IN THE SOUTH, only strongest weeds survive

Proper selection and management practices give warm-season turfgrasses the 'competitive' edge in the turfgrass manager's battle against weeds.

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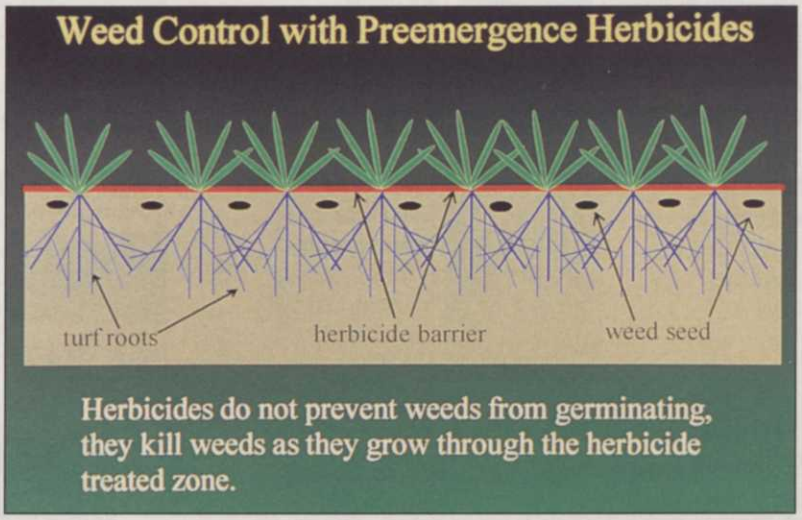
Warm-season turf species are ideally adapted to the lower-tier states in the US. Cold tolerance usually determines how far north a particular warm-season turf species is used. In many areas of the transition zone where both cool- and warm-season can be successfully grown, cool-season turf species are often preferred in the commercial and residential landscape because warm-season species go dormant in the winter. However, in many cases, a warm-season turfgrass would be better adapted to that particular area.

Proper turfgrass selection is critically important for many reasons, not the least of which is weed management. Most weed problems originate because the turfgrass is not growing vigorously and is therefore unable to successfully compete with many weed species. Therefore, proper turfgrass management is the best way to prevent weed problems. Good turfgrass weed management begins with proper selection of a turfgrass species. Attempting to grow tall fescue in many southern states can result in unnecessary weed problems because the turfgrass is not competitive.

Other common management problems that lead to weed problems include attempting to grow a particular turfgrass species where; 1) there is too much shade, 2) drainage is poor resulting in water-logged soils, 3) improper fertility and liming schedules are utilized, 4) consistent use of improper mowing heights, and 5) where soil compaction exists. Each of these situations can lead to significant weed management problems that result in unnecessary herbicide applications, additional costs, and a less than desirable appearance in the landscape.

Think of weeds and the turfgrass as competitors for space in the landscape. Weeds are opportunistic. When the turfgrass is not healthy, weeds gain a competitive edge. For instance, wet soils from poor drainage can result in poor performance of turf but it also opens the door for water-loving plants such as the sedges (yellow and purple nutsedge, annual sedge, green kyllinga, etc.). Improper mowing heights or irregular mowing schedules can open the turfgrass canopy and allow sunlight to reach the soil surface. This can open the door to infestation of many weed species including crabgrass, goosegrass, etc. Certain weeds also thrive in compacted soils. Prostrate knotweed and goosegrass are two such species. The presence of these weed species are often indicators that aerification is needed.

While many weed problems are brought on as a result of the above-



Herbicides kill weeds as they germinate and grow through the herbicide-treated zone. They do not prevent weed seed germination.

mentioned problems, weeds can also be a present where the turfgrass is competitive and being managed properly. A good example in warm-season turf is crabgrass and goosegrass. Both of these weeds can germinate prior to breaking dormancy of the warm-season turf species. In this case, it is impossible for the turf to have a competitive edge early in the spring because it is still dormant.

Large and smooth crabgrass can germinate when soil temperatures near the soil surface average about 52 to 55 degrees F. over several consecutive days. In many areas of the South, this can be as early as February through April. Goosegrass germinates when soil temperatures are approximately 60 degrees F., which is usually a minimum of two to three weeks later. Depending on the area, many warm-season turf species may not reach the maximum growth potential until late April until mid-June. Where crabgrass and goosegrass problems exist, the use of appropriate preemergence or postemergence herbicides are generally required.

For maximum control with preemergence crabgrass/goosegrass herbicides, application must occur prior to any weed seed germination. Probably the most common cause of poor control with preemergence herbicides is application after crabgrass germination. Not only must these herbicides be applied prior to any germination for maximum control, they must also be watered in to set up a chemical barrier. For proper application and maximum control, it is helpful to understand how these herbicides work.

It is a fairly common misconception that these preemergence herbicides prevent weed seed germination. They do not prevent weed seed germination!

The germinating weed seedlings die as they grow through the herbicide treated zone. With the case of dinitroaniline herbicides such as Barricade, pendimethalin, Team, Balan, Surflan, and XL the herbicide is absorbed into young roots and shoots of emerging weeds. Cell division is inhibited and the weed seedling dies.

A common question regarding preemergence control of crabgrass and goosegrass is "Can I enhance control by splitting the herbicide application?"

The answer to this question depends on where you are at geographically. As a general rule, the longer frost-free season, the more advantage there will be to splitting the herbicide application. For instance, in North Carolina, we often see enhanced crabgrass control by splitting the application in the eastern part of the state but seldom see an advantage in the western part of the state.

Again, this is due to the difference in the length of the season. In the far eastern part of the state, crabgrass can germinate as early as early March and the first frost is usually in November, whereas in the western part of the state, crabgrass may not germinate until early April and first frost is in October.

Stolon rooting by 'Tifway' bermudagrass is inhibited by certain preemergence herbicides. Note clubbed roots of bermudagrass plant which prevent it from pegging down.

(This excludes the mountain regions where climate prevents the use of warm-season grasses).

Compare these dates to crabgrass germination and first frost for your geographical area to get an indication on whether you should consider split applications. For goosegrass control, we almost always see an advantage to splitting the application with dinitroaniline herbicides, regardless of where we are in the state. The reason for this is goosegrass is not as easily controlled by these herbicides as is crabgrass.

By splitting the application of a dinitroaniline herbicide, generally half of the full herbicide rate is applied at the recommended time prior to any crabgrass germination. The remaining half is then applied about eight weeks later. One exception is with Barricade. For this product, it is generally recommended that two-thirds of the rate be applied at

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Good weed control during establishment can result in more rapid establishment. Note more rapid establishment of 'Tifway' bermudagrass on left side of picture as opposed to right side where there is poor weed control.

the initial application date and the remaining one-third be applied about eight weeks later.

When considering the use of dinitroaniline herbicides for weed control, it is generally not recommended that they be used where additional grow-in is needed. This is because these herbicides also affect root growth of the turfgrass plants. Therefore, if there are bare areas from excessive wear, or if for whatever reason the warm-season turf species is not well established (recently established, etc.), these herbicides can slow down the spread of the turf into these thin areas. The photograph on page 61 illustrates root injury from a dinitroaniline herbicide on Tifway' bermudagrass that is not well established. In these situations, it is generally recommended that weeds be controlled with the appropriate postemergence herbicide registered for use on the particular turfgrass species.

Control during establishment

During establishment, good weed control during establishment is often the most difficult to obtain. This is because sunlight is directly contacting the soil surface because the turf is not yet competitive. In addition, most turfgrass species are more sensitive to herbicides and can easily be injured during the establishment phase. Good weed control is extremely important during establishment because weeds slow down establishment and poor control during this time can lead to weed seed buildup in the soil which leads to weed problems in the future.

Any new planting of turf should include a carefully planned weed management program during the establishment phase. As previously mentioned, sound turf management practices will assist in the establishment phase. Proper soil preparation, optimum soil pH, and proper soil fertility are all critical because they will allow more rapid growth of the turfgrass which shifts the competitive edge to the turf and away from weeds. If the warm-season turf species is vegetatively planted, care should be taken to keep sprigs moist after proper planting procedures. This means light watering immediately after planting and subsequent light watering at least a couple of times daily to keep sprigs from drying out.

For centipedegrass, atrazine can be used after sprigs or plugs are actively growing and stolon growth has begun. There are many atrazine labels and application guidelines differ significantly depending on which product you use. Therefore, make sure you follow label directions for the particular atrazine product used. Atrazine can also be applied in November to December to provide control of many winter annual weeds. Vantage can be used to control many grassy weeds in centipede once there is a minimum of three inches of new stolon growth.

Vantage and atrazine can also be used once centipede becomes well established. On established centipede, care should be taken when using 2,4-D contained products for weed control. Centipede is sensitive to 2,4-D and should only be used at ex-

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tremely low rates if at all. A better choice for control of miscellaneous broadleaf weeds in centipede is Confront. Confront offers good control of many broadleaf weed species and centipede has good tolerance to this herbicide when used according to label directions.

As with centipedegrass, certain atrazine labels allow its use on zoysiagrass and St. Augustinegrass after plugs or sprigs are actively growing. Again, check individual labels for guidelines. Certain labels also allow its use on hybrid bermudagrass. When sprigging bermudagrass or zoysiagrass, Ronstar can be used at time of sprigging. The use of this product at sprigging has shown to be very effective in controlling many grassy weeds as well as other annual weeds and does not have a negative effect on growth of sprigs. In fact, more rapid establishment is usually realized due to reduced competition from weeds. Unfortunately, Ronstar cannot be used in home lawns.

Good weed management in warm-season turf begins at establishment. Weed control during establishment should be planned prior to planting. Failure to plan for weeds during the establishment phase can result in failure. Remember, the best way to prevent weed problems is to properly manage the turfgrass. If herbicides are needed, make sure you check for turfgrass and weed sensitivity to the particular herbicide in question. **LM**

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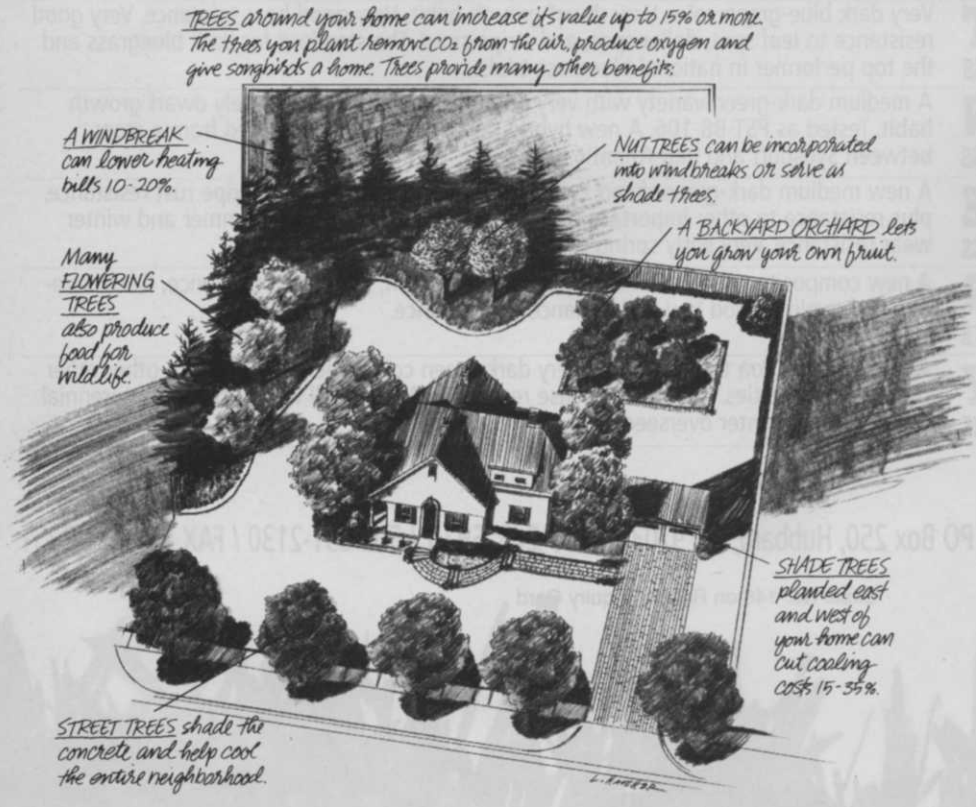

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