

A YOUNG ASSISTANT GOLF COURSE SUPERINTENDENT
PROVIDES SOME FACTS FOR AN AGE-OLD CONTROVERSY

Comparing Maintenance Costs: Bentgrass Versus Bermudagrass Greens

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EVEN TODAY, the questions and discussions revolving around the subject of bentgrass vs. bermudagrass greens in southern regions seems endless. Which grass really does produce the highest putting quality and most practical putting surface for southern regions? Here, at Callaway Gardens, Georgia, we have an unusual opportunity for comparing one grass over the other, as well as comparing the costs for maintaining each type of green. Of course, our turf programs may vary quite widely from other golf courses, depending upon location, number of rounds, personnel, turf needs, budget, or maintenance practices. Whatever the case may be, we all strive to have the best possible playing surface within the budget given us.

I have taken actual cost figures from two of our courses at Callaway Gardens. Hopefully, some of this information will be of use in deciding if you want bent or bermuda for planting new greens or in consideration of converting older ones from bermudagrass to bentgrass. Both grasses have their own benefits and their own management requirements.

The two courses we are comparing in cost are the Lake View Golf Course and the Gardens View Golf Course. Lake View was constructed in 1949. It presently has Tifgreen (328) bermudagrass on its 100,000 square feet of total putting area. Good air circulation is a problem with trees on either two or three sides of 13 of the 18 greens. With 98 acres of maintained turf, dog-legged fairways and picturesque scenery, it is



Bermudagrass/Bentgrass Comparisons

1978	Bermudagrass		Bentgrass		Cost Difference
	Total	Cost/M	Total	Cost/M	Per 1,000 sq. ft.
Fungicides	\$2,236	\$22.36	\$3,906	\$37.20	Bent = \$14.84 More/M
Insecticides	139	1.39	162	1.54	Bent = \$.15 More/M
Pre-Emergent Herbicides	155	1.55	325	3.10	Bent = \$1.55 More/M
Overseeding	4,000	40.00	00	00.00	Bermuda = \$40 More/M
Fertilizer	2,450	24.50	992	9.59	Bermuda = \$14.91 More/M
A Cost Difference of \$38.37/M "More" on the Bermuda Greens/M					

Estimated Number of Golf Rounds for 1978

Lake View (328)
37,000

Gardens View (Bent)
35,500

1979	Bermudagrass		Bentgrass		Cost Difference
	Total	Cost/M	Total	Cost/M	Per 1,000 sq. ft.
Fungicides	\$5,149	\$51.49	\$3,400	\$32.38	Bent = \$19.11 More/M
Insecticides	343	3.43	501	4.77	Bent = \$1.34 More/M
Pre-Emergent Herbicides	180	1.80	3.51	3.34	Bent = \$1.54 More/M
Overseeding	2,500	25.00	0.00	0.00	Bermuda = \$25 More/M
Fertilizer	2,407	24.07	1029	9.80	Bermuda = \$14.27 More/M
A Cost Difference of \$55.50/M "More" on the Bermuda Greens/M					

Estimated Number of Golf Rounds for 1979

Lake View (328)
40,000

Gardens View (Bent)
32,500

1980	Bermudagrass		Bentgrass		Cost Difference
	Total	Cost/M	Total	Cost/M	Per 1,000 sq. ft.
Fungicides	\$1,748	\$17.48	\$4,286	\$40.81	Bent = \$23.33 More/M
Insecticides	186	1.86	391	3.72	Bent = \$1.86 More/M
Pre-Emergent Herbicides	310	3.10	370	3.52	Bent = \$.42 More/M
Overseeding	1,800	18.00	0.00	0.00	Bermuda = \$18.00 More/M
Fertilizer	2,786	27.86	1,056.50	10.06	Bermuda = \$17.80 More/M
A Cost Difference of \$10.19/M "More" on the Bermuda Greens/M					

Estimated Number of Golf Rounds for 1980

Lake View (328)
42,500

Gardens View (Bent)
36,000

the golfer's favorite of the four courses. Percolation on the greens averages about an inch per hour.

The Gardens View Course was constructed and planted with Penncross bentgrass in 1969 on 105,000 square feet of putting surface. Air circulation is good on 15 of the 18 greens, but soil percolation is poor, averaging .09 inches per hour. With the high humidity in our area and the poor drainage of the greens, it is easy to understand the disease potential here. Although Gardens View is not as challenging as

Lake View, bentgrass lovers come to this course to test their putting skills on these fast and slick greens.

The main pests in our area are armyworms, goosegrass, annual bluegrass, leaf spot diseases, curvularia, large brown patch and pythium. As you look over the above charts, these are the target pests that run up the cost for managing both grasses on our greens. They contain what we believe to be the highest-cost areas for managing bentgrass and bermudagrass during the past three years.

Fungicides

Turfgrass diseases never miss the opportunity to invade our greens when conditions are favorable on our poorly drained soil. The years 1978 and 1980 were normal for spraying, but 1979 was abnormal on the bermuda greens. Leaf spot was a constant problem throughout the growing season. When the greens were overseeded in the fall, pythium also tried its best to take hold and wipe out our overseeding program. With regular applications of fungicides for the leaf spot disease plus the cost of

a good pythium fungicide at curative rates, it did not take long for the fungicide cost per 1,000 square feet to skyrocket.

Insecticides

The only turf-damaging insects that are presently chemically controlled on our greens are the armyworms. They are abundant on both grass varieties. They do favor the bentgrass, as the charts show, each year. Different insecticides are rotated with each application to discourage possible immunity buildup to any one insecticide. We keep three different insecticides in stock for armyworm control.

Pre-emergent Herbicides

These are applied for the control of goosegrass (*Elucine indica*) and annual bluegrass (*Poa annua*). The cost is higher per 1,000 square feet on the bentgrass greens for two reasons. Bentgrass is not overseeded on a yearly program, as is the bermuda green, and, therefore, we can apply pre-emergence materials more frequently without worry of later problems on overseeded greens.

Each year our overseeding target date is October 1. Therefore, the pre-emergent applications must be backed up at least 45 to 90 days, depending on the label instructions, in order to safely sow our seeds to the bermuda greens. We feel we lose a little less control on late germinating goosegrass seeds and early germinating annual bluegrass seeds on the bermuda greens. The application of activated charcoal, to erase the activity of the pre-emergent materials in the soil, is not yet a regular part of our program, even though it has brought on some heavy discussion.

The second reason for using more pre-emergent herbicides on bentgrass greens is to eliminate the need for later post-emergent applications. When bermudagrass really gets growing in June and July, goosegrass is also well underway. We can apply post-emergent herbicides to these greens and get fair to good control with only slight discoloration for a short period. On the other hand, availability of post-emergent materials for goosegrass control in bentgrass is quite limited. Bentgrass is not in its most vigorous stage during these hot months, but goosegrass is extremely active. With heat and humidity already a stress factor, we find it best not to apply a post-emergent material to bent. It would only create more problems and we do not want to look at off-color greens for a long time.

The weed seedlings that do survive the pre-emergence treatment are removed by hand.

Overseeding

The charts show the annual costs for quality putting surfaces. The costs per 1,000 square feet vary considerably for several reasons. In 1978 we had tournaments booked in early November, including the PGA Club Professional Championship. It was decided that greens should be seeded at a maximum rate to give a quicker, more dense germination. This in turn would give better putting surfaces for the earlier tournaments on the newly seeded greens. Even though the same program was followed for 1979, the seed market prices made a considerable difference. The cost was much more for perennial ryegrass per pound in 1978 than in 1979, and this shows an enormous cost difference per 1,000 square feet. In 1980, the seed cost per pound was almost identical to 1979, but our seeding rate was cut considerably. Keep in mind that the cost of seed, type of seed you decide to use, and the rate you decide to sow all play a very important part in the annual cost. We normally sow a minimum of 30 pounds per 1,000 square feet and, at times, have gone up to 40 pounds per 1,000 square feet for our overseeded greens. Our type? Manhattan perennial ryegrass continues to be our choice.

Bentgrass greens normally do not receive yearly overseedings. Every so often you may make the decision to overseed some of the weaker greens to improve density or increase bentgrass populations. We find this a good practice from time to time, but the cost will hardly exceed the price of a couple cases of a good fungicide. Nevertheless, this type of seeding could be costly if you have pre-emergents still active in the soil. Check your spray records for the application date and be safe.

Fertilizer

Fertilizer application is the one area we have the most control over, and the cost of fertilizer has been the most stable in the past three years. The bermuda greens receive a normal feeding of 20 to 24 pounds of actual nitrogen per year. Fertilizer applications are based on our projected needs to withstand heavy wear and to maintain the best appearance and putting surface possible for our guests. The heaviest applications are applied from April through September and then foliage fed as needed on the overseeded ryegrass greens.

Fertilizer analysis is determined from soil tests taken in October or November every year on all tees, greens and fairways.

Bentgrass greens show a favorable savings each year in fertilizer costs. Our normal fertilizer program consists of six to nine pounds of actual nitrogen per year. The time of applications is just the opposite of the bermuda greens. We feed heavier from October through March and foliage feed very little, if any at all, from April until September.

Summary

A number of turf maintenance practices are not listed on the charts. These practices include aerifying, spiking, verticutting and brushing. We have found that the same amount of attention is given to these matters regardless of the type of grass. We aerify all greens two times per year, both bentgrass and bermudagrass. During the growing season we lightly verticut both grasses weekly. The same goes for spiking and brushing. Since these areas are handled the same, no cost difference is involved.

There are two areas in which I found it difficult to place cost differences.

1. We believe it takes approximately 30 percent more man-hours to maintain our bent greens than it does our bermuda greens. Whether it is watching closely for disease, wilt or water management and the frequent syringing during the hotter months, I cannot give you an accurate time or cost figure. I hope the summer of 1980 was an exception to the 30 percent estimate. If all summers were like 1980, I feel an 80 percent estimate would be more correct to watch over the bentgrass greens.

2. A big factor concerning our bentgrass program is revenue. It is a written policy that, during July, August and September, the bent course is not open for afternoon play. This might be a major problem for a regular 18-hole golf course operation. We are fortunate in not having that consideration at Callaway Gardens. We check the bent greens regularly for wilt and syringe them so often to cool them down, that we feel the golfers would not enjoy their game with our frequent interference. Furthermore, bentgrass does not need high traffic wear and heat mixed together in the same afternoon.

I have no idea how much revenue we may lose through this policy. However, the decision is a sound one agronomically and managing summer bentgrass greens is much safer at The Gardens because of it.