



# Improving the selection and management of turfgrass in the tropics

DEEDI research scientist Bartley Bauer outlines a new three-year research project being undertaken in conjunction with Singapore's Centre for Urban Greenery and Ecology which will examine the adaptability of warm-season varieties to tropical environments.

Right: Aloha seashore paspalum is just one of 16 warm-season varieties to be assessed at the Singapore trial site

Queensland Government



Warm-season cultivars that are new or otherwise unavailable as sod have been propagated at Redlands Research Station in DEEDI's glasshouse facility. These will be used in a new collaborative three-year research project which aims to improve the selection and management of turfgrass in tropical environments

Nishimoto et al., 1997; Murakami and Ray, 2000).

Although a narrow range of cultivars has been identified as suitable for tropical climates by local turf producers and turfgrass managers, there is limited scope in utilising them across the diverse array of amenity and sporting situations for which turfgrass is required. One concern that has been discussed with the participating councils is the relatively high input requirements of some of the turfgrasses they maintain.

In recent years a number of new cultivars have been released with potential to enable economic maintenance of a turfgrass in a tropical region. Despite the indications of such promise, most have not been trialled in the tropics.

The first objective of the project is identification of cultivars that increase turfgrass choice for each region, with an emphasis on products with minimal cultural requirements and substantial environmental tolerances (drought, wear, shade). The secondary aim is determination of the specific maintenance needs that are important for turf producers and for end users. This information will not only allow for selection of cultivars that are well-suited to tropical settings but also for the choice of cultivars that will potentially perform best in a particular function (sports field, urban parkland, roadside etc).

## TRIAL SITES

The trials will be conducted in Wagaman Park in Darwin, the Mackay Regional Botanic Gardens in Mackay and the CUGE in Singapore. The species/cultivars to be tested are listed in Table 1 (Australia) and Table 2 (Singapore) and will be evaluated over the life of the three year project.

Trial establishment was scheduled for late 2010, however, due to the effects of cyclones Yasi and Carlos, as well as some extremely high rainfall events through summer and autumn, site preparation in Australia has been delayed. Planting will now start in May 2011.

Some cultivars will be laid in Darwin and Mackay as bare-rooted turf, with soil removed using a turf



washer. This is one of the quarantine requirements for plant material entering the Northern Territory and also minimises any bias that could arise due to differing soil types.

Cultivars that are new or otherwise unavailable as sod have been propagated at Redlands Research Station in DEEDI's glasshouse facility and will be planted as plugs. All material for the CUGE will be sent as plugs in seedling trays.

Plots will be 5m x 2m and the trial will have three randomised replicates. Temperature data will be logged at the Darwin and Mackay sites and quarterly visual inspections will be conducted along with collection of quality data (using a turf colour meter), photographs and core samples.

DEEDI has signed a Memorandum of Understanding with Singapore's CUGE, signifying mutual intention for collaborative research. The CUGE's facilities provide an opportunity to conduct more rigorous scientific testing and although the trial design will mirror that of the Australian sites, wear tolerance/recovery and applied nitrogen response will also be examined. In addition to the quality assessments used domestically, the team in Singapore will also measure growth rates as determined by dry leaf weight over time.

Findings from research in Singapore will benefit Australia's turf industry in the wet tropics through extrapolation of experimental results between these regions of the same climate (Wen et al., 2000). A potential export market for Australian owned cultivars will also be explored by testing them in the challenging Singaporean environment.

The information generated through this project will enable sod producers, turfgrass managers and the general public to make more informed decisions regarding the most suitable cultivars and maintenance methods for their environment and specific purpose. This aligns with potential industry expansion and access to a wider range of turfgrass products for tropical Australia.

## REFERENCES

For a full list of references, contact the AGCSA on (03) 9548 8600 or email [info@agcsa.com.au](mailto:info@agcsa.com.au)

TABLE 1. CULTIVARS FOR ASSESSMENT IN DARWIN AND MACKAY

Species	Common Name	Variety
<i>Cynodon dactylon</i>	Green couch	OZ TUFF™
<i>Cynodon dactylon</i>	Green couch	25a-1
<i>Digitaria didactyla</i>	QLD blue couch	Tropika
<i>Digitaria didactyla</i>	QLD blue couch	Aussibleue
<i>Stenotaphrum secundatum</i>	Buffalograss	Kings Pride
<i>Paspalum nicorae</i>	Brunswick grass	Blue Dawn
<i>Paspalum notatum</i>	Bahia grass	LowGro™
<i>Paspalum vaginatum</i>	Seashore paspalum	SeaDwarf™
<i>Zoysia hybrid</i>	Zoysia grass	PristineFlora™
<i>Zoysia matrella</i>	Manilagrass	Royal
<i>Zoysia matrella</i>	Manilagrass	Shadetuff®
<i>Zoysia japonica</i>	Japanese lawngrass	Palisades
<i>Zoysia japonica</i>	Japanese lawngrass	ZT-11
<i>Zoysia japonica</i>	Japanese lawngrass	Empire™
<i>Zoysia macrantha</i>	Zoysia grass	Nara™
<i>Axonopus compressus</i>	Broadleaf carpetgrass	Broadleaf carpetgrass
<i>Panicum laxum</i>	NA	Shadegro

TABLE 2. CULTIVARS FOR ASSESSMENT IN SINGAPORE

Species	Common Name	Variety
<i>Cynodon dactylon</i>	Green couch	OZ TUFF™
<i>Digitaria didactyla</i>	QLD blue couch	Tropika
<i>Digitaria didactyla</i>	QLD blue couch	Aussibleue
<i>Stenotaphrum secundatum</i>	Buffalograss	Kings Pride
<i>Stenotaphrum secundatum</i>	Buffalograss	Palmetto™
<i>Paspalum vaginatum</i>	Seashore paspalum	SeaDwarf™
<i>Paspalum vaginatum</i>	Seashore paspalum	Aloha™
<i>Zoysia matrella</i>	Manilagrass	Royal
<i>Zoysia matrella</i>	Manilagrass	Shadetuff®
<i>Zoysia matrella</i>	Manilagrass	Emerald
<i>Zoysia japonica</i>	Japanese lawngrass	Palisades
<i>Zoysia japonica</i>	Japanese lawngrass	ZT-11
<i>Zoysia japonica</i>	Japanese lawngrass	Empire™
<i>Axonopus compressus</i>	Broadleaf carpetgrass	Broadleaf carpetgrass
<i>Dactyloctenium australe</i>	Sweet smothergrass	Sweet Smother
<i>Eremochloa ophiuroides</i>	Centipedegrass	Hammock™



Palmetto and Kings Pride buffalograss will be assessed as part of the trial



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For information contact Lyndel Conway at the AGCSA on (03) 9548 8600 or email [info@agcsa.com.au](mailto:info@agcsa.com.au)