



## Improving Turf through Renovation

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### Introduction

Turf generally can be improved through proper mowing, fertilizing, watering, and pest control applications. With some turf problems, however, the only solution is re-establishment, using one of two methods:

- The conventional method, which involves destroying the sod, tilling the soil, and replanting.
- Renovation, which involves replanting without completely tilling the soil and often without destroying all existing vegetation.

Advantages of conventional tillage over renovation:

- Control of weeds and undesirable grass may be more complete.
- Surface depressions or humps can be removed, resulting in a smoother soil surface.
- Large quantities of organic matter or sand can be mixed into the surface to improve soil aeration and moisture retention.

Advantages of renovation over conventional tillage:

- Almost no erosion risk, post-establishment repair, or mud or dust problems.
- Turf is off-color for only two to three weeks.
- Less equipment is needed, thus renovation is less expensive.
- Original grade is unchanged.
- Post-planting watering is much easier on a stable organic surface.
- Root systems of older trees and shrubs are mostly undamaged.

Turf areas are often renovated to:

- Change grasses to plant an improved variety or a more adapted grass.
- Eliminate weeds by killing grassy perennial weeds with a nonselective herbicide before reseeding or by planting a desirable species that is more competitive with weeds.
- Reduce thatch and/or reseed with a non-thatch-forming grass.
- Improve a turf damaged by heavy traffic, white grubs, diseases, drought, etc.

### Keys to Successful Renovation

Successful renovation involves selecting the best grass, eliminating competition from other grass or weeds, good timing, and proper seedbed preparation and seeding.

#### *Selecting the Best Grass*

Renovation is the practice most often used to improve an established Kentucky bluegrass turf or a heavily trafficked sports turf. It is best accomplished in home lawns with tall fescue seed and in athletic fields with perennial ryegrass seed.



*If you renovate turf, you will have few problems later with erosion, mud, or dust and little need for repair.*

Although it is possible, renovating a turf with Kentucky bluegrass seed is difficult, since Kentucky bluegrass requires from 10 to 21 days for germination, has poor seedling vigor, and its extremely small seed can easily be placed too deeply within the soil. Several months may be required for complete establishment with Kentucky bluegrass, but only two or three weeks may be required for tall fescue or ryegrass establishment.

Be aware that renovation is not the only method for improving a Kentucky bluegrass lawn. Kentucky bluegrass has excellent lateral growth, so timely fertilization, mowing, watering, and weed control will greatly improve a poor Kentucky bluegrass turf and is often more effective than additional seeding with Kentucky bluegrass.

Of course, you can easily till small trouble spots in a lawn with a hoe or tiller and then reseed and mulch. Also, you can quickly repair small areas with sod bought at a nursery or dug from an obscure part of the lawn.

Review the information in *Selecting the Right Grass for Your Kentucky Lawn* (AGR-52) before choosing a tall fescue or perennial ryegrass variety for your lawn renovation.

### *Eliminating Competition*

Germinating grass seedlings cannot compete with an aggressively growing grass or weed.

To reduce or eliminate competition:

- Use a nonselective herbicide like glyphosate (Roundup Pro, Kleenup) or glufosinate (Finale) to kill all grasses and grassy weeds. Weeds such as nutsedge, wild violets, tall fescue clumps, and nimblewill may survive or recover after spraying, but these weeds are less of a problem when you are establishing aggressive species like tall fescue or perennial ryegrass. When renovating a thick bluegrass turf with tall fescue, it is usually best to use a nonselective herbicide to eliminate the bluegrass. You may not need a

nonselective herbicide if the existing bluegrass is very thin and poor. If thick Kentucky bluegrass turf is renovated without using glyphosate, few tall fescue seedlings will establish, and they will usually have coarse leaf blades, thus reducing turf uniformity and overall quality.

- Mow the turf as close as possible before renovating.
- Heavily dethatch or thin the lawn by going across it several times with a lawn dethatcher/verticut machine.

### *Timing Renovation*

The best time to renovate is mid-August through September. The second-best time is mid-February through March. Seedings made in June and July are seldom successful for two reasons: it is difficult to keep enough moisture available for the young seedlings, and summer annual weeds like crabgrass will become extremely competitive.

### *Preparing the Seedbed and Seeding*

Almost no success can be expected if you just broadcast seed on the soil surface. For seeds to germinate and survive, they must have good soil contact. Sometimes a heavy raking will loosen the soil surface enough, but most often the surface is very hard. Weeds, dead grass, or thatch make raking difficult.

Thatch is a tightly intermingled organic layer that often develops just above the soil surface in Kentucky bluegrass turf. If the thatch layer is approximately ½ inch or thicker, make every effort to remove as much of the thatch as possible. You may use a dethatching machine (vertical mower), but several passes across the turf will be necessary. A thatch layer of ¾ inch or thicker is best removed with a sod cutter. When cut just above the soil surface, the highly organic strips of sod are very light and easy to remove. You will need a fairly large disposal site.



*Glyphosate, a nonselective herbicide, can be used to kill most weeds. The resulting dead vegetation will help hold moisture, control erosion, and reduce mud until the grass is established.*



*Thatch removed from the soil surface with a sod cutter is lightweight and easily rolled up for disposal.*



*The dethatching machine will not dislodge all vegetation or thatch, but should penetrate the soil as deeply as possible.*

## **Different Renovation Methods**

You will want to use a different method depending on whether you are renovating an average-size home lawn or large acreage.

### *Home Lawns*

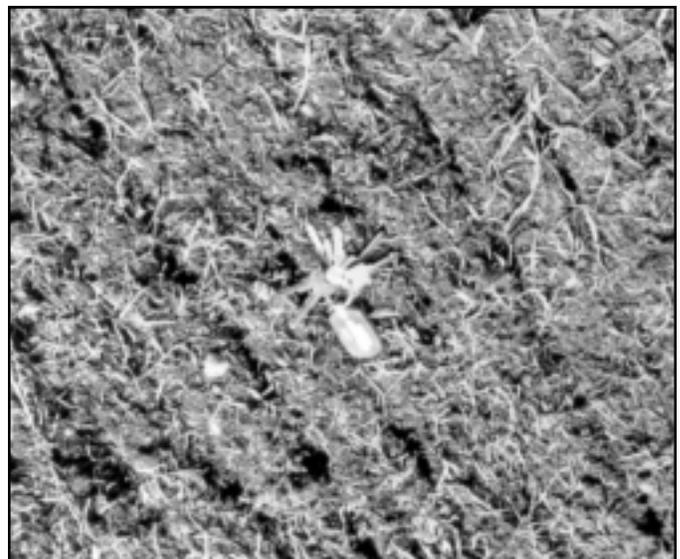
Home lawns are best renovated with a dethatching machine that will not only loosen the dead grasses, weeds, and thatch, but will also leave shallow grooves or slits in the soil surface. Seeds falling into these slits are much more likely to germinate and live. The machine may need to cross the area several times in different directions to disturb the surface sufficiently.

Dethatching machines can often be rented from a local lawn supplier or rental agency. Use machines with knives or blades, because spring-tine machines or tines added to your rotary mower blade will not be effective. If a large amount of organic material is dislodged by the dethatching machine, it should be removed and discarded. Several garbage bags of thatch may be removed from a small lawn. If the original lawn has little thatch, the debris dislodged by the dethatching machine can remain on the surface, acting as a mulch and helping to conserve moisture. For more information on dethatching, see the Cooperative Extension publication *Mowing, Dethatching, Coring, and Rolling Kentucky Lawns* (AGR-54).

After dethatching, evenly broadcast seed at a rate of 6 pounds per 1,000 square feet for tall fescue or at 4 pounds per 1,000 square feet for perennial ryegrass. Rake the seed lightly into the seedbed or cross the area again with the dethatching machine.

Small, bare spots in lawns can be renovated without destroying existing grass or preparing the seedbed. Broadcast seed on

the soil surface and then cover the seed with about  $\frac{1}{8}$  inch of topsoil or sand. You can also use a shovel or hoe to remove clump grasses, dead turf, and soil to a depth of  $\frac{1}{2}$  inch and then repair the area with sod.



*Seeds that lodge in grooves like those above are much more likely to germinate and develop. Without good soil-seed contact, seeds do not germinate, or if germination does occur, the seedlings wither.*

### *Large Lawns/Large Acreage Turf*

Good soil-seed contact is necessary on large lawns and large acreage turf, even though expense and difficulty make it almost impossible to remove thatch from most large turf areas. Some turf suppliers sell or rent equipment that removes thatch, grooves the soil, and applies the seed in one pass over the turf. Such lawn renovators (slit-seeders) are normally used by lawn contractors.

Large pasture renovators are equally effective. If you use them, you must cross the turf area two to four times, because spacing of the grooves in these large renovators may be 8 inches apart. With all turf/pasture slit-seeders, calibrate to apply ½ to 1 pound of seed (tall fescue or perennial ryegrass) per 1,000 square feet per pass, or 20 to 40 pounds of seed per acre per pass. If you cross the area three times, you will be seeding from 60 to 120 pounds of seed per acre. Do not use higher seeding rates for each pass, because all the seed is placed within a narrow slit. If too many seeds germinate within the slit, the seedlings will remain very immature and have poor drought/heat tolerance. They often become diseased.

For large turf areas with little established turf or thatch, you can achieve soil-seed contact by crossing the area several times with a self-propelled or tractor-drawn open-spoon aerifier (coring machine). Another method is to disk several times with the disk blades running almost straight. After this minimal seedbed preparation, broadcast the seed at 250 pounds per acre for tall fescue or at 175 pounds per acre for perennial ryegrass. Then drag the area with a section of chain link fence or a steel drag mat.

Preparing a seedbed with an aerifier (coring machine) is the best method to thicken a tall fescue turf that you do not want to injure with a nonselective herbicide. After heavy aerifying (several passes over the area), seeding, and dragging, new plants will emerge and develop in the thin spots where competition is weak. An aerifier does much less damage to an existing turf than does the vertical mower/dethatching machine.

### **Post-Renovation Management**

Plenty of water is a must! If weather is hot and windy, one or two light irrigations per day may be needed until germination is complete. If the thatch was not completely removed, even more frequent watering is needed. Thatch has a tendency to “wick” water from the seed and can severely limit germination.

A soil test will determine if lime, phosphate, and potash are needed. Certainly nitrogen will be needed in order to get good seedling establishment. If nitrogen is applied before seeding, it



*Many lawn service companies have slit-seeders that dethatch, groove the soil, and plant the seed in one pass across the lawn.*

will increase the aggressiveness of other grasses and weeds that were not killed, thus increasing competition against the desirable grasses. Therefore, it is often best to apply the nitrogen soon after germination. Apply about 1 pound of nitrogen per 1,000 square feet (40 pounds of nitrogen per acre), which is equivalent to about 3 pounds ammonium nitrate (34-0-0) or 10 pounds of 10-10-10 per 1,000 square feet. If using these farm-type fertilizers, be sure to apply them to dry foliage. Also, to prevent leaf burn, either apply them when the weather is cool or water the turf immediately after fertilizing. If you use the specialty organic turf fertilizers that are normally sold through garden centers, immediate irrigation is usually not necessary.

Mow as frequently as needed to keep the old grass or weeds from shading the new seedlings. As the new seedlings develop, continue mowing at the height intended for the entire turf area. Do not let the seedlings grow tall before mowing.

Weed control can usually begin, if needed, after the new seedlings have grown enough to have been mowed one or two times. During germination and shortly thereafter, most herbicides will damage young grass seedlings.

If the area is seeded during the spring when crabgrass encroachment is a potential problem, apply siduron (Tupersan) pre-emergence crabgrass herbicide at the time of seeding (before crabgrass germinates).

*Where trade names are used, no endorsement is intended, nor criticism implied of similar products not named.*