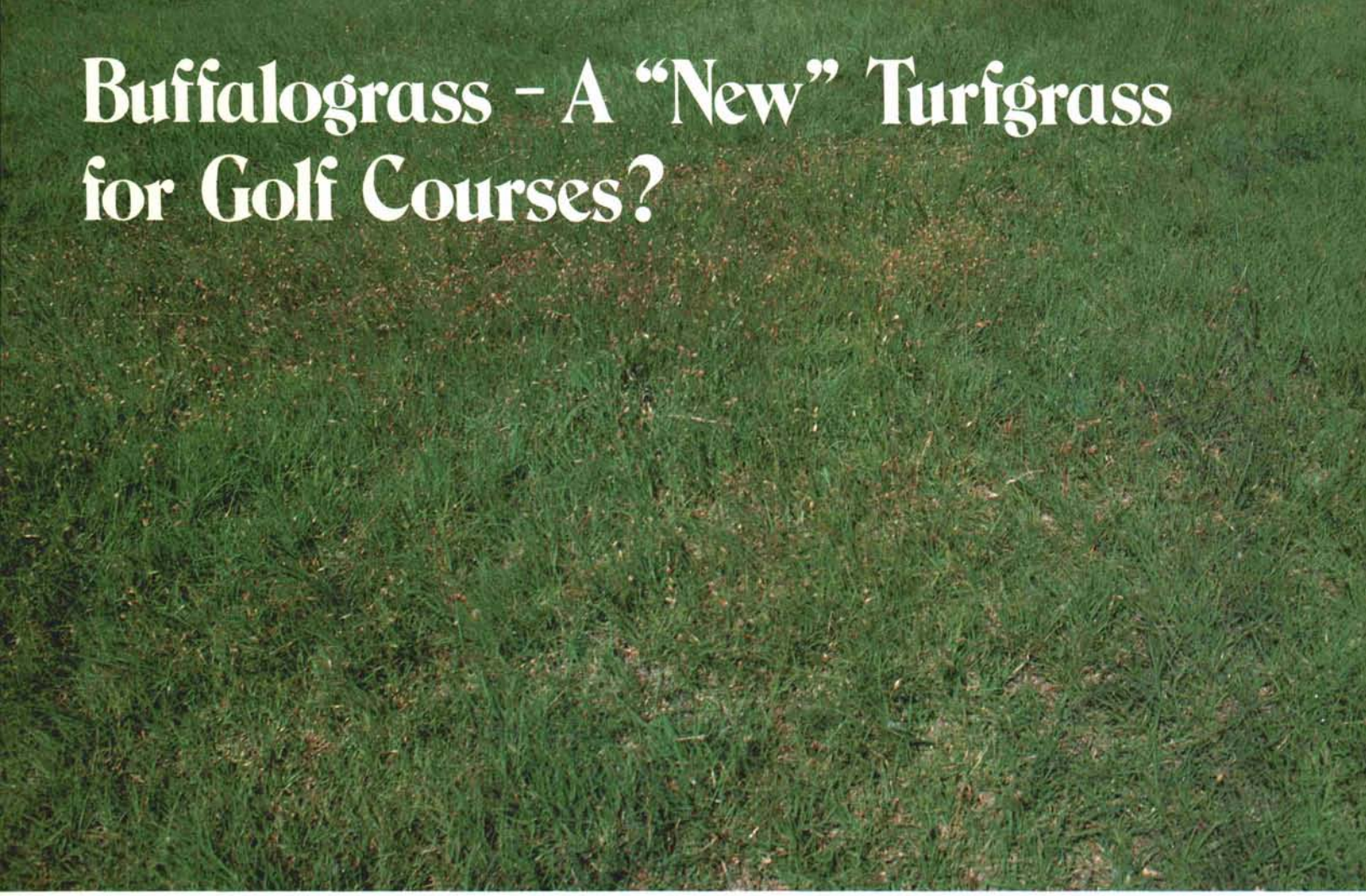
Buffalograss - A "New" Turfgrass for Golf Courses?



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CUTTING golf course operation costs has been the topic of many past articles in the GREEN SECTION RECORD. Superintendents and architects are constantly looking for ways to effectively reduce maintenance, especially water needs. Current practices are altered more and more to where maintenance is somewhere between an optimum and a minimal or critical level. Thus, in certain areas of the United States, different grasses, used in earlier times when maintenance standards were not nearly as high, are being used once again.

Buffalograss [*Buchloë dactyloides* (Nutt.) Englem.] is a grass native to the Great Plains. It shows potential for expanded use on golf courses. In 1933, David A. Savage wrote an article for the USGA Green Section on sodding buffalograss for fairways because seed was not available (8). Now, almost 50 years later, buffalograss is being re-examined as a potential turfgrass for home lawns and golf course purposes. This grass serves a valued role on unwatered fairways and roughs, especially on older courses in the High Plains. Two golf facilities of special interest are the Collindale Golf Course, Ft. Collins, Colorado, (Neil Johnson, Superintendent) where research on buffalograss maintenance is done, and at the nearly completed Battlement Mesa Golf Course, near Parachute, Colorado, (Dave Johnson, Superintendent) where buffalograss is being used widely to greatly reduce water needs.

Buffalograss is a long-lived, drought-resistant, perennial grass that spreads rapidly under good growing conditions by stolons and creates a dense sod. It is a warm-season grass that will go dormant with heat and drought stress as well as at the first frost. It is also three to four weeks slower to green up in the spring than cool-season grasses, such as Kentucky bluegrass and fine fescue. Seldom does this grass grow taller than 10 inches, including extended male flowers. Under most conditions, foliage height is two to three inches.

Buffalograss is known for its drought resistance and hardiness to high temperatures. It does well on heavy soils. Although this grass is commonly found on poor, heavy clay soils, it will also grow on good, well-drained soils. It does not do well on soils high in sand, however (9). It is found naturally in semi-arid areas that receive 12-25 inches of precipitation per year. Deep and infrequent supplemental irrigations benefit buffalograss turf. Improper irrigation encourages broadleaf weeds and invasive grasses.

THE FERTILITY requirements and mowing tolerances of buffalograss turf have not been well researched. Buffalograss does respond to light applications of nitrogen, but overfertilization can encourage weeds. This grass can be maintained with little or

no mowing; however, mowing can be used regularly throughout the season to give a more manicured appearance. A mowing height of between 1.5 and 2 inches can remove the male flowers and clean up the turf (1).

Tolerance to traffic is of concern on golf courses, and observations indicate that buffalograss will tolerate cart traffic quite well. As a range grass, buffalograss can tolerate a high degree of trampling and the associated close clipping of grazing (often to 0.5 inches) (9). Fraser and Anderson (2) found that Texoka buffalograss tolerated a moderate level of continual traffic and a regular mowing program very well. Nevertheless, if buffalograss is severely worn, regrowth may be slow or nonexistant, because regrowth occurs only from stolons.

Buffalograss is rarely troubled by insects or disease if not over-irrigated or over-fertilized. However, it can serve as a host for many types of insects and common turf diseases.

Once established, it can produce a tough sod that has few weed problems. Weeds can be a problem, however, until almost complete cover is achieved. Several chemicals have been tested on buffalograss, but potential turf injury and lack of labeling is of concern. 2,4-D [(2,4-dichlorophenoxy) acetic acid] is often used for weed control in buffalograss, but it may cause leaf burn and stunting of seedlings and mature plants, especially if plants are stressed at time of application (4, 7, 9). Pre-emergent herbicides such a propazine, siduron, and simazine seem to have little, if any, damaging effects when applied at seeding, when applications are at label rates (5, 6). Successful weed control with no damage to dormant buffalograss turf has been reported using high rates of Trimec®, Roundup®, and Weedone Super D® (6).

With the recent surge of interest in dry-land landscapes, more detailed knowledge was needed about buffalograss. Since most of the work done previously was concerned with dry-land range needs, research to test various untried establishment and maintenance practices on buffalograss for turf purposes was instigated at Colorado State University. Practices studied included seeding date and rate and effect of preplant and maintenance fertilization. A comprehensive thesis on buffalograss and other dry-land grasses is available (1), and it would be useful for those considering planting buffalograss turf.

TWO AREAS OF importance in establishment of turf, either for a home lawn or a golf course, are optimum seeding date and seeding rate. Only rarely are turf professionals able to seed at the optimum time; however, seeding at the best time can provide great return. Buffalograss can, in most of its areas of adaptation, be seeded anytime from mid-May until the end of August. In these studies best germination and subsequent cover was achieved by seeding in May. Early fall (September or later) is not advisable unless *UNTREATED* seed is used and germination is expressly planned for the following spring. By the second year, there was no appreciable difference between test plots seeded in May and July.

Seed cost is another important consideration. Buffalograss seed is expensive (wholesale cost in 1982 is $8.00 per pound) due to the difficulty in harvesting the burs that are found close to the ground. Also, the pretreatment that is necessary to ensure a high percentage of germination adds to the cost. The burs contain two to five seeds, with an average of two seeds per bur. A pound contains about 50,000 burs.

Recommended seeding rates for buffalograss for turf are high, as much as 7 lbs./1,000 ft.^{2} (7). When comparing five different broadcast seeding rates, adequate cover was achieved in one dry season with no supplemental water (beyond germination and initial establishment) using 3.9 lbs./1,000 ft.^{2}. With no irrigation beyond initial establishment, 2.3 lbs./1,000 ft.^{2} produced adequate cover within two growing seasons. Lower rates might be used and adequate cover achieved in one season if a regular irrigation schedule is planned or summer rains occur fairly regularly. After establishment, the frequency of irrigation can be adjusted for weather conditions and quality and rate of cover desired.

Color, density, and quality ratings comparing various seeding rates to a

At Ft. Collins, Colorado, unwatered buffalograss roughs:

After heavy spring rains in May. *In June.* *In August.*

good-quality buffalograss turf were made during the seeding year and the second season. During the seeding year, color was better in the plots with sparser stands than with those seeded at higher rates. Color differences were not visible during the second season, when color was acceptable throughout. Heavier seeding rates (2.3, 3.9, and 5.5 lbs./1,000 ft.^{2}) produced better cover, and the lowest seeding rates (0.4 and 0.8 lbs./1,000 ft.^{2}) produced unacceptable cover. The trend was similar during the second season. Quality was based on both color and density.

THE USE OF preplant fertilizers for establishment of high-quality turf is a common practice. Preplant fertilizer benefits on buffalograss were examined. There were no significant differences in growth rate or appearance with fertilization despite low soil nutrient levels at planting.

As a range grass, fertilization is often considered unnecessary for established buffalograss. However, a study at Collindale Golf Course showed that established buffalograss without irrigation, except to water fertilizer in, responds favorably to nitrogen fertilization. Nitrogen at a rate of 0.5 lb. N/1,000 ft.^{2} applied monthly during the growing season increased turf quality, color, and density greatly. Applications only in July or at a heavier rate (2 lbs./1,000 ft.^{2}) as a dormant, because of drought, treatment in August also improved overall turf quality. A residual effect from fertilizer application was noted the second spring.

In the U.S.A., there is a "new" grass for golf course use. Buffalograss can provide a suitable turf for golf purposes even when it is dormant and dry. Although buffalograss is native to the Great Plains, undoubtedly it will perform satisfactorily in several other areas. It withstands many of the climatic extremes common in the semi-arid High Plains, and it responds well to proper mowing, watering and fertilization. More research needs to be done to establish its environmental tolerance and to determine its disease and insect susceptibility, as well as to find its optimum irrigation. But here is a grass with potentials yet untapped. No doubt, as our resources become more and more limited, the use of this grass will be greatly extended.

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Established buffalograss can withstand heavy traffic, even when dormant. The green grass is Kentucky bluegrass.