

CHAMPION VERTICAL DWARF HYBRID BERMUDAGRASS

Champion is a triploid ($2n=27$) hybrid bermudagrass cultivar developed by Richard Morris, Michael A., and Scott D. Brown of Coastal Turf, Inc., Bay City, Texas. It was selected from a group of dwarf hybrids that had been collected and evaluated since 1987. Champion was selected in 1987 from a segregated patch on a Tifdwarf putting green in Southeast Texas.

DNA amplification fingerprint analyses indicates that Champion is distinctly different from both Tifdwarf and Tifgreen, and was either a somatic mutant out of Tifdwarf hybrid bermudagrass or a common ancestor from the two. A plant patent application was made in 1995 and is expected to be issued soon.

Morphological-growth parameter assessments were conducted during 1995 by J.B Beard and S.I. Sifers of ISTI in College Station, Texas. Seven types of measurements were made on four replicate sets of mature turfs in each of two experiments conducted in the spring and repeated again in the summer of 1995. These results are summarized in Table 1.

Leaf Characteristics. Champion exhibited a significantly slower vertical leaf extension rate, being in the order of 56% slower than Tifdwarf and 82.5% slower than Tifgreen. This characteristic contributes less resistance to ball roll and translates to a more rapid speed of ball roll on closely mowed turf surfaces.

Furthermore, the leaf width of Champion was found to be significantly more fine than the two hybrid

bermudagrasses, being 13% more narrow than Tifdwarf and 36.3% less than Tifgreen.

Stem Characteristics. The growth habit is by both stolons and rhizomes. In terms of lateral stem development as measured by the number of stolons extending outward, Champion exhibited significantly greater stolon numbers in the order of 2.6 times greater than Tifdwarf and 2.8 times that of Tifgreen. This extraordinary rate of lateral stem development is the morphological mechanism that contributes substantially to more rapid rates of both turf establishment and turf recovery from damage.

The internode lengths and corresponding number of internodes did not vary significantly among Champion, Tifdwarf, and Tifgreen. This indicates that the higher shoot density is attributed primarily to a greater number of lateral stems.

Traffic Stress. Wear simulation experiments showed Champion to be considerably more wear tolerant than Tifdwarf at a 1/8 inch (3.2 mm) cutting height. Champion had 32% more surviving green leaves/shoots by weight than Tifdwarf after 1,900 revolutions of the simulator.

Weekly assessments of the turf recuperative rate following mechanical divot simulation injury to the mature turfs revealed Champion to be significantly superior. It exhibited 1.8 times more rapid turf recovery than Tifgreen and 3.4 times more rapid recovery than Tifdwarf. This improved turf recovery rate will provide a better quality turf surface under intense use, including damage from ball marks and also will result in less proneness to weed invasion.

Table 1. Morphological-growth parameter comparisons among three triploid hybrid bermudagrass cultivars.

Genotype	Vertical Leaf Extension Rate (mm per day)	Leaf Blade Width (mm)	Stolon Number (per linear 100 mm)	Turf Recovery Rate (percent)	
				Week 3	Week 4
Champion	0.7 a*	1.00 a*	12.2 a*	68.3 a*	95.0 a*
Tifdwarf	1.6 b	1.16 b	5.4 b	20.0 c	76.7 ab
Tifgreen	4.0 c	1.57c	4.4 b	38.3 b	65.0 bc

* Numbers followed by the same letter in a column are not significantly different based on the Duncan Test ($p=0.05$).

Shoot Density. Champion has been maintained under modern putting green conditions of a 1/8 inch (3.2 mm) cutting height and daily mowing since September of 1994. Under these conditions it has sustained a distinctly higher shoot density than Tifdwarf, and a much greater density than Tifgreen, with stimpmeter ball roll assessments being above 9 feet (2.75 m). At a 1/8 inch (3.2 mm) cutting height Champion had a significantly greater shoot density of 2,133 per sq. dm. versus 1,104 for Tifdwarf, or 93% more shoots, plus a 58% greater shoot dry weight.

Low Temperature Stress. Assessments of low temperature hardiness in a cold stress simulation chamber revealed Champion to be distinctly more low temperature hardy than Tifgreen and slightly better in low temperature hardiness than Tifdwarf (Table 2).

In terms of fall low temperature color retention or chill tolerance, Champion turns distinctly purple and was indistinguishable from Tifdwarf in terms of color during winter dormancy.

Culture. Champion has a very good establishment rate from vegetative sprigs. Over an 8-year period the formation of seedheads has not been observed on Champion.

As with most vertical dwarf hybrid bermudagrasses, Champion can become thatchy if the appropriate cultural practices are not followed.

To date, no extraordinary disease or insect problems have been observed on Champion.

Winter overseeding of Champion was successfully accomplished in the fall of 1995 and 1996 at multiple locations in Texas. Champion exhibited a superior ability in spring transition from the winter overseeded turf when compared to Tifdwarf.

Use. One or more putting greens have been established and are currently in use on 25 golf courses, ranging from Texas to California, with nine full 18-hole and two 9-hole course conversions.

Table 2. Comparative low temperature stress resistance assessments of Champion and Tifdwarf hybrid bermudagrasses maintained at a mowing height of 3.2 mm (1/8 inch). Stress was imposed via an environmental simulator, and was the temperature of the total turf-soil column. Turfgrass recovery is assessed based on regrowth as a percent of the potential. ISTI - College Station, Texas, 1996.

Shoot Recovery Assessment		Cold Stress Temperature of Turf-Core				
Week	Cultivar	30° F	25° F	20° F	15° F	10° F
1	Champion	40 a*	3 c	0 c	0 c	0 c
	Tifdwarf	33 b	3 c	0 c	0 c	0 c
3	Champion	95 a	95 a	96 a	0 c	0 c
	Tifdwarf	60 b	60 b	63 b	0 c	0 c
4	Champion	100 a	98 a	100 a	3 c	0 c
	Tifdwarf	80 b	68 b	65 b	0 c	0 c

*Means of four replications. Means followed by the same letter in the same week and column are not significantly different at the 5% level LSD t-Test.

Note. There are three other dwarf hybrid bermudagrasses that are in various stages of release. Morphological-growth characterizations as to their dwarfness relative to Tifdwarf and Champion are yet to be completed.

One is FloraDwarf which has been patented and released, with significant quantities of vegetative material projected to be commercially available in 1997. The developer is Dr. Al Dudeck at the University of Florida - Gainesville.

The second is MS Supreme, which is in the process of being released with projected commercial availability in 1998. It has been developed by Dr. Jeff Krans at Mississippi State University.

The third is currently known by the experimental number TW72 and is in the least advanced stage of development, with projected commercial availability in 1999. It is being developed by Dr. Wayne Hanna at the Georgia Coastal Plain Experiment Station.