

Maximizing Herbicide Effectiveness

“Investing time and effort before an application will provide greater weed control and prevent lost time and wasted product.”

(Editor's Note: Each month an affiliate member is invited to write or supply an article from a question they have been asked by a Superintendent. If you would like to supply an article, please send the article and a head and shoulders photo to scott@mgcsa.org.)

While today's modern pesticides and application equipment help make golf course superintendents' jobs easier, when it comes to providing year-round control of turf-attacking weeds, there is still much that must be considered. The work that is done before and after the herbicide application will eliminate time- and resource-draining errors and ensure a successful treatment.

Identify Your Targets. The best starting point in any weed control program is correctly identifying the weeds (broadleaf and grassy) in the area you are planning to treat. This includes those visible and those that you can anticipate seeing throughout the year.

Broadleaf weeds are easily identified in turf and are especially visible when in bloom. Bright yellow dandelion, white clover and purple henbit flowers are good examples. Grassy weeds such as crabgrass, goosegrass and foxtail are more difficult to identify early and become increasingly difficult to control once established due to the large quantity of seed they produce.

The importance of correctly distinguishing between broadleaf and grassy weeds directly correlates to the type of herbicide that you will need to use. As an example, phenoxy herbicides control broadleaves but have little to no effect on grasses, while a pre-emergence herbicide such as pendimethalin can be used to control grassy and many broadleaf weeds at the same time with one product application.

Once your target list of weeds is established and you've determined whether they are broadleaf or grassy, understanding each weed's lifecycle will help determine what herbicides will work best and whether a pre- or post-emergent strategy is the correct method to provide the best control. While the product label should be your guide in determining what herbicide(s) will work best to control your targeted weeds, some basic considerations should include the following:

Pre-emergent Weed Control

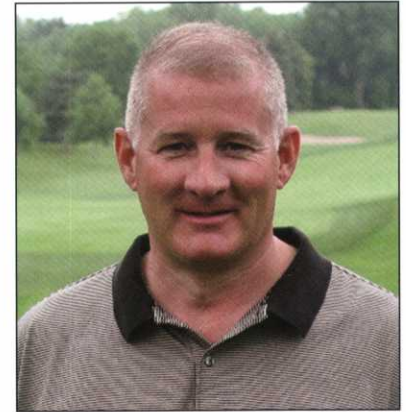
Annual grasses and broadleaf weeds are best controlled with pre-emergent applications in early spring prior to weed seed germination.

When the turf is well-established, a number of pre-emergent herbicides can be used to provide broad-spectrum seasonal weed control -- the most effective and least costly means of weed management.

If the turfgrass is significantly thin or will require large areas of turfgrass replacement, choose herbicides that are labeled for use during or directly following sodding or sprigging.

Post-emergent Weed Control

This strategy is generally more costly than pre-emergent programs.



Many post-applied herbicides can only be used on specific cool or warm season grasses. Do not assume your turfgrass is safe until you check the label.

Applications should be made when weeds are small. A lower rate can generally be used on newly germinated weeds more effectively.

Lower rates used equate to greater turfgrass safety.

Many post-applied herbicides can be used as spot spray applications, an economical approach to treating actively growing weeds.

Some tank-mix combinations can be used for broader spectrum control, but some mixes may cause an antagonistic effect or may cause injury to the turfgrass. Always consult the labels on both products prior to tank mixing.

Check the Label

If you've taken the time to identify the weeds that you need to treat and are trying to decide which herbicide to use, take the time to read and understand the herbicide product label. The label provides a wealth of information that is many times overlooked by applicators that will help achieve better weed control and avoid potentially harmful effects to non-targeted plants. The labeled information for precautionary statements, uses, weeds controlled and application instructions should always be reviewed prior to any application.

Equipment Check

Making sure application equipment (sprayers and spreaders) is in good working condition and properly calibrated is critical to ensure proper coverage is achieved.

Properly functioning spray equipment must be able to maintain constant pressure and flow to allow the even distribution of chemicals throughout an entire application and to calibrate the machine to deliver solutions at the labeled rate. Before conducting a calibration test, carefully check the spray tank and lines for leaks, the pressure regulator and flow meter for proper operation and spray tips for clogs or excessive wear. Worn spray tips will cause erratic coverage (over or under application).

Handheld and backpack sprayers that do not function properly can be traced to corroded metal parts, clogged nozzles or damaged seals. This is usually caused by leaving chemical solutions in sprayers and is prevented by cleaning after each use which is also the key to preventing cross-contamination between chemicals that can cause plant injury.

Spreaders, while generally simple machines, can easily cause poor product application when not working correctly.

(Continued on Page 10)

Herbicide Effectiveness—

(Continued from Page 8)

Applicators should check to ensure that the hopper is opening and closing properly and that the product spreader is rotating freely. Additionally, calibration tests can be completed to ensure that the spreader settings match product application rates.

Water Basics

Manufacturers of sprayable pesticide products recommend that the water used to make the spray solution should be in the pH range of 5.6 - 6.5 (basic). While this is generally the range of most city and well water, a water quality check is a good precaution to take in regions with highly acidic soils or if the source is reused or grey water. Simple water test kits are available through water conditioning retailers while municipal water treatment plants regularly test the water and would be able to provide pH measures. When working with extreme spray solution pH environments, adding a buffering agent to the spray solution should be considered to maintain product efficacy.

Mix It Up - Correctly

A common technique used to save application time is tank mixing products. This is generally a safe practice, if the applicator knows in advance that the products are compatible and can be mixed together without negating efficacy. Again, the product

label is the best place to determine product compatibility and provides specifics on products that can and should not be mixed.

When it comes to tank mixing, the most common mistake is the order that products are combined in the tank. The quick reference below is a proven sequence that will ensure that you don't end up with a congealed mess in the bottom of your spray tank:

- 1) Fill tank 1/2 full of water; begin agitation.
- 2) Add soluble packet products.
- 3) Add product types in this order:
 - a) WP, DG, LF or DF formulations
 - b) S or L formulations
 - c) EC formulations
 - c) NIS, COC or MSO
 - e) Liquid fertilizers
- 4) Fill the remainder of tank with water.

Play It Safe

The health and safety of the applicator should always be a primary concern. Applicators should never cut corners when it comes to wearing protective equipment required on the herbicide label. Even if not stated on the label, applicators should wear the following protective wear when mixing or applying herbicides: chemical resistant gloves and boots, protective overgarments such as tyvek suits or coveralls, and safety glasses or goggles. Applicators should always consider wearing a respirator, even when not required by the label. A good quality dust mask should be considered when preparing and applying dry products.

Clean Up

After application, first clean and store application equipment and then thoroughly rinse personal protection gear with cold water from a hose or hand-held container that was not used during application work. Applicators should bathe and change clothing as soon as possible. Clothes used during application must be washed and dried separately from other clothing, even if it doesn't appear contaminated.

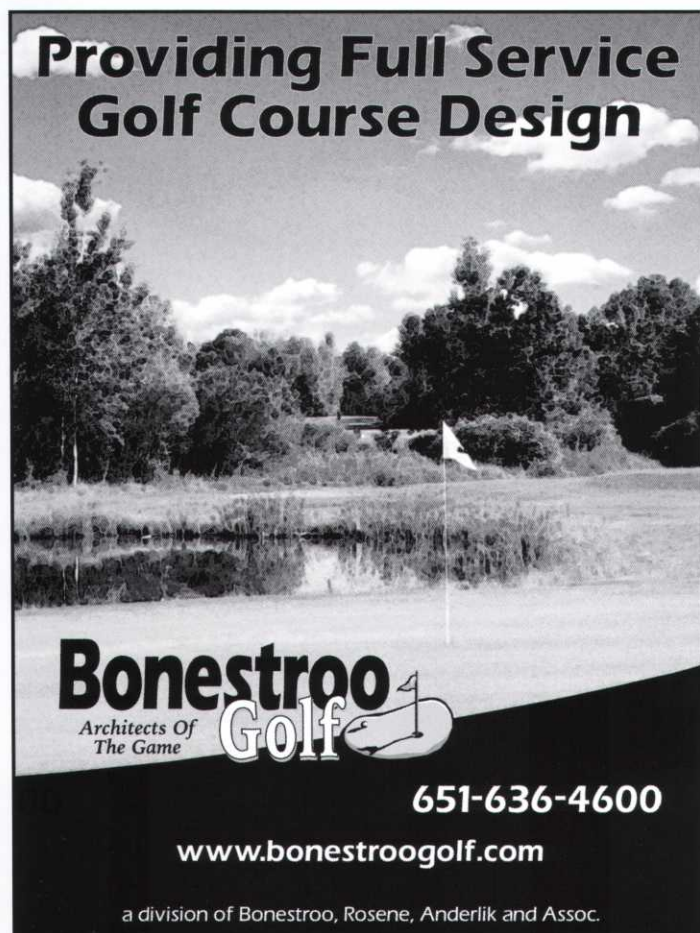
Storage and Disposal

The product label provides exact details on storage and disposal of unused chemicals and their containers specific to each herbicide. Pesticides and their containers deemed as waste should be handled as toxic and disposed of in conjunction with state and federal laws. A state's pesticide or Environmental Control Agency as well as regional EPA offices are prepared to assist by providing resources and information for proper storage and disposal.

Avoiding herbicide mix-ups relies primarily on the professionalism of the applicator to make certain that they understand the capabilities of the product being used, the care and use of their application equipment and proper safety precautions. By investing time upfront to adequately plan and prepare for their herbicide applications, golf course superintendents can achieve better weed control while maximizing the return on investment in terms of application time and herbicide product used.

* * * *

(Editor's Note: David Oberle is a senior sales specialist with BASF Turf & Ornamental in the Midwest region and can be reached at 651.681.8050 or via e-mail at david.oberle@basf.com.)



**Providing Full Service
Golf Course Design**

Bonestroo
Architects Of
The Game **Golf**

651-636-4600

www.bonestroogolf.com

a division of Bonestroo, Rosene, Anderlik and Assoc.