

In many cases, the application of an insecticide in combination with nitrogen will stop further damage and promote new top growth. Seeding would not be necessary.

Damage to roots and crowns by white grubs, billbugs and ateniids will cause complete loss of turf areas. After an insecticide is applied to stop further damage, renovation is necessary to regain a healthy grass stand.

Be aware that not all damage by insects requires renovation. Give the turf a chance to recover and then renovate bare areas.

Diseases cause various symptoms in turf, ranging from slight discoloration to death. Whether total kill has come from fusarium blight in bluegrass, anthracnose in annual bluegrass or spring deadspot in Bermudagrass, the only solution to dead turf is replanting.

Fungicides are a great preventative tool, and the high cost can be justified when putting green quality maintenance is involved. But when we main-

tain large areas, such as home lawns or parks, the cost of fungicide use becomes prohibitive.

When cultural procedures, such as proper mowing and watering, cannot keep a turf area from fungal infection, rejuvenation through renovation becomes the most economical alternative. Proper diagnosis of the disease aids in selecting the proper varieties for the reclamation process.

A weed is simply an out-of-place plant. In Tulsa, Okla., annual bluegrass is a weed in a Bermudagrass lawn, but in Cincinnati, Ohio, Bermudagrass is a weed in an annual bluegrass fairway. Weedy grasses, such as quackgrass, annual bluegrass or nimblewill are objectionable because of their variations in color, growth habits and competitiveness. Once a perennial grass species invades, a non-selective herbicide must be used to kill the unwanted vegetation.

### Renovation alternatives

Before starting to restore problem

turf, examine alternative programs. If a golf course fairway needs renovating, would the program interrupt play?

If renovating a large area for a public park, how tight is the budget? Can the homeowner justify the expense involved in alternative renovation programs for their troubled landscapes?

### Dethatching and overseeding

Many turf areas are being reclaimed through dethatching or power raking and overseeding. A dethatcher or power rake has a set of blades of spring teeth, which cut or comb the thatch, bringing it to the surface. To prepare a seedbed effectively, the seed must come in contact with the soil. Dethatchers will bring a great deal of debris to the surface, but if there is a severe thatch layer, the blade will not penetrate completely down into the soil.

Dethatching should be repeated, removing as much of the thatch layer  
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## Slitseeding to the rescue

Sometimes turf is so severely thinned that core aeration and overseeding will not provide enough plants to recover the declining area. In this case, the slitseeder can be used to incorporate seed in rows without completely stripping the area and starting all over.

The grass should be mowed short to reduce the debris brought to the surface. The slitseeder will bring matted grass and heavy thatch to the surface.

After the renovation is completed, this material should be raked or scraped up.

Whenever seeding is done, proper placement of the seed in contact with the soil should be given the utmost priority. If moisture, light and temperature favor germination, a seed may germinate in the thatch but its survival potential in this porous medium is low.

By using the slitseeder, seed-to-soil contact is assured. The machine has a set of blades in front which cuts grooves through the thatch down into the soil.

A set of disks located behind the blades keeps the slits open while seeds flow from a seed hopper through a small tube into the slits at the base of the disk.

The slits are two to three inches apart, close enough for the new plants to fill in rapidly. The slit-

seeder also cuts through the thatch layer, providing an avenue for the new seedling to grow through. This vertical cutting action also stimulates new growth.

Rhizomes and stolons of the existing turf are cut and new shoots grow from uncovered nodes and growing points.

New seed varieties can be incorporated without severe surface disruption. Slitseeding followed by core aeration provides excellent results because the surface has been mechanically modified to favor new growth and development. The seeding rate would vary depending on the various weights of the different species. The rate of seed flow is easily adjusted to compensate for seed size and weight.

An advantage is that the area renovated by slitseeding is never out of service. The area will look as if it has been renovated but it will still be firm and usable. In fact, entire fairways on golf courses have been changed from one variety to another without any interruption of play.

One disadvantage of slitseeding is the impatience of some people eager to have a beautiful turf area. A beautiful turf from seed or slitseeding takes longer than laying sod.

Your potential slitseeding customer must be informed that it will

take the seed months to fill in and form a dense turf. The homeowner also should know they may have to look at weeds during the recovery period when herbicides can't be applied.

Another challenge to slitseeding is irrigation systems. You have to make sure they are not damaged. Marking all the sprinkler heads and valves with marking paint or short stakes makes visibility simple.

### Timing

Timing of the slitseeding process is critical for proper establishment. Slitseeding cool-season grasses does not do as well in the spring as it does in the fall. Cool soil temperatures in the spring prolong the germination time and the existing sod grows vigorously during the cool, moist season.

The soil beneath the sod warms much more slowly than the bare soil which readily absorbs the sun's heat and light. The competition from the established grass reduces the chance for the new seeds to develop.

Pre-emergence herbicides to control spring and summer annuals cannot be applied because they will inhibit the growth of the new seedlings. The physical opening of the turf provides an opportunity for  
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at one time, without tearing out the entire sod layer. When a heavy thatch condition develops, crowns and other parts of the plant grow in the porous, organic layer, creating problems. The thatch, because of its physical nature, does not provide a satisfactory growth medium.

To dethatch an area totally, (removing all the dead organic matter), could leave the area with hardly any plant growth left.

By repeating the dethatching procedure many times, removing a portion of the layer each time, allowing time for recuperation between each dethatching, eventually the desired thickness of the organic layer will be reached.

This program involves many hours of labor for both machine operation and cleanup time. If the thatch layer is thick the seed will lay on top of the thatch and its potential for establishing itself is not great.

If the thatch layer is not thick, then

the dethatching units can cut through and expose the soil for seeding. In this case, dethatching the area once to break up the layer and removing the debris is all that is necessary. Seed should then be broadcast over the entire area, and the dethatching process should be performed again to incorporate the seeds in the soil. One of the greatest benefits of the dethatching units even when they can not fully penetrate the thatch area is their vertical mowing action.

Once the thatch depth is under control, routine dethatching will keep the layer to minimum reducing plant stress. Dethatching, however, does not have any effect on relieving soil compaction in established turf. This can only be accomplished through aeration. Dethatching should be scheduled for fall, reducing the incidence of annual grasses and broadleaf weeds.

If a pre-emergence crabgrass herbicide has been applied the cutting

action of the dethatcher will break this barrier and bring about a potential weed problem.

Dethatching is one form of renovation which should be used as a preventative measure rather than a cure for heavy thatch. To reduce a two-inch thatch layer properly to a quarter inch or to prepare a favorable seedbed requires numerous efforts.

### Core aeration

Interfacing soil problems, heavy thatch and poor rooting hinder the normal growth and development of a sodded area. Reduction of these stresses can be achieved through core aeration on a yearly or bi-yearly schedule. Core aeration involves the removal of a soil/thatch core two to three inches deep over the entire problem area. Coring breaks up the thatch layer, allows water to penetrate into the root system and gases to flow freely in and out of the root zone. Coring breaks up the serious interfacing

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weed seed to grow and develop.

Post-emergence herbicides should not be applied because of damage to the young seedlings. If you live in an area where summers are hot and dry, the young seedlings which germinate in late spring will not have developed their root systems.

Their survival through stress periods, therefore, depends on faithful watering to keep them alive. This could mean numerous waterings, perhaps even daily, if drought and high temperatures persist.

Slitseeding in the fall is best. Pre-emergence and post-emergence herbicides can be applied in the spring. In late summer when cool-season grasses are growing slower (which will reduce their competition with the new seedling) the high temperatures will promote rapid germination. The cool and moist fall period provides a favorable environment for the young seedling to survive.

Both pre- and post-emergence chemicals can be applied the following spring since the plant will have matured.

By the time the summer stress period approaches, the plant will have a developed root system, which requires less water and is prepared to face the heat and drought. An old diseased or insect-riddled turf area now takes on new



Slitseeding can help revive worn areas on athletic fields.

life as the improved varieties take over.

### Warm-season grasses

Warm-season grasses in the South are often overseeded during winter to provide a green turf full-season. The strong lateral growth of Bermuda grass, zoysia and St. Augustine grass, benefits greatly from annual vertical mowing. Using a slitseeder, the vertical mowing and

the overseeding can be done in one operation.

By using the slitseeder, different varieties can be used by simply adding the seed to the hopper. Shade areas can be seeded with shade-tolerant grasses, while heavy-wear areas can be seeded with wear-tolerant species. Selecting the right seed for environmental conditions assures success in establishment.

—Jim Mello