

Bringing out the best in

Turfgrass Management

Product Use Guide





Introduction

For more than 20 years, SePRO has been dedicated to providing expertise and environmentally responsible solutions for the golf, turf and landscape markets.

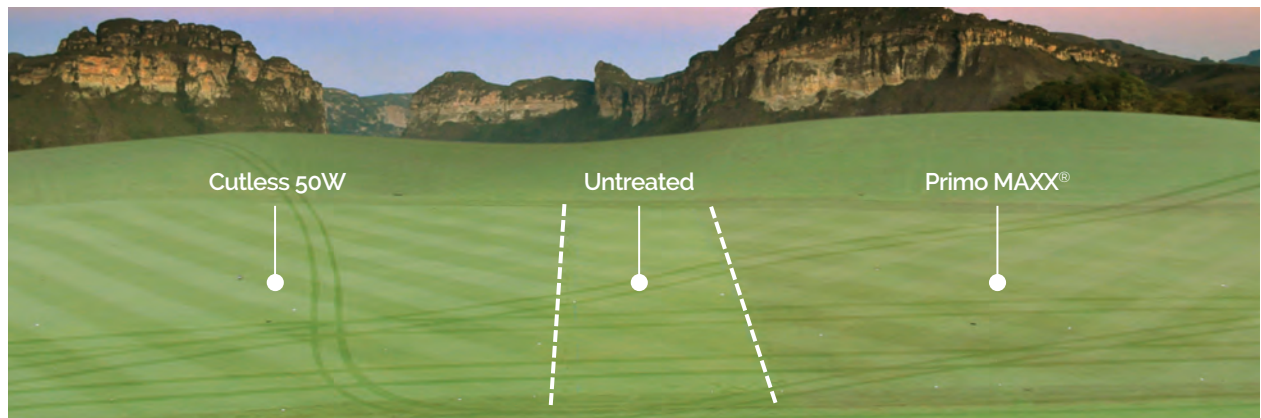
SePRO is always ready to support and guide you through your turf PGR and plant protection usage with the best product solutions designed to manage the challenges of your job.

Cutless® Turf Plant Growth Regulator

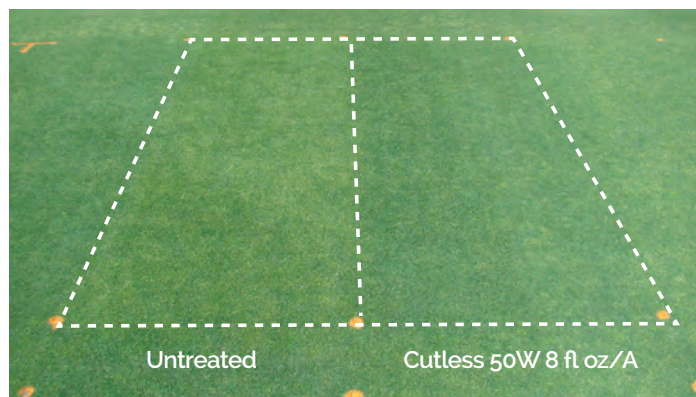
The premier PGR for turf quality and *Poa* suppression

Available in both a liquid (Cutless MEC) and dry (Cutless 50W) formulation, Cutless remains the premier PGR for providing unsurpassed turf quality and *Poa annua* suppression in both cool- and warm-season turf. Cutless consistently performs at the highest level to reduce shoot growth and clipping yield, resulting in improved aesthetics and playability. Additionally, Cutless promotes many plant health and stress tolerance benefits.

Features & Benefits of Cutless	
Features	Benefits
Enhances turf color and quality	Improves playability, striping and overall aesthetics
Minimal impact to bentgrass germination	No need to delay applications around interseeding. Allows for flexibility when timing applications around interseeding.
Suppresses Dollar Spot	Outbreaks will be less severe and less frequent
Efficient, controlled <i>Poa annua</i> suppression and conversion	Allows for flexibility in <i>Poa</i> suppression and conversion aggressiveness
Reduces turf water-use	Preserves Earth's most precious resource and budgets!
Does not inhibit lateral regrowth	Rapid recovery of divots and ball marks



Tifway bermudagrass fairway treated with Cutless 50W at 10 oz/A (left) and Primo MAXX at 8 fl oz/A (right) separated by an untreated strip of turf (center). Note the deep green color and vivid striping of the Cutless 50W treated turf.



Untreated creeping bentgrass (left) and bentgrass treated with 8 oz/A of Cutless 50W every 2 weeks. Cutless 50W reduced *Poa annua* density from 74% in the untreated to 9% in a single growing season. Also, note the deep green color in the Cutless treated bentgrass.

Legacy® Turf Plant Growth Regulator

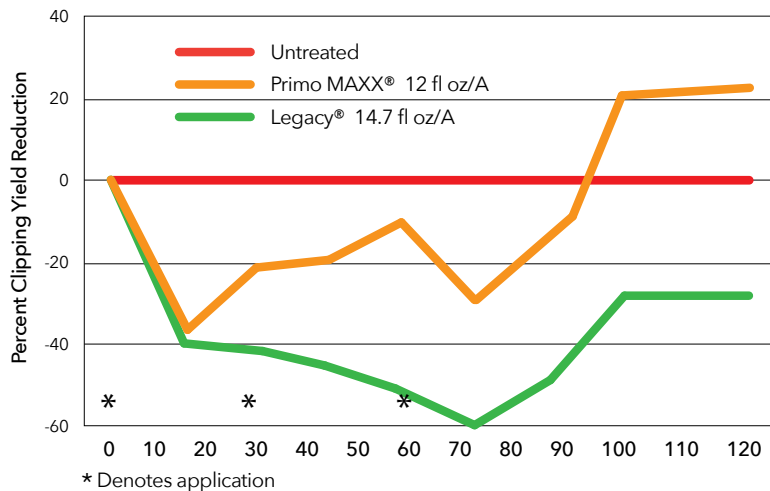
All-in-one PGR; no rebound, extended spray intervals, superior growth regulation

The all-in-one PGR excels in extending the duration of growth regulation, reducing the "rebound effect," and limiting *Poa annua* encroachment in cool- and warm-season turf.

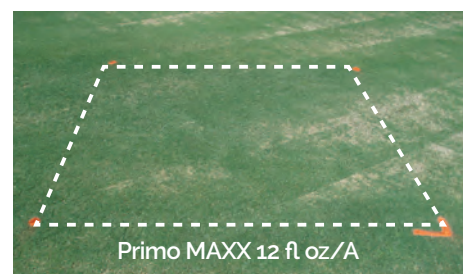
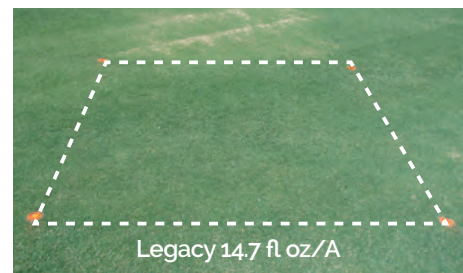
Legacy integrates patented synergistic PGR technology to provide superior growth regulation and turf quality in perennial cool- and warm-season turf. The Legacy synergism is a product of dual sites of action and plant uptake resulting in many other features and benefits.

Features & Benefits of Legacy	
Features	Benefits
Minimizes bronzing	Picturesque dark green turf color with limited concern for overspray damage
Maximizes growth regulation	Minimized scalping results in denser turf which improves playability while reducing clipping yield
Extends length of growth regulation	Extended spray intervals results in fewer treatments, reduced fuel usage and labor savings. Reapplication timing can be more flexible
Eliminates the "rebound" effect	No excessive flush of growth between applications
Suppresses Dollar Spot	Outbreaks will be less severe and less frequent
Stops <i>Poa annua</i> encroachment	Prevents <i>Poa annua</i> from gaining a foothold in desirable turf and serves as an excellent first line of defense against <i>Poa annua</i> establishment
Reduces turf water-use	Preserves Earth's most precious resource and budgets!
Uniform growth regulation in mixed turf stands	Smoother putting surface improves ball roll

Creeping Bentgrass Fairway



Percent clipping yield less than 0% indicates growth suppression whereas clipping yield greater 0% indicates growth enhancement compared to untreated turf. Note Legacy provided greater percent clipping reduction, extended length of clipping reduction and did not 'rebound' when compared to Primo MAXX®.



Tifway bermudagrass treated with Legacy at 14.7 fl oz/A (top) and Primo MAXX at 12 fl oz/A (bottom) at 4 weeks after final application. Note the lack of scalping and excellent quality and density in the Legacy treated turf.

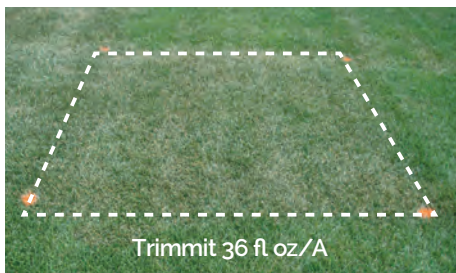
Musketeer® Turf Plant Growth Regulator

The economical solution to aggressive suppression of multiple *Poa* biotypes

Triple PGR technology that encapsulates the benefits of paclobutrazol alone, yet is gentle to both your budget and your turf.

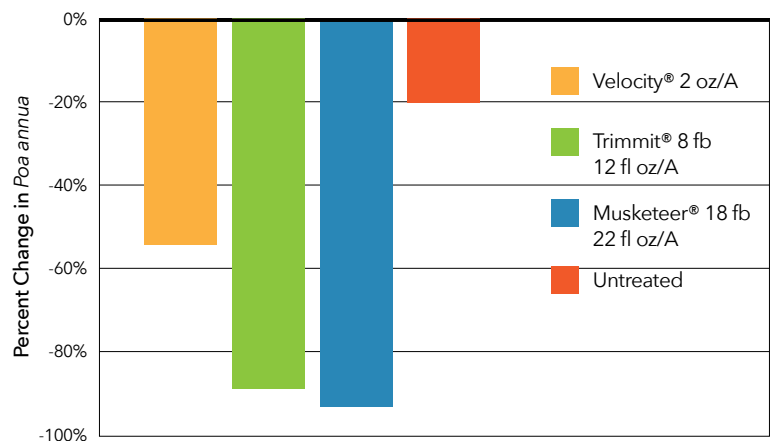
Musketeer is the efficient, economical solution to *Poa annua* conversion and suppression in both perennial cool-season turf stands and overseeded bermudagrass fairways. The ideal ratio of flurprimidol, paclobutrazol and trinexapac-ethyl in Musketeer provides maximum *Poa annua* suppression while adequately regulating desirable turf species. This results in dense turf stands, improved playability and minimal impact to lateral growth and recovery of desirable turf. Simply, Musketeer enhances the benefits of each standalone chemistry while minimizing potential negative effects.

Features & Benefits of Musketeer	
Features	Benefits
Dual sites of uptake and action	Rapid effectiveness, excellent turf quality enhancement and improved color
Maximizes growth regulation	Denser turf improves playability while reducing clipping yield
Effective suppression of multiple <i>Poa</i> -biotypes	Increased <i>Poa</i> suppression over PGR applications utilizing a single active ingredient
Reduces overspray damage, specifically to Kentucky bluegrass	No unsightly overspray triangles and weakened collars
Suppresses Dollar Spot	Outbreaks will be less severe and less frequent
Efficient, controlled <i>Poa annua</i> suppression and conversion	Allows for flexibility in <i>Poa</i> suppression and conversion aggressiveness
Reduces turf water-use	Preserves Earth's most precious resource and budgets!
Uniform growth regulation in mixed turf stands	Smoother putting surface improves ball roll



Impact of a multiple application program with Musketeer at 36 fl oz/A (top) and Trimmit at 36 fl oz/A (bottom) on Kentucky Bluegrass. This effect would represent overspray of greens, tees or fairways to Kentucky Bluegrass surrounds.

Reduction of *Poa annua* Population Density



Percent change in *Poa annua* population in a creeping bentgrass putting green after season-long applications. Treatments were initiated mid-May and were reapplied every 2 weeks through September. Beginning early-July applications rates for Musketeer and Trimmit were increased from 12 and 22 fl oz/A and 8 and 18 fl oz/A, respectively. Note Musketeer had a 5% greater reduction in *Poa annua* populations compared to Trimmit.

Junction® Fungicide/Bactericide

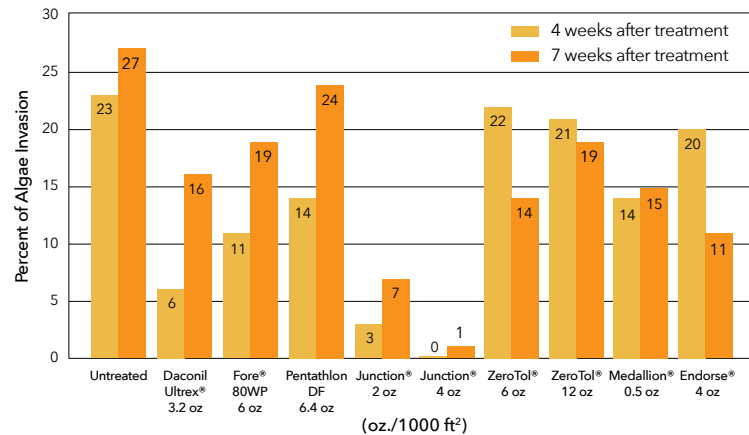
A Powerful Combination

Junction Fungicide/Bactericide is a unique broad-spectrum fungicide that also offers phenomenal algae and moss control. Junction utilizes a unique combination of mancozeb and copper hydroxide that offers rapid control of algae, dollar spot and *rhizoctonia* and fusarium diseases. Additionally, Junction can be used to supplement a moss control program, and adds a unique MoA.

Features & Benefits of Junction	
Features	Benefits
Superior formulation	Easy to handle, use and is easy on spray equipment
Low risk of resistance	Great tool to incorporate into any IPM program
Broad-spectrum disease control	Eliminate multiple diseases with a single application
Very fine particle size	Maximize leaf surface coverage for increased plant protection
Complements a moss control program	Adds another MoA to your moss program
Outstanding algae control	Disease and algae control in one

Algae Control in Creeping Bentgrass

Junction was applied on 14-day intervals.



Soteria™ Fungicide

The Cornerstone Fungicide

Soteria Fungicide is the building block in every fungicide program. Soteria has a unique, multi-site mode of action, that provides broad-spectrum control of many devastating turfgrass diseases. This technology is highly effective at controlling anthracnose, brown patch, dollar spot, including strains resistant to other fungicides, as well as several other diseases.

The many mechanisms by which Soteria attacks, gives turf diseases a low chance of developing resistance. Soteria's active ingredient is classified in the FRAC group 29, the only chemistry in that group registered for use on turfgrass.

Features & Benefits of Soteria	
Features	Benefits
Unsurpassed dollar spot efficacy	Eliminate the most costly disease to manage
Multi-site activity	Significantly reduce the risk of resistance
Broad-spectrum disease control	Seamless integration into all fungicide programs
Low use rate	12 applications per year
Excellent turf safety	Disease control across all turf species



Dollar Spot - Untreated bentgrass (left), Soteria applied (right) at 0.5 fl oz/1,000 ft²

Zio™ Fungicide

New World Plant Protectant

Zio Fungicide is a revolutionary bacteria hand-selected from a library of 60k+ microbes to protect plants against destructive diseases and improve quality. It colonizes the plant while producing compounds to control harmful plant pathogens including *Rhizoctonia* (Brown Patch), *Pythium*, and anthracnose. Zio has been scientifically proven to provide preventative control of resistant fungi utilizing multiple modes-of-action. Additionally, Zio can be mixed with traditional fungicides to enhance efficacy and minimize the risk of resistance development.

Features & Benefits of Zio	
Features	Benefits
Multiple modes of action	Antimicrobial, enzymatic, and colonizing action prevent resistance development
Broad-spectrum of activity	Seamless integration into any disease management program
Labeled for use on cool- and warm-season turf	Excellent crop safety across multiple turf and ornamental species
Improves turf and seed establishment	Speed up grow-ins, reduce turf losses, and promote root growth
OMRI listed	Registered for organic use

How Zio Fights Disease, Inside and Out

One key characteristic that sets Zio apart is its multiple unique modes-of-action (MoA). There are three primary mechanisms it utilizes to protect plants.

- Halts fungal respiration, similar to synthetic fungicides
- Enzymatically breaks down fungal structures
- Colonizes plants and soil—competing with pathogens for vital resources



With 3 unique MoA, Zio can be used to successfully protect plants against fungi resistant to commonly used chemistries. Additionally, Zio can be mixed with traditional fungicides to enhance efficacy and minimize the risk of resistance development.

Applying Zio

Zio is highly compatible with commonly used fertilizers and pesticides. For maximum performance do not tank-mix Zio with fungicides containing copper or mancozeb. Research results have shown excellent efficacy when integrated into fungicide programs as a standalone application and even greater control when applied as a tank-mix in combination with other fungicides.

Zio Application Rate Chart			
Use site	Diseases controlled	Application method	Application rate
Turfgrass and seed and turf establishment Ornamental plants (indoor and outdoor) Vegetable and fruit transplants	Anthracnose, Aerial Blight, <i>Botrytis</i> , <i>Rhizoctonia</i> (Brown Patch), Damping Off, Fusarium Patch, Pythium Blight, Phytophthora, Stem & Root Rot	Spray Drench Chemigation In-furrow	1.8 - 6 oz/1,000 ft ² or 67 - 100 oz/100 gal
		Soil incorporation	1.03 - 5.03 oz/ft ³

Zio Recommendation When Tank-mixed to Control Turfgrass Diseases		
Turfgrass diseases controlled	Zio application rate	Other fungicide application rate
Anthracnose, Brown Patch, Damping Off, Fusarium Patch, Pythium Blight	0.37 - 1.3 oz/1,000 ft ²	Low labeled use rate

Octane® Herbicide

New solution for Moss Control . Plus speed up your broadleaf weed control with Octane

Octane is a simple, economical to solution to faster weed control. Best applied on a sunny day, weeds sprayed with Octane show visual herbicidal symptoms within 24 - 48 hours. Emerged weeds are quickly killed, helping in timely tournament prep or instant satisfaction by membership and greens committees. Octane is also safe to use on recently seeded turf. Octane is now registered for Silvery-thread moss control.

Features & Benefits of Octane	
Features	Benefits
Increased speed of kill	Satisfied membership and greens committee
Labeled for use on cool- and warm-season turf	Excellent turf safety for locations with multiple turf species
Very short half-life	No limitation to turf establishment after application
Rainfast in 1 hour	Little chance for interference from weather or irrigation
Low vapor pressure	No movement to non-target areas
Low use rate	Lower environmental impact
Effective in all climates	No temperature restrictions, hot or cold

Silvery-thread Moss Program



Simple

Two applications 14 days apart at 6.8 fl. oz./acre



Turf Safety

No phytotoxicity observed even at 10x labeled rate



Economical

Highly cost-effective compared to alternatives



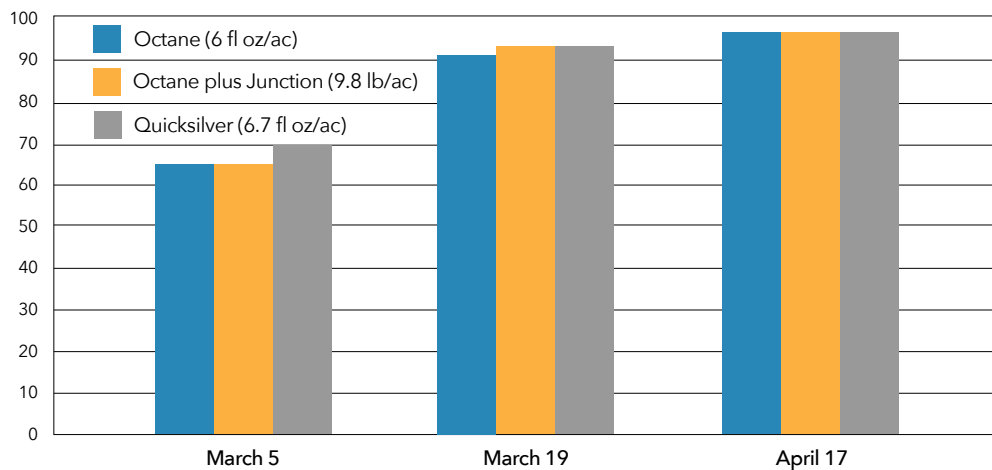
Effective

Attain 95%+ control with an Octane program

Follow-up with Junction Fungicide to keep moss out and get added disease control.

Octane - Silvery-thread Moss

Dr. Jim Brosnan, Knoxville, TN



Champion Bermudagrass
Apps. - February 20 and March 5

Rate and Reference Summary Tables

Turf Plant Growth Regulators					
	Active Ingredient	Signal Word	Mode of Action	Poa annua Suppression	Use Sites
Cutless MEC	Flurprimidol	Warning	GA Inhibitor	Excellent	G
Cutless 50W	Flurprimidol	Caution	GA Inhibitor	Excellent	G
Legacy	Flurprimidol & Trinexapac-ethyl	Warning	GA Inhibitor	Moderate	G
Musketeer	Flurprimidol, Trinexapac-ethyl & Paclobutrazol	Warning	GA Inhibitor	Excellent	G

Fungicides/Bactericides						
	Active Ingredient	Signal Word	Mode of Action	FRAC Code	Use Sites	Use Rates
Junction	Copper Hydroxide & Mancozeb	Danger	Multi-site contact	M1 & M3	G, C, S	2 - 3.6 oz/1,000 ft ²
Soteria	Fluazinam	Caution	Multi-site contact	29	G	0.5 fl.oz/1,000 ft ²
Zio	<i>Pseudomonas chlororaphis</i> strain AFS 009	Caution	Multiple	-	G, C, R, S	1.8 - 6 oz/1,000 ft ²

Herbicide						
	Active Ingredient	Signal Word	Mode of Action	HRAC Code	Use Sites	Use Rates
Octane	Pyraflufen-ethyl	Caution	PPO Inhibitor	E	G, A, C, R, S	0.7 - 4 fl.oz/A

G = golf course turf, A = athletic fields, C = commercial turf, R = residential turf, S = sod farms

*Only speeds up control when tank-mixed with another yellow nutsedge control product



Use Rates (per acre)

Bentgrass (greens)	Bentgrass (fairways)	KY Bluegrass	Perennial Ryegrass	Hybrid Bermudagrass (fairways)	Zoysiagrass	Seashore Paspalum	Kikuyugrass
6.1 - 24.6 fl oz	12.3 - 49.2 fl oz	24.6 - 49.2 fl oz	24.6 - 49.2 fl oz	12.3 - 36.9 fl oz	12.3 - 36.9 fl oz	12.3 - 49.2 fl oz	Not labeled
2 - 8 oz	4 - 16 oz	8 - 16 oz	8 - 16 oz	4 - 12 oz	4 - 12 oz	4 - 16 oz	Not labeled
5 - 10 fl oz	10 - 20 fl oz	15 - 30 fl oz	15 - 30 fl oz	8 - 20 fl oz	8 - 16 fl oz	10 - 20 fl oz	10 - 20 fl oz
12 - 22 fl oz	18 - 36 fl oz	18 - 36 fl oz	20 - 40 fl oz	15 - 30 fl oz	Not labeled	Not labeled	Not labeled

Diseases Controlled

Algae	Anthraxnose	Brown Patch	Copper Spot	Dollar Spot	Pink Snow Mold	Gray Snow Mold	Leaf Spot/ Melting out	Moss, Silvery Thread	Powdery Mildew	Pythium Blight	Red Thread	Rust
●		●	●	●	●	●	●	●	●	●	●	●
●	●	●		●	●	●	●				●	●
	●	●		● Suppression						●		

Weeds Controlled

Canada thistle	Chickweed	Clover	Dandelion	Dock, Curly	Dollarweed	Henbit	Knotweed	Moss, Silvery Thread	Nutsedge, Yellow*	Poison Ivy	Ragweed	Shepard's purse
●	●	●	●	●	●	●	●	●	●	●	●	●



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