

Spring Transition of Bermudagrass With Revolver® and Monument®

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I attended two symposia involving the use of sulfonyleurea (SU) herbicides for weed control in bermudagrass and other warm-season grasses in 2004. Most of the information presented in this article was obtained from presentations given by Dr's Shawn Askew (VPI), Bert McCarty (Clemson), Tim Murphy (U of GA), Fred Yelverton (NCSU), and others.

A major theme of the symposia was how to use SU herbicides for eliminating perennial ryegrass (PRG), roughstalk bluegrass (RBG), and annual bluegrass (ABG) from bermudagrass fairways and athletic fields. Kerb® (pronamide) is the standard herbicide for PRG and ABG control in bermudagrass. Kerb, however, is slow to act (4-6 weeks) and is notorious for moving long distances in surface water. This movement has on many occasions resulted in large losses of cool-season grasses as the herbicide is carried by water into drainage patterns to adjacent areas. The SU herbicides are more rapid (10-30 days) and move a lesser distance in surface water. Most SU's are very effective in controlling PRG and a variety of specific weeds. Among the more common SU's used on warm-season grasses include Corsair® (chlorsulfuron); Manor® (metsulfuron); Monument® (trifloxysulfuron); and Revolver (formasulfuron). The SU's are very diverse in their spectrum of weed control activity. Monument and Revolver control PRG, RBG and ABG; whereas, Corsair and Manor only control PRG. Because of their larger spectrum of activity, Revolver and Monument are currently the preferred herbicides used to control cool-season grasses growing in bermudagrass and zoysiagrass. Revolver is labeled for use in Maryland, but not Monument.

The SU's are both root and foliar absorbed. Some are more soil active (e.g., Monument) and others foliar (e.g., Revolver). They are used at very low rates and have low non-target species toxicity. Their mode of action (i.e., ALS inhibitors) is to inhibit the production of three amino acids (i.e., leucine, isoleucine, valine). They have long half-lives in soil and they can track or move in surface water. Because of potential movement of SU's in the surface water to adjacent cool-season grasses, it is recommended that a 15 foot buffer zone between the spray line and desirable cool-season turf be established. Tracking occurs when mowers and other equipment traverse treated areas when they are wet with the herbicide. Dew can re-suspend these herbicides and mowing equipment can redistribute the herbicide several days after application. Tracking is minimized by watering-in the herbicide after it dries on leaves, but prior to mowing and by mowing when turf is dry. The SU's are not volatile and they are degraded by water (i.e., hydrolysis) in the environment. The performance of some SU's (e.g., Monument) is improved by tank-mixing them with a non-ionic surfactant. Using additional surfactant with Revolver, however, is not recommended or necessary since the formulation already contains methylated seed oil.

Bermudagrass fairways and athletic fields are frequently overseeded in late summer with PRG and other cool-season grasses. The cool-season grass provides green color and improved playability during winter when the bermudagrass is dormant. In the spring, it is important to remove cool-season grasses to improve bermudagrass vigor, aggressiveness and thus recovery. If not removed, cool-season

grasses (especially perennial ryegrass) compete with and/or shade the bermudagrass and contribute to a loss in bermudagrass density overtime. For example, by not removing overseeded PRG each year can result in 50% or greater loss of bermudagrass in just a few years. Hence, the goal is to eradicate the PRG to release the bermudagrass with enough growing days to ensure total recovery of the bermudagrass before autumn.

Successful transition involves integrating cultural and chemical measures at the proper time. For most effective transition, research conducted at NCSU, UGA, Clemson, VPI and elsewhere has shown that SU use should be delayed until late spring, after bermudagrass has achieved 100% green-up. As noted below, applying SU's before 100% green-up and suitable temperatures can reduce herbicide performance and delay green-up. At bermudagrass green-up, the mowing height should be reduced and nitrogen use increased at a moderate rate. About 30 days after green-up, the bermudagrass should be lightly verti-cut and aerified. Deep and heavy vertical cutting will injure bermudagrass at this time and will delay recovery. About 30 days after cultivating, an SU should be applied to eliminate competition between the bermudagrass and cool-season grass(es). There appears to be a temperature or degree day requirement for the most effective use of SU's in bermudagrass transition programs. Night temperature should be consistently above 65F before using an SU to ensure vigorous bermudagrass growth. Furthermore, SU's do not appear to sufficiently injure PRG or ABG until temperature are consistently above 60F. Most SU's show decreased control capability at temperatures below 55F. SU performance can be poor in dry soils, but their use in saturated soil is discouraged. Hence, soil should be moist, but not excessively wet prior to applying an SU.

It is especially important to eliminate cool-season grasses at a time when there are at least 100 days of warm-hot summer temperatures to stimulate bermudagrass regrowth. In Maryland, an early-June removal of cool-season grasses would be required to ensure enough growing days remain to promote complete bermudagrass recovery. Weak or thin areas should be sprigged as soon as possible if large dead areas become apparent following removal of the cool-season grasses. An area worth considering is overseeding with the new seeded bermudagrasses, which would allow you to overseed at the time you eliminate the perennial ryegrass. Revolver is very safe on bermudagrass seedlings. It should be noted, however, that seeded bermudagrass cultivars are not generally compatible with vegetative cultivars. Thereafter, water soluble nitrogen (e.g., urea or ammonium sulfate) should be applied weekly at 0.5 - 1.0 lb N/1000ft² until there is complete bermudagrass cover. Applications of nitrogen, however, should cease after mid-August in Maryland as late season over-stimulation of bermudagrass can increase the chance for winter injury. Communication with members/greens committee is important prior to using any SU for transition for the first time, since this is the first time you may realize how little bermudagrass you actually have. Chemical transitioning will allow you to build your bermudagrass base, and transitioning becomes less painful with each successive year. It may take three
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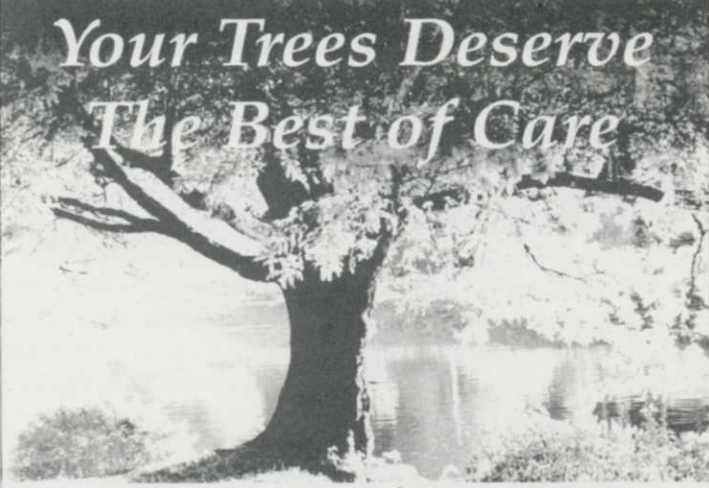
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years to accomplish a dense bermudagrass cover. Also, spring dead spot or any winter injury can make transitioning more difficult.

Revolver and Monument have some unique strengths and weaknesses. Revolver effectively controls PRG, ABG, RBG and goosegrass; suppresses dallisgrass in spot-treatments; but is weak or ineffective against many broadleaf weeds and crabgrass. Monument also is effective in controlling PRG, ABG, and RBG; it provides excellent control of yellow and purple nutsedge and Kylinga, but it does not control crabgrass or goosegrass. Revolver is labelled without restriction for use on golf courses, sports turf, lawn care and sod production. Monument, however, is not labeled for use in Maryland, but may be used on golf courses in Virginia and other Southeastern states. As always, carefully review the label before using any herbicide.

I gratefully acknowledge Bayer Crop Science and Syngenta Crop Protection for sponsoring honest, open and unbiased symposia focusing on the use of Revolver and Monument, respectively.


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