

# DOC'S DUGOUT - An Inning From Our Past

By Dr. Kent Kurtz - STMA Historian

## Dr. Glenn Burton, "The Father of Hybrid Bermudagrass", Part II

### The 1950's

Once the first controlled hybrid (Tiflawn) was released in 1952, Dr. Burton felt it would make an excellent parent to produce a better hybrid for golf courses. So he crossed a small fine-leafed, 18 chromosome *Cynodon transvaalensis* (African bermudagrass) with the coarser and more vigorous parent - Tiflawn. From this hybrid cross came a hybrid known as Tifton 127, later named Tiffine. It was a sterile hybrid with 27 chromosomes and since the seed was not viable Tiffine had to be planted vegetatively. However, before the Tiffine could gain impetus and popularity on golf courses, Dr. Burton replaced the Tiffine with one of his other selections he called Tifton 328, known today as Tifgreen (*Cynodon dactylon* x *C. transvaalensis*). Dedicated plant breeders are never satisfied with their creations and therefore, continually search for better and superior plants that are better adapted to the environment and to the particular use intended for the plant.

Tifgreen was released in 1956 and is a low-growing, rapidly spreading, disease resistant hybrid which can make a dense, weed-free turf when properly managed. Its fine-textured, soft, forest green leaves and very few seed-heads are the reason it has been a successful grass for golf and lawn bowling greens in many areas. Further, it tolerates a mowing height of 1/4 inch and tolerates overseeding with cool season grasses very well. Even today Tifgreen is considered one of the best hybrids for golf greens and is continually selected by sports turf managers for baseball infields and outfields and is recommended for use on lawn tennis and bowling greens. The search for a better, more durable grass for football and soccer fields and golf tees and fairways continued and the fourth product of Burton's turf breeding project resulted in the release of Tifway in 1960.

Tifway, after three years of testing as 419, is another 27-chromosome *Cynodon transvaalensis* x *C. dactylon* hybrid. According to many sources, Tifway is darker green, requires less nitrogen, greens up sooner in the spring, makes a weed-free sod and is more tolerant of traffic than many of the earlier releases. Many sports turf managers continue to prefer Tifway for their sports fields because of its wear tolerance and aggressive growth characteristics.

Tifdwarf is another of the fine grasses researched and developed by Burton which was released from Tifton in 1965. Evidence suggests that Tifdwarf is a vegetative mutant that occurred in Tifgreen at Tifton before the first planting stock was sent out for early testing. This is a dwarf type with shorter leaves, stems, and internodes. It also has a dark green color, high shoot density and a low, slow growth



Dr. Glenn Burton

habit. It tolerates a mowing height of 3/16 inch, and requires less fertilizer for comparable color than Tifgreen. However, Tifdwarf has been found to be susceptible to smog on the west coast and has a tendency to turn purple when subjected to cooler weather. It was these two latter characteristics that influenced the late Dr. Victor Youngner (University of California - Riverside) to release Santa Ana hybrid bermudagrass in 1966. Santa Ana was selected from Royal Cape in 1956 because it exhibited smog tolerance, early spring and late fall deep blue-green color and resistance to wear and salinity.

### The Later Years

During the winter of 1970 Dr. Burton, with the assistance of Dr. Jerrel Powell, initiated research designed to create mutants in their best triploids, namely, Tifgreen, Tifway and Tifdwarf. Dormant sprigs (stolons and rhizomes) were washed

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## Southern Athletic Fields

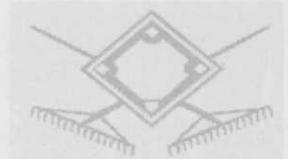
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to remove the soil and then were cut into small pieces and treated with various dosages of gamma rays from a cobalt 60 source. The dormant sprigs were exposed to 7,000 to 9,000 r of gamma rays and produced mutants. From a total of 158 mutants created in this manner and evaluated in the field, one looked promising, a mutant of Tifway and this one was officially released in April of 1981 for further testing and evaluation as Tifway II. Tifway II appeared to be similar to Tifway but possessed increased shoot density and could be used in moderate maintenance situations.

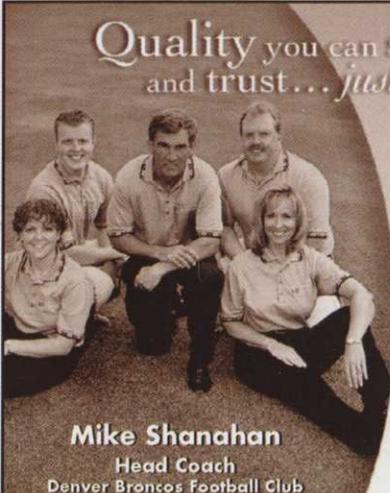
Dr. Glenn Burton turned 93 in May (2003) and continues to stay involved with the breeding work from his laboratory and office in Georgia. His contributions to the turf industry are incredible and, with the help of colleagues and staff in Georgia, two new cultivars were released during the 1990's. One was released for the sports turf profession, TifSport (1997) and the other for the golf course industry, TifEagle (1997). TifSport was released from the USDA and the University of Georgia as an induced gamma irradiated mutant from Midiron bermudagrass. It is reported to have superior cold tolerance, desirable turf texture and good turf density. The color and texture are similar to Tifway and Tifway II. TifEagle on the other hand is an induced mutant created by cobalt radiation of the Tifway II cultivar. This cultivar resembles other dwarfs in that it exhibits extremely fine texture and excellent turf density.

The early work of Dr. Burton is legendary as he was the first to create bermudagrass hybrids using intraspecific hybridization (crosses within the same species) utilizing two common bermudagrass parents, *Cynodon dactylon* x *Cynodon dactylon*. His pioneering work with intraspecific hybridization has influenced present day breeders to create some of the present-day cultivars such as the improved seeded bermudagrasses that are currently available for use by sports turf managers.

However, bermudagrass cultivars exhibiting the highest quality for the sports turf and golf course market continue to be the mutants created by irradiation or the interspecific hybrids, both of which must be planted and established by vegetative propagation (sod, sprigs/stolons, plugs) because they do not produce viable seed heads. The interspecific hybrids are produced by crossing two different species such as *Cynodon dactylon* x *Cynodon transvaalensis* and the new cultivar produced generally results in a superior turf of higher quality than the cultivars produced by intraspecific means. Burton's pioneering efforts in bermudagrass breeding have greatly influenced many of today's well known turfgrass breeders who continue to research and develop the new generation of both seeded and vegetative bermudagrasses for sports turf and golf. We are indeed grateful to Dr. Glenn Burton for his years of dedication and exhaustive work that has significantly contributed so much to our outstanding profession of sports turf. New grasses will come and go as science and technology change, but to understand the present and future, we must investigate the past.



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