

Profile* 2SC

Tree Growth Regulator

How TGRs can change
the way you manage trees.



TGRs for increased productivity. To remain competitive in today's marketplace, it is important to explore productive, cost-effective alternatives to your standard tree-management practices. SePRO Corporation can help. SePRO is committed to the business of tree-growth regulators (TGRs). When incorporated with your tree-trimming practices, TGRs help reduce the amount of branch growth and biomass in the crown of a treated tree. This decrease translates into more efficient system management.

What is the basic function of a tree growth regulator?

TGRs offered by SePRO Corporation gently reduce tree growth by suppressing its gibberellin production, the plant hormone that causes cell elongation in stems. This can reduce the growth of a tree without significantly altering its appearance.

What effects will I see after application?

The growth of treated trees appears more dense and compact, usually resulting in a reduced crown size compared to similar untreated trees. Leaves are often slightly smaller and a darker green.

When will I notice these effects?

Depending on the date of application, it may take a complete growing season before you start to see the effects of the treatment. However, current research indicates that if active transpiration is occurring at the time of treatment, respiration is occurring at the time of treatment, regulation may begin during the season of application.

Why should I use TGRs?

TGRs are designed to improve system management. They help you manage more trees during the year and maintain a consistent trim cycle. By controlling fast-growing species, TGRs help eliminate the need for "hot spotting," which reduces the potential for power outages. And TGRs also result in fewer customer complaints because there are fewer intrusions on owners' property for trimming, as well as reduced potential for crew injury due to less tree growth into the wire zone.

Will using a TGR eliminate the need to trim trees?

No. A TGR is designed to make your trimming operation more cost-effective and productive by reducing the amount of the time and effort it takes to trim a treated tree. As a result, you can trim more trees in less time. Reduced growth also means significantly less biomass waste, which equates to lower chip disposal costs—an important benefit considering the shortage of landfill space and the need to find alternative methods of disposal. Depending on your management practices, you may also extend the trim cycle on many circuits. That, too, can significantly increase the cost-effectiveness and productivity of your program.

What's the cost of using TGRs and when can I expect to see a payback?

There are many factors that must be considered to determine the financial value of using TGRs. Your SePRO representative can help you predict your savings based on your specific conditions.

Should I treat every tree on my system?

You'll see the most immediate benefits from TGRs used on fast-growing trees that are costly to trim. You should also use TGRs to control the "hot spots" along your power lines and in locations where you want to minimize intrusions on owners' property. There also may be areas—like a circuit feeding a hospital—where you want to establish a dependable maintenance cycle. Another excellent candidate for TGRs is a tree that has never been trimmed but will reach the wire zone in the next few years. This tree can be regulated in its natural state.

Will I need special crews or training to apply TGRs?

Application procedures for current TGRs have been simplified, but as with any application, the applicator is usually the key to success. For this reason, SePRO Corporation has a training program for applicators.

What special equipment is needed?

You have a choice of application methods to match your needs. With the soil-applied technology, you can use soil-injection equipment or a container with a graduated measurement scale for a basal-drench application. With the implant technology, applicators only need a sharp 3/8" brad point bit, water spray bottle and cordless drill (operating at a maximum speed of 400 rpms).

Will TGR treatments injure the tree?

TGR treatments are gentler than ever. The soil-applied product is applied to the soil around the tree, reducing the potential of permanent tree injury. Implants do require a series of small holes in the trunk. Research and field trials show that most drill holes close completely during the growing season an implant treatment is made. In fact, closing, or compartmentalization, begins within a few hours of application to a healthy tree. What's more, research from the Morton Arboretum, Purdue University, and utility field trials shows that regulated trees have increased root-to-shoot ratios and a better ability to survive disease and insect attacks and to withstand environmental assaults like drought and pollution. From this work, it appears that by reducing tree stress, TGRs give the tree greater ability to fight harmful conditions.

How do I determine which TGR to use?

You have the option of using soil-application products or implants. Site conditions will most likely dictate the proper treatment method.

Reducing trimming frequency and biomass.

Extend Trimming Cycles. Tree growth regulators have been shown to reduce the frequency of trimming by suppressing vegetative growth by up to 63% a result of a single application.

Reduce Line Clearing Cost.

Biomass Reduction. Treated trees have been shown to produce up to 75% less biomass than untreated trees.

Trim and Chip Time Reduction. Treated trees have been shown to reduce trim and chip time by up to 55% compared to untreated trees.

Reduce Liability. Reduced potential for crew injury due to less tree growth into the wire zone and reduced trimming frequency on trees near high traffic streets.

Profile^{*} 2SC

Tree Growth Regulator

A premier Paclobutrazol formulation, with a broad registration—including California—that is an easy-to-use, soil-applied tree growth regulator.

Reduced Tree Growth

Profile 2SC reduces tree growth and has been proven to significantly extend trim cycles and decrease work site hours.

A Win-Win for Utilities and Homeowners

Adding Profile 2SC to any line clearing program is outstanding alternative to wholesale pruning or tree removal and is also associated with a variety of “pre-stress conditioning” tree health benefits making it an exceptional customer relations tool for homeowners.

The following information answers common questions about Profile 2SC.



Health, Safety and the Environment

What human health signal word appears on the Profile 2SC label?

Profile 2SC received a “Caution” signal word on its label, the lowest human-hazard signal word category allowed under federal regulation. This classification is based on the concentrated form of a product. To receive registration, more than 120 environmental and toxicological studies on Profile 2SC have been reviewed and accepted by the United States Environmental Protection Agency (EPA). While the EPA has evaluated the toxicity of Profile 2SC as a concentrate, licensed professionals add 11 gallons of water to every gallon of Profile 2SC before applying the tree-growth regulator around the base of the tree. This creates an even more diluted solution. Applicators wear long-sleeved shirts and gloves, as required by the Worker Protection Standards, so they can avoid direct contact during product mixing. Once the product is injected into the ground, the roots begin absorbing the product and carrying it in the transpiration stream to the tree crown. This closed environment by injection makes the product unavailable to people and wildlife.

Can Profile 2SC travel to groundwater?

Movement of Profile 2SC in soils have been evaluated in both laboratory and field studies.

• **Laboratory evaluation:** Potential mobility of Profile 2SC has been assessed by laboratory studies of soil columns (12 inches in length) treated at the top with paclobutrazol and then leached with water (approximately 25 inches of simulated rain). Analysis showed no paclobutrazol moved beyond 6 inches in depth; no paclobutrazol was found at the bottom of the soil column or in the leachate water for four soil types (including sand). The results from studies indicate low mobility for paclobutrazol. Profile 2SC has been rated on the “Helling Scale,” a measure of the relative mobility of chemicals applied to the soil. A value of 1 = immobile and 5 = very mobile. Paclobutrazol is given a mobility rating of 2, indicating “low mobility.”

• **Field evaluation:** Researchers conducted field soil dissipation studies on a Florida sand, West Virginia clay loam and California sandy loam. Profile 2SC was applied to the soils as a subsurface injection at several times the maximum label rate for a large tree (i.e., 25" dbh). Based on these results, Profile 2SC was found not to be highly mobile in soil; it remained high localized at the points of application up to 12 months after treatment. The majority of the TGR stayed within the top 16 inches, with only trace movement downward (generally < 5 percent of applied paclobutrazol was found at depths between 16 and 48 inches). Based on this company study, it can be concluded that groundwater contamination is unlikely. Moreover, Profile 2SC is essentially used in a spot treatment application so that even with trace movement from a particular tree, there is a large overall dilution factor on a per area basis. Additionally and very importantly, the long efficacy observed with paclobutrazol as a TGR indicates gross downward movement does not occur.

Can I treat fruit and nut trees with Profile 2SC?

You can treat non-bearing trees, but the label of Profile 2SC in the United States restricts the use of Profile 2SC on nut and fruit trees as well as sugar maples that may be tapped for sugar. The reason for this label statement is that residue tolerances must be established by the EPA before any product can be used on food crops in the United States. Obtaining residue tolerances for different fruits, nuts or maple sugar would entail extensive analysis of these food products from treated trees. In the absence of residue data, the EPA requires that restrictions be put on the label to ensure that these trees are not treated. For business reasons, this product has been restricted at this time from use in the United States on trees that can be harvested for food.

The same active ingredient in Profile 2SC, paclobutrazol, is marketed by Zeneca Inc. in several countries outside the United States under the trademark of Cultar. Cultar growth regulator is used on a variety of fruit trees such as apple, pear, cherry and peach in several European countries, Australia and Japan. To achieve these registrations, the company conducted extensive residue work since these countries uphold similar or identical requirements to the EPA. In all cases, residue studies done with paclobutrazol under the registration requirements of each country led to the establishment of a tolerance on various fruit trees.

Can I use "tree chips" (leaves and stems) from treated trees as mulch around my plants?

Tree growth regulators have been used since 1989 and there have been no reported instances of chips used from treated trees causing any adverse effects. Additionally, results in studies conducted at Purdue University have shown that mulch from trees

treated with tree growth regulators will not have a negative impact on plants when used in conventional mulching. Further, since these studies were conducted on green "un-composted chips," the process of composting will further reduce any potential for paclobutrazol residue.

Has Profile 2SC been tested thoroughly for effectiveness?

TGR technologies have been available for nearly three decades. Researchers have conducted numerous and thorough tests on TGRs during that time, enough to develop a large research database.

In addition, the nursery and florist industries have used growth regulators for many years to produce more compact and marketable plants. The same basic chemistry used in these industries is also available to the utility industry. The data package on the active ingredient in Profile 2SC, paclobutrazol, goes back to the early 1970s.

Does Profile 2SC work best in a certain region of the country or on a certain tree species?

Field trials show that the efficacy of Profile 2SC does not vary greatly with geographical location. Soil type, tree species, application dose and application timing does influence efficacy, however. For a list of tree species and application rates, please consult label instructions for Profile 2SC. You can also contact a SePRO Corporation representative for regionalized rate cards. You may treat trees not expressly prohibited by the label. Just follow the instructions and application rates for a similar species.

Is there a specific time of year when I should use Profile 2SC?

You can make applications year-round, weather permitting, except on saturated or frozen soils. However, Profile 2SC will be absorbed by roots and travel to tree's crown only during periods of active growth. Most trees complete a majority of their elongation (growth) six to eight weeks after leaf formation.

How do different soil types and pH influence the efficacy of Profile 2SC?

Heavy clay soils, acidic soils (pH < 4.0) and highly organic soils require higher application rates. They also shorten the length of time growth reduction occurs. Compacted soils may require basal-drench in lieu of soil injection or, in some cases, a trunk-applied TGR.

What determines which application method—basal-drench or soil injection—I should use?

Environmental conditions, location limitations and equipment availability will determine which method to choose. Factors such as root matting, compacted soil and thick thatch (grass and weeds) may make one method more practical.

Soil injection places Profile 2SC closer to the roots, prevents runoff and aids in dispersing the product. Basal-drench is a very effective and good choice when using soil injection equipment becomes impractical. One application method offers no major advantage over the other; although, you can treat more trees per day using soil injection, which means higher productivity.

To reduce chances of runoff, should I avoid basal-drench applications under certain conditions?

If conditions exist that make basal-drench applications impractical, like steep slopes, surface-soil compaction, thick thatch or root matting, then consider soil injection or an alternatively applied TGR.

When is the best time to trim trees treated with Profile 2SC?

Trees may not exhibit visual regulation signs for up to one growing season after treatment. This gives you the flexibility to treat and trim or trim and treat during the same season or following season. When making trimming decisions, keep the following two factors in mind:

- **Efficacy** – When timing treatments for best efficacy, you should trim the trees two to three months following application. This allows the existing leaves time to pull the growth regulator to the crown during periods of active transpiration before you trim, thus reducing the resurgent growth. However, you should not consider all growth bad. Some growth is helpful in reducing sun scald on susceptible species.
- **Aesthetics** – You may want the trees to look visually pleasing. When timing treatments for aesthetics, trim and treat at approximately the same time. This scenario removes leaves necessary to pull the product to the growing points. So, regrowth is initially not inhibited, allowing the tree normal growth before regulation engages.

How many applicators will it take to treat one tree?

With proper training, it should only take one person. Both the soil injection and basal-drench application equipment are easy to transport, set up and operate.

How do I apply Profile 2SC?

Application takes three to five minutes per tree and requires the following simple steps:

- Identify the tree and measure it properly.
- Dilute Profile to make the treatment solution. Follow label instructions.
- Determine dose. Then measure the treatment solution properly.
- Apply the mixture with the proper application equipment.

Are there limitations on the size of tree I can treat with Profile 2SC tree growth regulator?

Tree species, diameter and crown size figure into the decision of whether a tree is “treatable.” Generally, only healthy trees with trunks measuring at least 4 inches diameter-at-breast-height (dbh) are good candidates. You can also treat smaller trees not yet in the wire zone and trees on fence rows. Do not apply Profile 2SC to trees in poor overall condition.

Will I get escape branches on a tree regulated with Profile 2SC?

Because tree roots absorb Profile 2SC passively, paclobutrazol distributes evenly throughout the tree’s crown. Although escapes are possible, their likelihood is low compared to the number of escapes experienced with the less passive application methods.

How long will Profile 2SC regulate a tree?

Field trials, research and case histories indicate that regulation effects of paclobutrazol can last two to eight years. This timeframe depends on a number of environmental factors, including climate, application dose, tree species, application timing, tree health and soil conditions. Your need to regulate its growth and aesthetics will also play a part in how often you treat. As a rule of thumb, once it’s apparent that normal growth has resumed, it’s time to re-treat.

Can I over-regulate a tree with Profile 2SC?

It’s unlikely you can over-regulate a tree if you follow label instructions. In historical cases of accidental overdose with trunk-injected TGRs, trees exhibited signs of severe regulation. They resumed normal growth processes in time, with no indication of permanent adverse effects. Because of the mode-of-action of paclobutrazol, it’s unlikely for it to “harm” a tree. In fact, research shows that TGRs can help trees cope during periods of water and disease stress.

Can Profile 2SC affect vegetation surrounding a treated tree?

Grass, shrubs and flowers directly in contact with treated soil will exhibit signs of regulation. These are natural responses of the vegetation and can be severe if roots contact the applied product. In such situations, use a trunk-applied TGR.



Special Solutions. For Specialty Markets.

SePRO Corporation focuses on developing, manufacturing, acquiring and marketing value-added products for special applications in aquatics, trees, turf and ornamental horticulture.

The result—highly focused solutions and services prepared especially for specialty markets.

For more information about Profile Tree Growth Regulator, visit online at www.TreeGrowthRegulator.com or contact SePRO Corporation at 1-317-580-8276.



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