

Turfgrass Renovation: Measures for Success



Verticutters should be set so their blades penetrate completely through the thatch layer and at least 1/4-inch into the underlying soil. Blade-spacing depends on the species of turfgrass involved. Photo courtesy: Ransomes America Corporation.

By John Wildmon

In common usage, the term “renovation” is applied to everything from remodeling athletic facilities to restoring old homes. By definition, renovation means “to reinvigorate, refresh, or revive.” Turfgrass renovation is a process of improving the turfgrass by measures extraordinary to normal maintenance procedures but short of removing the existing grass and replanting. However, before beginning turf renovation it’s important to determine what caused the existing grass to decline and if enough of the desirable species remains to make renovation practical.

Any number of maladies can afflict turfgrasses to the point of needing renovation.

In the case of home lawns, for example, the most common problem is improper mowing. Homeowners typically mow too low and too infrequently and fail to sharpen their mower blades on a regular basis. Other home lawn problems that lead to renovation include improper irrigation, mistakes with fertilizers and pesticides, and buried construction scrap.

With professionally installed and managed turf, the problems tend to be more complex. Turfgrass can deteriorate due to excessive thatch, tree root invasion, inadequate light, pest invasion, excessive traffic, adverse soil properties (high soluble salts, low pH, etc.) or adverse soil properties such as compaction and layering. Often a combina-

tion of the problems previously mentioned is involved. Whatever caused the turfgrass to decline must be determined and corrected or the renovation will probably fail for the same reason.

Find the Source of Trouble

Discerning the cause of turfgrass problems is tricky and can be done in light of past history of the turf, as well as current observations. A soil probe is very useful in evaluating rooting depth and soil physical conditions. Correct diagnosis and subsequent soil amendments may also require a soil test. The soil probe can be used to pull soil plugs for visual observations as well as subsequent lab analysis. Plugs should be pulled at random from the entire area. Spots that are not

indicative of the general condition of the soil should be avoided. For example, it would not be appropriate to pull samples near road beds or in localized wet spots. Plugs should be pulled to a depth of about 6 inches and the top and bottom 1 inch removed.

Fifteen to 25 plugs are usually sufficient. The plugs should be spread out and allowed to air dry, screened using a piece of fiberglass house screen, and thoroughly mixed prior to submitting them for lab analysis. Phosphorus and potassium fertility and pH should be adjusted based on lab recommendations.

Determining a renovation's feasibility requires a thorough assessment of the site. Virtually any turfgrass can be renovated. However, renovation is not always the best choice. If the turfgrass is too thin or severe physical or chemical problems exist in the soil, complete removal and replanting may be more cost-effective and give better results. As a rule of thumb, renovation should not be attempted unless about 60 percent of the area is covered by the desirable species. However, with vigorous, stoloniferous and rhizomatous species such as bermudagrass or creeping bentgrass, successful renovation is possible with stands that are somewhat thinner. It is also possible to renovate thinner stands with seeded turfgrass varieties by reseeding as part of the renovation process. Soil problems that may limit successful renovation include: severe layering, exceedingly poor drainage, excessive soluble salts, or buildup of toxic chemicals in the surface layer.

Tools for Correction

Once it has been determined that renovation is practical and existing problems have been determined and corrected, the renovation process can begin. Note that some problems, such as excessive thatch, will be corrected in the renovation process and may require prior attention. Of course, renovation should always be done during the growing season and should not be attempted during periods of severe turfgrass stress.

It will be necessary to eradicate existing weeds prior to beginning actual renovation. This can be accomplished either by spot-spraying with a non-selective herbicide or a broadcast application of selective herbicide. In either case, an herbicide should be selected which either

has soil activity or translocates via the phloem (i.e., systemic herbicide) to facilitate destroying underground parts of perennial weeds. Some situations may require more than one application of herbicide. Thus, herbicide treatments will typically need to begin one to three weeks prior to renovation.

The exact method of weed control will depend on the species of weeds present, the extent of the weed problem and the herbicides selected, and should be decided on a case-by-case basis. Help in selecting the appropriate herbicides

is generally available through state cooperative extension services.

The first step in renovation is assembling the appropriate equipment. This arsenal should include:

- Pickup or stake-body truck with high sides for hauling debris.
- Heavy-duty vertical mower for thatch removal.
- Heavy-duty rotary mower for scalping.
- Brush-type sweep for removing debris.
- Turf vacuum (optional) for removing finer debris and mat.

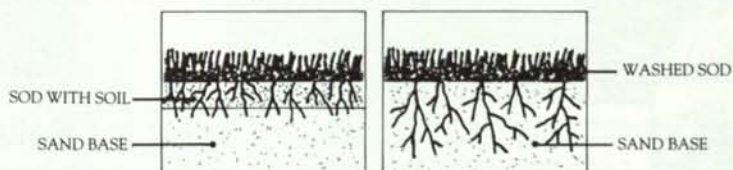
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- Hollow tine aerifier (optional) for core cultivation.
- Steel drag mat or broom-type drag for working in topdressing and seed.
- Leaf rakes, brooms and pitchforks for clean-up.
- Disc seeder (optional) if reseeding is planned.
- Two- to 3-inch plugging tool (optional) for transplanting plugs from healthy areas.
- Irrigation marking flags or stakes to mark obstructions.

Process Sequence

Begin by marking all obstructions, such as hose bibs, sprinklers, electrical outlets and valve boxes, with the marking flags. This will help prevent site damage as well as damage to the renovation equipment. The turfgrass should then be scalped. This accomplished by mowing at a height 30 to 50 percent lower than the current height of cut.

Ideally a mower with baskets or a bagging attachment should be used to facilitate catching clippings. Scalping is fol-

lowed by heavy verticutting. The verticutter should be set so the blades penetrate completely through the thatch layer and at least 1/4-inch into the underlying soil. Blade spacing depends on the species of turfgrass involved. In general, longer internodes require wider blade spacings. Recommendations for verticutter blade spacings for various turf-

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grass species are as follows:

- One to 3 inches — Bermudagrass, creeping bentgrass, zoysiagrass, red fescue, bahiagrass, centipedegrass.
- Two to 3 inches — Kentucky bluegrass, St. Augustinegrass, carpetgrass.
- Three inches — Tall fescue.

After verticutting, surface debris should be removed using the sweeper. In heavily thatched turfgrasses, it may be

necessary to verticut a second time. Debris should be removed prior to the second verticutting to prevent clogging and drag on the equipment.

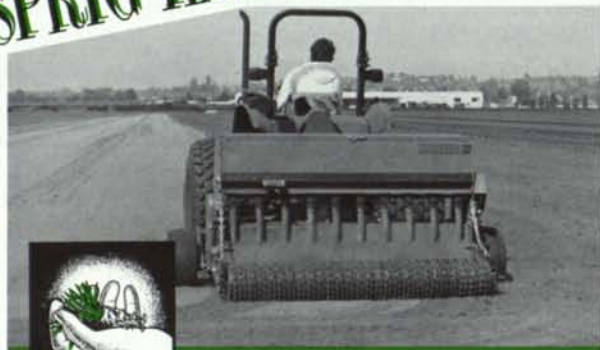
The second verticutting should be oriented at a right angle to the direction of the first verticutting. Debris should be removed again using the sweeper after the second verticutting. Follow the

sweeper with a turfgrass vacuum to remove fine mat if possible. On bunch grasses, or grasses that have stolons only, take care not to remove too much of the verdure. Enough vegetative material must remain to facilitate the recovery of the turf. Grasses with underground rhizomes can be scalped and verticut much

more vigorously and still recover in a reasonable period of time. Be prepared, and prepare the customer for brown "unthrifty" turf immediately after the renovation.

Coring (aerification) is an optional next step. This step should definitely be included if a compaction or surface-layering problems exist. If severe thatch problems exists, the cores should be

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removed. If most of the cores consist of desirable topsoil, they should be allowed to dry, broken up and scattered over the surface using a steel drag mat. If the cores resist breaking up with a drag mat, they can be scattered with the verticutter reset to skim the surface of the turf.

Lime and fertilizer should be applied prior to topdressing or dragging in aerifier cores. This helps get the lime and phosphorous down into the soil profile. Rates should be based on soil test results. If soil test results are not available, apply 2 pounds of phosphorus and 1 pound of nitrogen and potassium per 1,000 square feet. Approximately one-half of the nitrogen and potassium should be from a slow-release source, such as a sulfur or resin-coated product. Determine if the soil is acidic using pH paper or a homeowner-type pH kit. Apply dolomite lime to acidic sites at 50 pounds per 1,000 square feet for sand soils or 100 pounds per 1,000 square feet for finer texture soils such as loams or clays.

Topdressing is an essential next step. It smooths the surface, helps digest remaining thatch and stimulates new growth. Approximately 0.75 cubic yards

of topdressing should be applied per 1,000 square feet. This will provide a layer approximately 1/4-inch thick. If aerifier cores are removed, an additional 2 to 3 cubic yards of topdressing per 1,000 square feet, depending on tine size and spacing, will be required to fill the aerifier holes.

Topdressing material should be sterile to prevent introduction of weeds and other pests and pathogens. It should be similar in texture to the existing soil to prevent layering problems and screened to remove foreign matter such as stones.

Topdressing should also be allowed to dry after application and then dragged or broomed into the surface. If cores are not removed, topdressing and cores can be dragged simultaneously. If additional seed is required, it may be applied immediately after topdressing and dragged or broomed in with the material. Alternatively, seed can be planted at this time without using a disk seeder.

Any large areas that are very thin, completely bare or devoid of desirable turfgrass, will require replanting. This should be accomplished by stripping these areas and following normal establishment procedures. Potentially, these

areas can be plugged from areas that have healthy stands.

Aftercare

When necessary replanting is complete, the entire area should be treated like a new planting. Many renovations fail due to improper post-renovation care. Newly renovated turf is weakened, open and prone to becoming hydrophobic. Light, frequent irrigation, 0.1 inches applied two or three times a day, will be necessary on dry, hot days. Irrigation frequency can be gradually decreased to normal as the turfgrass becomes re-established. An application of 0.5 pounds of water-soluble nitrogen per 1,000 square feet, approximately two weeks after renovation, will also help speed the recovery process. Judicious monitoring for insects or diseases will also be necessary because of the conditions created by high-fertility and frequent irrigation.

Renovation works! Properly planned and executed, it's a cost-effective alternative to replanting when possible. The keys are careful evaluation and taking the process one step at a time. □

Editor's note: John Wildmon is an instructor at Lake City Community College in Lake City, FL.

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