

BY DOUG HOUSEWORTH

## New chemistry for *Poa annua* elimination

In March, the Environmental Protection Agency approved a new post-emergent herbicide, Xonerate from Arysta LifeScience, which has shown to control *Poa annua*.

**P***oa annua* is one of the most common and widely distributed winter annual grassy weeds in the world, and also is one of the most difficult to control on turfgrass. In March, the Environmental Protection Agency approved a new post-emergent herbicide, Xonerate from Arysta LifeScience, shown to effectively control *Poa annua*.

*Poa annua* survives as a weed due to its high genetic variability, short life cycle, tolerance of compacted soil and rapid germination; each *Poa annua* plant produces between 1,000 and 2,250 seeds in a season that can easily spread from equipment, human or animal contact. *Poa annua* is especially challenging in creeping bentgrass, which provides conditions that are ideal for its growth, including high moisture, nitrogen and traffic levels and routine fungi-

cide use.<sup>1</sup> Also, *Poa annua* is very susceptible to diseases, such as anthracnose, and doesn't tolerate heat well, which means it dies quickly in warm weather, leaving unsightly bare patches during high play times. The effect on golf courses is bumpier-than-normal surfaces, impaired playability and unattractive greens and fairways during the height of the play season.

Xonerate offers a solution to golf course superintendents.

Xonerate contains 70 percent amicarbazone in a convenient water-dispersible granule formulation, which is absorbed by leaves and roots of *Poa annua* for quick, residual, post-emergent activity. Xonerate is selective, so it kills the weeds, but not the turfgrass.

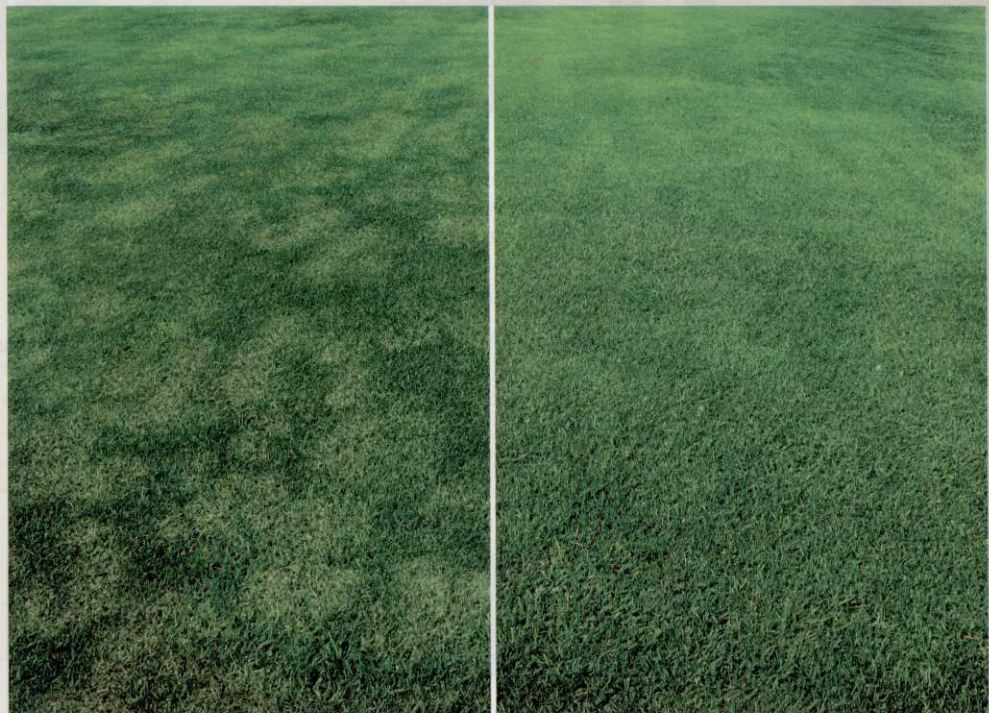
**TRIALS.** Over the past five years, numerous university and co-operator field trials have been conducted to examine the per-

formance of Xonerate in diverse geographic areas, under a wide range of climatic and turfgrass conditions. The trials found Xonerate to be 90 percent effective in controlling *Poa annua* – more than any product currently on the market.<sup>1</sup>

**TRIALS SHOW MINIMAL EFFECT ON TURFGRASS QUALITY.** While trials prove Xonerate effective at eliminating *Poa annua*, they also showed Xonerate had minimal

### Editor's Notes

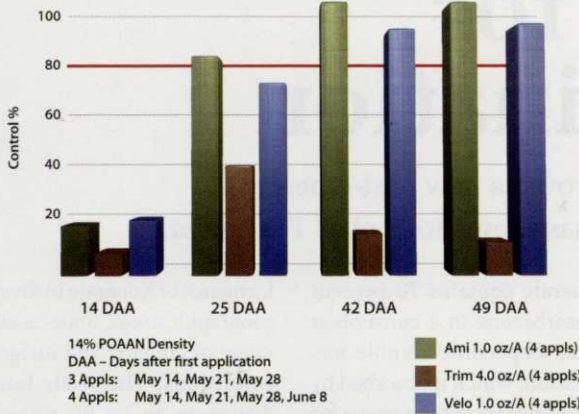
Since there's been considerable interest and discussion about this product in the market, we asked the technical team from Arysta to do this article to present what they know about the product and particularly how it should be used on greens.



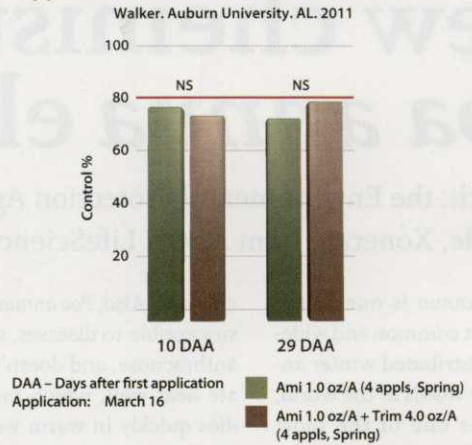
*Poa annua* is tough to control due to high genetic variability, short life cycle and rapid germination.

## Results of control tests for annual bluegrass and *Poa annua*

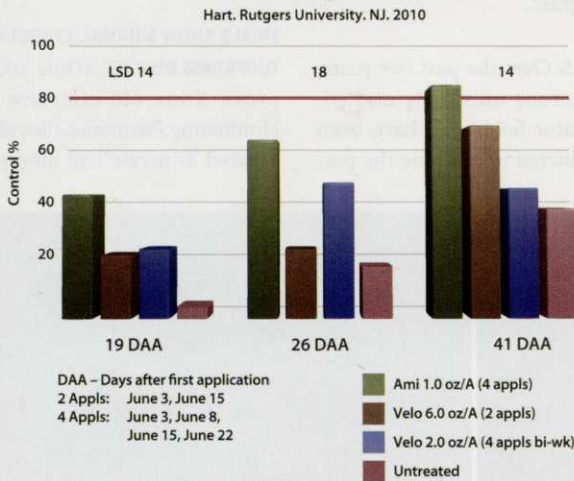
**Effect of Amicarbazone on Annual Bluegrass Control**  
McDonald, Turfgrass Disease Solutions, PA. 2010



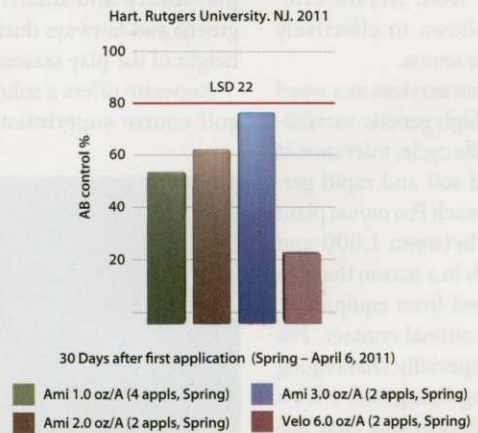
**Perennial Poa Control with Spring Applications of Amicarbazone and Trimmit.**  
Walker, Auburn University, AL. 2011



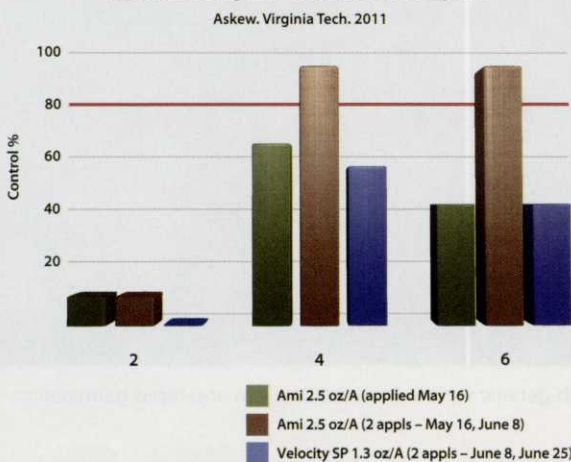
**Effect of Amicarbazone and Velocity on Annual Bluegrass Control**  
Hart, Rutgers University, NJ. 2010



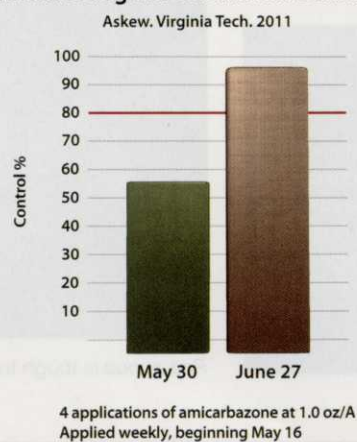
**Effect of Spring Application of Amicarbazone on Annual Bluegrass Control on Bent Fairway**  
Hart, Rutgers University, NJ. 2011



**Annual Bluegrass Control in Bentgrass**  
Askew, Virginia Tech. 2011

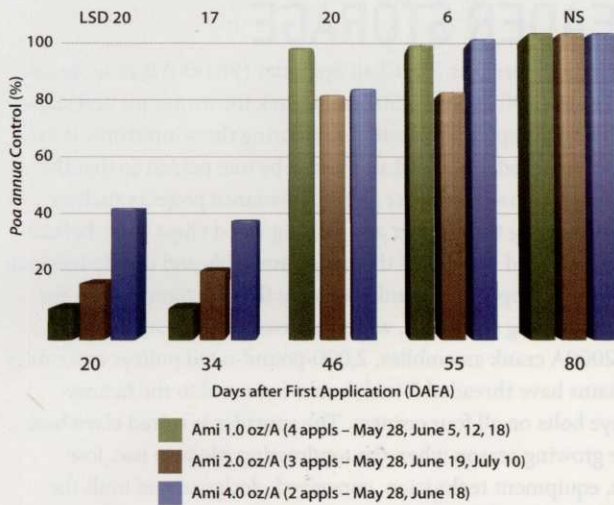


**Spring Applications of Amicarbazone Annual Bluegrass Control on Bent Fairway**  
Askew, Virginia Tech. 2011



### Poa annua Control in Kentucky Bluegrass with Amicarbazone

Street & Holdren, Ohio State University, 2011



effect on the quality of desirable turfgrasses. Many studies showed no visible effects to turfgrass. In some instances, a temporary yellowing of turf occurred after application, but turf recovered after 14 to 21 days.

**HOW XONERATE WORKS.** Xonerate offers selective removal of *Poa annua* in many cool- and warm-season turfgrasses including creeping bentgrass and Bermuda grass. The mode of action in Xonerate eliminates *Poa annua* with little to no disruption to the growth of bentgrass. Xonerate is absorbed by leaves and roots of *Poa annua*, where it inhibits photosynthesis by interfering with normal electron transport. Subsequent cell membrane and chlorophyll loss occurs. *Poa annua* initially becomes chlorotic (loss of green color), followed by necrosis (browning of plant tissue). Turfgrass remains mostly the same, with possible discoloration at first, lasting about two weeks as it fills back in. *Poa annua* control occurs over a three- to four-week time period.<sup>2</sup>

Xonerate may be tank-mixed (water is the recommended liquid carrier). It can be applied

up to four times at a 1-ounce-per-acre rate for bentgrass. (KBG and KBG/ryegrass up to 2-ounce rate at two applications). It should be used on turf that has smaller percentages of *Poa annua* (less than 10 percent *Poa annua* population), while transitioning to desirable turfgrass. Creeping bentgrass can be re-seeded as soon as seven days after the last application in roughs, fairways and tees.

Elimination of *Poa annua* should also include a management program that incorporates frequent topdressing, proper nutrient balance in the soil, proper soil pH and good water control (not overwatering) tailored toward encouraging optimum bentgrass growth and quality.<sup>3</sup>

**SHORT-TERM BENEFITS; LONG-TERM GAINS.** Golf course superintendents now have the choice to manage *Poa annua* or eliminate it with Xonerate herbicide. *Poa annua* requires intense management practices that are costly in terms of labor, water usage and fungicide/insecticide applications. At a cost of "X" per acre, the total cost of Xonerate is "X" in herbicide plus any additional monies in seed and fertilizer minus the reduced input needed to maintain *Poa annua* throughout the playing season. The first year cost will be the largest initial increase in budget expenses, subsequent annual applications of Xonerate will be required to maintain a clean stand of bentgrass.

The expense of this herbicide application in the future will be

offset, however by the reduced use of fungicides, insecticides, plant growth regulators and irrigation that would be required to maintain the *Poa annua*. Specifically, superintendents can anticipate savings of 10-20 percent in the fungicide budget once the *Poa annua* is removed.

Most importantly, the elimination of *Poa annua* improves the aesthetics of fairways, greens and roughs and increases turf quality and playability throughout the heavy play times. The loss of *Poa annua* during the heat of the summer will no longer be a problem, the consistency of the playing surfaces will increase, and color variation will decrease dramatically. **GCI**

Doug Houseworth, Ph.D., Turf & Ornamental Technical Manager, Arysta LifeScience North America

#### Notes

1. Grounds Maintenance, Controlling *Poa annua* in bent grass greens by Bert McCarty, Clemson University, Dec. 22, 2011.
2. Rates and applications will vary by turf type and geography.
3. USGA Green Section Record, The Continuing Saga of *Poa annua* May/June 1987.

### XONERATE Fairway Application Cost Example:

Cost per Acre After All Applications are Made	Number of Fairway Acres Treated	Total Cost to Remove Poa from Fairways
\$450	20	\$9,000

The total cost to remove *Poa annua* will vary by application rates. This example represents four applications of Xonerate at 1.0 oz product per acre.

### Hand Watering Example:

Number of Laborers Watering	Hourly Rate	1 hr/ Employee - 7 Days	Total Labor Saved
4	\$10	28	\$1,120.00/ week

The total amount of savings in labor from hand watering will vary with climate and amount of *Poa annua* present on the course.

### Chemical Example:

Product	Rate	Cost/Gallon	Cost/Acre	Total Application Savings
Disarm C	2 gallons/acre	\$172	\$344	\$6,880

The amount of savings will vary based on the number of applications made targeting Anthracnose.