

## FAIRWAY MAINTENANCE

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Fairway maintenance is a term that encompasses a wide variety of operations. It is necessary that each operation be treated briefly in this discussion.

**Mowing height and frequency** deserves mention. While mowing is a routine operation, it continues to provoke discussion. The golfer prefers closely mowed turf and this necessarily places some restrictions on the species of grass to be used.

Bermudagrass and Zoysia in the South and bentgrass in the cooler regions will tolerate close mowing. However, bluegrass and red fescue are grasses which do not do well when mowed less than about  $1\frac{1}{4}$  inches. It is generally agreed that close mowing must be coupled with frequent mowing. The relative percentage of the total leaf area removed at each mowing appears to have a bearing on the persistence of turfgrasses. A rule of thumb is to remove no more than one third of the leaf surface at any one mowing.

The taller growing grasses such as bluegrass and fescue require less frequent mowing and less frequent irrigation than does bentgrass. The question of how much a club is willing to pay for close-cut fairways frequently arises. It has been estimated that the practice of maintaining bentgrass as a close cut turf in contrast to bluegrass and fescue at a greater height may cost about 50% more.

**Fertilization** is another regular practice that may deserve another look.

Bermudagrass is known as a very heavy user of fertilizer. Bermudagrass turf has demonstrated increases in growth at rates of nitrogen in excess

of 15 pounds per 1,000 square feet per year. However, this should not be adopted as a practical approach to bermuda fertilization. Throughout the South, where growing seasons are long, well-established bermudagrass will make an excellent turf when supplied with 6 to 8 pounds of nitrogen per 1,000 square feet per year. In more northerly areas, where the growing season is shorter, the rate may be somewhat reduced. It appears that most of the turfgrasses require nitrogen, phosphorus, and potash in about 3-1-2 ratio.

Bluegrass and bent require relatively less fertilizer. Two to four pounds of nitrogen per 1,000 square feet per year appears to be an adequate amount for bluegrass turf. Most of the nitrogen should be applied in early fall.

Bentgrass appears to require a similar quantity but its use should be spread out over the growing season in as many light applications as may seem practical.

**Weed control** has received a great deal of attention in recent years. Great advances in effectiveness and selectivity have opened up new possibilities for fairway weed control. The phenoxy compounds still receive much attention and have been considered to be relatively safe. Some recent investigations by Callahan at Rutgers have indicated that these compounds produce some abnormalities in root growth. These abnormalities may result in the loss of turf during periods of stress. Young seedlings appear to be extraordinarily susceptible to injury.

Sodium arsenite has been one of the widely used, versatile, and effective



weed control materials for many years. Recently legislation has been passed in California which seriously restricts the use of this material. This is disturbing and perplexing because the safety record in the use of sodium arsenite is remarkable. The popular but misguided attack on pesticides should not be permitted to deny golf course superintendents the use of their tried, dependable, and safe herbicidal materials.

The use of pre-emergence materials is increasing and it appears likely that they will be economically feasible for fairway use before many years. There is still much to learn, however, about the fate of these compounds in soil. Some of them appear to carry over from one year to the next and continued safe use may be contingent upon adjusting the rate of application to supplement the material already present.

Better grasses and better management practices have combined to create another problem on many fairways. The cause is too much grass and the problem is thatch. Fortunately, equipment manufacturers have been concerned for a number of years with thatch on putting greens and have devised machines to remove excess grass. There are numerous machines available, each with its own advantages and shortcomings. Some dividends may accompany efforts toward thatch control. Several machines do some aeration and some fairway leveling while removing thatch.

**Proper irrigation and adequate drainage** remain two of the most elusive factors in fairway management. Irrigation is treated more fully in another article in this issue.

Rarely does one find two drainage problems that respond to exactly the same treatment. Most often a combin-

ation of engineering knowledge and common sense will suggest a workable solution. One relatively new innovation involves the use of "reject" plastic pipe for tile drains.

Fairway maintenance has never been on so high a plain as it is today. Truly, many fairways rival the putting greens of 25 years ago. The present status of fairway maintenance speaks well for the cooperative efforts of the golf course superintendents, the manufacturers of equipment and supplies, and the investigators who have contributed better grasses and better practices.

**DR. GLENN W. BURTON**

*Winner of the fifth annual USGA Green Section Award for "distinguished service to golf through work with turfgrass" was Dr. Glenn W. Burton, Principal Geneticist at the Georgia Coastal Plain Experiment Station, Tifton, Ga., and one of the nation's outstanding grass breeders. His selection was announced at the Green Section's annual Conference on Golf Course Management in New York City late in January.*

