

Verticutting produces smoother, healthier turf

by Dr. Fred V. Grau

A long time ago, when I was extension agronomist at Penn State, I used to visit the late Jim Morrison at Hershey Country Club. Jim had rigged up an altered rotary hoe by replacing the toothed rotors with sharpened rolling coulters. The two sections were out of register so that the space between cuts was about 2 inches. The idea was to cut the stems of crabgrass *vertically* (upright). The stems hugged the soil and thus escaped the fairway mowers, which cut horizontally (flat). By pulling the vertical cutter in two directions most of the crabgrass stems were severed. A chain-link fence drag did a good job of loosening them so that the fairway mowers pulverized them.

Sometime later, when I was director of the Green Section, I visited James Hamner at the Memphis Country Club. Jim had the same idea, only he modified a Brillion seeder by substituting sharpened cotton gin saws in two ranks, out of register. This tool was pulled with a tractor over the fair-



Vertical cutting blades can be seen underneath the verticutting machine at left. Effect of verticutting on turf is shown above.

ways and roughs to cut the flat-lying stems of Dallisgrass. Like Jim Morrison's design, it worked.

In my pocket I always carried a sharp long-bladed knife for cutting plugs from greens. One evening I was digging clumps of goosegrass from our front lawn in College Park when it occurred to me to pull the sharp blade across the flat stems of the weed. With only minimal pressure the stems were

After becoming the first turf extension specialist in the U.S. at Penn State in 1935, Dr. Fred Grau served as director of the USGA Green Section. He discovered Penngift crownvetch and helped develop Merion Kentucky bluegrass, Meyer zoysiagrass, and Penncross bent. He has been president of the Musser International Turfgrass Foundation since its inception in 1969.

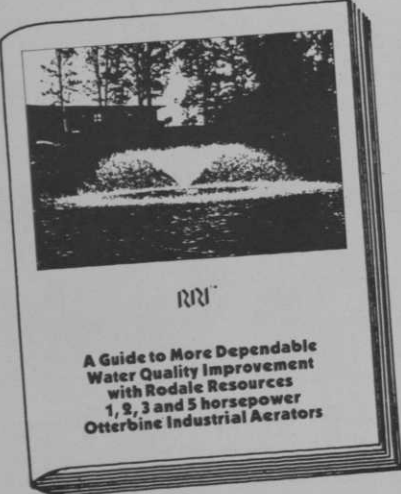
severed from the crown. By doing this in two directions there was left alive only a stub (the crown). By this time I had been working with Tom Mascaro and his brother Tony in developing the aerifier. It was only natural to discuss other ideas with them. The obvious happened. They put together a machine that they dubbed "The Verticut," a mower that cut on a vertical plane. It was a sensation almost overnight.

How does it work? A horizontal spinning shaft, adjustable for depth, has steel blades mounted on the shaft. As these whirling blades make contact with the turf they cut all stems that tend to lie flat out of the reach of conventional reel or rotary mowers. By lowering the blade unit it is possible to

make contact with soil and actually do a good controlled job of removing thatch. This is a drastic operation to be approached cautiously.

What does verticutting actually do? It smooths the surface! Most grass turf is composed of plants that are not identical in growth rate. Those that grow faster or more upright create an uneven surface, that can be described as "bumpy," especially for putting. This is particularly true when there are plants of *Poa annua* present. The vertical mower removes the objectionable faster-growing blades of grass and leaves a smooth uniform surface. It is complementary to the conventional horizontal cut of the reel mower which, following the vertical mower, removes the trash left on the surface.

More than smoothing bumpy turf, vertical mowing actually helps turf to be healthier. As grass blades grow older they become more susceptible to




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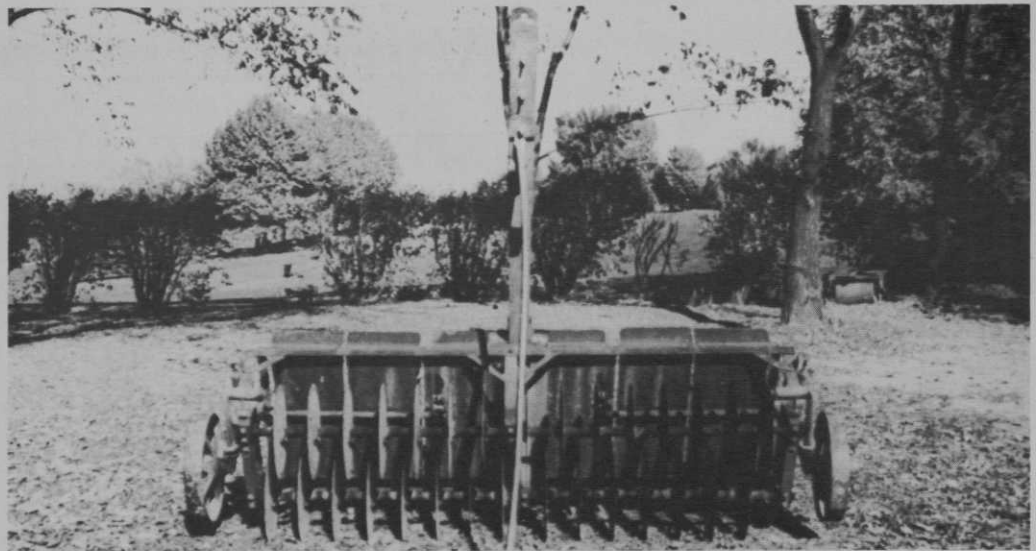
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Jim Morrison of Hershey (Pa.) CC created this forerunner of today's verticutting machines about 40 years ago.

diseases. Fresh new grass blades are remarkably resistant to diseases. "Juvenility" is a word coined to describe the state of keeping turf young and fresh by continually removing the older stems and leaves. The better turfgrasses tend to be decumbent, which means that the blades tend to lie in a position parallel to the soil surface. In this position they are cut imperfectly by reel mowers. As they grow older they become more susceptible to disease and become thatch producers. It is safe to say that the process of verticutting has been the most important mechanical factor ever produced for keeping turf healthy with fewer chemical treatments. It is a "rejuvenator."

Thatch, the bane of good turf, has less chance to develop when verticutting is done regularly. The material that helps to produce thatch is loosened and removed before it becomes a liability. Thatch limits the effectiveness of many insecticides used to control soil-inhabiting insects. This is another reason to employ regular verticutting in the production of quality turf.

Many weeds can be controlled mechanically to a large extent by verticutting. Patches of clover actually seem to disappear. But, quality turf rarely has weed problems since highly-effective chemical control nips them in the bud. A more practical use of verticutting occurs when a stoloniferous turf is treated rather deeply. The loose material which contains many stems with joints is swept up and used effectively as planting material. I've seen this done with bentgrasses, bermudagrasses, and zoysiagrass. The operation leaves the playing surface improved and the excess material becomes an asset instead of a liability.

The practicality and effectiveness

of verticutting becomes clear when one considers that most major mower manufacturers have produced interchangeable units that replace the reel mowing units. This has greatly extended the usefulness of power mowers, especially those used on putting greens and tees.

Many of us remember complaints about "grain" on putting greens. These days one hears only an occasional statement by a TV commentator about "the grain seems to run toward the ocean" or some such remark. It is rare that "grain" creates difficulties in putting. This is due in part to superior grasses such as Penncross and also to improved maintenance practices including verticutting on a regular schedule. Few will remember "Virginia bent" of 50 years ago, but it was renowned for its unmanageable grain. Thank goodness it has been replaced by superior grasses.

Summary

Verticutting, virtually unknown 30 years ago, today is an indispensable factor in the production of superior turf. It smooths "bumpy" turf and helps to produce uniform, true putting surfaces. Weeds are virtually destroyed, and surface stems and runners are eliminated. Thatch is reduced significantly. The older disease-prone grass blades are removed, thus making room for the young shoots that are highly resistant to diseases. Stems with joints that are removed from desirable grasses become an asset for establishing new plantings, rather than a liability for disposal. "Grain" that interferes with accurate putting virtually is eliminated under a system of regular verticutting. When all the pluses are added up, it is safe to say that verticutting is here to stay.