

100-1014

09-14-2011

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL, SAFETY  
AND POLLUTION PREVENTION

Fred Pearson  
Syngenta Crop Protection, LLC  
PO Box 18300  
Greensboro, NC 27419-8300

SEP 14 2011

Subject: Formulation Change to Paclobutrazol 2SC  
EPA Registration No. 100-1014  
Decision No. 450861  
Submission Date: May 20, 2011

Labeling Amendment to Paclobutrazol 2SC  
EPA Registration No. 100-1014  
Decision No. 453098  
Submission Date: May 20, 2011

Dear Mr. Pearson:

The confidential statement of formula (CSF) and the labeling referred to above, submitted under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, are acceptable.

The agency acknowledges the updated CSFs dated 4/20/11. Our files have been updated to reflect the current accepted CSFs to be:

1. Basic (CSF 192/2) - 4/20/11
2. Alternate #1 (CSF 1202/1) - 4/20/11
3. Alternate #2 (CSF 314/2) - 4/20/11
4. Alternate #3 (CSF 1204/1) - 4/20/11
5. Alternate #4 (CSF 1203/1) - 4/20/11

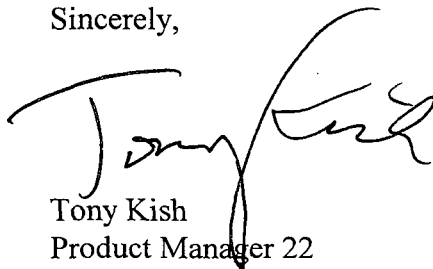
The agency also acknowledges the correction in percent active ingredient on the label from 22.3% to 22.9% and the inclusion of revised directions for use associated with restrictions for use in California when applied as a seed treatment for peppers.

Please note that we do not review/stamp a supplemental label that is identical to the master label as is this submitted seed treatment supplemental label. Supplemental labels are submitted when there is something changed from the master label.

A stamped copy of the label is enclosed for your records. Please submit one (1) final printed

copy for the above mentioned label before releasing the product for shipment. If you have any questions, please contact Dominic Schuler at (703) 347-0260 or via email at [schuler.dominic@epa.gov](mailto:schuler.dominic@epa.gov).

Sincerely,



Tony Kish  
Product Manager 22  
Fungicide Branch  
Registration Division (7504P)

# PACLOBUTRAZOL 2SC

Plant Growth Regulator for Turfgrass, Trees, and Seed Treatment

*Active Ingredient:*

Paclobutrazol

(±)-(R\*,R\*)-beta-[(4-chlorophenyl)methyl]-alpha-(1,1-dimethylethyl)-1H-1,2,4-triazole-1-ethanol ..... 22.9%

*Other Ingredients:* ..... 77.1%

*Total:* ..... 100.0%

Contains 2 lbs. active ingredient per gallon.

**KEEP OUT OF REACH OF CHILDREN**

## CAUTION

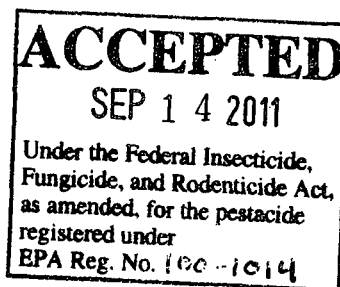
[See additional precautionary statements and directions for use inside booklet.]

EPA Reg. No. 100-1014

EPA Est.

Product of

\_\_\_\_\_ gallons  
Net Contents



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<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>
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
<b>HOTLINE NUMBER</b> For 24-Hour Medical Emergency Assistance (Human or Animal) or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident) Call <b>1-800-888-8372</b>	

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## **PRECAUTIONARY STATEMENTS**

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### **Hazards to Humans and Domestic Animals**

#### **CAUTION**

Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes, or clothing.

### **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.

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Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as barrier laminate, butyl rubber, nitrile rubber, 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.

#### **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 of equipment or disposal of equipment washwaters.

#### **Physical or Chemical Hazards**

Do not use or store near heat or open flame.



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**CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY**

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**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, LLC. or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of the product contrary to label instructions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and, (2) Buyer and User assume the risk of any such use. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.**

To the extent permitted by applicable law, in no event shall SYNGENTA be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and of Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.



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## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

**FAILURE TO FOLLOW THE USE DIRECTIONS AND PRECAUTIONS ON THIS LABEL MAY RESULT IN PLANT INJURY OR POOR DISEASE CONTROL.**

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.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40CFR 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). 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, or Viton®
- Shoes plus socks

## TURF

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### USE INFORMATION

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Paclobutrazol 2SC is a plant growth regulator for non-residential turfgrass that slows grass growth for up to two months after application. The frequency of mowing can be reduced by up to 50% during the period of effective retardation. Use of Paclobutrazol 2SC on fine turf should be accompanied by moderate-to-high fertility to maintain turfgrass appearance and reduce discoloration. Growth and development of some grasses (e.g. *Poa annua*) can be significantly reduced, leading to selective control after prolonged use in mixed populations.

#### What Applications of Paclobutrazol 2SC to Turfgrasses Provide

- Slowed vertical growth and reduced mowing for 6 to 8 weeks on established hybrid bermudagrass, bentgrass and perennial ryegrass fairways, tees and roughs, and on St. Augustinegrass and Kentucky bluegrass/perennial ryegrass turf areas (use reduced rates on bentgrass and overseeded bermudagrass greens).
- Improved and extended fertilizer performance for up to 12 weeks when combined with a nitrogen fertilizer while improving turfgrass quality versus fertilizer alone.
- Reduced potential for scalping of all turfgrass areas.
- Better ball playability on hybrid bermudagrass due to increased turf density and tighter-knit turf areas.
- Suppression of *Poa annua* by reducing its growth and competitive ability.

#### When to Use for Growth Suppression of Warm-Season Grasses

Use anytime when established hybrid bermudagrass and St. Augustinegrass are green, actively growing and have recovered from dormancy (filled in fully following winter).

#### When to Use for Growth Suppression of Cool-Season Grasses

Apply in spring after green-up and after turf has been mowed once or twice. Apply at least 1 month before onset of high air temperatures. In late summer/early fall, apply at least 1 month before anticipated first killing frost.

#### When to Use for *Poa annua* Suppression

Apply when the *Poa annua* is actively growing. In moderate climates the application timing may be fall through late spring. In northern climates, spring and fall timings are



recommended. In climates with a prolonged winter dormancy, fall applications can be made up to one month prior to anticipated first killing frost. Repeat application should be made as part of a *Poa annua* suppression program.

**When to Use for Color and Quality Enhancement of Winter Overseeded Turf and *Poa annua* Suppression**

Apply anytime after overseeded turf has successfully established itself (cool-season turf species should be near 85% of turf composition). Do not apply after March 15<sup>th</sup> to putting greens to avoid delay in bermudagrass green-up. Moderate soil moisture conditions should be present before and after application to achieve best regulating effect.

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**USE DIRECTIONS**

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Apply treatment solution uniformly to turf. Do not use on residential turf. For best results, apply 0.25 inch of water within 24 hours after application to remove product from foliage and onto soil surface.

Apply with standard pressurized spray application equipment with by-pass or mechanical agitation using strainer screens of 50 (or coarser) mesh. Product should be added during filling of applicator tank. When tank is allowed to stand, vigorous agitation should be used to assure material suspension before application.

Apply Paclobutrazol 2SC to turf in sufficient amount of water (minimum 1 gallon treatment solution per 1,000 sq. ft. = 43.5 gals./acre) to ensure uniform coverage. For best results, use 2 to 3 gallons of water per 1,000 sq. ft. A color agent or other marking device is advised to avoid skipping and/or overlapping.

**Treatment Coverage Chart<sup>1</sup>**

Rate of Active Ingredient per Acre	Fluid Ounces of Product per Acre
0.10 lbs. a.i./A	6.4 oz.
0.16 lbs. a.i./A	10.0 oz.
0.25 lbs. a.i./A	16.0 oz.
0.50 lbs. a.i./A	32.0 oz.
0.75 lbs. a.i./A	48.0 oz.

<sup>1</sup>Product should be mixed with minimum 1 gal water/1,000 sq. ft. Use 2 to 3 gals/1,000 sq. ft. for best results.

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### Specific Rates

Warm Season Grasses	Cool Season Grasses <sup>1</sup> (except putting greens)	Bentgrass Putting Greens	Overseeded Bermudagrass
0.50 lbs a.i./A (sandy soils)	0.25 to 0.50 lbs. a.i./A	0.10 to 0.25 lbs. a.i./A	0.10 to 0.16 lbs. a.i./A
0.75 lbs a.i./A (clay soils)			

<sup>1</sup> Reduce application rate by 50% if *Poa annua* is a significant portion of turfgrass population (greater than 50%).

Apply 0.5 to 0.9 lbs. nitrogen/1,000 sq. ft. of a non-burning fertilizer product on warm and cool season grasses. Apply 0.25 to 0.5 lbs. nitrogen/1,000 sq. ft. on bentgrass greens and overseeded bermudagrass.

### Results to Expect from Application of Paclobutrazol 2SC

When applied as directed, vertical growth of turf will be slowed within 3-10 days, resulting in reduced mowing frequency for a 6- to 8-week period. Following applications, turf will gradually undergo increased greening and density, which may persist up to 12 weeks.

Following application of product, weed populations should not be any greater than on untreated turf, although weed visibility may be higher on regulated turf.

Growth and competitive ability of *Poa annua* will be reduced within 1 to 2 weeks after application; regulation will last 3 to 8 weeks. Turfgrass shoots and leaves will become discolored for 3 to 8 weeks following onset of growth regulation. With proper fertilization, desired turfgrasses will be stimulated to crowd out weakened *Poa annua*.

As density of treated fairways increases due to altered growth habit, ball playability may improve, causing ball to sit higher on turf. This result is most evident on hybrid bermudagrass.

Seedhead formation will not be prevented. Seedheads should be mowed off as they grow above turf cutting height to maintain a desirable-looking turf.

Excessive irrigation and/or nitrogen fertilization may shorten period of growth regulation.

Regulator response will vary somewhat according to turf variety. For St. Augustinegrass, Bitter Blue will be the most responsive and Floratam the least responsive.



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**HYBRID BERMUDAGRASS**

Cultivar	Sensitivity/Activity	Period of Growth Regulation	Period of Color Response
Tifway I, II	Medium/Good	5 - 6 weeks	6 - 8 weeks
Tifgreen	High/Excellent	6 - 8 weeks	8 - 10 weeks
Ormond	High/Excellent	6 - 8 weeks	8 - 10 weeks

**ST. AUGUSTINEGRASS**

Cultivar	Sensitivity/Activity	Period of Growth Regulation	Period of Color Response
Floritam	Low/Moderate	4 - 6 weeks	5 - 8 weeks
Floralawn	Low/Moderate	4 - 6 weeks	5 - 8 weeks
Floratine	Medium/Good	6 - 7 weeks	7 - 8 weeks
Raleigh, Texas Common	Medium/Good	6 - 7 weeks	7 - 8 weeks
Bitter Blue, Seville	High/Excellent	7 - 8 weeks	8 - 10 weeks

**Program Scheduling**

If crabgrass or other annual grassy weeds have been a problem in the past, an application of the appropriate preemergence weed control product should be made before the use of Paclobutrazol 2SC. Space the applications of Paclobutrazol 2SC and oxadiazon-based preemergence products at least 4 weeks apart on putting greens.

If a weed, disease or insect problem occurs after application of Paclobutrazol 2SC, apply an appropriate control product at its recommended rate. Paclobutrazol 2SC is compatible with most existing control products. Use of Paclobutrazol 2SC in combination with fungicides containing propiconazole, fenarimol, triadimefon, and myclobutanil can result in increased growth inhibition of *Poa annua* on putting greens.

**For Growth Regulation**

Repeat applications can be made within the same growing season as long as the turf is actively growing. Turfgrass species and growth rate will dictate rate and timing of applications. Do not apply more than 4 quarts per acre per year (2 lbs. a.i./A).



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### **For *Poa annua* Suppression**

Paclobutrazol 2SC will suppress the growth and competitive ability of *Poa annua*. Apply when *Poa annua* is actively growing at 16 to 32 ounce per acre. Lower rates and more frequent applications can be made if *Poa annua* discoloration cannot be tolerated. However, only moderate *Poa annua* suppression may be achieved. Do not apply more than 4 quarts per acre per year (2 lbs. a.i./A).

### **For Color, Quality Enhancement, and *Poa annua* Suppression in Overseedings**

On bentgrass greens and overseeded bermudagrass, repeat applications can be made as long as the turf is actively growing. Do not apply more than 4 quarts per acre per year (2 lbs. a.i./A). Apply to overseeded turf when seed has established and turf composition is near 85% of the cool season species.

Do not apply to overseeded bermudagrass greens after March 15<sup>th</sup> to avoid delay of spring green-up of dwarf-type bermudagrass.

Do not aerify or topdress and drag greens with steel mats while under growth regulation.

Do not seed within 6 weeks prior to or 2 weeks after application of Paclobutrazol 2SC.

If Embark is used for *Poa annua* seedhead control, apply this product **at least 14 days** after application of Embark.

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### **USE PRECAUTIONS**

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**Do not** use on residential lawns.

**Do not** use on bermudagrass putting greens except for winter overseeding enhancement use.

**Do not** use on athletic fields under heavy traffic where maximum growth potential of turf is desired.

**Do not** use on shrubs, flowers, fruits, or vegetable plants (applications to turf areas under trees will not affect/harm trees).

**Do not** use during periods of extreme dry or cold weather conditions, or during heavy insect or disease activity.

**Do not** apply product when soil is already saturated. Heavy rainfall or irrigation in the treated areas may cause active ingredient to move laterally on slopes and collect in low areas. These areas may undergo more severe growth control for a longer period of

time.

**Do not** use on areas containing greater than 70% *Poa annua*, since discoloration of *Poa annua* may be unacceptable.

Delay treatment of newly-sodded or sprigged turf until grass has knitted down and rooted firmly.

Delay sprigging for at least 4 weeks and sodding at least 2 weeks after application is made.

**Do not** apply this product through any type of irrigation equipment.

Withhold application on large turf areas that have been thinned from winter drainage, disease, or insects until desired fill-in is achieved.

Assure that dosage rates are measured accurately since rates greater than those recommended may cause undesirable turf growth control and may discolor areas temporarily.

Shake container thoroughly before use.

For best residual activity, Paclobutrazol 2SC should be removed from leaf surfaces by irrigation or rainfall prior to mowing.

Broadleaf weeds are not significantly affected by Paclobutrazol 2SC. To control the growth of weeds, treat with an appropriate herbicide when weeds are actively growing. Carefully follow label directions.

**Do not** use on areas to be cultivated for food or feed crops or to be resown with grasses within two years of treatment.

**Do not** apply more than 4 qts. per acre per year (2 lbs. a.i./A).

**Do not** graze treated areas or harvest for forage or hay.

## TREES

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### USE INFORMATION

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Paclobutrazol 2SC is a xylem mobile plant regulator that slows vegetative growth as well as creating other physiological effects by inhibiting gibberellin biosynthesis. Paclobutrazol 2SC reduces the above ground vegetative growth and changes specific morphological characteristics of the plant. Paclobutrazol 2SC is most effective when applied to the soil near the base of the tree either by soil injection or with basal soil drench.

Paclobutrazol 2SC can be used on listed trees found in such areas as urban environments, utility rights-of-way, residential areas and other non-crop areas.

Characteristics of results in the tree:

The activity of Paclobutrazol 2SC occurs following root uptake and xylem translocation throughout the tree canopy. This occurs within a few weeks, although maximum growth inhibition may not be fully visible for up to 18 months following application. Initial effects of Paclobutrazol 2SC may be observed as intense greening of the foliage with no phytotoxicity. Trees treated with Paclobutrazol 2SC will exhibit shorter internodes, a reduction in the diameter growth of the main stem wood, thicker leaf cuticles, and an increase in fine root growth in some species. Smaller leaf size and enhanced flowering may also be observed in some species.

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### USE PRECAUTIONS

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- Apply at recommended rates and follow safety procedures.
- Trees not used for food production and that are not specifically listed on this label may be treated if all other label directions are followed.
- Local soil and environmental conditions can affect the degree and longevity of effect following application of Paclobutrazol 2SC. Follow label instructions to increase effectiveness depending on these factors.
- Do not reapply Paclobutrazol 2SC until symptoms from the previous applications begin to disappear, or within 3 years of the last application, whichever comes first.
- For hard-to-wet soils, the mobility of Paclobutrazol 2SC can be enhanced by using a nonionic, organosilicone surfactant.
- Trees growing in heavily compacted soils may need to be vertical mulched or soil aerated for Paclobutrazol 2SC to effectively promote root growth.
- Basal drench and soil injection application of Paclobutrazol 2SC may result in localized, temporary discoloration of turfgrass immediately adjacent to the treatment site.



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- Avoid basal drench applications on slopes or other areas where Paclobutrazol 2SC 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 within one year of application.
- Do not treat nut or fruit trees that will be harvested within one year of application.
- Do not treat trees that are severely stressed or rapidly declining
- Do not apply this product through any type of irrigation system.

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## APPLICATION METHODS

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Paclobutrazol 2SC may be applied as a basal drench or by soil injection. Application should be made as close to the tree and the soil interface as possible to obtain the most consistent results.

### Basal Drench

Apply the required dose (see Table 1 for rates based on tree size and species) 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 Paclobutrazol 2SC may be carefully poured around the tree or an applicator that provides a controlled flow may be used. If there is potential for rainfall or irrigation to move the surface applied product to non-target plants, apply Paclobutrazol 2SC 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 Paclobutrazol 2SC should be injected approximately 3-6 inches deep. Use injection equipment capable of delivery at 60-150 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 the Paclobutrazol 2SC diluted mixture as close as possible to the point of contact between the soil and the tree 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 DBH, use at least 4 evenly spaced injection sites per tree.

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## APPLICATION TIMING

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Applications can be made throughout the year, weather permitting, except when the soil is frozen or saturated with water. Note: Paclobutrazol 2SC 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 Paclobutrazol 2SC will not occur until development of new leaves in the spring and resumption of evaporative water loss.

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## **MIXING PROCEDURES**

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Refer to Table 1. When mixing large amounts of Paclobutrazol 2SC, use a suspension aid to improve suspension of the diluted mixture at a rate of approximately  $\frac{1}{2}$  pint to 2 pints per 100 gallons. To re-suspend a solution that has settled, use 1 to 2 pints of a suspension aid per 100 gallons. Follow all label directions and precautions on the product label of the suspension aid.

If applying mixture to compacted soils, high clay content soils, or other hard-to-wet soils, use a nonionic, organosilicone wetting agent (surfactant) to increase penetration of the soil. Mix approximately  $\frac{1}{2}$  ounce surfactant per 3 gallons or 1 pint surfactant per 100 gallons. Follow all label directions and precautions on the product label.

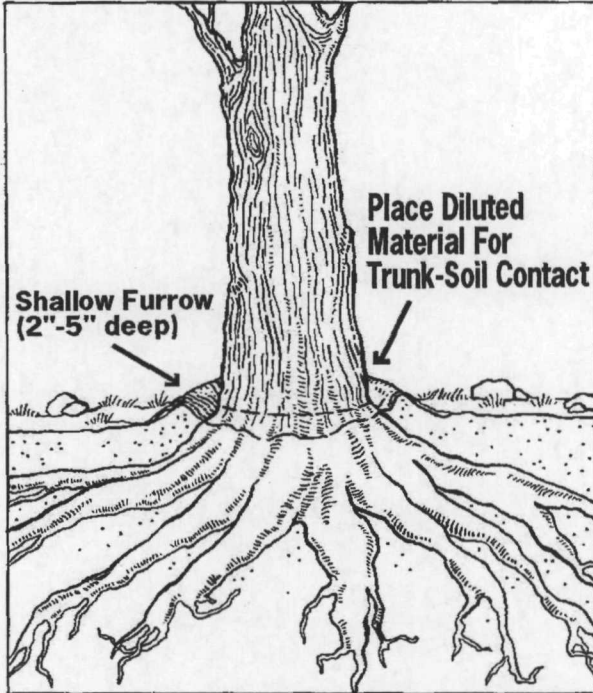


Figure 1. Placement of Paclobutrazol 2SC as a basal drench

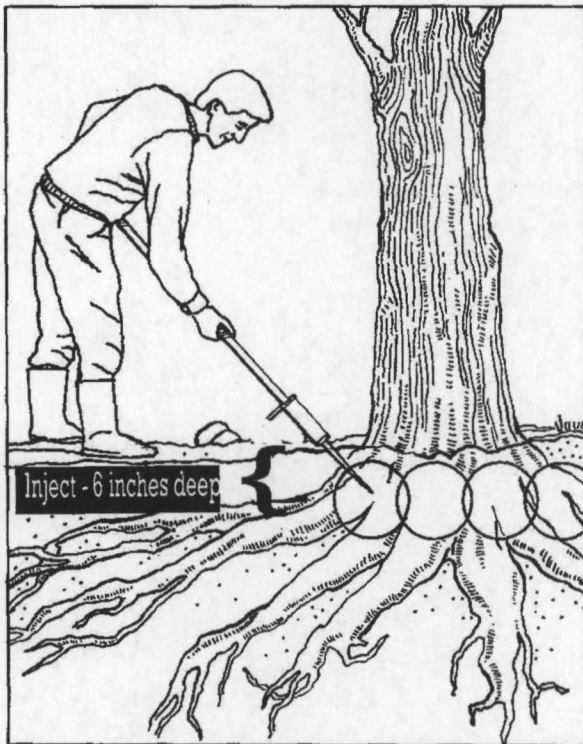


Figure 2. Placement of Paclobutrazol 2SC as a soil injected treatment



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**Table 1: Amount of Paclobutrazol 2SC and Minimum Water Required for Specific Trees and Tree Sizes**

DBH (in.)	Tree Species Group (See Table 2)											
	Group A		Group B		Group C		Group D		Group E		Group F	
	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)
4	17	500	33	667	42	833	46	917	50	1,000	67	1,333
5	20	625	42	833	52	1,042	57	1,146	63	1,250	83	1,667
6	25	750	50	1,000	63	1,250	69	1,375	75	1,500	100	2,000
7	44	875	58	1,167	73	1,458	80	1,604	88	1,750	117	2,333
8	50	1,000	67	1,333	83	1,667	92	1,833	100	2,000	133	2,667
9	56	1,125	75	1,500	94	1,875	103	2,063	113	2,250	150	3,000
10	63	1,250	83	1,667	104	2,083	115	2,292	125	2,500	167	3,333
11	69	1,375	92	1,833	115	2,292	126	2,521	138	2,750	183	3,667
12	75	1,500	100	2,000	125	2,500	138	2,750	150	3,000	200	4,000
13	81	1,625	108	2,167	135	2,708	149	2,979	163	3,250	217	4,333
14	88	1,750	117	2,333	146	2,917	160	3,208	175	3,500	233	4,667
15	94	1,875	125	2,500	156	3,125	172	3,438	188	3,750	250	5,000
16	100	2,000	133	2,667	167	3,333	183	3,667	200	4,000	267	5,333
17	106	2,125	142	2,833	177	3,542	195	3,896	213	4,250	283	5,667
18	113	2,250	150	3,000	188	3,750	206	4,125	225	4,500	300	6,000
19	119	2,375	158	3,167	198	3,958	218	4,354	238	4,750	317	6,333
20	125	2,500	167	3,333	208	4,167	229	4,583	250	5,000	333	6,667
21	131	2,625	175	3,500	219	4,375	241	4,813	263	5,250	350	7,000
22	138	2,750	183	3,667	229	4,583	252	5,042	275	5,500	367	7,333
23	144	2,875	192	3,833	240	4,792	264	5,271	288	5,750	383	7,667
24	150	3,000	200	4,000	250	5,000	275	5,500	300	6,000	400	8,000
25	156	3,125	208	4,167	260	5,208	287	5,729	313	6,250	417	8,333
26	163	3,250	217	4,333	271	5,417	298	5,958	325	6,500	433	8,667
27	169	3,375	225	4,500	281	5,625	309	6,188	338	6,750	450	9,000
28	175	3,500	233	4,667	292	5,833	321	6,417	350	7,000	467	9,333
29	181	3,625	242	4,833	302	6,042	332	6,646	363	7,250	483	9,667
30	188	3,750	250	5,000	313	6,250	344	6,875	375	7,500	500	10,000
31	194	3,875	258	5,167	323	6,458	355	7,104	388	7,750	517	10,333
32	200	4,000	267	5,333	333	6,667	367	7,333	400	8,000	533	10,667
33	206	4,125	275	5,500	344	6,875	378	7,563	413	8,250	550	11,000
34	213	4,250	283	5,667	354	7,083	390	7,792	425	8,500	567	11,333
35	219	4,375	292	5,833	365	7,292	401	8,021	438	8,750	583	11,667
36	225	4,500	300	6,000	375	7,500	413	8,250	450	9,000	600	12,000
37	231	4,625	308	6,167	385	7,708	424	8,479	463	9,250	617	12,333
38	238	4,750	317	6,333	396	7,917	435	8,708	475	9,500	633	12,667
39	244	4,875	325	6,500	406	8,125	447	8,938	488	9,750	650	13,000
40	250	5,000	333	6,667	417	8,333	458	9,167	500	10,000	667	13,333



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DBH (in.)	Tree Species Group (See Table 2)											
	Group A		Group B		Group C		Group D		Group E		Group F	
	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)	Paclobutrazol 2SC (ml)	Water* (ml)
41	256	5,125	342	6,833	427	8,542	470	9,396	513	10,250	683	13,667
42	263	5,250	350	7,000	438	8,750	481	9,625	525	10,500	700	14,000
43	269	5,375	358	7,167	448	8,958	493	9,854	538	10,750	717	14,333
44	275	5,500	367	7,333	458	9,167	504	10,083	550	11,000	733	14,667
45	281	5,625	375	7,500	469	9,375	516	10,313	563	11,250	750	15,000
46	288	5,750	383	7,667	479	9,583	527	10,542	575	11,500	767	15,333
47	294	5,875	392	7,833	490	9,792	539	10,771	588	11,750	783	15,667
48	300	6,000	400	8,000	500	10,000	550	11,000	600	12,000	800	16,000
49	306	6,125	408	8,167	510	10,208	562	11,229	613	12,250	817	16,333
50	313	6,250	417	8,333	521	10,417	573	11,458	625	12,500	833	16,667

\*More water may be used than indicated on the table to deliver the desired rate of product. Do not use less water as distribution of the chemical in the tree can be compromised.



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**Table 2: Tree Species for Each Group Corresponding to Application Rates in Table 1.**

<b>Group A</b>	<b>Group E</b>	<b>Group F</b>
Australian pine (NOT Austrian Pine)	Anaqua*	Alder
Dogwood	Baytree	Arborvitae
Sweetgum (eastern US)	Beech	Ash – All Species
Redbud	Camphor	Aspen**
	Cedar – Deodora	Banyan*
<b>Group B</b>	Chinaberry	Birch – All Species
Basswood	Catalpa	Black olive
Cypress	Ebony – Texas*	Bradford pear
Elm – small (<10" DBH)	Hickory	Cedar – All others (except Deodora)
Elm – Siberian	Holly – American	Cherry – black
Linden – all varieties	Locust – Honey	Cottonwood**
Mountain ash	Mesquite*	Crabapple
Norway maple – small (<10" DBH)	Mimosa*	Eucalyptus
Red maple – small (<10" DBH)	Oak – Black	Fir
Sugar maple – small (<10" DBH)	Oak – Live - large (>10" DBH)	Hackberry
Sweetgum (western US)	Oak – Pin	Hawthorne
Tupelo	Oak – Post	Hemlock
	Oak – Red	Jackaranda
<b>Group C</b>	Oak – Sandshinnery	Juniper
Australian bottle*	Oak – Water	Laurel
Black gum	Oak – White	Locust – Black
Box elder	Oak – Willow	Magnolia
California pepper*	Olive – Russian	Melaleuca*
Elm – large (>10" DBH)	Paloverde*	Mugo Pine
Horse chestnut	Paulownia	Mulberry
Live oak – small (<10" DBH)	Pecan*	Oak – Laurel
Norway maple – large (>10" DBH)	Raintree*	Oak – valley
Oleander*	Saltcedar*	Osage orange
Persimmon*	Sassafras	Palms*
Red maple – large (>10" DBH)	Soapberry*	Pear – Bradford
Rosewood*	Sumac – African*	Photinia
Silver maple – small (<10" DBH)	Walnut	Pines – All Species**
Sugar maple – large (>10" DBH)		Poplar – Lombardy, Tulip, Yellow**
<b>Group D</b>		Redwood
Ailanthus		Spruce – All Species
Buckeye		Sugarberry
Ironwood		Sycamore**
Silver maple – large (>10" DBH)		Tallow – Chinese
		Waxmyrtle - Pacific
		Tallowwood*
		Tamarisk*
		Willow
		Yew

\* These trees may exhibit variable results.

\*\* These trees have a limited response to Paclobutrazol 2SC and may need multiple consecutive years of treatment for acceptable growth control.



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## SEED TREATMENT

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### USE INFORMATION

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Paclobutrazol 2SC is a xylem mobile plant regulator that slows vegetative growth as well as creating other physiological effects by inhibiting gibberellin biosynthesis. Paclobutrazol 2SC reduces the above ground vegetative growth and changes specific morphological characteristics of the plant. Paclobutrazol 2SC is shown to be effective as a seed treatment in specific vegetable crops. Seed treatment of Paclobutrazol 2SC includes direct slurry treatment of seed, seed priming, seed soaking, treatment of seed contained in the planting media by a mechanical drip system, seed conditioning, seed pelleting, seed film coating, seed encrusting or other such addition of inert polymers that improve germination and establishment of seed including impregnation of seed germination trays, containers or germination medium or fertilizer or additives used in the growth medium. Paclobutrazol 2SC seed treatment can be applied to primed or unprimed seed. Paclobutrazol 2SC is shown to be most effective on transplanted vegetable crops. In such transplanted crops the growth regulatory influence of Paclobutrazol 2SC begins during the early stages of seed germination and subsequent growth and establishment of the seedlings in the containers or transplant medium. The actual benefit of Paclobutrazol 2SC may extend beyond the seedling stages, after the plants are transplanted in fields where the plants complete growth, development, flowering, fruiting, maturity and harvest.

Paclobutrazol 2SC can be used for seed treatment of tomatoes, peppers and cucurbits. Specifically Paclobutrazol 2SC seed treatment is effective on varieties of tomatoes, peppers and cucurbits that are used in transplanting.

**Characteristics of Paclobutrazol 2SC seed treatment effects:** The visible impact of Paclobutrazol 2SC starts as soon as the seed starts to germinate. The emergence of the root and shoot structures from the seed may be slightly slowed because of the direct inhibitory effect of Paclobutrazol 2SC on gibberellin or other such natural growth hormones that are involved in seed germination. This characteristic slowing of germination due to Paclobutrazol 2SC seed treatment is rate dependent and therefore the rates used need to be specific to crop, seed type and seed size. This slowing of germination is deemed useful in plants grown for future transplanting. Seedlings that emerge from a seed treated with Paclobutrazol 2SC generally tend to be shorter with short internode and thicker stems and the leaves produced by these plants may be dark green. These young plants or seedlings are expected to withstand "physiological stress" that may arise due to a reasonable deviation from normal temperature and moisture conditions in the transplant production. Due to this impact from Paclobutrazol 2SC seed treatment, the plants are expected to perform to their genetic potential even if they are subjected to certain acceptable and tolerable biotic or abiotic stress to the plants. With these physiological and functional adaptations, the growth, development, flowering, fruiting, and maturity of the crop is optimized.

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## USE PRECAUTIONS FOR PACLOBUTRAZOL 2SC SEED TREATMENT

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- Apply at recommended rates.
- It is highly recommended to use seed that is professionally treated and approved by Syngenta Crop Protection.
- Where required, confirm seed safety and seed storability based on certified seed germination tests.
- All commercial seed slurry treating procedures, seed treating equipment, seed pelleting, seed film coating, seed encrusting, seed priming, must first be tested for compatibility with the seed. Treat a small amount of seed with the same application method, application equipment and seed enhancement process. Conduct germination tests and evaluate plant vigor to assure seed safety prior to committing the entire seed lot.
- Follow safety procedures prescribed in the label.
- Good seed quality is important. Do not treat seed that are inherently poor in germination quality with Paclobutrazol 2SC.
- Only compatible, approved and registered seed treatment fungicides, insecticides, nematicides, plant activators, growth regulators may be applied with Paclobutrazol 2SC seed treatment.
- The growth medium used for germinating seed, fertilizer or nutrient added, water source and water properties, transplant material structures, prevailing conditions of temperature and humidity in transplant seedling production may have an adverse affect on germination and early season growth of Paclobutrazol 2SC treated seed and/or seedling. Prior to using Paclobutrazol 2SC seed treatment, make sure that these conditions and procedures are compatible.
- Local soil and environmental conditions can affect the degree and longevity of effect of Paclobutrazol 2SC seed treatment.

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## USE INFORMATION ON APPLICATION METHODS

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Paclobutrazol 2SC may be applied as a seed treatment on listed vegetable seed only. The application of Paclobutrazol 2SC seed treatment requires proper calibration and application techniques. Application should be made with proper loading around each seed at the recommended rates.

### Slurry Seed Treatment with Paclobutrazol 2SC

Use standard mixing and slurry application equipment to uniformly distribute Paclobutrazol 2SC. For slurry treatment that requires application of other additional registered products it is recommended that the Paclobutrazol 2SC be tested for compatibility in mixing and application. The application must be applied as a mixture

rather than being applied sequentially. A proper drying step is required before the slurry treated seed is packaged.

### **Other Seed Treatment Procedures**

Paclobutrazol 2SC can also be applied on specific seed via film coating, pan coaters, pelleting, encrusting, directly to seed in transplant trays via a mechanical drip system, or any other processes that are deemed suitable for seed treatment. The polymers, inerts, surfactants or additives used in these processes must be approved by EPA and tested for compatibility with Paclobutrazol 2SC. In addition, it is mandatory that these processes and additions made must be completely compatible to the seed for optimum germination, establishment, growth and development.

Paclobutrazol 2SC can be applied to primed or unprimed seed using standard and commonly accepted vegetable seed treatment processes that have confirmed efficacy and seed safety (i.e. slurry application, film coating, encrusting, pelleting, or directly to seed in transplant trays via a mechanical drip system). Uneven or incomplete seed coverage may not give the desired level results. Depending upon the seed size and shape, highly specialized batch seed treatment application equipment may be required to insure uniform treatment of the seed, to insure safety to the seed, and to meet quality standards. Paclobutrazol 2SC must only be mixed with other seed treatments that are approved by the EPA and on crops that are compatible.

Application of Paclobutrazol 2SC into seeded trays:

Paclobutrazol 2SC can also be applied directly onto seed contained in transplant trays. A mechanized drip system, with appropriate dilution in water, or with other registered seed treatment products, must be applied with proper calibration so that each seed in individual "plugs", or compartments, receives the prescribed and tested dose rate of paclobutrazol. For calibration of the drip system, consult with Syngenta or the equipment manufacturer. Cover the seed with a standard quantity of soil media after application of Paclobutrazol 2SC.

### **Note:**

- Uneven or incomplete seed coverage may not give the desired level of response from the seed treatment. Depending upon the seed size and shape, highly specialized batch seed treatment application equipment may be required to insure uniform treatment. These processes must have confirmed safety to the vegetable seeds and meet quality standards.
- Treatment of highly mechanically scarred or damaged seed, or seed known to be of low vigor and poor quality may result in reduced germination and/or reduction of seed and seedling vigor. Conduct germination tests on a representative sample of the seed lot before committing the total seed lot to Paclobutrazol 2SC seed treatment.



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Because seed quality and seed storage conditions are beyond the control of Syngenta Crop Protection, no claims are made to guarantee the germination of carry-over seed or propagating material for all crops.

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## SEED CONTAINER LABEL REQUIREMENTS

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The Federal Seed Act requires that containers containing treated seeds shall be labeled with the following statements:

- This seed has been treated with Paclobutrazol 2SC seed treatment.
- Do not use treated seed for feed, food, or oil purposes.

The following statements are required on containers containing vegetable seed treated with Paclobutrazol 2SC:

- Store treated seed away from food and feedstuffs; do not allow children, pets or livestock to have access to treated seeds.
- Wear long pants, long-sleeved shirt and protective gloves when handling treated seed.
- Treated seeds exposed on soil surface may be hazardous to wildlife. Cover or collect treated seeds spilled during loading and planting.
- Dispose of all excess treated seed by burying seed away from bodies of water.
- Do not contaminate bodies of water when disposing of planting equipment wash water.
- Dispose of seed packaging or containers in accordance with local requirements.

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## MIXING PROCEDURES

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**Note:** Always treat seed in a well-ventilated area. Refer to the **Precautionary Statements** section of this label for personal protective equipment requirements and other safety precautions.

### **Important:**

1. Consult the Syngenta Seed Treatment Representative or the manufacturer of the application equipment you plan to use regarding application, equipment calibration, and operating instructions.
2. Paclobutrazol 2SC should be thoroughly recirculated/mixed in its original container before using.
3. An EPA approved and registered dye that will impart an unnatural color to the seed is required. This artificial color can also be added during any standard film, pan coating, pelleting or seed encrusting procedures.
4. Use only EPA approved carriers, colorants and materials that are tested and known to be safe to the seed and compatible with Paclobutrazol 2SC.



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5. Thoroughly mix the recommended amount of Paclobutrazol 2SC and other seed treatment products (i.e. fungicides, insecticides) with the amount of water required for the dilution rate and the slurry treater.
6. Prepare no more mixture than is needed for the immediate operation.
7. Store treated seed away from feed and foodstuffs.

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## **APPLYING PACLOBUTRAZOL 2SC WITH COMPATIBLE FUNGICIDES AND INSECTICIDES**

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Mixing Paclobutrazol 2SC with registered and compatible fungicides, insecticides, nematocides, plant activators or plant growth regulators in the seed treating system is highly recommended. These products must be approved by the EPA for application to the vegetable seed specified in this label and recommended by Syngenta Crop Protection for use with Paclobutrazol 2SC. The application must be applied as a mixture rather than being applied sequentially.

### **Note:**

- Do not mix Paclobutrazol 2SC with any product that prohibits such mixing.
- The combination of Paclobutrazol 2SC and compatible products must be tested to determine safety to all intended varieties or lines of seed.
- Follow all directions for use, crop/sites, dilution rates, precautions and limitations that are prescribed in the label for each product.
- Follow the most restrictive label precautions and limitations and do not apply more than the label permits.

### **Compatibility**

Before mixing Paclobutrazol 2SC with other seed treatment products conduct a compatibility test before use.

1. Using a clear glass container, thoroughly mix all intended seed treatments with the appropriate amount of water.
2. Allow the mixture to sit for one hour.
3. Remix and observe for incompatibility.

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**Application Rates for Paclobutrazol 2SC**

**Application Rate Ranges for Listed Vegetable Crops**

Crop	Active Ingredient Rate in Micrograms per Seed	Remarks
Tomatoes	1 to 12.5*	Pre-determine the suitable and exact rate based on seed size of the tomato variety.
Peppers**	1 to 16	Pre-determine the suitable and exact rate based on seed size of the pepper variety.
Cucurbits	1 to 6.5	Pre-determine the suitable and exact rate based on seed size of the cucurbit crop.

\* Not to exceed 7.5 micrograms per seed on varieties grown in California unless tested or approved by Syngenta Crop Protection.

\*\* In California, Paclobutrazol 2 SC must be applied via Syngenta-approved application equipment that is designed to apply the product directly into the seeded transplant trays.

The above rates are recommended for varieties of the listed crops intended for transplanting. The pre-transplant time for each crop, while in transplant beds, transplant trays or containers transplant houses, growth chambers or green houses, will vary between 2 to 6 weeks. All normal growth requirements for seed germination and growth of transplant seedling must be provided for Paclobutrazol 2SC treated seed.

**STORAGE AND DISPOSAL**

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

**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



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Agency, or the hazardous waste representative at the nearest EPA Regional Office for guidance.

### Container Handling

Non-refillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or mix tank or store rinsate for later use and disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER.**

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Manufactured for:  
Syngenta Crop Protection, LLC  
P.O. Box 18300  
Greensboro, North Carolina 27419-8300

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