



## **OHP Product Guide**

June 2016  
Volume X

### **Greenhouse and Nursery Production**

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# Fungicides

## Aliette® WDG

**Aliette WDG** brand fungicide is a systemic fungicide that may be applied to a wide range of ornamental flowering and foliage plants as a foliar spray, drench, or as a dip for control of diseases caused by pythium, phytophthora, and downy mildew. **Aliette WDG** can also be used for suppression of bacterial blight caused by certain pathovars of *Xanthomonas campestris*.

**Labeled for use on:** Ornamentals and bedding plants grown in field nursery, greenhouse, and conifer nursery situations. (Not labeled on conifer nurseries in California.)

**Diseases Controlled:** Pythium, Phytophthora and Downy Mildew. Also suppression of bacterial blight.

**Packaging:** 5 lbs. container, 4 per case

**Notes:** To avoid undesirable copper phytotoxicity, do not apply **Aliette WDG** and copper-based compounds at less than 14-day intervals.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-890	12 hours	Ethyl Phosphonates	33	Fosetyl-Al	1.25, 2.5, 5.0 pounds	1 ¼ tsp, 2 ½ tsp, 5 tsp	Spray or drench

## OHP Chipco® 26019 N/G

**Chipco 26019 N/G** is a broad spectrum fungicide that may be applied safely to a wide range of ornamental flowering and foliage plants as a foliar spray, drench, or dip. **Chipco 26019 N/G** fungicide contains iprodione, 50% active ingredient per pound.

**Labeled for use on:** Ornamentals in greenhouses and nurseries, including conifer nurseries.

**Diseases Controlled:** Alternaria, Botrytis, Rhizoctonia, Fusarium Corm rot, Cylindrocladium and other diseases.

**Packaging:** 2 lbs. container, 6 per case

**Notes:** Do not use as a drench on impatiens and pothos. Do not use on Spathiphyllum.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-889-59807	12 hours	Dicarboxamides	2	Iprodione	1 to 2 pounds	1 ½ tsp to 2 ¾ tsp	Drench or spray

## Compass® O

**Compass O** is a broad spectrum fungicide that provides 14-21 days of control on a variety of pathogens. **Compass O** offers both contact as well as translaminar activity at very low use rates. Use **Compass O** in a preventive broad-spectrum fungicide rotation program with other non-strobilurin products for season long, disease free growing.

**Labeled for use on:** Ornamentals grown in the greenhouse, nursery, and interiorscapes.

**Diseases Controlled:** Powdery Mildew, Botrytis, Anthracnose, Septoria Leaf Spot, Myrothecium, Rust, Scab, Blackspot, Downy Mildew, Rhizoctonia Root Rot.

**Packaging:** 1 lbs. container, 4 per case

**Notes:** Use **Compass O** preventatively at the highest rate and shortest interval during periods of high infection potential.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-1371-59807	12 hours	Strobilurins	11	Trifloxystrobin	1 to 4 ounces	¼ tsp to ½ tsp	Drench or foliar spray

## FenStop®

**FenStop** is highly effective against downy mildew, pythium, phytophthora, and foliar phytophthora in greenhouses. **FenStop** is a good rotational tool in the battle against root and foliar diseases.

The product is highly translaminar as a spray and systemic when applied as a drench. The active ingredient in **FenStop** exhibits no known cross-resistance to most other fungicide chemistry.

Rates vary from 7 to 14 fl. oz. per 100 gal. of water and **FenStop** may be used once every 28 days. For downy mildew, pythium, or phytophthora control, **FenStop** may be rotated with Aliette, Terrazole, Segway O, or other appropriate fungicides.

**Labeled for use on:** Ornamentals grown in the greenhouse.

**Diseases Controlled:** Downy Mildew, Foliar Phytophthora, Phytophthora, Pythium.

**Packaging:** 1 quart container, 6 per case

**Notes:** **FenStop** should be rotated with fungicides with different modes of action for control of downy mildew, pythium, and root and foliar phytophthora.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-1389-59807	12 hours	Imidazolinones	11	Fenamidone	7 to 14 fluid ounces	¼ tsp to ¾ tsp	Drench or spray

## OHP 6672® 4.5 F

**OHP 6672 4.5 F** ornamental fungicide controls a broad range of ornamental diseases including, anthracnose, black spot, botrytis, leaf spot, powdery mildew, scab, and others.

**OHP 6672 4.5 F** is from the benzimidazole family of fungicides and appropriate resistant management practices should always be followed.

**Labeled for use on:** Ornamentals and turfgrass.

**Diseases Controlled:** Anthracnose, Black Spot, Blights, Botrytis, Fusarium, Leaf Spot, Powdery Mildews, Rhizoctonia and Scabs.

**Packaging:** 2.5 gallon container, 2 per case

**Notes:** Continuous agitation is required to keep the material in suspension.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
59807-5	12 hours	Thiophanates	1	Thiophanate-methyl	10.75 to 20 fluid ounces	¾ tsp to 1 ½ tsp	Foliar spray, drench, pre-plant dip treatment

## OHP 6672® 50 WP

**OHP 6672 50 WP** ornamental fungicide controls a broad range of ornamental diseases including anthracnose, black spot, botrytis, leaf spot, powdery mildew and scab.

**OHP 6672 50 WP** is from the benzimidazole family of fungicides and appropriate resistant management practices should always be followed.

**Labeled for use on:** Ornamentals grown in the greenhouse and nursery, vegetable transplants and turfgrass.

**Diseases Controlled:** Anthracnose, Black Spot, Blights, Botrytis, Fusarium, Leaf Spot, Powdery Mildews, Rhizoctonia and Scabs.

**Packaging:** 2 lbs. bag (4 x 8 oz. WSP per bag), 6 per case

**Notes:** This product is not recommended for the following plants: Swedish Ivy, Boston Fern and Easter Cactus.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
59807-6	12 hours	Thiophanates	1	Thiophanate-methyl	8 to 16 ounces	N/A	Foliar spray, drench, bulb treatment

## Segway® O

**Segway® O** fungicide is a flowable suspension concentrate for control of pythium, phytophthora, and downy mildew diseases on ornamental plants grown in commercial greenhouses and nurseries. **Segway O** should be utilized as a protectant fungicide and applied before the disease damages the crop. Depending on disease risk and severity, users may expect protection for a period of 7 to 28 days after treatment.

**Labeled for use on:** Ornamental plants grown in commercial greenhouses and nurseries; container and field grown plants

**Diseases Controlled:** Pythium crown and root rots and damping-off; phytophthora crown and root rots and foliar blights; downy mildews

**Packaging:** 1 pint (16 fl. oz.) container, 8 per case

**Notes:** Do not make more than two applications of **Segway O** per crop cycle for control of pythium or phytophthora soil borne diseases. Do not make more than four applications of **Segway O** per crop cycle for control of downy mildews or phytophthora foliar diseases.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
71512-13-59807	12 hours	Cyano-imidazole	21	Cyazofamid	1.5 to 6.0 fluid ounces	⅛ to ½ tsp (.44 mL 1.77 mL)	Drench or spray

## SoilGard®

*G. virens*, the active ingredient in **SoilGard** is a naturally occurring soil fungus, which is antagonistic to plant pathogenic fungi such as pythium and rhizoctonia, thereby aiding in control of these damping off and root rot pathogens. **SoilGard** acts as a preventative and will protect non-infected plants. It is not curative on already infected plants. Where possible allow the treated soil or media to incubate for 1 day prior to planting to achieve the best results. Do not use other soil fungicides at the time of incorporation. Later addition of fungicides is acceptable but usually unnecessary.

**Labeled for use on:** Ornamentals and food crop plants grown indoors and outdoors, in greenhouses, nurseries, and interiorscapes.

**Diseases Controlled:** Pythium and Rhizoctonia (Damping off and Root Rot)

**Packaging:** 5 lbs. bags, 4 per case

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
70051-3	4 hours	Microbial (preventive)	NC	Gliricium virens strain GL-21	.5 lbs. to 2 lbs.	½ tsp to 2 tsp (2.5 g to 10 g)	Drench or Soil Incorporation

## Strike® Plus 50 WDG

**Strike Plus 50 WDG** is a combination of two systemic fungicides that control or prevent many fungal diseases on ornamental plants in the greenhouse, garden center and nurseries.

**Labeled for use on:** Flowers, foliage plants, shrubs, shade trees and non-bearing fruit trees grown in nurseries, garden centers and greenhouses.

**Diseases Controlled:** Anthracnose, black spot, leaf spot, powdery mildew, rust, scab and other diseases.

**Packaging:** 1 lbs. container, 12 per case

**Notes:** Do not use more than 207 oz. of **Strike Plus 50 WDG** per acre per year (4.76 oz./1000 sq./ft.)

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-1513-59807	12 hours	Triazole + Strobilurin	3 + 11	Triadimefon + Trifloxystrobin	1.2 to 2.4 ounces (greenhouse) 3 to 9 ounces (nursery)	⅛ tsp to 1 tsp (.34 g to 2.55 g)	Spray

## Terraclor® 400

**Terraclor 400** is an effective soil fungicide for prevention and control of soil borne diseases caused by *Rhizoctonia solani* and other soil borne diseases. **Terraclor 400** works primarily as a preventative agent through contact activity, and should be applied before disease symptoms appear in order to achieve optimum results. **Terraclor 400** applications at first sign of disease have curative properties as well.

**Labeled for use on:** Ornamentals and vegetable bedding plants grown in greenhouses, shadehouses, nurseries, and non-residential landscape plantings.

**Diseases Controlled:** *Rhizoctonia* spp., Bulb Rot, Crown Rot, Needle blight, *Sclerotinia* spp., *Phyllosticta*.

**Packaging:** 1 gallon container, 4 per case

**Notes:** Soil applied **Terraclor 400** should be drenched or incorporated thoroughly into the soil for best results. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
5481-8992	12 hours	Aromatic Hydrocarbons	14	PCNB	6 to 12 fluid ounces	⅜ tsp to ¾ tsp	Drench

## Terraguard® SC

An effective disease control program combining **Terraguard SC** fungicide with good cultural and sanitary practices is the key to growing healthier, more vigorous ornamental plants. **Terraguard SC** controls rhizoctonia root rot, one of the most common soilborne diseases, as well as other hard to control diseases such as thielaviopsis, cylindrocladium, powdery mildew, and leaf spots.

**Terraguard SC** is a locally systemic fungicide that provides protection of hard to control diseases. **Terraguard SC** can be used as a cutting soak, soil drench, foliar spray or through chemigation for control of diseases on ornamental plants grown in enclosed commercial structures such as greenhouses, shadehouses and interiorscapes. It prevents diseases from attacking leaf surfaces as it penetrates the plant (where applied) to stop disease development. The chemical action of **Terraguard SC** makes it the ideal fungicide for fighting foliar as well as soilborne diseases.

**Labeled for use on:** Ornamental, non-bearing fruit (trees/shrubs) and greenhouse grown vegetables (tomato and cucumber). For use in the following sites: greenhouse and shadehouses, nurseries including Christmas tree/conifer plantations, interiorscapes.

**Diseases Controlled:** Rhizoctonia root rot, as well as other hard to control diseases such as Thielaviopsis, Cylindrocladium, botrytis blight, powdery mildew, rust, and leaf spots.

**Packaging:** 1 quart container, 12 per case

**Notes:** Do not use on impatiens plugs. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-521	12 hours	Imidazoles	3	Triflumizole	2 to 8 to 16 fluid ounces	⅛ tsp, ½ tsp, 1 tsp	Drench or spray

## Terrazole® L

**Terrazole L** is an effective soil fungicide for prevention and control of damping-off, root rot and stem diseases caused by *Pythium* and *Phytophthora* species in ornamental, nursery crops and golf course tees and greens.

**Labeled for use on:** Ornamentals, nursery crops and golf course tees and greens.

**Diseases Controlled:** *Pythium* spp, and *Phytophthora* spp.

**Packaging:** 1 quart container, 8 per case

**Notes:** For best results overhead irrigate or drench with water to remove leaf residue and improve drench effectiveness. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-422-59807	12 hours	Thiadiazoles	14	Etridiazole	2.5 to 7 fluid ounces	1/8 tsp to 3/8 tsp	Drench or spray

## Terrazole® 35% WP

**Terrazole 35% WP** is an effective soil fungicide for prevention and control of damping-off, root rot and stem diseases caused by *Pythium* and *Phytophthora* species in ornamental and nursery crops.

**Labeled for use on:** Ornamentals, and nursery crops and golf course tees and greens.

**Diseases Controlled:** *Pythium* spp, and *Phytophthora* spp.

**Packaging:** 2 lbs. bag, 6 per case

**Notes:** For best results maintain tank agitation to ensure uniform application. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-416	12 hours	Thiadiazoles	14	Etridiazole	3.5 to 10 ounces	1/2 tsp to 1 1/2 tsp	Drench or spray

## Terrazole® L CA

**Terrazole L CA** is an effective soil fungicide for prevention and control of damping-off, root rot and stem diseases caused by *Pythium* and *Phytophthora* species in containerized ornamentals.

**Labeled for use on:** Containerized ornamental crops.

**Diseases Controlled:** *Pythium* spp, and *Phytophthora* spp.

**Packaging:** 1 quart container, 8 per case

**Notes:** For best results overhead irrigate or drench with water to remove leaf residue and improve drench effectiveness. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-575-59807	12 hours	Thiadiazoles	14	Etridiazole	3 to 4 fluid ounces	1/5 tsp to 1/4 tsp	Drench or spray

## Triact® 70

**Triact 70** (clarified hydrophobic extract of Neem oil) is a broad-spectrum Fungicide, Miticide and Insecticide. **Triact 70** is listed by OMRI (Organic Materials Review Institute) for organic production. See **Triact 70** in the **Insecticide Section** for rates and product information.

## Triathlon® BA

**Triathlon BA** is a broad-spectrum preventative biofungicide for control of a wide variety of fungal and bacterial diseases on ornamentals, fruits, vegetables, herbs and spices grown in greenhouses, nurseries, and shadehouses. **Triathlon BA** is listed by OMRI (Organic Materials Review Institute) for organic production.

**Labeled for use on:** Ornamentals, vegetables (fruiting and leafy), legumes, cucurbits, corms, fruits, tree nuts, and herbs and spices.

**Diseases Controlled:** botrytis, powdery mildew, downy mildew, rusts, leaf spots, scab, alternaria, pythium, phytophthora, rhizoctonia, fusarium, and bacterial spot.

**Packaging:** 1 gallon containers, 4 to a case

**Notes:** **Triathlon BA** contains a minimum of  $1 \times 10^{10}$  colony-forming units (cfu) of active ingredient per milliliter.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
70051-107-59807	4 hours	Biological	44	<i>Bacillus amyloliquefaciens</i>	foliar .5 to 6 quarts; drench .5 to 4.5 pints	1 tsp to 1 1/2 tsp (4.8 mL to 57.0 mL)	spray or drench

# Insecticides / IGRs / Miticides

## Adept®

**Adept Insect Growth Regulator** (IGR) is an effective tool for controlling fungus gnats, shore flies, and foliar feeding pests found in ornamental crops grown in greenhouses, shade houses, and interiorscapes.

**Labeled for use on:** Ornamental crops grown in greenhouses, interiorscapes and shade houses.

**Insects Controlled:** Larvae of fungus gnats, shore flies, armyworms, leafminers and suppression of whiteflies.

**Packaging:** 1 lbs. (16 - 1 oz water soluble packets), 12 per case

**Notes:** Exceeding label rates, volumes or number of applications of **Adept** can cause serious foliar injury to crops, particularly to poinsettias, hibiscus, and Rieger begonia. Do not apply **Adept** to poinsettias, hibiscus, or Rieger begonia. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-477	12 hours	Benzoyl Urea IGR	15	Diflubenzuron	1 (drench) to 2 (spray) ounces	See label for more information	Spray or drench

## Azatin® O

**Azatin O** is a newly-formulated biological insect growth regulator (IGR) used to control the larval stage of a broad-spectrum of greenhouse and nursery pests. **Azatin O** is OMRI listed (Organic Materials Review Institute), soft on beneficials, and carries a 4-hour REI. **Azatin O** contains 175 grams of the active ingredient azadirachtin per gallon.

**Azatin O** may be used for insect control on all crops such as ornamentals, vegetables, herbs, and berries, grown in the greenhouse, nursery, interiorscape, and in hydroponic growing situations. **Azatin O** may be used for control of insects on turfgrass. Insects do not survive the molting process to become reproductive adults. Death results in 3-10 days after application but insects will stop feeding long before they die. **Azatin O** is often tank-mixed with Decathlon for control of larval and adult insect stages.

**Labeled for use on:** Ornamentals, vegetables, herbs, and berries grown in the greenhouse, nursery, and interiorscape.

**Insects Controlled:** Aphids, thrips, whiteflies, scale, chafers, leafhoppers, psyllids, grubs, borers, stink bugs, grasshoppers, and many Lepidoptera species (see label for complete list of insects controlled).

**Packaging:** 1 quart container, 6 per case

**Notes:** For best results thorough spray coverage and a final spray solution of 3.0 to 7.0 is recommended.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
70051-9-59807	4 hours	Biological	UN	Azadirachtin	4 to 16 fluid ounces	¼ tsp to 1 tsp (1.2 mL to 4.8 mL)	Drench or spray

## Decathlon® 20 WP

**Decathlon 20 WP** is effective for broad spectrum control of crawling and flying insect pests on ornamental and nursery stock. **Decathlon 20 WP** will not stain or cause damage to any painted or varnished household surface, plastic, fabric or other surface where water applied alone causes no damage.

**Labeled for use on:** Ornamentals, and nursery stock.

**Insects Controlled:** Aphids, armyworms, bagworms, beetles, caterpillars, cutworms, fungus gnats, gypsy moths, lace bugs, leaf hoppers, leaf rollers, mealybugs, mites, scales, thrips, webworms and whiteflies.

**Packaging:** 1/2 lbs. container, 12 per case

**Notes:** Addition of a spreader-sticker at recommended rates may enhance control of insects on certain species of ornamentals having hard-to-wet surfaces.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-1402-59807	12 hours	Pyrethroid	3	Cyfluthrin	1.3 to 1.9 ounces	½ tsp to ¼ tsp	Spray

## Discus® N/G

**Discus N/G Insecticide** is a versatile, broad-spectrum product that gives long-term control of many insects. **Discus N/G** is safe on virtually all plant material, offering control of a wide range of insects. **Discus N/G** as a foliar application provides greater than 30 days control. **Discus N/G** can be applied as a drench, band or foliar application.

**Labeled for use on:** Ornamentals, non bearing fruit and nut trees, in greenhouses, field and container nurseries, and interior plantscapes.

**Insects Controlled:** Aphids, leafhoppers, leafminers, mealybugs, scale, strawberry root weevil, whiteflies, white grub larvae, and many other insects.

**Packaging:** 1 gallon container, 4 per case

**Notes:** When spraying hard to wet foliage, the addition of a surfactant may enhance both knockdown and residual activity.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-1393-59807	12 hours	Pyrethroid + Neonicotinoid	4a+3	Imidacloprid + Cyfluthrin	25 to 50 fluid ounces	1 ½ tsp to 3 tsp	Spray, drench, band

## Discus® Tablets

**Discus Tablets** deliver imidacloprid (active ingredient in Marathon®) plus a fertilizer charge to the root zone in a unique delivery system for extended protection and improved plant health.

**Labeled for use on:** Ornamentals grown in greenhouses and field and container nurseries. Application may be made to established plants or during planting.

**Insects Controlled:** Aphids, whiteflies, thrips, mealybugs, soft scale.

**Packaging:** 1200 tablets per container, 4 per case

**Notes:** Discus Tablets may provide up to 2 years control.

The tablet also has been shown to improve survival and growth rates of newly established seedlings, containerized trees and shrubs, and newly-planted and well-established ornamental plants.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate (see label)	Application
432-157-59807	12 hours	Neonicotinoid	4a	Imidacloprid	Depending on pot size	Placement in media

## Dimilin® SC

**Dimilin SC Insect Growth Regulator** (IGR) provides control of a variety of insect pests found in and around ornamental plants and controls larvae of sciarid flies in mushroom growing facilities.

Ornamentals: **Dimilin SC** can be used in repeat applications as a foliar spray in enclosed commercial structures only, such as greenhouses, shadehouses and interiorscapes. **Dimilin SC** is effective on foliar feeding insects like armyworms and lepidopterous leafminers. It also suppresses whiteflies when part of an IPM program.

Mushroom Production: For control of sciarid fly larvae, **Dimilin SC** should be applied in the mushroom growing media where it will prevent the development of the larval stages of the sciarid fly.

**Labeled for use on:** Ornamental crops grown in greenhouses, interiorscapes and shadehouses. Control of sciarid fly larvae in mushroom growing media.

**Insects Controlled:** Larvae of armyworms, lepidopterous leafminers and larvae of sciarid flies.

**Packaging:** 1 quart container, 8 per case

**Notes:** Users should test plants before using on a large scale and observe for symptoms of phytotoxicity. Symptoms may take up to three months to appear for applications made to the soil. The user assumes all risks arising out of application to untested plants.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-483	12 hours	Benzoyl Urea IGR	15	Diflubenzuron	2 to 4 fluid ounces (foliar)	1/8 tsp to 1/4 tsp	Spray or drench

## Dimilin® 25W

**Dimilin 25W Insect Growth Regulator** (IGR) offers control of a variety of insect pests found on trees and shrubs grown in public and private forests, forest plantings and forest nurseries, and Christmas tree and conifer nurseries. **Dimilin 25W** can be used in repeat applications at weekly intervals. Do not use more than two (2) **Dimilin 25W** applications per season.

Mushroom Production: **Dimilin 25W** will control larvae of sciarid flies in mushroom growing facilities.

Gypsy moth: For use in Quarantine programs conducted by State cooperators as well as USDA personnel of both Plant Protection and Quarantine, APHIS, and the U.S. Forest Service. Make two applications of 1-2 oz. per acre at 7-14 day intervals.

Bagworms: Apply to early instars in mid to late June.

**Labeled for use on:** Trees, shrubs, ornamentals, mushrooms, peppers, and non-crop areas.

**Insects Controlled:** Armyworms, bagworms, browntail moth, budworms, cankerworms, gypsy moths, hemlock loopers, lepidopterous leafminers, pine shoot moth, pine tip moths, sawflies, tent caterpillars, tussock moths, webworms, weevils, and Zimmerman moth.

**Packaging:** 5 lbs. bag, 8 per case

**Notes:** **Dimilin 25W** is a restricted use pesticide and should be used only by certified applicators or persons under their direct supervision.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-465	12 hours	Benzoyl Urea IGR	15	Diflubenzuron	2 to 8 ounces	N/A	Spray or drench

## Floramite® SC

**Floramite SC Ornamental Miticide** provides outstanding control of a variety of mite pests on ornamentals plants in greenhouse, shadehouse, nursery, field, landscape and interiorscape settings. **Floramite SC** is effective on a variety of mites and all life stages of Tetranychid spider mites.

**Floramite SC** produces quick knockdown through contact activity and long residual control of more than 21 days. **Floramite SC** is soft on predacious mites and beneficial insects, making it ideal for use in IPM and resistance management programs.

**Labeled for use on:** All ornamental plants, including bedding plants, flowering plants, foliage plants, bulb crops, perennials, trees and shrubs. All non-bearing fruit trees and greenhouse tomatoes, varieties greater than 1" in diameter when mature.

**Mites Controlled:** Variety of spider mites and all life stages of Tetranychid mites.

**Packaging:** 1 quart container, 8 per case

**Notes:** For best results adjust tank pH to neutral or acidic range as **Floramite SC** degrades rapidly in alkaline water. For optimal control of high populations, apply **Floramite SC** with a spray adjuvant. Users should test plant safety of adjuvants prior to commercial use.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-508-59807	12 hours	Carbazates	UN	Bifenazate	4 to 8 fluid ounces	¼ tsp to ½ tsp (1.25 mL to 2.5 mL)	Spray

## Floramite® SC/LS

**Floramite SC/LS Ornamental Miticide** provides outstanding control of a variety of mite pests on ornamental plants growing in the landscape. **Floramite SC/LS** is effective on a broad range of mites and all life stages of Tetranychid spider mites.

**Floramite SC/LS** gives quick knockdown through contact activity and long residual control of more than 21 days. **Floramite SC/LS** is soft on predacious mites and beneficial insects, making it ideal for use in IPM and resistance management programs.

**Labeled for use on:** Plants growing in the landscape, including bedding plants, flowering plants, foliage plants, bulb crops, trees and shrubs. Additional use sites include plants growing in public, commercial, industrial and institutional areas, and in recreational sites, including campgrounds, golf courses, parks, and athletic fields.

**Mites Controlled:** Variety of spider mites and all life stages of Tetranychid mites

**Packaging:** 8 fl. oz. containers, 8 per case

**Notes:** For best results adjust tank pH to neutral or acidic range as **Floramite SC/LS** degrades rapidly in alkaline water. For optimal control of high populations, apply **Floramite SC/LS** with a spray adjuvant. Users should test plant safety of adjuvants prior to commercial use.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-509	N/A	Carbazates	UN	Bifenazate	4 to 8 fluid ounces	¼ tsp to ½ tsp (1.25 mL to 2.5 mL)	Spray

## Fulcrum®

**Fulcrum® Insect Growth Regulator** is highly effective against a broad-spectrum of greenhouse and nursery insects. **Fulcrum** controls nymphs/larvae and pupae and negatively affects development of viable eggs. **Fulcrum** should be used as one component of a rotational strategy with products from different chemical classes with different modes of action.

**Fulcrum** is a 11.23% formulation of pyriproxyfen and contains 0.86 lbs. of active ingredient per gallon.

**Labeled for use on:** Shrubs, ornamentals, flowering plants, foliage plants, ground covers, ornamental trees, and non-bearing fruit, nut trees and vines.

**Insects Controlled:** Eggs, nymphs/larvae and pupae of aphids, fungus gnats, leafminers, mealybugs, scales, shore flies and whiteflies.

**Packaging:** 1 quart (32 fl. oz.) container, 4 per case

**Notes:** Foliar sprays are effective through conventional and low volume sprayers. Make only one drench application per crop. Do not apply to poinsettia after bract formation.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
59807-14	12 hours	Pyridine insect growth regulators	7C	Pyriproxyfen	2 to 12 fluid ounces	⅓ tsp to ¾ tsp (.6 mL to 3.6 mL)	Spray or drench



## Judo®

**Judo** Miticide/Insecticide is highly effective against a broad range of mites and whiteflies. A member of the tetrionic acid class of chemistry, **Judo** affects all development stages of mites and whiteflies (including eggs and transformation stages). **Judo** is translaminar and moves readily through the leaf tissue. **Judo** provides extended residual control of mites (30+ days) and whiteflies (21+ days).

**Judo** is a suspension concentrate (SC) containing 4 pounds of spiromesifen per gallon.

**Labeled for use on:** Ornamentals grown in the greenhouse or nursery.

**Mites/Insects Controlled:** Mites and whiteflies.

**Packaging:** 8 fluid ounces, 6 per case

**Notes:** For best results, apply before a damaging population of whiteflies or mites is established. Do not use on geraniums, impatiens, English Ivy, crotons, and other crops. See the label for a listing of crops that **Judo** should not be applied to.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-1280-59807	12 hours	Tetrionic acid	23	Spiromesifen	2 to 4 fluid ounces	⅛ tsp to ¼ tsp	Foliar spray

## Kontos®

**Kontos** is a systemic insecticide from the tetramic acid class of chemistry (MOA Group 23). **Kontos** can be applied as a foliar spray or drench and controls a number of major sucking insect and mite pests, including adelgids, aphids, leafhoppers, mealybugs, psyllids, scales, spider mites, spittlebugs and whiteflies. **Kontos** is both xylem and phloem active, meaning that because of the systemic activity the product moves upward and downward in treated plants.

**Kontos** is a suspension concentrate formulation containing 2 pounds of the active ingredient spirotetramat per gallon.

**Labeled for use on:** **Kontos** may be used on ornamental plants in greenhouses and nurseries, including non-bearing fruit and nut trees (i.e., trees that will not bear fruit or nuts for one year after application) and vegetable transplants.

**Mites/Insects Controlled:** Adelgids, aphids, leafhoppers, mealybugs, psyllids, scales, spider mites, spittlebugs, thrips (immature), whiteflies.

**Packaging:** 250 mL (8.45 fl. oz.) containers, 6 per case

**Notes:** There is no known cross resistance of **Kontos** with other pesticide mode of action groups, making it an excellent part of a resistance management program. Do not use on: geraniums, orchids, hoyo, dracaena, cordyline, schefflera, neanthebella palm and ferns.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-1471-59807	0-24 hours	Tetramic acid derivative (ketoenole)	23	Spirotetramat	1.7 to 3.4 fluid ounces	⅛ tsp to ⅓ tsp (.5 mL to 1 mL)	Drench or Spray

## Marathon® 1% G

**Marathon 1% G** is a highly-active insecticide that demonstrates systemic activity in plants when applied to the soil surface or incorporated into the media. It offers 6 to 8 weeks of residual control on ornamentals plants for resale grown in the greenhouse or nursery.

**Labeled for use on:** Ornamentals, non-bearing fruit and nut trees, and vegetable transplants in greenhouses, nurseries and interior landscapes.

**Insects Controlled:** Aphids, whiteflies, thrips, mealybugs, soft scale.

**Packaging:** 5 lbs. container, 4 per case and 50 lbs. drum

**Notes:** Watering, timing, and rotation are keys to making a successful application.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate (see label)	Application
59807-15	12 hours	Neonicotinoid	4a	Imidacloprid	⅛ - 1 ½ teaspoons per pot depending on size	Topical or incorporated into media

## Marathon® 60 WP

**Marathon 60 WP** is a wettable powder in a water soluble packet that allows for a foliar spray, drench, or ebb and flood application for control of insect pests on ornamentals and vegetable transplants for resale grown in the greenhouse or nursery.

**Labeled for use on:** Ornamentals and vegetable transplants in greenhouses and nurseries

**Insects Controlled:** Aphids, whiteflies, thrips, mealybugs, soft scale.

**Packaging:** 1600 grams per master case, 20 gram packets, 5 packets per pouch

**Notes:** Watering, timing, and rotation are keys to making a successful application.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate (see label)	Application
432-1361-59807	12 hours	Neonicotinoid	4a	Imidacloprid	Subject to Application Method	See above

## Marathon® II

**Marathon II** is a flowable formulation that allows for a foliar spray application on ornamentals and vegetable transplants for resale grown in the greenhouse or nursery. At very low rates **Marathon II** as a spray offers 3–4 weeks of control on sucking and piercing insects (aphids, whiteflies, and thrips).

**Labeled for use on:** Ornamentals, non-bearing fruit and nut trees, and vegetable transplants in greenhouses and nurseries.

**Insects Controlled:** Aphids, whiteflies, thrips, mealybugs, soft scale.

**Packaging:** 250 mL container, 12 per case

**Notes:** Watering, timing, and rotation are keys to making a successful application.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
432-1369-59807	12 hours	Neonicotinoid	4a	Imidacloprid	1.7 fluid ounces	1/10 tsp (.5 mL)	Foliar spray, broadcast spray or drench

## Pedestal™

**Pedestal Insect Growth Regulator (IGR)** is effective in controlling a variety of insect pests on ornamental plants. As a result of its unique chemistry and specific mode of action, **Pedestal** provides the grower with an effective tool for Integrated Pest Management (IPM) and resistant management programs.

**Labeled for use on:** Control of insect pests on container and field grown ornamentals in greenhouses, shadehouses, and nurseries.

**Insects Controlled:** Larval, nymph or immature stages of thrips, whiteflies, armyworms and suppression of leafminers.

**Packaging:** 1 quart container, 8 per case

**Notes:** Do not make more than 2 applications of **Pedestal** per crop per year. Do not apply to poinsettias. Do not apply this product through any type of irrigation system.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
66222-40-400	12 hours	Benzoyl Urea IGR	15	Novaluron	6 to 8 fluid ounces	3/8 tsp to 1/2 tsp	Spray

## Shuttle® O

**Shuttle O** miticide is the first product from the naphthoquinone derivative class of chemistry. **Shuttle O** is an excellent choice as a rotational tool for control of two-spotted spider mites, spruce spider mites and other mites.

**Labeled for use on:** Ornamentals grown in greenhouses, container and field nurseries, lath and shade houses, arboretums, interiorscapes, and on greenhouse grown fruiting vegetables (except cucurbits).

**Mites/Insects Controlled:** All life stages of Two Spotted spider mites, Spruce spider mites, Citrus spider mite, European Red mite, Pacific Spider mite, Willamette Spider mite and more.

**Packaging:** 1 pint container, 4 per case

**Notes:** **Shuttle O** should not be mixed with strongly alkaline or acidic compounds. Do not combine **Shuttle O** with Aliette WDG.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
66330-38-59807	12 hours	Naphthoquinone derivative	20B	Acequinocyl	6.4 to 12.8 fluid ounces	3/8 tsp to 3/4 tsp (2 mL to 4 mL)	Spray

## Sirocco®

**Sirocco** provides quick knockdown and long residual control of a wide variety of insects and pests such as thrips and mites. **Sirocco** may be used in greenhouse, shadehouses, nurseries (including Christmas tree / conifer plantations), landscapes and interiorscapes.

**Labeled for use on:** Ornamentals including bedding plants, flowering plants, foliage plants, bulb crops, perennials, and trees and shrubs.

**Mites/Insects Controlled:** Mites such as: Broad mite, Cyclamen mite, Lewis mite, Two-spotted spider mite. Insects such as: Aphids, Thrips, Whiteflies and Leafminers. (Suppression only on aphids, thrips and whiteflies.)

**Packaging:** 8 fluid ounces, 8 per case

**Notes:** Apply in sufficient volume of water to ensure thorough coverage of the foliage. Begin application as soon as mites appear.

For suppression of pest populations, young immature stages must be contacted by the spray. One additional application can be made after 7 days.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
400-572-59807	12 hours	Carbazates + Glycosides	UN + 6	Bifenazate + Abamectin	3 to 6 fluid ounces	¾ tsp to ¾ tsp	Foliar spray

## Triact® 70

**Triact 70** (clarified hydrophobic extract of Neem oil) is a broad-spectrum fungicide, miticide and insecticide that is OMRI listed. This highly effective and economical botanical oil may be used indoors as well as outdoors on ornamental flowering plants, trees, shrubs and foliage grown in greenhouses, interiorscapes and commercial landscapes. As a fungicide, **Triact 70** is a preventative as well as a curative. It coats fungal spores and then dehydrates them to stop the disease cycle. Use **Triact 70** when conditions favor disease development but before major symptoms occur. As a miticide and an insecticide, **Triact 70** acts as a suffocant. To ensure maximum control thorough coverage of **Triact 70** is key. Use **Triact 70** at rates of 0.5 to 2 percent at spray intervals of 7 to 10 days. **Triact 70** makes an excellent tool for all well developed IPM programs.

**Labeled for use on:** For indoor/outdoor use on ornamental flowering plants, trees, shrubs, foliage and vegetable plants grown in nurseries, greenhouses and commercial landscapes.

**Insects, Mites, and Diseases Controlled:** A broad spectrum insecticide, miticide and fungicide. See label for more information.

**Packaging:** 2.5 gallon container, 2 per case

**Notes:** Water temperature should be above 45° F. **Triact 70** is compatible with most commonly used fungicides, insecticides, and fertilizers. Avoid tank mixes of captan, sulfur, chlorothalonil or other chemically similar products. Refer to the label or Product Information Bulletin for crop sensitivities.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per 100 gallons	Rate per 1 gallon	Application
70051-2-59807	4 hours	Oils	M	Clarified hydrophobic extract of neem oil	½ gallon , 1 gallon to 2 gallons	3 ¾ tsp to 7 ½ tsp to 15 tsp (5 TBS) (19 mL to 38 mL to 76 mL)	Spray

# Amendments

## Suffusion® Liquid

**Suffusion** is an effective blend of surfactants for use on all types of growing media in nurseries, greenhouses, interior plantscapes, soil production, and turfgrass.

**Suffusion** works by reducing surface tension of applied water, penetrating into dry and water repellent areas, and linking together water-repellent soil and water. Peat, bark or alternative compost substrates are typically candidates for **Suffusion**.

**Labeled for use on:** All types of growing media in nurseries, greenhouses, interior plantscapes, soil production, and turfgrass.

**Conditions Controlled:** Resistance to wetting.

**Packaging:** 2.5 gallon, 2 per case, and 30 gallon drums

**Notes:** For application information, please see Product Information Bulletin. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	Rate per 100 gallons	Rate per 1 gallon	Application
NA	0 hours	Alkoxyether Surfactants	2.0 to 15 fluid ounces	½ tsp to 1 tsp	Drench

## Suffusion® Granular

**Packaging:** 50 lbs. pail

**Notes:** For more complete mixing information, please see Product Information Bulletin.

EPA Reg. No.	REI	Chemical Family	Rate	Application
NA	0 hours	Alkoxyether Surfactants	½ lb. to 2 lb. per cubic yard	Soil incorporation or top dressing

## Suffusion® Tablet

**Packaging:** 6 tablets per inner case, 10 inner cases per master case

**Notes:** For application information, please see Product Information Bulletin.

EPA Reg. No.	REI	Chemical Family	Application
NA	0 hours	Alkoxyether Surfactants	Hose End Application System

# Herbicides

## Casoron® 4G

**Casoron 4G** is a pre-emergent herbicide which easily handles many troublesome weeds in and around established woody landscape ornamentals, non-crop areas, fruit and nut trees and respective nurseries.

The active ingredient in **Casoron 4G** is dichlobenil, which acts by inhibiting germination, and actively dividing cells of meristems of growing points and root tips; thereby, inhibiting cell division through cellulose synthesis. **Casoron 4G** prevents weed seeds, emerging shoots and certain existing weeds from growing.

**Casoron 4G** develops a vapor barrier and is active for 9-10 months after application. It is absorbed primarily from the soil by the root system. **Casoron 4G** requires ½ to 1 inch of overhead watering to thoroughly incorporate granules to a depth of 4-6 inches in the soil. Application timing is critical, since dichlobenil volatilizes under warm conditions. Applications should be made under cool weather conditions in late fall or very early spring. A fall application may be necessary to control certain perennials, such as fescues, orchardgrass, quackgrass, docks, and dandelions. Do not treat newly planted trees until at least 6 months after planting.

**Casoron 4G** controls grasses and hard to control weeds such as Coltsfoot, Thistles (has post emergent activity), Horsetail, Nutsedge, and many other annual and perennial weeds.

**Labeled for use on:** Fruit and nut trees, woody ornamentals, shelterbelts (established and in nurseries). Non-crop areas such as: landscape around buildings and structures, fences, recreational areas, and under containerized nursery stock.

**Labeled Plants:** Established ornamental trees and shrubs, apple, blueberry, cherry, grape, pear, and filbert. See label for full plant listing and restrictions.

**Packaging:** 25 lbs. bag

**Notes:** Do not apply over the top into containerized plants. Do not use in enclosed structures. Do not allow granules to stick to foliage or to accumulate around the base of trees or shrubs. Do not use on trees or shrubs that have been established for less than 6 months. See label for specific restrictions and precautions.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	lbs. per Acre	Application
400-168-59807	12 hours	Benzonitrile	20	Dichlobenil	100 to 200 lbs.	Granular

## Biathlon®

**Biathlon** is a pre-emergent granular herbicide for control of weeds in field and container production ornamentals, conifers and Christmas trees, grounds maintenance, and other label specified non-crop areas. **Biathlon** contains the active ingredients oxyfluorfen and proflaminate formulated on the Verge® granule. The engineered granule provides an unprecedented level of dust reduction resulting in improved worker safety and ease of application. **Biathlon** applicators are required to wear minimal Personal Protective Equipment (PPE) – long sleeved shirt, pants and socks plus shoes. **Biathlon** has a CAUTION label. **Biathlon** provides control of a wide range of problem grass and broadleaf weeds by creating a barrier in the soil and is active for several months. **Biathlon** works by inhibiting cell division and disrupting cell wall formation in shoots and roots of emerging seedling weeds. Users should irrigate new plantings before **Biathlon** application with ½" water to ensure firm soil or media around the root system. After application, **Biathlon** should be applied when rain is soon forecasted or watered-in with approximately ½" of water. **Biathlon** should be broadcast evenly over media for maximum performance. To prevent weed escapes, do not disturb the soil or media in **Biathlon** treated areas; this will disrupt the barrier necessary for successful weed control.

**Labeled for use on:** Container and field grown ornamentals, Christmas tree and conifer farms, grounds maintenance ornamentals, cut flower and foliage crops and non-crop land.

**Labeled Plants:** **Biathlon** has shown excellent plant tolerance on a wide variety of ornamentals. Please consult the label for a full list. Crops not listed as tolerant to **Biathlon** should be evaluated on a small scale for 30-60 days after application for herbicidal injury prior to widespread application.

**Packaging:** 50 lbs. bag

**Notes:** Do not apply to wet foliage. **Biathlon** is a pre-emergent herbicide and will not control established weeds. **Biathlon** is not labeled for use on vegetable or edible fruit crops, turf, and bedding plants or flowering crops, except as listed in the grounds maintenance section of the label. Avoid application to plants that can channel herbicide to the leaf base (e.g. yucca, dracaena, daylily, hosta etc.). See label for additional restrictions and precautions.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Maximum lbs. per Acre	Maximum lbs. per year - per Acre	Application
59807-12	24 hours	Diphenylether + Dinitroaniline	14 + 3	Oxyfluorfen + Proflaminate	100 lbs. (can apply twice, 3 months apart)	200 lbs.	Granular broadcast

## Marengo®

**Marengo** is a pre-emergent selective liquid herbicide that offers long-term residual control of both grassy and broadleaf weeds on ornamentals grown in production nurseries including those grown in-ground and in pot-in-pot containers. **Marengo** may also be used on conifers, Christmas trees and greenhouse floors. **Marengo** can be used in ornamental production sites and hardscapes and is labeled for use in shadehouses and hoopouses in areas covered by landscape fabric, rock or under benches.

With the new active ingredient indaziflam, **Marengo** offers unparalleled, season-long control of many hard-to-control broadleaf weeds such as bittercress, groundsel, oxalis, marestail, and spurge. **Marengo** also controls tough grassy weeds such as crabgrass, annual bluegrass, and annual sedge. **Marengo** also demonstrates early post-emergence activity against some weeds, including annual bluegrass, crabgrass, and oxalis.

A suspension concentrate (SC) formulation, **Marengo** contains the first active ingredient from MOA (Mode of Action) Group 29. The active ingredient prevents weed seed germination by inhibiting cellulose biosynthesis. **Marengo** does not move once applied to the soil and does not volatilize. **Marengo** should be applied as a broadcast spray over ground areas and as a directed spray for field grown ornamentals.

**Marengo** use rates range from 7.5 to 18.5 fl. oz. per acre depending on soil type and conditions. **Marengo** should be applied in a minimum of 10 gal. of water per acre (one quart of water per 1,000/sq. ft.). **Marengo** performs best when applied to bare ground or mixed with a post-emergent herbicide to eliminate existing weeds. If tank mixing with Roundup® or Finale®, mix **Marengo** in the tank thoroughly before adding Roundup or Finale. For best results, users should activate **Marengo** with a minimum of ¼ inch of water within 2 days of application.

Users should avoid applications when spray particles may be carried by air currents to areas where sensitive crops and plants are growing. Avoid spraying with winds in excess of 10 mph.

Fall applications have shown excellent weed control through the following spring season. The fall application will provide weed control into the spring season, a time when nurseries are busy with other duties and the fields are muddy.

**Labeled for use on:** Ornamentals in outdoor nurseries, shadehouses, hoopouses, greenhouse floors and on Christmas trees, and in conifer plantations.

**Labeled plants:** **Marengo** has shown excellent plant tolerance on a wide variety of ornamentals. Please consult the label for a full list. If a cultivar is not listed on the label, users should treat several plants at the single maximum desired use rate and evaluate 1 to 2 months later for possible injury and acceptable tolerance.

**Packaging:** ½ gallon containers, 4 to a case; 18 fl. oz., 8 to a case

**Notes: Do not apply over the top of ornamental plants.** Do not allow spray to contact foliage. Do not disturb soil surface after application. Do not use **Marengo** on nursery seedbeds, on rooted cuttings, or on young plants in liners. See the label for additional restrictions and precautions.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per acre (see label)	Maximum rate	Application
432-1518-59807	12 hours	Alkylazines	29	Indaziflam	7.5 to 15.0 fl. oz.	18.5 fl. oz. per acre/per year	Liquid directed spray to ornamentals; broadcast spray over ground areas

## Marengo® G

**Marengo G** is a pre-emergent granular herbicide that offers long-term residual control of both grassy and broadleaf weeds on ornamentals grown in production nurseries including those grown in-ground and in containers. **Marengo G** may also be used on conifers and Christmas trees. **Marengo G** can be used in ornamental production sites and hardscapes and is labeled for use in shade houses and hoop houses in areas covered by landscape fabric, rock or under benches.

With the new active ingredient indaziflam, **Marengo G** offers long term control of many hard-to-control broadleaf weeds such as bitter-cress, groundsel, oxalis, marestail, and spurge. **Marengo G** also controls tough grassy weeds such as crabgrass, annual bluegrass, and annual sedge. **Marengo G** also demonstrates early post-emergence activity against some weeds, including annual bluegrass, crabgrass, and oxalis.

A granular formulation, **Marengo G** contains the first active ingredient from MOA (Mode of Action) Group 29. The active ingredient prevents weed seed germination by inhibiting cellulose biosynthesis. **Marengo G** does not move once applied to the soil and does not volatilize.

**Labeled for use on:** Production ornamentals, shadehouses, hoop houses and hardscapes

**Labeled plants:** **Marengo G** has shown excellent plant tolerance on a wide variety of ornamentals. Please consult the label for a full list. If a cultivar is not listed on the label, users should treat several plants at the single maximum desired use rate and evaluate 1 to 2 months later for possible injury and acceptable tolerance.

**Packaging:** 50 pound bag, 40 bags per pallet

**Notes:** The **Marengo G** formulation utilizes Verge® technology, an engineered granule. This technology provides for a heavier and very uniform particle which allows for uniform application and no dust. Do not allow the granules to remain on leaves for extended periods. Research recommends 200 pounds per acre for best weed control. Irrigation or rainfall is necessary to activate **Marengo G**. Do not apply more than 400 pounds per acre per year.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Rate per acre (see label)	Maximum rate	Application
432-1523-59807	12 hours	Alkylazines	29	Indaziflam	100 - 200 lbs./acre	400 lbs. per acre/per year	Granular over the top of ornamentals; broadcast granular application over target ground area

# Plant Growth Regulators

## Augeo®

**Augeo** is a plant growth regulator/enhancer for ornamentals. **Augeo** enhances the overall structure and appearance of plants by reducing apical dominance and promoting lateral branching, resulting in thicker, fuller and a more compact plant with an increased potential for blooms. **Augeo** works by disrupting cell wall integrity, resulting in a pinching effect on the plant.

**Labeled for use on:** Ornamentals in greenhouses, laths, shadehouses, nurseries (both field and container) and/or farms for deciduous, evergreen (broadleaf and needle) and conifer trees, including, but not limited to Christmas tree farms and conifer farms.

**Labeled Plants:** Ornamentals including bedding plants, herbaceous plants, perennials, woody ornamentals, trees and shrubs.

**Packaging:** 1/2 gallon container, 4 per case

**Notes:** Foliar spray. Performs best if applied early in the crop cycle. Usually only one application required. Rates range from 400 to 6400 PPM, many plants respond using 400 to 800 PPM. See the label for more information

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Parts per Million (PPM)	Measure per gallon	Application
2217-932-59807	4 hours	Cyclohexaketone	Unknown	Dikegulac-sodium	400 to 800 PPM	1 ½ tsp to 3 tsp (¼ to ½ fl. oz).	Spray

## B-Nine® WSG

**B-Nine WSG** reduces plant height in ornamental plants by reducing internode length. Other benefits include a deeper green color and reduced breakage during shipping.

**B-Nine WSG** when applied to plant foliage is absorbed into the leaf, moves within the plant to the growing points to reduce internode elongation. On certain crops a tank mix of **B-Nine WSG** plus Cycocel can provide a synergistic effect that results in enhanced activity. An example is 1250 PPM of **B-Nine WSG** and 1250 PPM of Cycocel for moderate height control in finishing bedding plants.

**Labeled for use on:** Ornamentals grown in commercial or research greenhouses, shadehouses, and nurseries.

**Labeled Plants:** Bedding plants/flowering plants, foliage, chrysanthemums, gardenias, hydrangeas, poinsettias, plugs and others. See label for full listing.

**Packaging:** 1 lbs. container, 12 per case and 5 lbs. container, 8 per case

**Notes:** Lower or higher rates of **B-Nine WSG** may be used depending on crop needs. Solutions prepared from **B-Nine WSG** should not be held for more than 24 hours. Apply during morning or evening hours for best leaf absorption. Do not tank mix **B-Nine WSG** with any copper-containing product and do not spray **B-Nine WSG** within 7 days either before or after copper-containing products, as burning of leaves may result. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Parts per Million (PPM)	Measure per gallon	Application
400-478-59807	24 hours	Hydrazide	1	Daminozide	1000 to 2500 to 7500 PPM	¼ TBS to 2 TBS to 6 TBS	Spray to wet

## Cycocel®

**Cycocel** is among the most reliable and widely used plant growth regulators on the market today. **Cycocel** may be used on any crop in the greenhouse or nursery including but not limited to, poinsettias, hibiscus, azaleas, and geraniums to reduce stem elongation, induce early flowering, improve flowering, and to produce compact plants with multiple buds per shoots.

On certain crops a tank mix of B-Nine WSG and **Cycocel** can provide a synergistic effect that results in enhanced activity. An example is 1250 PPM of B-Nine WSG and 1250 PPM of **Cycocel** for height control in finishing bedding plants. Maximum effect of spray applications occurs when **Cycocel** is applied as a foliar spray, thereby entering the plant through leaves and stems.

**Labeled for use on:** Ornamentals grown in commercial or research greenhouses, shadehouses, and nurseries.

**Labeled Plants:** Bedding plants, flowering plants, foliage, chrysanthemums, gardenias, hydrangeas, poinsettias, plugs and others. See label for full listing.

**Packaging:** 1 quart container, 4 per case; 1 gallon container, 4 per case and 30 gallon drum

**Notes:** Avoid overhead irrigation or rainfall within 6 hours of application. Poinsettias: On natural-season crops in the North, **Cycocel** should not be used after October 15. In the South, **Cycocel** should not be used after November 1. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Parts per Million (PPM)	Measure per gallon	Application
241-74-59807	12 hours	Quaternary ammonium	1	Chlormequat chloride	200 to 1250 to 4000 PPM	.22 to 1.36 to 4.34 fluid ounces	Spray or drench



## Paczol®

**Paczol** is an extremely active plant growth regulator that can significantly curtail unwanted plant growth through reduced internode elongation.

**Labeled for use on:** Ornamental plants grown in containers in nurseries, greenhouses, shadehouses, and interiorscapes.

**Labeled Plants:** Including but not limited to bedding plants, azaleas, flowering plants, plugs, liners, foliage plants, poinsettias, hibiscus, chrysanthemums, poinsettias and woody plants.

**Packaging:** 1 gallon container, 4 per case

**Notes:** Caution: reuse of pots, trays, or other containers that previously were used for crops treated with **Paczol** may affect growth of new plantings in such containers. See label for more information. Always read and follow label directions when using this product.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Parts per Million (PPM)	Measure per gallon	Application
400-515-59807	12 hours	Triazole	1	Paclobutrazol	1 to 30 Drench, 5 to 100 Spray	1 PPM=1mL/gl; 5PPM=4.7 mL/gl; 30 PPM=1 fl oz/gl	Spray, drench, soak, media spray

## Hormodin®

**Hormodin** is a root inducing plant hormone. **Hormodin** is a formulation of indole-3-butyric acid (IBA). IBA is a synthetic auxin rooting hormone, which acts as a root stimulant.

**Hormodin** enhances rooting, which reduces propagation bench time and plant loss. **Hormodin** is easy to use, yielding steadfast performance of rooted cuttings and zero disease migration.

To apply **Hormodin**, moisten cuttings, in particular the basal ends of the cuttings before treatment (except geraniums). Pour a small amount of **Hormodin** into a bowl or pan. Dip and stir basal ends of the cuttings in **Hormodin**. Remove excess powder by tapping on the rim of the container. Then, plant treated cuttings in rooting medium. Simply stated, "Dip it - Tap it - Stick it." **Hormodin** works best when used on fresh cuttings.

**Hormodin** is available in three strengths: **Hormodin 1**, at 00.1% (IBA); **Hormodin 2**, at 00.3% (IBA); and **Hormodin 3**, at 00.8% (IBA).

**Hormodin 1** is a general purpose powder designed for the grower who propagates plants such as roses, carnations, poinsettias, some shrubs and most soft herbaceous plants.

**Hormodin 2** is prepared specially for propagating many woody and semi-woody plants, including some of the evergreens.

**Hormodin 3** is prepared specially for propagating the more difficult to root varieties, including many of the evergreens and dormant leafless cuttings.

**Labeled for use on:** Ornamentals grown in commercial or research greenhouses, shadehouses, and nurseries.

**Labeled Plants:** Ornamentals. See label for full listing.

**Packaging:** **Hormodin 1** and **Hormodin 2** are packaged in 1-pound containers (12 x 1 lbs. per case) and 10 kg pails. **Hormodin 3** is packaged in 8 oz. containers (12 x 8 oz. per case).

**Notes:** Cuttings that respond satisfactorily to **Hormodin 1** may be injured by **Hormodin 3** and in some cases by **Hormodin 2**. See the plant listings on the product labels to select the correct **Hormodin** formulation.

EPA Reg. No.	REI	Chemical Family	MOA	Active Ingredient	Application
Respectively 1: 59807-4 2: 59807-2 3: 59807-3	0 hours	Rooting hormones, synthetic auxin	6	Indole-3-butyric acid	Dip it (in appropriate Hormodin substance, designated as per plant listing on label) Tap it (on container rim) Stick it (in rooting medium)

*Augeo, Biathlon, Decathlon, Discus, Fulcrum, Hormodin, Judo, Marathon, OHP 6672, Sirocco, Strike, and Triathlon are trademarks or registered trademarks of OHP, Inc. Aliette, Compass, Chipco, FenStop, Kontos and Marengo are registered trademarks of Bayer Corp. Azatin, SoilGard, and Triact are registered trademarks of Certis USA, LLC. Adept, B-Nine, Casoron, Dimilin, Floramite, Paczol, Terraguard, and Terrazole are registered trademarks of MacDermid Agricultural Solutions, Inc. Pedestal is a trademark of Makhteshim-Agan. Cycocel is a registered trademark of BASF Corporation. Suffusion is a trademark of AmegA Sciences. Shuttle is a registered trademark of Arysta LifeScience North America, LLC. Terraclor is a registered trademark of Amvac Corp. Verge is a registered trademark of Oil Dri Corp. Segway is a registered trademark of Ishihara Sangyo Kaisha, Ltd.*



# WEIGHTS AND MEASURES CHARTS



## AMERICAN LIQUID MEASURE

- 1 teaspoon (tsp) = 80 drops
- 1 tablespoon (tbs) = 3 teaspoons
- 1 fluid ounce (fl oz) = 2 tablespoons
- 1 cup = 8 fluid ounces
- pint (pt) = 2 cups = 16 fluid ounces
- 1 quart (qt) = 2 pints = 32 fluid ounces
- 1 gallon (gal) = 4 quarts = 8 pints = 128 fluid ounces

## AMERICAN DRY MEASURE

- 3 teaspoons = 1 tablespoon
- 16 tablespoons = 1 cup
- 1 pound (lb) = 16 ounces

## LINEAR MEASURE

- 1 foot (ft) = 12 inches
- 1 yard (yd) = 3 feet
- 1 mile = 5,280 ft = 1,760 yd

## SURFACE MEASURE

- 1 square foot (sq ft) = 144 square inches
- 1 square yard (sq yd) = 9 square feet
- 1 acre = 43,560 sq ft = 4,840 sq yds

## VOLUME MEASURE

- 1 cubic foot (cu ft) = 1,728 cubic inches (cu in) = 7.48 gallons
- 1 cubic yard = 27 cubic feet

## CONVERSION TABLE

- 1 kilogram (kg) = 1000 grams (g) = 2.2 lbs
- 1 gram (g) = 1000 milligrams (mg) = .035 ounce
- 1 liter = 1000 milliliters (ml) = 1.057 quarts
- 1 milliliter = .034 fluid ounces
  
- 1 pound = 453.6 grams
- 1 ounce = 28.35 grams
  
- 1 gallon = 4 quarts = 3.785 liters
- 1 quart = 2 pints = .946 liters
- 1 pint = .473 liters
- 1 ounce = 29.6 milliliters
- 1 tsp = 5 mL
- 1 gallon of water = 8.34 lbs (approximately)

- 1 part per million (ppm) = 1 milligram/liter
- = 1 milligram/kilogram
- = .0001 percent
- = .013 ounces in 100 gallons of water
  
- 1 percent = 10,000 ppm
- = 10 grams per liter
- = 10 grams per kilogram
- = 1.33 ounces by weight per gallon of water
- = 8.34 pounds/100 gallons of water

DILUTION OF LIQUID PESTICIDES AT VARIOUS CONCENTRATIONS				
DILUTION	1 GAL	3 GAL	5 GAL	15 GAL
1 - 100	2 tbs + 2 tsp	½ cup	¾ cup + 5 tsp	1 cup + 3 tbs
1 - 200	4 tsp	¼ cup	6½ tbs	½ cup + 2 tbs
1 - 400	2 tsp	2 tbs	3 tbs	4 tbs + 2½ tsp
1 - 800	1 tsp	1 tbs	1 tbs + 2 tsp	3 tbs + 2½ tsp
1 - 1,000	¾ tsp	2¼ tsp	1 tbs + 1 tsp	1 pt + ½ cup

Equivalent quantities of dry materials(wettable powders) for various quantities of water based on recommended pounds to 100 gallons.						
Water	Quantity of Material					
100 gals	1 lb	2 lb	3 lb	4 lb	5 lb	6 lb
25 gals	4 oz	8 oz	12 oz	1 lb	1¼ lb	1½ lb
5 gals	3 tbs	1½ oz	2½ oz	3¼ oz	4 oz	5 oz
1 gal	1 tsp	2 tsp	1 tbs	4 tsp	5 tsp	2 tbs

Equivalent quantities of liquid materials (emulsion concentrates, etc.) for various quantities of water based on pints per 100 gallons.						
Water	Quantity of Material					
100 gals	½ pint	1 pint	2 pints	3 pints	4 pints	5 pints
25 gals	2 fl oz	4 fl oz	8 fl oz	12 fl oz	1 pint	1¼ pint
5 gals	1 tbs	1 fl oz	2 fl oz	2½ fl oz	3 fl oz	4 fl oz
1 gal	½ tsp	1 tsp	2 tsp	3 tsp	4 tsp	5 tsp

## CONVERSION TABLES FOR USE OF MATERIALS ON

LIQUID MATERIALS		
RATE/ACRE	RATE/1000 SQ FT	RATE/100 SQ FT
1 pint	½ tbs	¼ tsp
1 quart	1½ tbs	½ tsp
1 gallon	6 tbs	2 tsp
25 gals	4½ pints	1 cup
50 gals	4½ quarts	1 pint
100 gals	9 quarts	1 quart
200 gals	4½ gals	2 quarts
300 gals	6¾ gals	3 quarts
400 gals	9 gals	1 gallon
500 gals	11¼ gals	1¼ gals

DRY MATERIALS		
RATE/ACRE	RATE/1000 SQ FT	RATE/100 SQ FT
1 lb	2½ tsp	¼ tsp
3 lbs	2¼ tbs	¾ tsp
4 lbs	3 tbs	1 tsp
5 lbs	4 tbs	1¼ tsp
10 lbs	½ cup	2 tsp
100 lbs	2¼ lbs	¼ lb
200 lbs	4½ lbs	½ lb
300 lbs	6¾ lbs	¾ lb
400 lbs	9 lbs	1 lb
500 lbs	11¼ lbs	1¼ lbs

# OHP QUICK REFERENCE Product Rate Guide

Products	Rate per 100 gallons	Rate per 1 gallon
<b>Fungicides</b>		
<b>Aliette® WDG</b>	1.25, 2.5, 5.0 pounds	1¼ tsp, 2½ tsp, 5 tsp (5.7 mL, 11.4 mL, 22.7 mL)
<b>Compass® 0</b>	1 to 4 ounces	¼ tsp to ½ tsp (.3 g to 1.1 g)
<b>FenStop®</b>	7 to 14 fluid ounces	¼ tsp to ½ tsp (2.1 mL to 4.2 mL)
<b>OHP Chipco® 26019 N/G</b>	1 to 2 pounds	1½ tsp to 2½ tsp (4.5 mL to 9.1 mL)
<b>OHP 6672® 4.5 F</b>	10.75 to 20 fluid ounces	¾ tsp to 1½ tsp (3.2 mL to 5.9 mL)
<b>OHP 6672® 50 WP (WSP)</b>	8 to 16 ounces	N/A
<b>Segway® 0</b>	1.5 to 6.0 fluid ounces	⅛ tsp to ½ tsp (.44 mL to 1.77 mL)
<b>SoilGard®</b>	.5 to 2 pounds	½ tsp to 2 tsp (2.3 g to 9.1 g)
<b>Strike® Plus 50 WDG</b>	1.2 to 9 ounces	⅛ tsp to 1 tsp (.34 g to 2.55 g)
<b>Terraclor® 400</b>	6 to 12 fluid ounces	¾ tsp to ¾ tsp (1.8 mL to 3.6 mL)
<b>Terraguard® SC</b>	2 to 8 to 16 fluid ounces	⅛ tsp, ½ tsp, 1 tsp (0.6 mL to 2.4 mL to 4.8 mL)
<b>Terrazole® 35% WP</b>	3.5 to 10 ounces	½ tsp to 1½ tsp (1.0 g to 2.8 g)
<b>Terrazole® L</b>	2.5 to 7 fluid ounces	⅛ tsp to ¾ tsp (.7 mL to 2.1 mL)
<b>Terrazole® L CA</b>	3 to 4 fluid ounces	½ tsp to ¼ tsp (.9 mL to 1.2 mL)
<b>Triact® 70</b>	1/2 gallon, 1 gallon, 2 gallons	3¾ tsp to 7½ tsp to 15 tsp (5 TBS) (19 mL to 38 mL to 76 mL)
<b>Triathlon® BA</b>	0.5 to 6 quarts	1 tsp to 11½ tsp (4.8 mL to 57 mL)

<b>Insecticides / IGRs/ Miticides</b>		
<b>Adept®</b>	1 ounce drench or 2 ounces spray	See label for information.
<b>Azatin® 0</b>	4 to 16 fluid ounces	¼ tsp to 1 tsp (1.2 mL to 4.8 mL)
<b>Decathlon® 20 WP</b>	1.3 to 1.9 ounces	½ tsp to ¾ tsp (.4 g to .5 g)
<b>Discus® N/G</b>	25 to 50 fluid ounces	1½ tsp to 3 tsp (7.4 mL to 14.8 mL)
<b>Discus® Tablets</b>	N/A	1 per gallon pot
<b>Floramite® SC and SC/LS</b>	4 to 8 fluid ounces	¼ tsp to ½ tsp (1.2 mL to 2.4 mL)
<b>Fulcrum®</b>	2 to 12 fluid ounces	⅛ tsp to ¾ tsp (.6 mL to 3.6 mL)
<b>Judo®</b>	2 to 4 fluid ounces	⅛ tsp to ¼ tsp (0.6 mL to 1.2 mL)
<b>Kontos®</b>	1.7 to 3.4 fluid ounces (50 to 100 mL)	¼ tsp to ½ tsp (.5 mL to 1 mL)
<b>Marathon® 1% G</b>	See label for more information.	⅛ tsp to 1½ tsp per pot depending on size
<b>Marathon® II</b>	1.7 fluid ounces	¼ tsp (.5 mL)
<b>Marathon® 60 WP in WSP</b>	1 WSP treats 1000 - 6" pots	See label for more information.
<b>Pedestal™</b>	6 to 8 fluid ounces	¾ tsp to ½ tsp (1.8 mL to 2.4 mL)
<b>Shuttle® 0</b>	6.4 to 12.8 fluid ounces	¾ tsp to ¾ tsp (2 mL to 4 mL)
<b>Sirocco®</b>	3 to 6 fluid ounces	¾ tsp to ¾ tsp (0.9 mL to 1.8 mL)
<b>Triact® 70</b>	1/2 gallon, 1 gallon, 2 gallons	3¾ tsp to 7½ tsp to 15 tsp (5 TBS)(19 mL to 38 mL to 76 mL)

<b>Herbicides</b>		
<b>Biathlon®</b>	100 pounds per acre	
<b>Casoron® 4G</b>	100 to 200 pounds per acre	
<b>Marengo®</b>	7.5 to 15 fluid ounces per acre	
<b>Marengo® G</b>	100 to 200 pounds per acre	

Plant Growth Regulators	Parts per Million (PPM)	Rate per 1 gallon
<b>Augeo®</b>	400 to 800 PPM	1½ tsp to 3 tsp
<b>B-Nine® WSG - Spray</b>	1000 to 2500 to 7500 PPM	¼ TBS to 2 TBS to 6 TBS
<b>Cycocel® - Spray</b>	200 to 1250 to 4000 PPM	.22 to 1.36 to 4.34 fluid ounces
<b>Hormodin® 1, 2 or 3</b>	— See label for which Hormodin to use on various cuttings. —	
<b>Paczol® - Spray or Drench</b>	1 to 30 Drench, 5 to 100 Spray	1 PPM=1 mL/gl; 5 PPM=4.7 mL/gl; 30 PPM=1 fl oz/gl

Users should read the entire label for full information and application instructions.

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TBS = tablespoon  
tsp = teaspoon  
mL = milliliter  
g = grams  
1 fl oz = 29.6 mL  
1 tsp = 5 mL

