




ROTATE, ROTATE, ROTATE!

By Todd Lowe
USGA Florida Region Senior
Agronomist

*Goosegrass removed from a Texas putting green that was later confirmed to be resistant to a **sulfonylurea herbicide**." Photo courtesy Gary Brooks, Bayer Environmental Science.*

Golf courses constantly battle weeds in our region due to subtropical conditions that favor rapid establishment and growth. Eradication of weeds however, is economically and environmentally impossible. Thus a philosophy of maintaining an acceptable level of control is required and the use of herbicides is a necessary part of an integrated pest management program. Weed management programs on most Florida golf courses generally includes two to four preemergent herbicide applications for warm-season and cool-season weeds, and spot treatments of postemergence herbicides to kill infestations of established weeds.

There are a variety of herbicides that are effective on turfgrass weeds in our region. Factors that are often considered when purchasing herbicides include cost, safety, efficacy, and ease of application. However, an additional factor that is overlooked is mode of action. It is human nature to continue using products that provide consistent results, or are the least expensive, but we



Legendary greens and bunkers have one thing in common...
they both began with the best soil.

Beneath every meticulously groomed green is dirt. And, the best dirt doesn't just happen. At **Golf Agronomics Supply & Handling** we've been perfecting golf course soil and sand for more than a decade. Our computerized soil blending equipment ensures that the mix you receive meets your exacting specifications – every order, every time. With production facilities located throughout the Southeast, Golf Agronomics offers volume orders and next day service.

GOLF AGRONOMICS SUPPLY & HANDLING

Serving the Carolinas and Florida
800-626-1359 • FAX (941) 955-4690
www.golfag.com

SPREADRITE, INC.**CUSTOM SPREADING**FERTILIZER • DOLOMITE • GYPSUM
ARAGONITE • HYCAL LIME**FAIRWAY TOP DRESSING****LAMAR SAPP
ART SAPP**6001 S.W. 19th STREET
PLANTATION, FL 33317**MOBILE:**
772-201-4000 (ID 158-81-10962)
954-444-0820Tom Burrows, Consulting
Agronomist/Turfgrass Specialist
Independent Consulting using
"Brookside Laboratory"**Greens Reconstruction**

- ♦ Soil Physical Analysis
- ♦ USGA Approved Testing
- ♦ Analytical Service
- ♦ Recommendations
- ♦ Specifications for Contractor Bidding

Soil Testing

- ♦ Greens, Tees, Fairways
- ♦ Analytical Report and Soil Fertility Recommendations

Water Testing

- ♦ Report & Recommendations

*In the business 40 years*Jensen Beach, Florida
772-692-1221 cell: 772-215-1819

may be doing more harm to our golf course in the long run.

Some annual weeds like goosegrass and annual bluegrass produce thousands of seeds that can be quite genetically diverse. Some seedlings may have a herbicide-resistant gene, and if the same herbicide is applied each year, this gene can be passed along to future generations. To date,

goosegrass and annual bluegrass resistance has been confirmed with several different turfgrass herbicides.

For goosegrass, resistance has been documented with Illoxan (*diclofop*), Fusilade II (*fluazifop*), Dimension (*dithiopyr*), Pendulum & others (*pendimethalin*), Barricade (*proflumicarb*), Surflan (*oryzalin*), Balan (*benflin*) and Team (*trifluralin*). For annual bluegrass, they include Dimension, Pendulum & others, Barricade, Surflan, Balan, Team, Prograss (*ethofumesate*), Princep & others (*simazine*), Aatrex & others (*atrazine*) and Sencor (*metribuzin*). There has been a recent report of sulfonyleurea herbicide resistance in goosegrass as well, but results are not yet published (*see picture*).

Rotating different modes of action is recommended to reduce the development of herbicide resistance. An example might include rotating

Ronstar into a preemergent Barricade program, if it has been applied consecutively for several years. Pendulum and Surflan would be poor choices for rotation in this scenario, as these

It is human nature to continue using products that provide consistent results, or are the least expensive, but we may be doing more harm to our golf course in the long run.

chemicals have similar modes of action as Barricade. Some basic knowledge of herbicide families is necessary to make an informed decision, but these are easily accessible via the internet or turf management textbooks.

Consider your weed control programs and whether reduced control of a particular weed like goosegrass or annual bluegrass has occurred. If the same herbicide has been applied for several years consecutively, then there may be a chance that resistance is occurring. Rotate herbicides with different modes of action to reduce the likelihood of herbicide resistance and improve weed management efficacy at your golf course.

**Tifton Physical Soil Testing Laboratory, Inc.**

Accredited by the American Association for Laboratory Accreditation (A2LA)

Specializing in:

- Testing All Materials for USGA Golf Green Construction.
- Developing Putting Green Rootzone Mixtures that meet USGA Specifications.
- Recommending Topdressing and Bunker (Trap) Sands that meet USGA Specifications.
- Developing Sportsturf Rootzone Mixes with Optimum Physical Properties for Athletic Fields.

1412 Murray Avenue
Tifton, Georgia 31794

www.tiftonsoillab.com

T. Powell Gaines
(229) 382-7292