

75499-3

05/22/2003

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U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division (7511C)
1200 Pennsylvania Avenue NW
Washington, DC 20460

EPA Reg. Number:

75499-3

Date of Issuance:

MAY 22 2003

Term of Issuance:

Unconditional

Name of Pesticide Product:

Plant Synergists, Inc. GA3 4% Liquid
Plant Growth Regulator Solution

NOTICE OF PESTICIDE:

X Registration
Reregistration
(under FIFRA, as amended)

Name and Address of Registrant (include ZIP Code):

Plant Synergists, Inc.
3001 Winchester Way
Sugar Land, TX 77479

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This registration does not eliminate the need for continual reassessment of the pesticide. If EPA determines at any time, that additional data are required to maintain in effect an existing registration, the Agency will require submission of such data under section 3(c)(2)(B) of FIFRA.

This product is registered in accordance with FIFRA section 3(c)(5) and is subject to the following conditions:

- 1. Change the EPA Reg. No. from 75499-G to 75499-3.
2. Submit three (3) copies of the final printed labeling before you release the product for shipment.

A stamped copy of the label is enclosed for your records.

Signature of Approving Official:

[Handwritten Signature]

Date:

May 22, 03

Janet L. Andersen, Ph.D., Director
Biopesticides and Pollution Prevention Division (7511C)

EPA Form 8570-6

CONCURRENCES

Table with columns for SYMBOL, SURNAME, and DATE. Contains handwritten entries for Hudson, Reelf, and dates 5-15-03, 5-20-03, 5-22-03.

Plant Synergists, Inc.



**Plant Synergists, Inc.**  
**GA<sub>3</sub> 4% Liquid**  
Plant Growth Regulator Solution

**ACCEPTED**  
MAY 22 2003 2/19  
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 75499-3

ACTIVE INGREDIENTS:  
Gibberellic Acid: .....04.0% w/w  
OTHER INGREDIENTS: .....96.0% w/w  
TOTAL .....100.0% w/w  
GA<sub>3</sub> 4% contains approximately 1.0 gram of active ingredient per fluid ounce of formulated product.

**KEEP OUT OF THE REACH OF CHILDREN**  
**WARNING – AVISO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail).

<b>FIRST AID</b>	
<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>• Call poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water, if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<b>IF INHALED:</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>HOTLINE NUMBER</b>	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For general product information, call Plant Synergists, Inc. at (713) 906-5290 between the hours of 9 a.m. – 4 p.m. Central Time.	

**PRECAUTIONARY STATEMENTS**  
**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**  
**WARNING**  
Causes substantial but temporary eye injury. Harmful if inhaled or absorbed through skin. Do not get in eyes or on clothing. Avoid breathing vapor or spray mist, and avoid contact with skin. Wear protective eyewear (goggles or face shield). Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

EPA Reg. No. 75499-G  
EPA Est. No.

Net Contents:  
\_\_ 1.0-gallon \_\_ 2.5 gallons  
\_\_ 5.0 gallons \_\_ 30 gallons  
\_\_ 55 gallons

Manufactured For:  
Plant Synergists, Inc.  
3001 Winchester Way  
Sugar Land, TX 77479

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category C on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Long sleeved shirt
- Long pants
- Chemical resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride, and viton
- Shoes plus socks
- Protective eyewear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

### USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Exposed treated seed may be hazardous to birds and other wildlife. Dispose of all excess treated seed and seed packaging by burial away from bodies of water.

### PHYSICAL OR CHEMICAL HAZARDS

FLAMMABLE! Keep away from heat and open flame.

### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during applications. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

**EXCEPTION:** If the product is soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated areas if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls over short sleeved shirt and short pants
- Chemical-resistant gloves such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride, and viton.
- Shoes plus socks
- Protective eyewear

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter without appropriate protective clothing until sprays have dried.

### STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

**PESTICIDE STORAGE:**  
Keep containers tightly closed when not in use. Keep away from heat and open flame.

**PESTICIDE DISPOSAL:**  
Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:**  
Do not reuse containers. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

### GENERAL INFORMATION

Use only as directed. The label should be read thoroughly and understood before making applications. Keep out of reach of children.

Do not apply this product through any type of irrigation system.

**Application recommendations:**

- GA<sub>3</sub> 4% contains gibberellic acid which is an extremely potent plant growth regulator; when applying plant growth regulators, deviations from the label directions in the rates, timings, water volumes, or the adoption of untested spray mixes, may result in undesirable effects.
- Do not apply to plants under pest, nutritional, or water stress.
- For optimum effectiveness, thorough spray coverage must be achieved; all parts of the plant or crop must receive the spray or desired results will not occur. Prepare solution concentrations by mixing the required amount of product with water in a clean, empty spray tank. Dispose of any unused spray material at the end of each day following local, state or federal law.
- For best results, the water pH should be around neutral, and always below 8.5.
- GA<sub>3</sub> 4% applications made under slow drying conditions (cool to warm temperatures, medium to high relative humidity, and no wind) will increase absorption by the plant, thus optimizing effectiveness. Night-time applications are encouraged when day-time conditions are not conducive to slow drying conditions.
- Product persistence: GA<sub>3</sub> 4% should be re-applied if significant rain occurs within 2 hours of application.
- Compatibility: The GA<sub>3</sub> 4% spray guidelines refer to the use of the product alone. The use of surfactants and other additives has been reported to be beneficial. Plant Synergists, Inc. does not assume responsibility for unexpected results due to the tank mixing of GA<sub>3</sub> 4% with other products.
- DO NOT apply using ULV application methods. For aerial applications spray volumes must be greater than 2 gallons per acre (10 gallons per acre for tree crops).

**SPRAY GUIDELINES FOR CROP CATEGORIES**

**GRAPE**

For all grapes, application is recommended by ground sprayer. Apply in sufficient water volume to ensure thorough wetting. It is important to wet all flower clusters or berries thoroughly. For specific spray rates and timings, by variety, see accompanying tables. Do not exceed maximum rates.

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

**SEEDLESS GRAPE**

Do not apply more than 208 grams a.i./acre, per growing season, for all uses.

*For cluster elongation and looser cluster forms ("Stretch"). To reduce costs of thinning, allow better air circulation to aid in the control of bunch rot, and increase light penetration to aid in sugar development:*

Guide: Apply one to two applications before bloom when flower clusters are 2-to-5 inches long.

*For decreased berry set ("Thinning"), reduced hand-thinning costs, and hastened maturity:*

Guide: Apply one to three applications during bloom. When the bloom period is extended, subsequent sprays should be made 1-to-7 days after the first application.

NOTE: Higher amounts or multiple applications may cause an excess of shot berries or overthinning, especially in young vines or vines with high vigor.

*For larger berries ("Sizing") and larger clusters when used in conjunction with established girdling and thinning practices:*

Guide: Apply one to three applications beginning when the average berry size reaches "target" diameter (See Table 1). Timing of the subsequent sprays will be dictated by experience in the vineyard and

temperatures occurring between sprays. Potential effect will be reduced if the final spray occurs more than two weeks after the first application.

**TABLE 1 Application Rates (Grams A.I./Acre) for Seedless Grape, Including Target Berry Diameters**

Seedless Grape	Stretch	Thinning	Sizing	
	grams a.i./acre	grams a.i./acre	"Target" Diameter	grams a.i./acre
Perlette	8-to-16	*	4-to-5 mm	32-to-80
Flame	8-to-16	3-to-16	6-to-9 mm	20-to-80
Thompson	8-to-16	8-to-16	3-to-5 mm	32-to-80
Raisin	8-to-16	3-to-12	4-to-5 mm	4-to-12
All Other Seedless Grape	*	*	12-to-14 mm	8-to-48

\*No recommendations available for this variety/timing at this time.

NOTE: Do not apply more than 208 grams a.i./acre per growing season for all uses.

**SEEDED GRAPE**

**Emperor Grape**

*For reducing berry shrivel. This can also increase berry size:*

Guide: Apply 20 grams a.i./acre as one application approximately two weeks after completion of berry shatter. This timing should correspond to a period when the predominant berry diameter ranges from 10-to-15 mm.

**Black Corinth (Zante Currant) Grape**

*For improving berry size:*

Guide: Apply 1-to-8 grams a.i./acre as one application 3-to-5 days after full bloom, but before shatter begins.

**Wine Varieties**

*For looser cluster to reduce incidence of bunch rot:*

Guide: Apply one spray when shoots are 15-to-20 inches long. Use 100 gallons of water per acre. Clusters should average 3-to-4 inches in length and may range from 2-to-5 inches in length. Concentrations for registered varieties are shown below (See Table 2).

NOTE: Do not make applications less than four weeks before bloom. IT IS IMPORTANT that the proper rate be used on each variety; if late applications are made or if indicated rates are exceeded, reduction in yield may occur during the year of application and subsequent years.

**TABLE 2 Application Rates (Grams A.I./Acre) and Recommended Water Volume on Seeded Wine Varieties.**

Variety	Grams a.i./acre	Gallons/acre
Palomino Sauvignon Blanc Tinta Madeira	0.4-to-1	100
Aleatico Carignane Chardonnay Chenin Blanc French Colombard	1-to-2	100

Variety	Grams a.i./acre	Gallons/acre
Pinot Noir Valdepenas		
Barbera Petite Sirah Zinfandel	2-10-4	100
Green Hungarian	2-10-4	100
Grenache Alicante	8	100
Salvadore	8-10-16	100

## CITRUS

For all citrus, apply in sprays of sufficient water volumes to ensure thorough fruit wetting. Application to trees of low vigor or under stress (pest, nutritional, or water, etc.) may cause severe leaf and/or fruit drop. In most cases, some drop of older mature leaves will occur after application. Do not apply in white wash sprays in which lime or other caustic material has produced a high pH in the spray tank.

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

### NAVEL ORANGE

*To delay rind aging, reduce physiological disorders (e.g., rind staining, water spotting, sticky or tacky surface, puffy rind and rupture under pressure), and to produce a more orderly harvesting pattern. The delay in rind aging is greatest when an early spray is applied. This spray timing produces the firmest rind possible:*

Guide: Apply 16-to-48 grams a.i./acre in sufficient water volume to ensure thorough wetting.

EARLY SPRAY: Apply one spray approximately two weeks prior to color break, which normally occurs August through November.

**OR**

LATE SPRAY: Apply one spray after marketable color has developed, normally from October through December.

**This late application may cause fruit re-greening.**

NOTE: Do not apply the early spray to groves that may be harvested early, as fruit coloring will be delayed. Do not apply from January through July, as production may be reduced the following year.

### VALENCIA ORANGE

*To reduce rind creasing and to delay rind aging and softening:*

Guide: Apply a single spray in August to October to trees with a target crop of young fruit. Apply 40-to-80 grams a.i./acre in sufficient water volume to ensure thorough wetting.

NOTE: Slower color development should be expected in the target crop. Increased re-greening of mature fruit may occur. After marketable color is achieved, treatment effects may be reduced the longer treated fruit remains on the tree.

### OTHER ROUND ORANGES (All States except California)

*To reduce rind creasing and to delay aging and softening of the rind:*

Guide: Apply a single spray in August to October to trees with a target crop of young fruit. Apply 40-to-80 grams a.i./acre in sufficient water volume to ensure thorough wetting.

NOTE: Slower color development should be expected in the target crop. Increased re-greening of mature fruit may occur. After marketable color is achieved, treatment effects may be reduced the longer treated fruit remains on the tree.

### LEMON/LIME

*To decrease the amount of small ripe fruit and to produce a more desirable production pattern relative to market demand:*

Guide: Apply one spray when target crop is 1/2-to-3/4 full size, but still green. Use 10-to-32 grams a.i./acre in sufficient water volume to ensure thorough wetting.

When applied two years in a row, an even larger difference in harvest pattern and maturity occurs.

### TANGERINE HYBRIDS

*To delay disorders associated with rind aging, puffiness, and softening, and to increase peel strength, of tangerine hybrids such as Orlando, Robinson, Minneola and Sunburst:*

Guide: Apply 20-to-40 grams a.i./acre approximately two weeks prior to color break. Apply in sufficient water volume to ensure thorough wetting.

NOTE: Do not apply if early harvest is planned. Do not apply after coloring as preharvest rind staining may occur. Application during coloring may cause variation in rind color of development.

#### (All States except California)

*To increase fruit set and yields on tangerine hybrids with pollination problems such as the Orlando, Robinson, Minneola and Sunburst:*

Guide: Apply 8-to-30 grams a.i./acre during full bloom. Apply in sufficient water volume to ensure thorough wetting.

NOTE: Fruit sizes may be reduced and color development slightly retarded. A slight increase in mature leaf drop may occur in trees under stress.

### GRAPEFRUIT

#### (All States except California)

*To delay disorders associated with rind aging (e.g., puffiness, softening, and orange coloration), to prevent preharvest drop of mature fruit, to increase peel strength and reduce water loss during storage, and to produce a more orderly harvesting pattern. The delay in rind aging is greatest when an early spray is applied before color change. This spray timing produces the firmest rind possible:*

Guide: Apply 16-to-48 grams a.i./acre in a minimum of 250 gallons per acre.

EARLY SPRAY: Apply one spray approximately two weeks prior to color break, which normally occurs August through September.

**OR**

LATE SPRAY: Apply one spray after marketable color has developed which is normally from October through December.

**This late application may cause fruit re-greening.**

NOTE: Do not apply the early spray to groves that may be harvested early as fruit coloring will be delayed. It is advisable to spot pick heavy crops to aid early marketing and to avoid reduction of yields, which generally follow late held crops. Fully colored fruit to which applications have been made will begin to re-green if allowed to remain on the tree for extended periods.



Application made after December, or when trees begin to break dormancy, may adversely affect new crop. Do not use concentrate sprays. Results may vary from season to season depending on environmental conditions.

### **STAR RUBY VARIETY**

**(All States except California)**

*To reduce early-season small fruit drop of Star Ruby Variety thereby increasing yields:*

Guide: Apply a single spray during the bloom period. Use 25 grams a.i./acre in a minimum of 250 gallons of water per acre.

NOTE: Results may vary from season to season depending on environmental conditions. Maintain a well-balanced fertilization and watering program.

## **FRUIT CROPS**

### **BLUEBERRY**

**(All States Except California)**

*To improve fruit set. For natural fruit set problems due to insufficient natural honeybee pollination, adverse weather conditions, or physiological factors.*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

*Highbush blueberry - (for varieties such as Coville, Jersey, Stanley, Earliblue, Weymouth, Walcott, Berkeley, Bluegray, Bluecrop, 1316A, Concord, and others).*

Guide: Make one or two applications at 40 grams a.i./acre in 100 gallons of water; the single application should be made at full bloom (when 75% of the flowers are fully open). When 2 applications are made, spray the first one at full bloom, and the second one within 10-14 days of the first one. For Weymouth, application can be delayed up to two weeks after bloom to increase size of "shot" berries.

*Rabbiteye blueberry - (for varieties such as Aliceblue, Beckyblue, Bonita, Brightwell, Climax, Delite, Tifblue, Woodward, and others).*

Guide: Make a single application of 40 grams a.i./acre in 100-to-300 gallons of water per acre when most of the flowers are elongated but not yet open (bloom Stage 5).

#### **OR**

MULTIPLE APPLICATIONS: Make two to four applications 10-to-14 days apart starting at bloom Stage 5. Spray 40 grams a.i./acre in 50-to-300 gallons of water per application.

### **SWEET CHERRY**

*To produce larger, brighter colored, firmer fruit:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply a single spray when the fruit is light green to straw colored. Use 16-to-48 grams a.i./acre in sufficient water volume to ensure thorough wetting.

NOTE: Color development and harvest may be slightly delayed.

### **RED TART CHERRY**

**(All States except California)**

*To maintain and extend high fruiting capacity of bearing tart cherry trees and reduce the occurrence of "blind" nodes. Treatment will cause bud differentiation, which is apparent the year after application. Therefore, changes in shoot, spur, and flower production will not be evident until two or three years after*

program initiation. Applications must be applied annually to ensure vegetative development and subsequent yield improvement year after year.

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply one spray 14-to-28 days after bloom. Optimum timing is defined as that stage when 3-to-5 terminal leaves have fully expanded, or, at least 1-to-3 inches of terminal shoot extension has occurred. Use 4-to-18 grams a.i./acre, depending on tree age and vigor (See Table 3). Apply in sufficient water volume to ensure thorough wetting.

**TABLE 3 Recommended Application Rates (Grams A.I./Acre) for Tart Cherry Trees by Age**

Tree Age (years)	Rate (grams a.i./acre)
6-to-10	4-to-6
11-to-15	8-to-10
16-to-20	10-to-14
20 + years	14-to-18

NOTE: Rates are based on expected normal tree vigor at various ages. Adjust rate according to tree vigor. If trees are vigorous, use lowest recommended rates. Lowest rates should also be used on trees that have been heavily pruned or hedged. Use higher rates for trees low in vigor and weak in shoot and spur production. Excessive application rates will increase vegetative growth at the expense of fruit production the following year.

Applications will not improve growth of trees under stress conditions, such as nutritional, moisture, or pest. Best results will be obtained when combined with good cultural practices.

#### **ITALIAN PRUNE (All States except California)**

*To reduce internal browning, improve quality, and increase size:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply 4-to-5 weeks before expected harvest. Apply a single spray at 16-to-48 grams a.i./acre in sufficient water volume to ensure thorough wetting.

NOTE: Color development and harvest may be slightly delayed. May reduce bloom the following season.

#### **NON-BEARING FRUIT TREES**

*To reduce flowering and fruiting in young tart and sweet cherry, and peach trees in order to minimize the competitive effect of early fruiting on tree development:*

NOTE: DO NOT SPRAY TREES IN THE FIRST YEAR. GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product. Treat in the second season for reduction of flowering in the third season, and again in the third season if flower reduction and fruiting is desired in the fourth season. Treat only trees that are in good physiological condition. Discontinue treatment the year before desired harvest.

#### **YOUNG TART AND SWEET CHERRY (All States except California)**

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply a single spray of 20-to-40 grams a.i./acre, 2-to-4 weeks after bloom. Apply a foliar spray of 25-to-50 gallons per acre, assuming a tree density of 100 trees per acre equivalent. Under conditions of low vigor, two applications are recommended. If two spray applications are made, allow at least a seven-day interval between sprays.

**PEACH**  
(All States except California)

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply a single spray in the fall after flower buds have been initiated. This corresponds to the period immediately before and at the onset of early leaf drop, typically late September to early October. Apply at the rate of 40-to-80 grams a.i./acre in 50 gallons of water per acre. Best results are obtained when applied with a handgun and tree canopy is wetted thoroughly to the point of run-off.

**OTHER FRUIT**

**OLYMPUS STRAWBERRY**  
(All States except California)

*To increase runner production of mother plants of the Olympus cultivar:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply a single spray of 20 grams a.i./acre to mother plants 10-to-30 days after planting. At the time of spraying, plants should have 1-to-6 leaves. Apply 100 gallons/acre to thoroughly wet new foliage to the point of run-off.

NOTE: Not for use on fruiting plants. Treatments may not be effective on plantings set out after mid-May.

**VEGETABLE CROPS**

**RHUBARB**

*To break dormancy on plants receiving insufficient chilling and to increase marketable yield of forced rhubarb:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Make a single application of 2 fluid ounces (60 ml) of a solution containing 20 grams a.i. in 10 gallons of water to each cleaned crown, when the rest period is not completely broken. When the rest period is broken by cold weather, apply 2 fluid ounces (60 ml) of a solution containing 10 grams a.i. in 10 gallons of water to each cleaned crown.

NOTE: Keep forcing house temperatures at 40° F-to-50° F for 24 hours after application. If house is warmer than 50° F, the crowns should be covered with plastic. Temperatures in the forcing house above 50° F may lower yields and cause poor stalk color.

**ARTICHOKE**

*To accelerate maturity and shift harvest to an earlier date:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: For perennials, apply one to three applications at bud irritation stage. For annuals, apply one to four applications at 2-week intervals, beginning at the fourth true leaf. Use 10-to-20 grams a.i./acre per application in sufficient water volume to ensure thorough wetting of the entire plant (leaves, stems and buds).

**CELERY**

*To increase plant height and yield and overcome stress due to cold weather conditions or saline soils, and to obtain earlier maturity:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply a single spray one to four weeks prior to harvest at a rate of 2.5-to-10 grams a.i./acre. Use 25-to-50 gallons of water per acre by ground application or 5-to-10 gallons of water per acre for aerial application\*. Use lower concentrations applying 3-to-4 weeks before harvest and higher concentrations within 1-to-2 weeks before harvest.

\*Do not apply by air in California.

NOTE: Do not apply earlier than 4 weeks before harvest as bolting (seed stalk formation) may occur.

### LETTUCE FOR SEED

*To obtain uniform bolting and increase seed production:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply one to four applications at 2-week intervals, beginning at the fourth true leaf. Use 1-to-4 grams a.i./acre per application in sufficient water volume to ensure thorough wetting.

### PEPPER

(All States except California)

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

*To Promote Plant Growth:*

Guide: Apply one to two sprays of 1-to-3 grams a.i./acre in 25-to-50 gallons of water per acre at two-week intervals. Begin sprays 2 weeks after transplanting.

NOTE: This use is recommended for areas with short growing seasons, or when low temperatures slow plant growth.

*To Increase Fruit Set and Promote Fruit Growth:*

Guide: Apply one to two sprays of 1-to-3 grams a.i./acre in 25-to-50 gallons of water per acre at weekly intervals during the flowering period. The high rate is recommended for areas and/or varieties with pollination and/or fruit set problems.

*To Increase Fruit Size:*

Guide: Apply 1-to-3 grams a.i./acre in 25-to-50 gallons of water per acre at the beginning of the picking period. The high rate is recommended for plants with heavy fruit loads.

### MELON AND CUCUMBER

(All States except California)

*To stimulate fruit set during periods of cool temperatures:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Use 2 grams a.i./acre in sufficient water volume for thorough coverage of exposed foliage. Make one application prior to bloom followed by two additional applications at intervals of 10-to-14 days on cantaloupes and watermelons. On cucumbers, up to four applications may be required.

For maximum benefits, vines must be in good condition, except for reduced rate of growth due to cool temperatures.

### SEED POTATO

*To stimulate uniform sprouting to aid in maximum production, more uniform development, fewer late maturing plants, and to break dormancy of newly harvested potatoes that have not had a full rest period.*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Dip whole or cut seed pieces in a solution containing 0.2-to-0.4 grams a.i. in 100 gallons of water prior to planting.

NOTE: Under high soil temperatures use the minimum concentration for dormant seed. Do not treat rested seed pieces.

**SPINACH**  
**(All States except California)**

*To facilitate harvest, increase yield and improve quality of fall and over-winter spinach.*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply a single spray 10-to-18 days before each anticipated harvest on fall or over-winter spinach, ideally when daytime temperatures are 40° F-to-70° F and during early morning hours when dew is present on crop. Apply 6-to-8 grams a.i./acre in 10-to-50 gallons of water per acre by ground sprayer or in a minimum of 5-to-10 gallons of water per acre by air. When applied to promote growth of second cutting, wait until some regrowth has started before spraying. Maximum benefit is obtained when below normal temperatures predominate following application and growth would be otherwise slowed in untreated spinach.

NOTE: Since the promotion of bolting may occur, do not apply after the mid-winter period or if temperatures may be expected to exceed 75° F within several days of application. Do not apply on spring plantings.

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**FLORICULTURE CROPS**

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**POMPOM CHRYSANTHEMUM**  
**(All States except California)**

*For elongating peduncles on Pompom chrysanthemum.*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply a single spray 4-to-5 weeks after initiation of short day conditions.

Use 0.5-to-1 grams a.i. in 12 gallons of water for application to 1,000 sq. ft. of bed. Apply with overhead nozzles directing the spray to the flower buds.

NOTE: Overuse of incorrect timing may cause long, spindly, and weak stems.

**STATICE**  
**(All States except California)**

*To promote earlier flowering and to increase flower yield:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply a single drench spray when plants are more than 10 inches in diameter (approximately 90-to-110 days after normal seeding time). Use 40-to-50 grams a.i. in 25 gallons of water to provide 10 ml solution (4-5 mg a.i.) per plant.

NOTE: Do not exceed specified rates. Do not apply repeated sprays. Accelerated flowering is influenced by extended photoperiod, adequate nutrition, and reduced night temperatures. This treatment reduces the cold requirement and/or the long photoperiod.

**AZALEA**  
**(All States except California)**

The following recommendations are based on results with common azalea cultivars. Differences in responsiveness may vary from one cultivar to another, or from one set of growing conditions to another, or from one cultural management system to another. Therefore, prior to widespread usage, we recommend testing a small number of plants from each cultivar under a specific set of growing and cultural management conditions to verify desired efficacy. GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Spray plants to run-off. The actual spray application rate will vary, depending on plant size and spacing density. Thorough spray coverage is essential for uniform flowering. **Do not apply after flower buds show color.**

NOTE: A representative spray application rate which has been proven effective for 6 inch potted plants spaced at a density of 1 per square foot is 1-gallon spray solution/200 square feet.

*As a partial replacement of cold treatment to break flower dormancy:*

Guide: Apply three sprays of 250-to-500 ppm a.i. (See Table 4) at weekly intervals after 3-to-4 weeks of chilling.

NOTE: Plants should be at Stage 5 of floral development (i.e., style elongated and open) when treatment is initiated. A representative spray schedule would consist of applications made at 3, 10, and 17 days after four weeks of chilling. Flowers will not develop properly if applied prior to Stage 5.

NOTE: On some cultivars (e.g., 'Gloria', 'Prize', and 'Redwing'), a single spray of 1000-ppm a.i. after 3-to-4 weeks of chilling has proven effective in breaking dormancy.

*As a complete substitution of cold treatment to break flower dormancy:*

Guide: Apply four to six sprays of 1000-ppm a.i. (See Table 4) at weekly intervals. Plants must be at Stage 5 of floral development (style elongated and open) before first spray is applied.

NOTE: Flowers will not develop properly if applied prior to Stage 5 of floral development.

*To inhibit flower bud initiation during vegetative growth:*

Guide: After each pinch, apply two to three sprays of 100-to-750 ppm a.i. (See Table 4) at intervals of 2-to-3 weeks.

Table 4 can be used to convert spray concentrations (ppm of a.i.) to actual number of fluid ounces of GA<sub>3</sub> 4% needed for one gallon of spray solution.

**TABLE 4 Application Rates and Recommended Water Volume for Azalea**

Desired ppm value	grams a.i./gallon*	grams a.i./acre**	Fl. Oz. of GA <sub>3</sub> 4%/acre**
100	0.38	87	87
250	0.95	207	207
500	1.90	414	414
750	2.85	610	610
1000	3.80	828	828

\*Note: GA<sub>3</sub> 4% is a liquid. Each fluid ounce contains approximately one (1) gram of active ingredient.

\*\*Based on a spray application rate of 1 gallon of spray solution/200 square feet.

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## GOLF/TURF

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### BERMUDAGRASS GOLF TURF (All States except California)

*To initiate or maintain growth and prevent color change during periods of cold stress and light frosts on golf course Bermudagrass (e.g., Tifdwarf, Tifgreen, etc.).*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply 10 grams a.i./acre weekly or 25 grams a.i./acre biweekly in 25-to-100 gallons of water/acre.

NOTE: Do not exceed specified rates. Do not apply during extended warm period where night temperatures exceed 65° F.

*To maintain or enhance regrowth during summer months:*

Guide: Apply 1-to-3 grams a.i./acre weekly in 25-to-100 gallons of water/acre.

NOTE: Maintain adequate moisture and proper fertilization programs recommended in local area. Discontinue treatments if thinning is observed. Do not apply the high rate more frequently than every two weeks. More frequent mowing may be necessary. Do not use on dormant turf.

## OTHER CROPS

### HOPS

(Northwestern U.S. only)

For seeded and seedless Fuggle hop and similar varieties adapted to the Northwestern states.

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

*To increase yield and fruit set:*

Guide: Apply a single spray when vine growth is 5-to-8 feet in length. Use 4-to-6 grams a.i./acre in 100-to-150 gallons of water/acre.

### COTTON

(All States except California)

*To promote early plant growth, increase early seedling vigor, and to overcome stress caused by cool weather:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply 1-to-6 grams a.i./acre via in-furrow application to seed, or as a foliar application from the cotyledon stage through the 5-leaf stage. Repeat applications as needed every 5-to-7 days, to a maximum of 4 applications. Use 5-to-40 gallons of water by ground application or 3-to-10 gallons by air.

NOTE: Use higher rates when temperatures will likely average 75° F or less during the 14 days following the applications. Do not tank mix with herbicides. Do not apply more often than necessary to achieve the desired height, as overdosage may result in excessive growth.

### GRAIN SORGHUM

(All States except California)

*For use as a seed treatment to break dormancy and allow germination under cold soil conditions:*

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

Guide: Apply 0.25 to 1.00 grams a.i. per 100 pounds of seed. GA<sub>3</sub> 4% can be applied to dry seed with standard mist-treating equipment. Make certain the seed is completely and uniformly covered with GA<sub>3</sub> 4%. Fill the seed treatment tank with water to one-half the final tank mix volume. Add the required amount of GA<sub>3</sub> 4%, mixing thoroughly while adding water and other seed treatment products to the desired final volume.

**DO NOT USE TREATED SEED FOR FOOD, FEED OR OIL PURPOSES.** An approved dye must be added to distinguish GA<sub>3</sub> 4% treated seed and prevent inadvertent use for food, feed or oil purposes. Seed commercially treated with this product must be labeled in accordance with all applicable requirements of the federal and state seed laws. GA<sub>3</sub> 4% is compatible with most commonly used fungicide seed treatments such as Vitavax® and Dithane®, standard dyes and sticker-binding agents. When preparing tank mixes, the user should ensure adequate physical compatibility and mixing characteristics.

## RICE

(All States except California)

GA<sub>3</sub> 4% contains approximately 1.0 gram active ingredient per fluid ounce of formulated product.

### Foliar Application

Early season foliar application of GA<sub>3</sub> 4% may promote vigorous and more uniform seedling growth of rice prior to permanent flood establishment. This may permit earlier flooding (5 to 10 days earlier) of drill or broadcast-seeded rice and is particularly effective on semi-dwarf varieties. Early flooding may reduce the additional flushing costs associated with a delay in establishing the permanent flood, reduce weed infestations and the number of herbicide applications, and/or promote earlier and more uniform grain maturity.

Late season foliar applications of GA<sub>3</sub> 4% between split-boot and 100% heading may increase panicle height of rice. This may facilitate harvest efficiency in the field by allowing the rice grain to be cut above the leaf canopy at faster combine speeds and at reduced vegetative load. Grain quality and maturity may be advanced with the promotion of tiller panicle development. Heading applications to the first crop may also accelerate regrowth of second crop rice. This may result in earlier second crop maturity and maximized grain yield.

### Timing and Rate Recommendations

#### Seedling Applications (Early Season)

GA<sub>3</sub> 4% may be applied at a rate of 1 to 3 fl oz (30 to 90 ml) of product per acre to rice between the 1-2 and 4-5 leaf stages of growth. Timing and dosage should be based upon environmental conditions, tank mix combinations with herbicides, and preferred permanent flood practice in relation to rice leaf stage.

For best results, apply GA<sub>3</sub> 4% at a rate of 1 to 2 fl oz (30 to 60 ml) of product per acre using either a non-ionic surfactant known to be non-phytotoxic to rice or in tank mix combination with rice herbicides (See Compatibility with Other Chemicals section). Use higher rates of 1.5 to 3 fl oz (45 to 90 ml) of product with some dry and water-based herbicide formulations, or when temperatures will likely average 75°F or less during 14 days after application.

NOTE: Foliage may temporarily appear lighter green in color due to accelerated growth rates following GA<sub>3</sub> 4% application.

#### Panicle Extension Applications (Late Season)

GA<sub>3</sub> 4% may be applied at a rate of 3 to 8 fl oz (90 to 240 ml) of product per acre between split-boot and 100% panicle heading to promote main culm and tiller panicle extension. Tank mix with a non-ionic surfactant known to be non-phytotoxic to rice.

### Use Precautions

Avoid drift or accidental application to other crops.

Do not apply when rice is subjected to drought stress conditions.

### Mixing Instructions

Fill the treatment tank with half of the final tank mix volume. Add the required amount of GA<sub>3</sub> 4% and mix thoroughly while adding water to the desired final volume. Dispose of any unused spray material at the end of the day.

### Application Equipment

GA<sub>3</sub> 4% may be applied by aerial or ground spray equipment. As an aerial spray, use a spray system capable of producing a uniform spray pattern of medium to fine spray droplets at 10 gallons per acre (GPA). Apply no less than 3 GPA of total spray volume. Low pressure ground sprayers equipped with boom and flat fan nozzles using 10 to 15 GPA spray volume may be used.



**Compatibility with Other Chemicals**

GA<sub>3</sub> 4% can be tank mixed with most commonly used rice herbicides and fungicides. When applying GA<sub>3</sub> 4% in mixtures with Arrosolo<sup>®</sup>, Riverside Propanil<sup>®</sup> 60DF, Stam<sup>®</sup> M4, Stam<sup>®</sup> 80EDF, or Wham!<sup>®</sup> EZ, plus one of their recommended adjuvants, use of an additional surfactant is not necessary. Do not apply GA<sub>3</sub> 4% with Whip<sup>®</sup> IEC or Whip<sup>®</sup> 360.

**Seed Treatment Application**

GA<sub>3</sub> 4% may be used as a seed treatment for rice. GA<sub>3</sub> 4% stimulates seed germination and promotes faster and more uniform stand establishment. The following table describes GA<sub>3</sub> 4% application and expected benefits.

**GA<sub>3</sub> 4% Seed Treatment Application**

Crop	GA <sub>3</sub> 4% Use Rates	Important Considerations	Benefits
Rice	0.5 to 2.1 fl oz product in 8-20 fl oz water/100 lbs seed (Equivalent to 15 to 20 ml in 237 to 591 ml water/45 kg seed)	For use with drill or broadcast seeding systems. Do not apply GA <sub>3</sub> 4% prior to a 24 hour presoak or to water used for the presoak. Do not exceed 2.1 fl oz product/100 lbs of seed (or 62 ml product/45 kg seed).	May promote germination and emergence for semi-dwarf and tall varieties. May help increase final stand density and uniformity when seed are planted deeper to receive adequate moisture.

**Mixing Instructions**

GA<sub>3</sub> 4% may be applied to seed with standard mist treating equipment. For best results, higher treatment volume of 12 to 20 fl oz per 100 pounds of seed (355 to 591 ml/45 kg seed) ensures complete and uniform coverage.

Fill the treatment tank with half of the final tank mix volume. Add the required amount of GA<sub>3</sub> 4% and mix thoroughly while adding water and other co-applied seed treatment products (see Compatibility with Other Chemicals section) to the desired final volume.

An approved dye must be added to distinguish GA<sub>3</sub> 4% treated seed and prevent inadvertent use for food, feed or oil purposes. Treated seed must be labeled in accordance with the requirements of the Federal Seed Act.

**Use Restriction**

Do not use treated seed for food, feed or oil purposes.

**Compatibility with Other Chemicals**

GA<sub>3</sub> 4% is compatible with most commonly used fungicide seed treatments (e.g. Vitavax<sup>®</sup> CT and Dithane<sup>®</sup>), standard dyes, and sticker/binding agents. When preparing tank mixes, ensure adequate physical compatibility and mixing.

**HYBRID RICE SEED PRODUCTION**

(All States except California)

GA<sub>3</sub> 4% may be applied during heading to increase panicle height of hybrid rice. This may facilitate pollination and harvest efficiency in the field, thus maximizing potential seed yield.

**Timing and Rate Recommendations**

For hybrid rice, 1 to 3 applications can be applied during heading to promote main culm and tiller panicle extension, thus helping to maximize flower pollination.

Do not apply more than a total of 100 fl oz (3000 ml) of product per acre.

**Use Restrictions**

Hybrid seed harvested from GA<sub>3</sub> 4% treated rice may only be used for planting. Do not use the seed for food, feed or oil purposes. An approved dye must be added to distinguish the harvested hybrid seed and prevent inadvertent use for food, feed or oil purposes. All non-seed portions of the female plants and all pollinator (male) rice plants, including male seed, must be destroyed.

**Use Precautions**

Avoid drift or accidental application to other crops. Higher rates of GA<sub>3</sub> 4% application to hybrid rice plants can result in excessive vegetative growth, thus producing a taller plant that is more prone to lodging.

**Mixing Instructions**

Fill the treatment tank with half of the final tank mix volume. Add the required amount of GA<sub>3</sub> 4% and mix thoroughly while adding water to the desired final volume. Dispose of any unused spray material at the end of the day.

**Application Equipment**

Aerial applications of GA<sub>3</sub> 4% should be made with spray systems capable of producing a uniform spray pattern of medium to fine spray droplets. Apply no less than 3 gallons per acre (GPA) of total spray volume. Low pressure ground sprayers may be used equipped with boom and flat fan nozzles using 10 to 15 GPA spray volume.

**CONVERSION TABLE**

<b>Grams of Gibberellic Acid Per Acre</b> Desired Gibberellic Acid Concentration (Grams Active Ingredient per acre) in Finished Spray	<b>To</b>	<b>Amount of GA<sub>3</sub> 4% Formulation Per Acre</b> GA <sub>3</sub> 4% Liquid Contains Approximately 1.0 Gram Active Ingredient Fluid Ounce of Formulated Product
0.5		0.5 oz.
1.0		1 oz.
2.0		2 oz.
4.0		4 oz.
5.0		5 oz.
8.0		8 oz.
10.0		10 oz.
12.0		12 oz.
16.0		16 oz.
20.0		20 oz.
25.0		25 oz.
32.0		32 oz.
40.0		40 oz.
48.0		48 oz.
50.0		50 oz.

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