RootShield Plus WP- (EPA Reg. # 68539-9)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41

Drench rates: 1.5-2 Tbls per 5 gal or 5-8 oz per 100 gal. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. Approved for hydroponic applications. Long term crops should be retreated with a half-rate application midway through the crop. 4 hr REI. MOA NC. OMRI listed.

### **Rhizoctonia (soil borne, see also: aerial)**

All of the following recommendations are for soil drenches except as noted.

Affirm WDG- (EPA Reg. # 68173-3-1001)

Active Ingredient: Polyoxin D zinc salt

1/2-1 tsp per gal or 4-8 oz per 100 gal applied as a soil drench. Label prevents from applying through an injector. Some edible crops on the label. Excellent plant safety. 0 day PHI. 4 hr REI. MOA 19.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide soil drench at 1.25-2.5 fl oz per gal or 1-2 gal per 100 gal. Naturally occurring bacteria. Labeled for certain edible crops. Re-application interval 21-28 days. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Cleary's 3336 EG- (EPA Reg. # 1001-89)

Active ingredient: Thiophanate-methyl

Foliar spray rate: 1-2 tsp per gal or 12-24 oz per 100 gal. Drench rate- 8-16 oz per 100 gal. REI 12 hr. MOA 1. Restricted use pesticide in NY.

Cleary's 3336 WP and F- (EPA Reg. # 1001-63 = WP) (EPA Reg. # 1001-69 = F)

Active Ingredient: Thiophanate-Methyl

WP formulation is 2-3 tsp per gal or 12-16 oz per 100 gal; the F formulation is 3/4-1 tsp per gal or 12-16 fl oz per 100 gal. May be repeated at 2-4 week intervals as needed. 12 hr REI. 0 hr REI for drenches if label conditions are met. MOA 1. Restricted use pesticide in NY and CT.

Companion- (EPA Reg. # 71065-3)

Active Ingredient: *Bacillus subtilis* GB03

Naturally occurring bacteria. Drench rate 1 tsp per gal or 16 fl oz per 100 gal repeated every 14-28 days.

Protectant. Compatible with most traditional fungicides. Excellent plant safety, labeled for some edible crops. 0 day PHI. 4 hr REI. MOA 44.

Regalia PTO- (EPA Reg. # 84059-3-87865)

Active Ingredient: *Reynoutria sachalinensis*

A botanical fungicide that reduces transplant shock and suppresses soil-borne diseases and improves root growth. Drench rates: 2-5 3/4 tsp per gal or 32-96 fl oz per 100 gal. Good plant safety. Multiple drench applications should be made on a 10-14 day intervals. Labeled for use in greenhouses and nurseries. 0 day PHI. 4 hr REI. MOA P5. OMRI listed.

RootShield G- (EPA Reg. # 68539-3)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22

Incorporation rate: 1.5 lb per cu yd of soil mix. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. 0 hr REI. MOA NC. OMRI listed.

RootShield WP- (EPA Reg. # 68539-7)

Active Ingredient: *Trichoderma harzianum* Rifai strain KRL-AG2

Drench rate: 2 Tbls per 5 gal or 5 oz per 100 gal applied as early in the crop cycle as possible. Naturally occurring fungus that grows along with the roots to protect them. Labeled for vegetables and herbs. Typically only one application per growing season is needed. Long term crops should be retreated with a half-rate application midway through the crop. 0 hr REI. MOA NC. OMRI listed.

RootShield Plus G- (EPA Reg. # 68539-10)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41

Incorporation rate: 2-3.0 lb per cu yd of soil mix. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for ornamentals and many edible crops in greenhouses and nurseries. 0 hr REI. MOA NC. OMRI listed.

RootShield Plus WP- (EPA Reg. # 68539-9)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41

Drench rates: 1 1/2-2 Tbls per 5 gal or 5-8 oz per 100 gal. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. Approved for hydroponic applications. Long term crops should be retreated with a half-rate application midway through the crop. 4 hr REI. MOA NC. OMRI listed.

Subtilex NG- (EPA Reg. # 71840-8)

Active Ingredient: *Bacillus subtilis* MBI 600

Biofungicide drench applied at 1Tbls per 100 gal. Naturally occurring bacteria. Consult label for drench volumes per pot. Labeled for certain edible crops. 0 day PHI. 4 hr REI. MOA 44.

Terraclor 400- (EPA Reg. #5481-8992)

Active Ingredient: Pentachloronitrobenzene (PCNB)

Preventative drench application rate: 1/2-2/3 tsp per gal or 6-12 fl oz per 100 gal. Labeled for certain vegetable transplants. 12 hr REI. MOA 14.

## Aerial *Rhizoctonia*-

All applications in this section are foliar sprays. All foliar sprays listed will perform better with a surfactant such as CapSil added at 1/2 tsp per gal, (8 fl oz per 100 gal), to increase coverage and reduce visible residue.

Affirm WDG- (EPA Reg. # 68173-3-1001)

Active Ingredient: Polyoxin D zinc salt

1/2-1 tsp per gal or 4-8 oz per 100 gal applied as a foliar spray. Some edible crops on the label. Excellent plant safety. 0 day PHI. 4 hr REI. MOA 19.

Cease- (EPA Reg. # 264-1155-68539)

Active Ingredient: *Bacillus subtilis* QST 713 strain

Biofungicide foliar spray applied at 1.25 fl oz per gal or 1 gal per 100 gal. Naturally occurring bacteria.

Preventative control effective for about 7 days. Good plant safety including open blooms and no visible

residue. Tank mixable with most common pesticides. Labeled for several edible crops. 0 day PHI. 4 hr REI.

MOA 44. OMRI listed.

Companion- (EPA Reg. # 71065-3)

Active Ingredient: *Bacillus subtilis* GB03

Naturally occurring bacteria. 1 tsp per gal or 16 fl oz per 100 gal applied as a foliar spray. Excellent plant safety and no visible residue. Labeled for application to many edible crops. 0 day PHI. 4 hr REI. MOA 44.

Mural- (EPA Reg. # 100-1479)

Active Ingredients: Benzvidflupyr (Solatenol) and Azoxystrobin

Translaminar systemic movement. Labeled for some for vegetables at a foliar spray rate of: 1/2 tsp per 2.5-3.5 gal or 2.33-3.33 oz per 100 gal. Do not use with organo-silicon surfactants such as CapSil. Good plant safety.

12 hr REI. MOA 7 & 11. Not registered in MA and NY as of 3/1/16.

Pageant Intrinsic- (EPA Reg. # 7969-251)

Active Ingredients: Boscalid and Pyraclostrobin

Foliar spray rate: 1-1 1/2 tsp per gal or 12-18 oz per 100 gal. Supplemental label allows for use on greenhouse grown tomato transplants. Additional improved plant health benefits include increased cold, heat and drought tolerance. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 0 day PHI. 12 hr REI.

MOA 7 & 11. Restricted use pesticide in NY.

Triathlon BA- (EPA Reg. # 58044-3-59807)

Active Ingredient: *Bacillus amyloliquefaciens* strain D747

Biofungicide foliar spray applied at 2 tsp-2 Tbls per gal or 16-96 oz per 100 gal. Naturally occurring bacteria.

Good plant safety including open blooms and no visible residue. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA 44. OMRI listed.

Zero-Tol 2.0- (EPA Reg. # 70299-12) 

Active Ingredient: Hydrogen dioxide and Peracetic acid

0.5 fl oz per gal or 50 fl oz per 100 gal spray on young tender plants and 1.25 fl oz per gal or 128 fl oz per 100 gal spray on established plants. No visible residue and safe on most open blooms. Contact control with no residual. Labeled for many edible crops. 0 day PHI. 1 hr REI. MOA NC. OMRI listed.

## Rusts

Rust pathogens are usually host specific and are identified by the spores they produce. Most rusts produce brown or orange spores while the Chrysanthemum White Rust produces white spores. Please consult with the GGSPRO department for our technical bulletin on Chrysanthemum White Rust.

Camelot O- (EPA Reg. # 67702-2-67690)

Active Ingredient: Copper Octanoate

Foliar spray rate 0.5 fl oz per gal or 50 fl oz per 100 gal. Leaves some visible residue and burns most open blooms. Do not allow this product to come in contact with aluminum sprayer or irrigation parts. Labeled for several edible crops. 0 day PHI. 4 hr REI. MOA M1. OMRI listed.

Heritage- (EPA Reg. # 100-1093)

Active ingredient: Azoxystrobin

1 tsp per 2.5 gal or 4 oz per 100 gal as a foliar spray. Most effective as a protectant. No visible residue and safe on most open blooms. Labeled for many vegetable and herb transplants. Do not use with CapSil or other silicone containing surfactants. 4 hr REI. MOA 11. Restricted use pesticide in VT. Cannot be used through ultralow volume applicators.

Mural- (EPA Reg. # 100-1479)

Active Ingredients: Benzivdiflupyr (Solatenol) and Azoxystrobin

Translaminar systemic movement. Labeled for some for vegetables at a foliar spray rate of: 1/2 tsp per 2.5-3.5 gal or 2.33-3.33 oz per 100 gal. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 12 hr REI. MOA 7 & 11. Not registered in NY.

Nordox 75 WG- (EPA Reg. # 48142-4)

Active Ingredient: Cuprous Oxide

Labeled for certain edible crops in greenhouse and outdoor crops. Foliar spray applied as 1/3 tsp per gal or 10.66 oz per 100. Do not tank mix with Aliette or any phosphonate fungicides such as Agri-phos, Alude, or Fosphite. 0 hr PHI. 12 hr REI. MOA M1. OMRI listed.

Pageant Intrinsic- (EPA Reg. # 7969-251)

Active Ingredients: Boscalid and Pyraclostrobin

Foliar spray rate: 1-1 1/2 tsp per gal or 12-18 oz per 100 gal. Supplemental label allows for use on greenhouse grown tomato transplants. Additional improved plant health benefits include increased cold, heat and drought tolerance. Do not use with organo-silicon surfactants such as CapSil. Good plant safety. 0 day PHI. 12 hr REI. MOA 7 & 11. Restricted use pesticide in NY.

Phyton 35- (EPA Reg. # 49538-5)

Active Ingredient: Copper Sulfate Pentahydrate

Labeled for use on many edible crops in greenhouses and nurseries. Foliar spray rates: 3/4-1 1/2 tsp per gal or 13-25 fl oz per 100 gal. Avoid spraying when leaves will stay wet for a long time to reduce chance of phytotoxicity. Do not add surfactant. Avoid spraying within 7 days of B-Nine to avoid burning. 0 day PHI. 48 hr REI. MOA M1.

Protect DF- (EPA Reg. # 1001-77)

Active Ingredient: Mancozeb

1 Tbls per gal or 1.5 lb per 100 gal, leaves a visible residue but is safe on most open blooms. Certain vegetable transplants are on the label. Other crop caution: phytotoxicity has been noted on marigolds or geraniums due to manganese toxicity 24 hr REI. MOA M3.

## **Thielaviopsis**

RootShield G- (EPA Reg. # 68539-3)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22

Incorporation rate: 1.5 lb per cu yd of soil mix. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled many edible crops in greenhouses and nurseries. 0 hr REI. MOA NC. OMRI listed.

RootShield WP- (EPA Reg. # 68539-7)

Active Ingredient: *Trichoderma harzianum* Rifai strain KRL-AG2

Drench rate: 2 Tbls per 5 gal or 5 oz per 100 gal applied as early in the crop cycle as possible. Naturally occurring fungus that grows along with the roots to protect them. Labeled for vegetables and herbs. Typically only one application per growing season is needed. Long term crops should be retreated with a half-rate application midway through the crop. 0 hr REI. MOA NC. OMRI listed.

RootShield Plus G- (EPA Reg. # 68539-10)

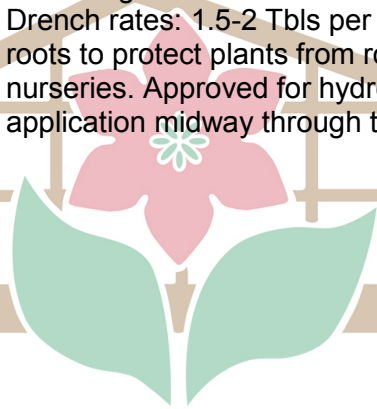
Active Ingredient: *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41

Incorporation rate: 2-3.0 lb per cu yd of soil mix. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. 0 hr REI. MOA NC. OMRI listed.

RootShield Plus WP- (EPA Reg. # 68539-9)

Active Ingredient: *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41

Drench rates: 1.5-2 Tbls per 5 gal or 5-8 oz per 100 gal. Naturally occurring fungus that grows along with the roots to protect plants from root and crown diseases. Labeled for many edible crops in greenhouses and nurseries. Approved for hydroponic applications. Long term crops should be retreated with a half-rate application midway through the crop. 4 hr REI. MOA NC. OMRI listed.



# GRIFFIN