

GOLF COURSE AERIFICATION

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Turfgrass *cultivation* refers to the working of the soil without destruction of the turfgrass sod. The term *aerification* has the same meaning as cultivation and is used to denote any type of cultivation. The term *aerifier* was the original patent name for a coring device. Several different methods of turfgrass cultivations are available, each with unique advantages and disadvantages — coring, shattercoring, grooving, slicing, spiking, forking, and subaerification.

Coring

Coring is a method of turf cultivation in which soil cores are removed by hollow tines, screw devices, or spoons. The soil cores may be dragmatted back into the turf as a topdressing or collected and removed. Core diameters are from ¼-¾ inches, depth of coring is 3-10 inches, and spacings are from 2-6 inches. Units may be power driven or tractor drawn.

Timing for coring depends on the situation; (a) Cool-season grasses — early to mid-spring and late summer to mid-fall. Sometimes late fall for football fields. (b) Warm-season grasses — mid-spring to mid-summer.

On severely compacted areas coring may be necessary at other times than the above recommended dates. For example, warm-season grass tees may need to be cored in the fall.

The soil should be moist when coring. A light topdressing following coring of a close cut turf may be desirable.

Shatter-Coring

Shatter-core cultivation uses standard core aeration equipment but solid cores are used instead of hollow cores. The objective is to “shatter” the surface zone, which is best done when the soil is somewhat dry. This is a new procedure and very limited data exists. A few comments relative to this procedure are:

- It works best on soils high in clay and silt.
- Only the surface zone has appreciable shattering. Pushing the soil cores into the soil is very likely to create a “plow pan” effect after several operations — where a compact zone occurs several inches below the soil surface. Thus, the “net” benefit (or disadvantage) of using shatter-coring may require some time to judge.
- Since little soil is brought up and incorporated into the turf, this method would not be expected to control thatch.

Grooving

Grooving is a cultivation method where vertical, rotating blades cut continuous slits through the turf and into the soil; with soil, thatch, and green plant material being displaced. The vertical *blades are power driven*.

A verticutter or dethatcher with the blades set down to cut into the soil is a small grooving machine. Large tractor drawn models are available. The Rogers/Jac Seeder acts as a groover when the front blades are power driven. Thus, models are

available from ½ inch depth — 1 inch spacing to units with 5 inch depth — 2 inch spacings. Since the blades are power driven, these units dethatch while cultivating. They are often used in renovation of an existing turf.

Timing is similar to coring. Since both cultivation methods cause some injury to the turf and leaf openings, at least 2-4 weeks of good growing weather should follow grooving. The soil should be moderately dry for most effective grooving.

Slicing

A turf cultivation method is where vertical, rotating knives or discs slice through the turf and into the soil. The knives or discs are not power driven but depend on the weight of the unit. Since the units cut through the turf and soil without power blades, these units do not dethatch while cultivating. Depth of penetration is 1-4 inches and at 4-7 inch spacings.

Slicing can be done at any time of the growing season and as often as every 1-2 weeks. The soil should be moist. On close cut turf topdressing may be desirable.

Spiking

A turf cultivation method in which solid tines or flat, pointed blades penetrate the turf and soil surface. The depth of penetration depends on the weight of the machine but is generally shallow (¼-1 inch) and at about 1-2 inch spacings. This is a mild form of cultivation and the effects may only last a few days.

Spiking can be conducted at any time of the growing season and on a frequent basis. The soil should be moist.

Sub-Aerification

Sub-soiling refers to subsurface cultivation by means of vibrating blades. The units generally cut slices into the turf at 8 inch spacings and 7 inch deep. The blades vibrate to breakup compacted layers and shatter the subsurface soil. The soil should be moderately dry.

Sub-aerification can be done at any time of the growing season. It is most effective on heavy soils. If *surface* compaction is the major problem, these units are not more effective than slicing.

Forking

A method of cultivation in which a spading fork or similar solid tine device is used to make holes in the turf. The effects of forking are short lived. This method is useful for small localized areas.

Just as with any cultural practice, turf cultivation is done for certain beneficial responses. The grower should evaluate what his problem is and choose a cultivation procedure that will alleviate the problem. For example, thatch buildup on a bermuda fairway will not be corrected by slicing or shatter-coring but grooving or core aeration could be very effective since they bring up considerable soil that acts as a topdressing. If an impervious surface layer is hindering water infiltration, core aeration followed by topdressing would be more effective than spiking or slicing. However, spiking or slicing might be used if the growing conditions were unfavorable for grass recovery from the more severe coring plus topdressing operations. Perhaps the problem is a layer or compacted zone beneath the surface few inches. The best approach would be subaerification or drill-aerification.

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The basic benefits of turf cultivation are presented in Table 1. As can be seen from the above example, a particular method of cultivation may not provide all of these benefits.

Table 1. Basic benefits from turf cultivation

1. Alleviates soil compaction at least temporarily
 - better air and water drainage
 - better rooting media
2. Beneficial for overseeding and renovation
3. May reduce thatch accumulation
4. Corrects layering
5. Helps correct localized dry spots
6. Improves fertilizer, lime, and pesticide penetration
7. May improve new shoot growth from cut rhizomes and stolons
8. Improves soil resiliency

Problems can arise from the use of an improper cultivation method or timing of cultivation. Common problems often cited are: (a) Any cultivation practice causes at least some injury in the turf. Thus, the timing of cultivation and choice of procedure are important. Cultivation should only be done if a problem warrants it. (b) Cultivation may leave openings for weed encroachment. This is especially a problem on sites where *Poa annua* seed are present. Early spring and fall coring can provide an excellent environment for *Poa annua* germination. (c) On close cut turf some procedures can leave the soil surface uneven. Top-dressing can help smooth the area. (d) Many growers are concerned about disturbing the preemergence, annual grass, herbicide zone when cultivating. Recent research at several locations indicate that this is not likely to occur unless the cultivation procedure is very severe — such as grooving or coring several times over an area. (e) Desiccation of the turf may be enhanced by late fall or summer cultivation, especially on close cut turf or one with excessive thatch. Irrigation immediately after the cultivation operation often reduces this problem.

Credit: Proc. 33rd Ann. Florida Turfgrass Conf.

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non-golf sector. Please send your tags to: Turf Seed, Inc., P.O. Box 250, Hubbard, OR 97032, in care of the Musser Foundation.

Our October outing will be at Wedgewood Valley Golf Club in Woodbury on October 6. Host superintendent, Dennis Hendrickson, CGCS, looks forward to showing off his new facility. See you on the course!



MINNESOTA'S GOLFING HERITAGE **NEW ULM COUNTRY CLUB**

by JOHNNY L. HELGET
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The first meeting to buy 200 acres of land on which the New Ulm Country Club was built was held on March 22, 1929. The land was purchased for \$14,000.

Mr. J. A. Hunter, at that time Secretary of the U.S.G.A. Greens Committee, Twin Cities section, was hired to design the course lay-out. Mr. Hunter laid out such courses as Minneapolis Country Club and Hilltop Country Club.

Originally the New Ulm course consisted entirely of sand greens. Hole No. 1 had its tee on a point above the valley south of the present club house with about 130 yards down to the green. There were two greens down in the valley, then you had to climb such a steep hill to No. 3 tee that many people had someone pick them up in a car and drive them to the tee.

The land not used in building the course was sold to the city of New Ulm and used to build New Ulm's first airport.

The first club house was built in 1932. A fire in 1956 caused extensive damage to the structure. It was rebuilt and in 1974 it was remodeled to its present structure. At this time the hill in front of the 18th green was lowered approximately 10 feet to allow better vision from the fairway to the green.

In September of 1936 four grass greens were authorized at an estimated cost of \$500. They were then moved to their present location.

In 1966 the extra land sold to the city was bought back to construct a second 9 holes which was completed in 1967.

After opening the new nine we redid our watering system to quick couplers on the greens and tees, quite a change from the

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