

What is Happening to Our Bermudagrass?

A New Concern with the Hybrids

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The past two or three years have brought more and more questions concerned with small patches of different grasses developing in hybrid bermudagrass greens. It is becoming difficult to maintain a pure bermudagrass stand. The "mixing" occurs in greens and larger areas as well. The golf course superintendent is concerned with greens while the sod nurseryman is concerned over the larger areas as he wants to sell an uncontaminated product.

A pure strain of bermudagrass is first the responsibility of the researcher, then the sod grower, and finally the turfgrass manager. The researcher has a long, tedious job in selecting strains of turfgrasses. He has to keep close surveillance while evaluating the merits of each grass for a particular use. There is constant roguing of cultivars and foreign ber-

mudagrasses from research plots. Any strain of bermudagrass to be released has had several years of testing and has been cleared through State and Federal agencies before it is released.

Bermudagrass is heterogenous indicating an unstable tendency. We see this in the variation of grass under stress. Many common bermudagrass selections produce fertile seeds sometime during the year, and this makes it easy for golfers to carry seed onto the greens. On the other hand, hybrids have sterile seed, and there should be no mixing from seed produced by Tifway, Tifgreen, Tifdwarf, and other hybrids.

There are many ways common bermudagrass seed can be transported onto greens. It is quite difficult to keep a pure stand. A strong, healthy turf

This cultivar is surviving under adverse conditions.



on greens is the first and best defense against common bermudagrass invasion.

It is much easier to observe a mixture of grasses in small research plots and greens than it is in fairways, athletic fields, and other large turfgrass areas. Spectators at sporting events are not so concerned about the mixture of grasses as the turfgrass manager is on his greens. The best putting surfaces have pure strains of grass, or grasses that have very similar texture, especially with hybrid bermudagrasses.

In recent years, we have observed different cultivars or mutants of grasses in hybrid bermudas, especially where the grass is under stress. Stress in greens can develop from poor construction, partial shade, chemical treatment, traffic, being mowed closely, insects, and other environmental conditions.

Stress from the environment has created changes in the vegetative appearance, but this does not include grain. This statement is not readily accepted by many turfgrass managers, but in the next five years it will be very interesting to see the changes that have occurred in bermudagrass and what the cause is. It is quite obvious that changes in common bermudagrass could be entirely from seed, but in hybrids that have sterile seed, other causes have to be considered. When bermudagrass is thinning out but a small spot of grass continues to grow and spread, it is reasonable to conclude it is a different grass from some contamination or growth created by the dominant grass. For several years, selections have been made from areas where a superior grass was taking over the established grass. Several superintendents have made selections and are planting greens with their selections. Reese Coltrane, Superintendent of Lakewood Country Club, New Orleans, has made a selection from his ninth green and will eventually plant all 18 greens with it.

When there are mixtures of grasses in greens, it is advisable that the mixture be removed immediately. If this is not done, the cup changer will set the undesirable grass into key cup setting areas, especially when bermudagrass is overseeded and he

cannot see where the undesirable grass is located. Some cup changers do not recognize the difference in grasses.

In some greens where the grain is obvious, the members invariably think there are different types of grasses growing in the same green. Bermudagrass grain gives a different appearance in the opposite direction. Grain in the grass has created many serious discussions for turfgrass managers, each thinking his problem is unique. Many are.

One of the best methods for removing foreign grasses is to gas it with methyl bromide. Sometimes one area is gassed then resodded, plugged, or stolonized. The soil mixture should be gassed before planting to eliminate any seed or live stolons in the seedbed. It would be advisable that the area is observed immediately after the grass begins to grow, and all foreign grass rogued as soon as there is a distinction. If too much is present, then the area should be gassed again and replanted with a pure strain of grass. A sod nursery is essential.

Light, chlorotic areas appearing in the greens have caused considerable concern across the South. Many soil samples have been taken from these areas and a complex problem exists causing the grass to have the chlorotic appearance. Usually diseases and nematodes cause the grass to be in a weak condition and off-color.

Most superintendents question the cause of chlorotic areas. Several solutions have been offered but none have proven to be the cause. Bermudagrass mites, nematodes, disease complex, and turfgrass management practices are some of the causes. Tom Brown, Superintendent at the Country Club of Austin, Texas, has used an acaricide over a period of several weeks. The number of patches in the greens were reduced by 50 per cent but many small areas still exist.

In the middle 1960s some chlorotic spots were treated with a nematocide and were finally eradicated by using a fungicide over a period of two years of repeated applications. Soil samples from

Tifdwarf under stress at Country Club of Austin, Texas.





A typical green showing variation in grasses. This can occur in Tifdwarf as well as Tifgreen.

these areas were checked for nematodes, diseases, and in some cases, bermudamites.

The diseases found were *Rhizoctonia*, *Helminthosporium*, *Curvularia*, dollarspot, *Fusarium*, and *Pythium*. In a recent soil sample where disease symptoms were noticed, there were 50 propagules of *Pythium* per one gram of soil.

The higher the nematode count, the more prevalent the chlorotic conditions. Nematode assays were made on 100 cc of soil. A recent period of sampling from these spots in Florida has not verified nematodes as the main cause.

Researchers at the Georgia Coastal Plain Experiment Station exposed vegetative parts of Tifway, Tifgreen, and Tifdwarf to radiation and have created many mutations. This would certainly indicate that bermudagrass under stress in greens could cause changes in vegetative characteristics on the golf course.

Every 18-hole golf course should have a turfgrass nursery and it should be kept free of all un-

desirable grasses. Constant surveillance is necessary to keep a pure stand and all employees should be able to distinguish the undesirable grasses, especially in greens, and bring it to the superintendent's attention immediately. When any undesirable grass is observed it should be removed immediately. The longer an undesirable grass is allowed to remain, the better established it becomes and the harder it is to eradicate.

We can summarize by stating the researcher must establish a pure strain for the certified grower and the sod nursery should pass it on to the turfgrass manager in the same condition. The turfgrass manager should keep a pure stand of grass for his operations at all times. If bermudagrasses mutate, then the researcher must develop a grass that is stable and retains its characteristics to compete with undesirable grasses. The turfgrass manager of the golf course should maintain a pure stand of grass by constant surveillance and from planting year after year. A pure stand of grass makes a much better putting surface and a much more attractive green.