

# Shortstop®

## Plant Growth Regulator for Trees

**ACTIVE INGREDIENT:**

Paclobutrazol: ((±)-(R\*,R\*)-β-[4-chlorophenyl methyl]-α-(1,1-dimethylethyl)-1H-1,2,4-triazole-1-ethanol).....22.3%

**OTHER INGREDIENTS**.....77.7%

**TOTAL**.....100.0%

Shortstop® contains 2 lbs. active ingredient per gallon.

### KEEP OUT OF REACH OF CHILDREN

### CAUTION

Precautionary Statements

Hazards to Humans and Domestic Animals.

Harmful if Swallowed, Inhaled, or Absorbed through the skin.

See The Label Booklet For First Aid And Additional Precautionary Statements

EPA Reg. No.: 80697-4-82866

EPA Est. No.: 069845-CHN-002

**Net Volume: 2 quarts**

Manufactured by:  
Zhejiang Tide CropScience Co., Ltd.  
21 Hubble, Irvine, CA 92618, USA

Manufactured for:  
Greenleaf Chemical LLC  
Henderson, NV 89052, USA

**SHAKE WELL BEFORE EACH USE**

<b>FIRST AID</b>	
<b>If swallowed</b>	<ul style="list-style-type: none"> <li>• Call a 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 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>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 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 mouth-to-mouth if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<b>HOT LINE NUMBER</b>	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-702-324-2403 for emergency medical treatment information.</p>	
<b>PRECAUTIONARY STATEMENTS</b>	
<b>HAZARDS TO HUMANS AND DOMESTIC ANIMALS</b>	
<b>CAUTION</b>	
<p>Harmful if swallowed, inhaled or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist.</p>	

### PERSONAL PROTECTIVE EQUIPMENT

#### 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 F on an EPA chemical resistance category selection chart.

#### Applicators and other handlers must wear:

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

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. Wash PPE after each day's use.

#### USER SAFETY RECOMMENDATIONS

##### Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately, if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- 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 by cleaning equipment or disposal of equipment washwaters.

### PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

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**DIRECTIONS FOR USE**

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**Failure to follow directions and precautions on this label may result in plant injury or poor disease control.**

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 application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation. Read all label directions carefully before use.

**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), notification to workers, and restricted-entry interval. The requirements in this box only apply to uses of this product 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.

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
- Chemical-resistant gloves such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride, or viton
- Shoes plus socks

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**GENERAL INFORMATION**

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Shortstop® is a systemic plant growth regulator that slows vegetative growth by inhibiting gibberellin biosynthesis for use on trees. For trees, Shortstop® reduces the above ground vegetative growth and changes specific morphological characteristics of the tree plant. Shortstop® is most effective when applied to the soil near the base of the tree either by soil injection or with basal soil drench.

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**TREES**

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Shortstop® as tree growth regulator is a xylem mobile plant growth regulator that slows vegetative growth by inhibiting gibberellin biosynthesis. Shortstop® reduces vegetative growth thereby reducing the volume of woody growth that must be removed from trees when trimming occurs and may extend the trimming cycle. Shortstop® is equally effective when applied as a basal soil drench or by soil injection.

Shortstop® can be used on listed trees found in areas such as utility rights-of-way, urban environments, residential areas and other non-crop areas.

**Symptoms of Growth Regulation**

Shortstop® demonstrates little or no phloem mobility. Activity occurs following root uptake and xylem translocation throughout the tree canopy. Symptoms of growth regulation may not be visible for up to 18 months following application of Shortstop®. Initial effects of Shortstop® may be observed as intense greening of foliage with no resulting phytotoxicity. At the time when normal vegetative growth extension should occur, trees treated with Shortstop® will exhibit shortened internodes which may be somewhat thickened. Smaller leaf size and enhanced flowering may also be observed in some species.

**USE DIRECTIONS****Application Timing**

Applications can be made throughout the year, weather permitting, except when soil is frozen or saturated with water.

**Note:** Shortstop® is absorbed by plant roots and translocated to the growing tissues in response to evaporative water loss (transpiration). If applications are made after fall leaf drop, uptake of Shortstop® will not occur until development of new leaves in the spring and resumption of transpiration.

**Mixing Directions**

Mix 317 ml (10.7 fl oz) of Shortstop® with water to make one gallon of diluted mixture. One gallon of Shortstop® will make 12 gallons of diluted mixture. To improve the handling characteristics of the diluted mixture, the addition of a suspension aid is recommended such as, nonionic and organosilicone surfactants.

Follow all label directions and precautions on the product label of the suspension aid.

**Application Methods**

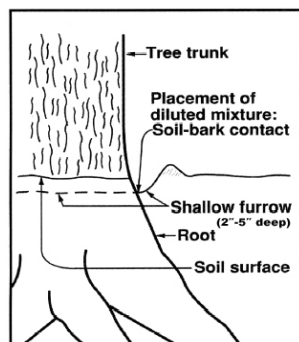
Shortstop® may be applied as a basal drench or by soil injection. Treat only trees that are well established in their final location. Treatment of trees less than 4 inches in diameter is not recommended.

**Basal Drench**

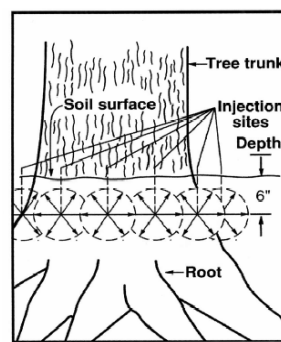
Apply the required dose [total ml required for the application rate and tree size (DBH)] uniformly around the base of the tree at the point of contact between the soil and the tree trunk (Figure 1). The diluted mixture of Shortstop® may be carefully poured around the tree or an applicator which provides a controlled rate of flow may be used. If there is potential for rainfall or irrigation to move surface applied product to non-target plants, apply Shortstop® diluted mixture to the bottom of a shallow furrow around the base of the tree. After applying, refill the furrow with untreated soil.

**Soil Injection**

The diluted mixture of Shortstop® should be injected approximately 6 inches deep. Use soil injection equipment capable of delivery at 100 to 200 psi. Injection orifices should be oriented to release the diluted product horizontally at the point of injection. The required dose should be divided evenly among injection sites spaced as uniformly as possible around the tree trunk. The injection sites should be positioned to release Shortstop® diluted mixture as close as possible to the point of contact between soil and unthickened bark beneath the soil so that the active ingredient may be readily absorbed by the tree (Figure 2). Injection sites should also be located next to buttress roots (Figure 2). For trees less than 6 inches DHB, use at least 4 evenly spaced injection sites per tree.



**Figure 1.** Placement of Shortstop® as basal drench



**Figure 2.** Placement of Shortstop® as a soil injected treatment.

**Application Rate**

Application Rate Ranges for Diluted Mixture of Shortstop® for Treatment of Various Tree Species <sup>2</sup>				
50 to 100 ml (1 to 2 grams a.i.) per inch DBH	100 to 150 ml (2 to 3 grams a.i.) per inch DBH		150 to 200 ml (3 to 4 grams a.i.) per inch DBH	
Australian Pine	Basswood	Maple	Alder	Locust, Black
Dogwood	Beech	Mountain Ash	Ash	Magnolia
Redbud	Boxelder	Olive, Russian	Aspen	Mulberry
Sweetgum	Buckeye	Sassafras	Birch	Oak
	Catalpa	Walnut	Bradford Pear	Pines
	Elm(s)		Cedar, Red	Poplar

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50 to 100 ml (1 to 2 grams a.i.) per inch DBH	100 to 150 ml (2 to 3 grams a.i.) per inch DBH	150 to 200 ml (3 to 4 grams a.i.) per inch DBH	
	Hickory Horse Chestnut Linden Locust, Honey	Cherry, Black Cottonwood Eucalyptus Hackberry	Redwood Sycamore Willow

<sup>2</sup>For acidic soils (low pH), soils with high organic matter content or soils with high clay content, use the higher rate, not to exceed 4 grams a.i. per inch DBH.

Amount of Shortstop® Diluted Mixture Required for Specific Application Rates and Tree Sizes				
Dia. of Tree at Breast Height (DBH) (inches)	50 ml per inch DBH	100 ml per inch DBH	150 ml per inch DBH	200 ml per inch DBH
	Total ml required	Total ml required	Total ml required	Total ml required
4	200	400	600	800
5	250	500	750	1000
6	300	600	900	1200
7	350	700	1050	1400
8	400	800	1200	1600
9	450	900	1350	1800
10	500	1000	1500	2000
12	600	1200	1800	2400
14	700	1400	2100	2800
16	800	1600	2400	3200



<b>Amount of Shortstop® Diluted Mixture Required for Specific Application Rates and Tree Sizes</b>				
<b>Dia. of Tree at Breast Height (DBH) (inches)</b>	<b>50 ml per inch DBH</b>	<b>100 ml per inch DBH</b>	<b>150 ml per inch DBH</b>	<b>200 ml per inch DBH</b>
	<b>Total ml required</b>	<b>Total ml required</b>	<b>Total ml required</b>	<b>Total ml required</b>
18	900	1800	2700	3600
20	1000	2000	3000	4000
22	1100	2200	3300	4400
24	1200	2400	3600	4800
26	1300	2600	3900	5200
28	1400	2800	4200	5600
30	1500	3000	4500	6000
32	1600	3200	4800	6400
34	1700	3400	5100	6800
36	1800	3600	5400	7200

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**GENERAL PRECAUTIONS**


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- Apply at recommended rates and follow safety procedures.
- Trees not used for food production that are not specifically listed on this label may be treated if all other label directions are followed.
- Trees which are severely stressed due to moisture, temperature, low soil fertility, or exhibit mechanical or chemical injury should not be treated.
- Do not reapply Shortstop® until symptoms from previous applications begin to subside.
- If soil is heavily compacted or a high water table exists, use of a registered tree growth regulator such as Cutless\* Tree Implants may be more satisfactory.

- Basal drench and soil injection application of Shortstop® may result in localized, temporary discoloration of turfgrass immediately adjacent to the treatment site.
- Avoid basal drench applications on slopes or other areas where Shortstop® or treated soil may be washed away from the base of the tree by rainfall or irrigation.
- Treatment of trees bordered by shrubs and/or herbaceous ornamentals may cause these plants to be affected if their roots extend into the treatment zone.
- Do not treat sugar maple trees or any other trees that are or could be tapped for sugar.
- Do not treat nut or fruit trees that will be harvested within one year.

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

#### STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container.

**PESTICIDE STORAGE:** Keep container closed when not in use. Do not store near food or feed. Protect from freezing. In case of spill or leak on floor or paved surfaces, soak up with sand, earth or synthetic absorbent. Remove to chemical waste area.

**PESTICIDE DISPOSAL:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the hazardous waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL:** 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.

**LIMITED WARRANTY AND DISCLAIMER**

Greenleaf Chemical LLC warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below.

Our recommendations for use of this product are based upon tests believed to be reliable. The use of this product being beyond control of the manufacturer, no guarantee, expressed or implied, is made as to the effects of such use or the results to be obtained if not used in accordance with printed directions and established safe practice. To the fullest extent permitted by law, buyer's exclusive remedy and manufacturer's or seller's exclusive liability for any and all claims, losses, damages or injuries resulting from the use or handling of this product, whether or not based in contract, negligence, strict liability in tort or otherwise shall be limited, at the manufacturer's option to replacement of, or the repayment of the purchase price for, the quantity of product with respect to which damages are claimed.

**Inherent Risks of Use**

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Greenleaf Chemical LLC or the seller. All such risks shall be assumed by buyer.

**Terms and Conditions of Use**

If terms of the Limited Warranty & Disclaimer and Inherent Risks of Use are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer and Inherent Risks of Use.

Shortstop® is a trademark of Greenleaf Chemical LLC

\*Trademark of SePRO Corporation.