All a turf novice has to say to a sports turf manager to make him wince is, "My lawn looks great and I don't do all the things you say you need to do for good turf." This statement is especially aggravating when it comes from a person who has some control over your budget, such as the physical plant director, coach, greens chairman or park superintendent.

In one instant all your years of training and experience are on the line. You have to respond quickly with an equally terse statement, "If your lawn had to tolerate what my sports turf does, you would understand why I need to do much more to provide a uniform, playable and safe surface." Few areas of sports turf management differ from typical lawn maintenance as much as preemergence weed control. The constant abuse and injury inflicted by sports on turf actually invites annual and perennial weeds to become established. Those tears and craters in the turf made by golfers, football players and soccer players we call divots are perfect seedbeds for annual weeds. In fact, these weeds are often the only surviving plants on some low-maintenance athletic fields.

Nevertheless, a large number of athletic facilities still do not take advantage of preemergence weed control. Because managers of these facilities don't see the weeds before they are controlled, they don't understand their importance, says Dr. Wayne Bingham, professor of weed science at Virginia Polytechnic Institute, Blacksburg, VA.

The intense weed pressure on sports turf makes preemergence herbicides, those herbicides that prevent germinating annual grassy and broadleaf weeds from invading desirable turf, a critical part of a sports turf maintenance program. The superintendent or sports turf manager needs to utilize these products to their maximum advantage during peak germination periods of the major weeds. At the same time, he has to follow the directions on the label carefully so that all the herbicide is exhausted before overseeding, reseeding, sodding or sprigging takes place. The mode of action for these materials is just as effective on germinating desirable turfgrasses as it is on undesirable weeds.

Perhaps most important is making preemergence herbicides fit your maintenance schedule. Since these materials last from several weeks to several months, a turf manager who must renovate his football fields in early summer needs to watch timing of spring applications more carefully than a golf course superintendent who oversees his tees and fairways in the fall. Furthermore, target weeds such as crabgrass and goosegrass germinate at different times in different regions of the country. A football field manager in the Sunbelt has more leeway than his peers in the North.

In fact, sports turf managers who have been waiting until spring to reseed or sod, might consider rescheduling this work to the fall so they can take advantage of spring applications of preemergence herbicides. Spring sports, especially soccer, also make fall the best time to reseed. By spring the seed has become established and the sod has rooted. Rather than disturbing the soil by seeding or sprigging in the spring when annual weed germination is at its peak, the herbicide can be applied safely to established turf. By preventing these weeds from invading the turf in the spring, the amount of time spent on controlling established weeds during the summer with postemergence herbicides can be reduced.

Weed pressure never lets up on sports turf. While preemergence herbicides have taken some of the pressure off postemergence herbicides, they have not replaced them. The best results are obtained by using them in conjunction with each other. Using preemergence herbicides is more complicated than using postemergence herbicides, but once the turf manager has mastered both, he has much greater control over weeds that damage the uniformity of turf, its playability, safety and appearance.

"There has to be a certain amount of knowledge to use preemergence herbicides properly," points out Dr. Bill Knoop, turfgrass specialist with the Texas Agricultural Extension Service in Dallas. "Unfortunately, this knowledge is not always available at all sports facilities." Knoop has developed a comprehensive turf maintenance program and schedule for athletic fields in his area to help close the knowledge gap.

A second hurdle to clear for some facilities, explains Knoop, is the cost of preemergence herbicides compared to some of the standard postemergence products.

When the budget is tight, the cost difference seems to get a lot of attention. Knoop works closely with suppliers and high school grounds managers in his area to demonstrate the difference some turf maintenance practices can make. By providing the turf manager who must renovate his football fields in early summer needs to watch timing of spring applications more carefully than a golf course superintendent who oversees his tees and fairways in the fall. Furthermore, target weeds such as crabgrass and goosegrass germinate at different times in different regions of the country. A football field manager in the Sunbelt has more leeway than his peers in the North.

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Herbicide manufacturers have discovered that by combining different preemergence herbicides they can lengthen their residual activity and increase the number of weeds they control.
Preemergence Weed Control
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low the rates of the individual components
to actually be reduced without sacrificing
control levels. An additional benefit is the
lower rates reduce the likelihood of the her-
bicides injuring the desirable turf. "There
is a definite synergism when herbicides are
combined with other herbicides or fertiliz-
er," states Bill Tavener, sales manager of
Pacific Sod. "The herbicides seem to per-
form better even at lower rates." Examples of combination preemergence
herbicides are Team, XL, Scotts
Goosegrass/ Crabgrass Control and Rega-
Star. Elanco has combined trifluralin (Treflan)
and benefin (Balan) in a product targeted
for northern weed control called Team. It
also has cominoborzyalin (Surflan) with
benefin (Balan) to make a southern product
called XL. Bensulide (Betasan) and oxalia-
zon (Ronstar) are being combined by Scotts
to make Goosegrass/ Crabgrass Control.
Regal Star is a combination of benefin, ox-
adiazon and Nitroform slow-release fertilizer
marketed by Regal Chemical. The Anders-
sons has a fertilizer combined with Team
(trifluralin with benefin) and Dursban inse-
ticide.
In all instances, success with preemerg-
ence herbicides requires a thorough un-
derstanding of the label. The label clearly
explains the particular weeds the product
is designed to control. It will also warn
if the herbicide has the potential to damage
certain turfgrasses. Perhaps most impor-
tant, it will say whether or not split appli-
cations are advised and what the length of the
treatment period is at certain rates. This
lets you know how soon you can reseed,
overseed or sod following application.
If you have a question that is not really
answered by the label, don’t hesitate to call
your local chemical distributor, the manufac-
turer or extension turf specialist. They will
be able to give you precise information on
timing, rates and split applications. If you
aren’t sure which weed or weeds are invading
your turf, ask them to identify them for
you.
There can be significant differences be-
tween preemergence weed control on cool-
season and warm-season grasses. To ex-
plain some of these we interviewed manufac-
turers and extension personnel in various
locations throughout the country for their
recommendations.

Locke makes the cut ...
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ing edge, a unique scissor action, pro-
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result is a uniform playing surface that maintains its
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quality of play.

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blades, Locke mowers have been proven season after
season. Powered by durable cast-iron engines, Locke
mowers are built to last more than 20 years. So make
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For the name of your nearest authorized dealer,
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THE LOCKE CUT VS. A TYPICAL MOWER CUT

Dr. B. J. Johnson, professor of agrono-
my, University of Georgia, Athens, GA, is
an expert on weed control in warm-season
turf. He points out that the biggest concern
of southern turf managers is timing preem-
ergence applications so that they won’t
harm perennial ryegrass or tall fescue over-
seeded into bermudagrass in the fall. All
preemergence herbicides work by inhibiting
the growth of roots and shoots of seed-
ings. Spring and summer applications
must be timed so that all herbicide residue
is exhausted before overseeding begins.
This makes timing of a second application
critical and can dictate the use of shorter
acting products. Some products can last
in the soil for more than three months.
Johnson recommends that all applications of
preemergence herbicides in his area
should be made by mid-March. This is the
time when temperatures average above 55
degrees F. and crabgrass begins to ger-
minate. However, he warns that timing can
vary from year to year.
The longer germination period in the
South frequently requires two applications.
Generally, the second treatment is made
60 days after the first. "Repeat treatments
done away with some of the variabil-
ity in control experienced in the past," he
adds.

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Goosegrass has become a major problem throughout the South. Johnson has been impressed lately with the goosegrass control of pendimethalin, combinations of oxadiazon with bensulide or benefin, and the combination of benefit and oryzalin.

Johnson reveals that preemergence herbicides can also play a role in spring transition from overseeded ryegrass back to bermudagrass. Pendimethalin and oryzalin appear to phase out the ryegrass in the spring when the bermudagrass is coming out of dormancy. This procedure is not recommended for bermudagrass greens since preemergence herbicides can inhibit the transition of the bermudagrass.

Spring renovation of bermudagrass fields and fairways by pegging or sprigging can be hampered by preemergence herbicides. Root-absorbed herbicides can harm the establishment of the sprigs. However, treatment is needed since the sprigging process can open up the turf to crabgrass and goosegrass establishment. Applying oxadiazon following sprigging has shown effective weed control without harm to the sprigs.

With the growing conversion of bermudagrass greens to bentgrass in the South, bermudagrass has become an important weed in bentgrass greens. Applications of preemergence herbicides can inhibit the transition of bentgrass.

Goosegrass invading either bermudagrass or bentgrass greens can be the worst problem a superintendent can face. This is the specific reason Scotts developed its combination product. Only certain preemergence herbicides can be used on greens. Check the label and with your extension agent before selecting products for goosegrass control on greens.

Johnson, associate professor of agronomy at the University of Arkansas, Fayetteville, AR, thinks oxadiazon applications after sprigging can be a major help to athletic fields with busy spring schedules. "Spring wear and tear of fields opens them up to goosegrass," King states. "The herbicide barrier in treated fields can also be chewed up by spring play. You don't want to do anything that can hinder the recovery of overseeded ryegrass or tall fescue until soccer season ends in May."

In May, King says that treatments with postemergence herbicides with MSMA, glyphosate (Roundup) or metribuzin (Sencor) can knock out weeds that germinated in bermudagrass between winter and the end of the season. A very light rate (1/2 pound/a.i./acre) of glyphosate will also knock out any overseeded ryegrass, he states. Broadleaf weeds can be removed with an application of Trimec (PBI Gordon) WeeDone DPC (Phone Poulenc), Three-Way (Lesco), Triamine (Riverdale), Turflon-D (Dow) or similar postemergence herbicide combination.

Once these weeds are eliminated, the sports turf manager can then apply preemergence herbicide for control of weeds germinating in the fall. Glyphosate has a label in Texas for summer use on bermudagrass to remove hard-to-control weeds such as dallisgrass, johnsongrass and crabgrass.

King is a proponent of leaving weeds alone in the spring if they make up a high percentage of the surface. "At some point, weeds are a blessing." For sports fields with small budgets and busy spring schedules, he likes the idea of overseeding common bermudagrass fields in the fall with tall fescue because it requires less fertilizer and water than ryegrass. Irrigation is necessary, however, to water-in preemergence herbicides immediately after application and to assure successful germination of the fescue in the fall.

Preemergence control of annual grassy weeds in cool-season turf can be complemented with an application of fenoxaprop-ethyl (Acclaim) from Hoechst-Roussel Agri-Vet Company, says Dr. Robert Shearman, professor of horticulture, University of Nebraska, Lincoln, NE. The postemergence product selectively removes crabgrass, goosegrass, foxtail and other grassy weeds that are missed by spring treatments of preemergence herbicides. Applications made when these weeds are in the three-leaf stage...
Annual bluegrass is growing in areas missed when preemergence herbicides were applied in Texas. Photo courtesy: Bill Knoop.

(June to July) after spring sports season have ended will remove crabgrass and goosegrass missed by preemergence products. It enables the sports turf manager to overseed in the spring and to delay grassy weed control until the spring season is over. Since the herbicide is not a residual, reseeding and overseeding can take place a short time after application. Fenoxaprop can be tank mixed with preemergence herbicides for the second split application to improve summer control.

Split applications are helpful in the North when the turf contains both annual grassy weeds and annual broadleaf weeds, explains Shearman. Single treatments that may control crabgrass may not control oxalis, spotted spurge and prostrate spurge since they germinate later. Fall applications may be necessary for control of annual bluegrass, chickweed or knotweed. However, fall is also the primary time for reseeding cool-season turf, including bentgrass, ryegrass, tall fescue and Kentucky bluegrass. Some success has been achieved in removing annual bluegrass from overseeded ryegrass turf in the South with ethofumesate (Prograss) from Nor-Am.

While the length of control of siduron is relatively short compared to other preemergents, it is safe to apply on newly seeded turf. Turf managers can still provide weed control after reseeding in either the spring or fall with siduron.

Shearman cautions that high rates of preemergence herbicides can decrease wear tolerance, slow recovery and decrease root and rhizome development. He recommends that sports turf managers maintain sufficient levels of potassium for wear stress and phosphorus for root and rhizome development. He also urges sports turf managers to exercise caution when applying preemergence herbicides near ornamentals or plant beds.

Once you have identified the primary weeds that you need to control with preemergence herbicides and have pinpointed their primary germination period for your area, the next step is to apply them properly. Turf should not be wet when dry products are applied to avoid any possible leaf burn. Sprayable herbicides should be mixed with a spray pattern indicator to avoid skips and misses. A uniform barrier of a sufficient rate of herbicide must be created in the top inch or two of soil. Both products should be watered-in quickly following application to rinse the active ingredient off the foliage and down to the soil.

The same guidelines should be followed for split applications, although the rate is typically one half to three quarters of the original rate. The idea is to restore a threshold rate and to replace the portion of the herbicide that has been broken down by soil microorganisms.

Sports turf managers have to decide for themselves whether important cultivation practices such as verticutting and aerifying are too important to delay until after preemergence herbicides have done their job, says Milt Kogiyama, pesticide specialist for Scotts. "Technically, anything that disturbs the herbicide barrier will reduce control," states Kogiyama. "But, if you have a major... continued on page 31
tongriment or series of games, aerifying afterward to relieve compaction and restore drainage and soil gas exchange may be more important than preemergence weed control. You can reapply the herbicide after aerifying, but you really don't lose that much control with normal cultural practices. Oxadiazon seems to hold up better to soil disturbance than some of the other preemergence products."

David Ball, product manager for Elanco, says combinations of preemergence herbicides with fertilizer from major formulators such as Regal, Lebanon, The Andersons, Lesco, Gordon and Scotts, have made preemergence weed control more affordable for many sports turf managers. "These formulators have helped educate the turf manager to the benefits of preemergence herbicides. With their help we have been able to develop products which fit regional as well as national turfgrass markets."

Elanco has a new preemergence turf herbicide with improved broadleaf weed control called isoxaben in the process of registration for introduction in 1989. "It is the first preemergent that was developed specifically for broadleaf weed control, instead of grassy weed control," states Ball.

Safety is the goal of Rhone Poulenc with oxadiazon, says Dan Stahl, marketing manager. "We look for products with a high margin of safety and low toxicity potential to desirable turf," he states. Oxadiazon is very insoluble in water and stays at the soil surface. "If a turf manager accidentally applies too much Ronstar by using an improperly calibrated spreader, he can use activated charcoal to fix his mistake. Also, since it stays at the surface, it does not get absorbed by the roots of sprigs. "You don't have to be an expert with spray equipment to use preemergents," says Welch. "There are effective products in both liquid and dry-applied forms. Golf courses and stadiums tend to use spray equipment, but there is no reason to buy this equipment if you have a spreader that can be calibrated."

Sports turf under heavy use is ripe for invasion by annual weeds. Preemergence herbicides were invented specifically for this reason. A sports turf manager needs to use every tool available to him to keep his fields safe and playable.