

Bluegrass-Fescue Versus Bentgrass-Poa Annua Fairways

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Prior to World War II, the majority of country clubs had bluegrass fairways on their golf courses and few of them were watered. Since 1945, most private clubs and a number of the courses maintained for public use have installed, or are now in the process of planning or installing, fairway watering systems.

Before 1940, most players, including those who made a living at golf, played the ball clean, or picked the ball cleanly from the turf rather than pinching the ball into the turf and against the soil surface, or hitting down on the ball. The modern golfers (especially those who consider themselves the best players) insist they will "hit flyers" if the ball nestles slightly into turf or if any quantity of grass is beneath or behind the ball. Consequently, the better players today insist upon a short cut.

As a result of all this, fairway turf on many courses is being watered and cut short. When cut close, bluegrass and fescue simply will not grow, develop, and spread sufficiently to present a suitable turf. These grasses are "high stooling" plants as the first leaf develops up to $\frac{3}{4}$ inch on the stem. If they are cut lower than $1\frac{1}{4}$ inches, sufficient leaf surface or photosynthesizing area is removed so that adequate chlorophyll does not exist. Consequently, insufficient quantities of sugar are manufactured. It follows that a healthy, vigorous growth cannot be supported and therefore starvation results.

Bluegrasses and fescues are deep-rooted, vigorous plants. The vast

healthy root system will explore the soil to quite a depth. Therefore, frequent, light waterings are not necessary. Rather, such watering practices will tend to reduce root systems and result in a tender, weak plant much more subject to attacks by pathogenic fungi. Thus, weedy growth is encouraged. *Poa annua* is the primary invader and it will gradually replace bluegrass and fescue under such environmental conditions.

Poa Annua Too Vigorous

In this process of "turf change" brought about by the demand for close mowing and frequent irrigation, many tons of seeds of various bentgrasses have been sown in an effort to establish bentgrass turf. Many and varied types of programs have been followed. These programs may comprise plowing, vigorous aeration, sodium arsenite "kill back," sprigging or stolonizing and simply drilling seed into fairway areas. Generally speaking, very small amounts of bentgrass have become established in planted fairway areas. *Poa annua* continues to cover the vast majority of such areas. Perhaps our technology or ability to grow bentgrass is lacking or perhaps *Poa annua* is simply too vigorous a plant during most of the growing season to allow bentgrass to become established. In any event, considering our current knowledge, as long as turf is cut short and watered daily or every other day, *Poa annua* is not only with us but will continue to produce the largest percentage of fairway grass.

Not only must *Poa annua* - bentgrass turf be watered frequently but plant

nutrients must be applied regularly. Both types of grass are supported by shallow root systems, especially during July and August. Fertilizer demands are such that between three and six pounds of actual nitrogen per 1,000 square feet and approximately one half this amount of phosphoric acid and potash are required annually. Applications must be spaced throughout the growing season. Of course, both water and fertilization programs are dependent upon the type of soils present. More sandy soils usually require greater frequency of water and larger total quantities of fertilizer.

A bluegrass - fescue turf demands considerably less frequent irrigation. Weekly watering is usually adequate even during periods of drought. Fertilizer requirements for this turf are roughly one half that for *Poa annua* and bentgrass. Repeated observations prove that bluegrass - fescue should be fertilized in late August or early September and early October only. If fertilized in spring or early summer, weeds receive the greatest benefit and severity of disease activity is increased. Of course, if the turf is new or the soil excessively barren, spring fertilization may be necessary.

Within reasonable limits, practically all types of herbicides can be used safely on bluegrass and fescue. Therefore, weedy growth is eliminated practically at will. Few herbicides can be safely used on a *Poa annua* - bentgrass turf. By this it is meant that *Poa annua* and bentgrass usually suffer from applications of herbicides, especially of the hormone type. Many times the evidence of damage is not visible until the advent of hot, humid weather. At such times *Poa annua* fades out and bentgrass may also suffer serious damage. If the summer season is not severe (or hot and humid), damage from herbi-

cide applications may not be especially noticeable.

Disease activity is pronounced on both types of grasses. Leaf spot can be and often is quite severe on bluegrass - fescue turf. Damage to this grass is evident as "spotty, thin growth." Severe disease activity usually is limited to spring and early summer and again in September. When disease is severe the golf ball will "nestle" into the pitted turf. On the other hand, a myriad of disease causing fungi are pathogenic on *Poa annua* and bentgrass, especially during periods of extended heat and humidity in July and August. When environmental conditions are such that disease is active, turf on entire fairways can fade out. A typical example was the "fadeout" condition on *Poa annua* - bentgrass fairways throughout the Midwest last summer. (Bluegrass - fescue turf on fairways was never better in most sections.) Applications of fungicides were not effective in stopping turf "fadeout" last summer on *Poa annua* - bentgrass fairways. In a normal season, fungicide requirements would be about 50% less on bluegrass - fescue turf.

Insect activity and control is similar for both types of turf.

Threefold Reason

The prime reason for developing this type of article is threefold. Many comments have been offered about fairway turf kill last summer. Anyone planning to switch to *Poa annua* - bentgrass fairways or anyone planning to build a new course should have as much information as possible before making a choice as to which kind of fairway turf is most suitable for his purpose and the cost relationship between the two programs.

1. Comments about fairway turf kill last summer: Bluegrass-fescue turf was excellent this year in most

cases. *Poa annua* - bentgrass turf killed out severely. The kill was quite general. If only a few isolated courses suffered fairway kill, the immediate consideration would be mismanagement. However, because of the extent of damage, it is obvious that other factors are responsible. Disease activity was one of the important factors. It would seem that the best maintained courses (those with highest budgets) suffered the most severe kill-out, especially where total nitrogen applications were high and heavy watering practices were followed. This was especially true where soils were "heavy" and poorly drained and the course supported a large quantity of trees. Sandy, well-drained locations fared much better.

Severe kill-out occurs about every 5-6 years in the north midwest. Therefore, those who have had *Poa annua*—bentgrass fairways for a number of years report they are not interested in returning to bluegrass—fescue, but rather will live with what they have. On the other hand, many of those contemplating converting to "so-called bentgrass" fairways have changed their minds at least temporarily and will live with their bluegrass-fescue.

Also, they are interested in knowing why more suitable grass which can more successfully compete with *Poa annua* and can withstand a short cut has not been developed.

2. To those planning to switch to *Poa annua*-bentgrass or those building new courses: An effort has been made to outline the differences between the two basic fairway turf programs in the northern part of the country. The prime and perhaps the only reason for attempting to grow bentgrass on fairway areas is simply that the best golfers (perhaps 10% of the players) insist they cannot play the ball unless it can be pinched against the ground. In order to do this, turf must be cut at $\frac{3}{4}$ inch or preferably shorter. *Poa annua*-bentgrass can be cut at this height. Bluegrass-fescue turf must not be cut below $1\frac{1}{4}$ inches; therefore, it is more difficult or impossible to pinch the ball against the soil. The ball must be picked cleanly from longer turf.

Of the profuse bentgrass seeding and overseeding which has been done, usually no more than 10% develops to any extent. Therefore, when discussing bentgrass fairways we really mean

Supt. Elmer Michael, Oak Hill Country Club, Pittsford, N. Y. lays one strip of Merion bluegrass sod across fairways near the green to indicate where golf carts must terminate or turn. Once planted, the Merion strip lasts indefinitely, and stands out so well that even the unobservant player couldn't mistake the turn-off signal.



our fair weather friend *Poa annua*. On bluegrass—fescue turf *Poa annua* is rarely a problem except in areas which receive excessive moisture.

3. Cost relationship: As can be determined from what already has been said, maintenance cost for *Poa annua*—bentgrass fairway turf is approximately 50% greater than for bluegrass—fescue turf.

If you wish to have what is currently considered (by some, especially the best golfers) “top” fairway playing conditions, install an adequate fairway watering system and sow bentgrass. But, be prepared to experience a few expensive troubles.

Drainage is Essential

In any type of fairway programs, especially for bluegrass—fescue culture, drainage, both surface and sub-surface, is of prime importance. On many soils, adequate subsurface drainage simply cannot be obtained. Therefore, all efforts must be made in construction or reconstruction to assure that surface drainage is adequate. At least a 3% general fall must be obtained if at all possible. Tile with adequate and properly placed risers to insure rapid surface run-off is essential. After the area has been in play for a few years, wet spots or areas difficult to drain will be noticeable, even if reasonable tile drainage is afforded. In such cases simply dig a trench three feet deep by three inches wide through the wet area. Fill the trench to the surface with pea-size gravel. Turf will grow over the gravel in about two weeks. *Do not* place soil over the gravel and thus create a “perched” water table.

If you are fortunate enough to have a sandy, well-drained soil, your fairway troubles are substantially reduced. In any event, do not build low-water

holding areas into your fairways. Also, do not cover a beautiful sandy soil with a layer of “heavier soil” thinking that it will be easier and cheaper to grow grass on the heavier silt or clay soil. It will not be so; it is much, much easier to apply water than to remove it.

We have not meant to infer that the installation of a watering system is not advisable for culture or bluegrass—fescue. However, the superintendent must use prudence in his watering habits and be careful or he will tend to overwater. Otherwise, *Poa annua* and other weeds will gradually develop into a serious problem. Of course, artificial water is essential for the *Poa annua*—bentgrass fairway program.

CONCLUSION:

Although over 150 clubs have been visited this year and the fairway picture discussed with at least 200 people, it is difficult to say just exactly which program offers the most under all circumstances. The general thinking at this time is that *Poa annua*—bentgrass fairways simply are too expensive to maintain with too great a possibility of going-out in the area south of a line running through Columbus, Ohio, Indianapolis, and Omaha. North of this line, the *Poa annua*—bentgrass will not go out more often than approximately every six years; thus players and those responsible for maintenance tend to favor *Poa annua*—bentgrass if adequate water and money are available. Lower budget courses and those without water must stay with bluegrass—fescue.

If the writer were to have the responsibility of maintaining a golf course he certainly would wish that bluegrass—fescue was the accepted fairway cover by the membership, but he is fully aware of the limitations of such turf and that his wish might not become a reality.