GRAU'S Answers to Turf Questions

By FRED V. GRAU

Today, with several excellent grasses, vegetative and seeded, plus our modern irrigation systems and mechanical equipment, plus our know-how in building synthetic soils with excellent drainage, together with highly sophisticated chemical controls for diseases, weeds, and insects, and fertilizers that release slowly, not so slowly, and rapidly, there should be little excuse for anyone to have putting greens that are anything short of perfection. This includes bent greens *and* bermuda greens.

Why can't we make the same statement about fairways? We have the irrigation systems, the soil cultivating and thatching equipment, the chemicals for weeds and insects, and the fertilizers that release at varying rates. What we *do not* have are: 1) the improved grasses we need, 2) the ability to modify the soil, and 3) the chemicals to control diseases on the grasses we now have.

Where have we fallen down? Our failure to modify fairway soils in the same manner as for greens is excusable purely on an economic basis. To do so would make golf too costly for anyone but an oil-happy sheik. This takes care of point No. 2.

Chemicals have been used for diseases on fairway turf to a limited extent with limited results. Some diseases, so far, can not be controlled in this manner (Fusarium on Merion Kentucky bluegrass, Helminthosporium leafspot on common Kentucky bluegrass). In some cases the control measures simply checked the destruction of the weak, weedy grass (annual bluegrass) that made up most of the population and effected no permanent improvement. The economics of spraying expensive fungicides on 50 to 80 *acres* of turf should give us pause. Surely there must be a better way to do it.

The failure of one grass after another on the fairways of the nation is something to which no one can point with pride. We should examine the situation(s) in some detail.

Common bermudagrass—Occasionally one could find good fairway turf developed from seed of this grass which has been the mainstay of southern courses from Georgia to California. It was done with *adequate fertilizer, close mowing,* and *minimum water.* Most failures could be credited to *starvation, overwatering, diseases* which thinned turf and let weeds in, and *mowing too high.* Over the years, certain types of bermudagrass spread and dominated in large patches. Most were an improvement over the run-of-the-mill types from seed.

During the last 20 years a vast improvement has taken place. Some types of bermuda grasses that were developed along with putting green research, which were not putting green quality, have become the improved fairway bermudas of today —all vegetatively propagated. There was a brief disgraceful fiasco with so-called "U-3 seed" but it soon was discredited. So, today, in the warm regions we have several good fairway bermudagrass—all vegetative—which come close to producing the quality and the results we seek. Among them are: U-3, Tifway (419) and

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Ormond bermudagrass.

In some sections there is promise in the zoysias and progress is being made. Seed has been only a partial answer. We still look toward the vegetative types which give predictable performance. These include Meyer (Z-52) and Midwest zoysia.

Common Kentucky bluegrass — In 1935 when I went to Pennsylvania to become the first extension agronomist in turf, I discovered that most golf clubs, each spring, reseeded the fairways with common Kentucky bluegrass seed. Much of it was done with a wheelbarrow seeder with no seedbed preparation and without benefit of fertilizer. The purpose was "to thicken the turf." No one ever will be able to calculate the tonnage of seed thus wasted. It would be staggering.

Why has common Kentucky bluegrass failed so dismally so generally, granting, of course, that some clubs in the far north managed to develop reasonably acceptable fairway turf? 1) Helminthosporium leafspot took a heavy toll two or three years out of five, opening the way for weed invasion; 2) Starvation (lack of nitrogen, principally) kept the grass from spreading to form turf; 3) Close mowing, demanded by golfers, removed the upright growing leaves and thus prevented formation of food in the leaves. When root reserves reached a low point the plant could not compete.

In 1948 I helped to launch B-27 bluegrass (Merion Kentucky bluegrass) as the first improved turfgrass from seed. At once it was both popular and unpopular. It was resistent to leafspot; it was more prostrate and could be mowed closely without injury; it was vigorous and had a deep green color. For these attributes it was popular. But—it proved to be a poor seed producer. For this it was very unpopular with seed growers who prefer strains that stand upright (for the combine) and produce large yields of seed.

Merion gradually revealed weaknesses which force us to continue to search for

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better bluegrasses. Striped smut and Fusarium have ruined large expanses of lovely turf. Lack of sufficient nitrogen (and Merion is a heavy feeder) develops yellowish, unthrifty turf that gives way to weeds and falls prey to rust. In spite of everything, Merion revolutionized the sod industry and today, remains the best bluegrass on the market.

Bentgrasses—These are the grasses that can tolerate close mowing. They demand only moderate levels of fertility, but proper irrigation is a MUST! Bentgrasses fail miserably when summer heat and humidity bring on epidemics of diseases which are practically uncontrollable. No bentgrass from seed has been able to withstand all the onslaughts and produce acceptable turf. Too soon clover and annual bluegrass invade, then crabgrass, goosegrass and others. Chemicals have been a crutch, sometimes of considerable help, sometimes not. Now and then a strain of vegetative bent shows real promise but none has been accepted.

Fescues—Chewings and creeping red fescues have been used widely in combination with bluegrass. Virtually the only fescue fairways known today exist under low fertility, no irrigation and usually on sandy soils. Diseases, water and fertilizers (especially readily-available ones) have spelled the end of red fescues as permanent fairway grasses.

Tall fescues (Alta, Kentucky 31, and some developing finer-bladed types) appear to offer real hope for permanent trouble-free fairway turf of good quality. This grass is drought and salt tolerant; indifferent to soil types; responds to medium levels of fertility, especially urea-form nitrogen; tolerates close mowing and is highly resistant to diseases. Chief drawbacks are the coarseness of blades and the tendency to form clumps. Adequate fertilization and heavy rates of seeding partially overcome these objections. The newer types (not yet on the market) are finer in the blade and spread under-

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ground to form dense turf free of clumps.

Summary—The nation's golf courses desperately need improved fairway turfgrasses. If the improved bermudagrasses could be grown in the North we would see all fairways converted to the better bermudagrasses.

Among the cool-season grasses, we look to improved bluegrasses and tall fescues.

The new grasses, to be successful, must have several attributes. They must:

1) tolerate close mowing (½ inch) without injury.
2) be highly resistant to diseases so that chemical treatment is unnecessary.
3) be able to produce good dense turf with a *minimum* of irrigation water.
4) have a tendency to spread, to thicken turf naturally without reseeding, so as to resist weed invasion and to provide a good lie.

Desirable, but not essential, are fine to medium leaf width, deep roots, and long-season green color.

(This writer requests correspondence with GOLFDOM readers who have (or who know of) fairway turf that approaches perfection. We need to assess critically our present situation. Why the failures? What has been done to bring outstanding success? Address correspondence to: Fred V. Grau, c/o GOLFDOM, 800 Second Ave., New York, N. Y. 17)

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