

TIMELY TURF TOPICS

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GOOD DRAINAGE IS THE KEY TO GOOD TURF

TURF NEWS OF NOTE—Putting Greens: "No topdressing for 26 years" is the story on one green at the Roland Park Course, Baltimore Country Club. Robert Scott is the Superintendent. The green is on a hill, built on rock, with excellent sub-drainage. The putting surface is very good. The grass is mixed bent established from seed.

It is estimated by one superintendent that each "topping" on 18 greens costs the club \$500.00. The greens are of Bermuda grass, and the course is in Texas. This may not represent "average" costs but it is sufficient incentive to study ways and means of producing satisfactory putting surfaces with fewer topdressings.

Velvet bent areas in putting greens on many New England courses are suffering from a "chlorotic condition." The diagnosis indicates *Helminthosporium* (leafspot), which does not respond to ordinary fungicides. Ferrous sulfate (copperas) in light applications (1 to 2 pounds to the green) gives relief in most cases. Creeping bents do not seem to be affected similarly.

Richmond, Virginia, reports excellent performance from Cohansey (C-7) bent-grass. This grass performs well also in St. Louis. It has high heat tolerance but is susceptible to dollarspot. It is aggressive, and the light yellow color does not blend well with other named strains.

On tight, clay soils in North Carolina, Arlington (C-1) bent has resisted *Poa annua* invasion longer than have any other strains of bent.

Fairways: Arlington bent sprigged into existing turf has produced superior fairway turf at the Old York Road Country Club, Jenkintown, Pennsylvania. Alex Strachan is the Superintendent. The nursery of Arlington bent is being expanded for additional sprigging.

Fairways in the Boston District are characterized by the high proportion of bentgrass. Bent predominates irrespective of fairway irrigation. Color alone indicates watered fairways. Good fairway lies are the rule when close (1/2 inch to 3/4 inch) cutting is practiced.

Experimental evidence supports the contention that adequate balanced fertilization minimizes the effects of drought. An application of 1,000 pounds of ammonium sulfate to the acre (one application) on Bermuda grass fairway turf at Dallas, Texas, maintained density and green color throughout a drought of 16 weeks. Unfertilized turf was brown and thin. This is a high-lime soil, well supplied with minerals. An outstanding "natural" fairway (which is a mixture of bluegrass, bent, and Bermuda grass) in the Washington, D. C., area is one at the Army Navy Country Club. Summer fertilization has built a strong natural population of Bermuda grass. Fall feeding, when Bermuda grass goes dormant, picks up the bent and bluegrass for a pleasing color in the cool months.

Bluegrass is increasing in the good Bermuda grass fairways at Pinehurst, North Carolina. During the summer no bluegrass is in evidence. When the Bermuda grass goes dormant in the fall the bluegrass makes an excellent showing. Frank Maples, the Superintendent, has made a number of bluegrass selections from the better areas.

Centipede grass produces excellent, close fairway lies at the Ponte Vedra Country Club, Ponte Vedra Beach, Florida, at low levels of fertility and with minimum irrigation. The soil is sandy. Centipede grass has been satisfactory at Greensboro, North Carolina, on the Sedgefield Club course, where it was planted in the roughs, and has spread into the fairways. The soil at Greensboro is heavy.

Crabgrass in fairways has been the worst in many years. Causes include (1) a long, cold, wet spring (nature's overwatering) with poor growth of grass; (2) severe leafspot, especially on bluegrass; and (3) soil compaction from mowing where soil was saturated. Renovation with arsenicals and reseeding with bent in the mixture are being practiced by a number of clubs. Cultivating and aerating compacted soils are being practiced widely, with promising results.

James Hamner, Superintendent of the Memphis Country Club, where the 1948 USGA Amateur Championship will be held, reports practically 100 percent cleanup of crabgrass in fairways with arsenicals. With heavy fertilization and aerifying, the Bermuda grass has filled in without reseeding.

DRAINAGE AND SOIL AERATION FOR GREENS

Howard B. Sprague *

Good drainage and ample aeration of soils on turfed areas are indispensable to the healthy growth of grass. Surface drainage is necessary, but the removal of excess water within the soil is equally important. Grass roots will penetrate deeply on fertile soils which have good sub-drainage (and therefore good aeration), but may be limited to an inch or two in the case of soils which are waterlogged chronically. Putting green grass roots will not live in soil layers which are poorly aerated. It is obvious that deeply-rooted turf is stronger and better able to endure drought, heat, pests, and heavy wear, than is turf with a shallow root penetration.

Putting greens are particularly susceptible to the development of a compacted soil structure. The common practice of watering abundantly, and the inevitable play in periods when the soil is soggy, favor the compaction of the soil. Also, rolling when soil is wet may quickly develop a compact, impervious soil layer. The tendency for compaction is aggravated greatly on greens which were built with heavy-textured soil, without the benefit of well-designed tile drainage systems, and without sufficient organic matter and lime (on acid soils) to insure good soil granulation in the upper 12 inches.

Drainage systems should go hand in hand with irrigation on all heavily used grassed areas built with soils which contain appreciable amounts of clay (i. e., heavy loams, silt loams, clay loams, and clay soils). The higher the clay content, the greater is the need for artificial drainage. A tile drainage system which has been designed well and installed properly should carry away excess water which percolates through the upper 8 to 12 inches of soil. Tile drains are necessary also wherever an impervious soil layer underlies the upper 8 to 12 inches of soil, even though the surface soil is otherwise satisfactory for root growth.

Greens which are already established on unfavorable soil often may be kept in play by skillful watering; regular forking or perforation to improve aeration; and careful fertilizing, mowing, and topdressing. However, the ultimate solution of what to do with weak greens on poorly aerated, heavy soil is a complete rebuilding job, with the installation of a tile drainage system for each green, and the correction of the soil to insure good soil structure and a healthy root growth. On many greens with poor sub-drainage it would be far cheaper, as well as more satisfactory, to rebuild the greens correctly than to attempt to nurse them along in their present condition.

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FERTILIZATION OF BERMUDA GREENS BEFORE OVERSEEDING WITH RYEGRASS FOR WINTER PLAY

O. J. Noer *

The fall of 1946 was a bad one for ryegrass seedlings in Bermuda grass greens in the South. Most of the first seedlings were failures because the young grass was killed by damping-off. The causal organisms are most active in hot, humid weather. There is more or less trouble from damping-off every year but severe damage is confined to the odd season when the late fall and early winter are unseasonably hot.

Practices which make the ryegrass more tender must be avoided. They encourage damage. Procedures which make the grass more hardy should be emphasized. They help it to resist the disease. Manipulation in the application of fertilizer, topdressing, and water determines whether grass is weakened or strengthened.

All plants are most tender during the seedling stage of growth. Ryegrass is especially bad in this respect. An abundance of nitrogen and water produces thin cell walls and makes plant tissues soft and lush. The market gardener uses plenty of both to produce tender, crisp celery, lettuce, radishes, etc. Softness and lushness are two things to avoid. Ryegrass seed is large. It contains enough nitrogen to nourish the young plant until it has become established, so that nitrogen feeding before seeding is not an important factor in obtaining growth.

The use of nitrogen fertilizer in Bermuda grass should stop a month before over-seeding with ryegrass in order to deplete partially the soil of readily available nitrogen. Fertilization with nitrogen of any kind should cease from then on until the ryegrass has become well established. Pre-seeding fertilization should consist of enough potash to strengthen plant structures, and of enough phosphate to stimulate root development.

Greens which are more acid than pH 6.0 should receive finely ground limestone, preferably a month or two before seeding, applied at 25 to 50 pounds to 1,000 square feet. The heavier rate is justified where the soil is moderate to strongly acid, in the range of pH 4.0 to 5.0.

The topdressing used at seeding time should be poor in plant food, and low in organic matter. A high content of organic matter should make the soil hold water and keep the surface wet. Plentiful moisture promotes the development of the damping-off organisms.

From 2 to 4 weeks before seeding, the Bermuda grass should be renovated by the renovator attachment on a power mower or by cross raking. Close cutting after renovation is advisable. Superphosphate (20 percent grade) should be applied at 10 to 20 pounds; and muriate of potash, (60 percent grade) at 10 to 15 pounds to 1,000 square feet, applied immediately after renovation. It is important to use not less than 7 to 8 pounds of actual potash to 1,000 square feet. There is no danger of inhibiting or preventing germination when the fertilizer is applied 2 to 4 weeks before seeding.

The greens should be treated with a fungicide such as a calomel-corrosive sublimate mixture, Semesan, #531, etc., immediately before and after seeding. The use of fungicide once a week, but at a light rate, is advisable.

The watering of newly seeded greens is extremely important. The soil should be moist at the surface at all times but should not be wet. This may necessitate several light syringings by hand on warm, windy days. Germinating grass may wither and die in a few hours if it is deprived of moisture. Once roots become over 1/2 inch in length the danger is less, but careful control of moisture is necessary and important.

Nitrogen fertilization should start only after the grass has become well established. This assures a better stand of grass because of the reduced hazard from damping-off. This procedure has been followed at many golf courses and has withstood the test of time.

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