



TRIAL INFORMATION

PLATEAU

Setting a new standard for warm season turf

The 'PLATEAU' story

Back in 1973 the breeder of 'Plateau'; Peter Brown noted a change of growth habit on one of the couch varieties in his collection. The stolons, tillers and rhizomes on the mutation produced almost horizontal growth as opposed to the significantly more upright growth of the parent plant.

The new growth was isolated from the parent and divided up to be planted into pots for observation. The new variety remained stable continuing to produce the low spreading growth characteristics. Mr. Brown then planted sections of his home lawn and over a number of years made observations that confirmed the stability of the outstanding characteristics of the new variety that he named 'Plateau'.

In 1994 Commonwealth Plant Breeders Rights legislation was passed. This encouraged breeders of new plant varieties to apply for PBR to provide legislative protection for their breeding and development efforts. To gain plant breeders rights, the breeder must establish replicated trials, which prove that the new variety is distinct, uniform, and stable. All trials are supervised by registered Qualified Person and must include comparative varieties of the parent and the most similar known commercial varieties. Commonwealth inspectors assess the trial and either reject or recommend the new varieties acceptance. If accepted the new variety is granted, and the details of the trial are published in the PBR journal. Following a 6 months period in which objections may be lodged, full PBR is granted to the new variety. The grant is for 20 years and the variety must be made commercially available within 12 months of the grant.

PBR enables the breeder to negotiate a royalty with licensed growers. The end user (customer) cannot further propagate the variety without the permission of the licensed grower and breeder as royalties apply.

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What makes 'Plateau' so special?

Growth habit – low not slow

Grasses possess 3 main habits of growth. Upright, as in the bunch forming cool season species like the rye, fescue and annual bluegrasses. Spreading/upright as in the cool and warm season species that have horizontally spreading stolons and/or rhizomes producing predominantly vertical tillers and leaves. Most of the *Cynodon* spp. (couch/bermuda) is categorised in this group. Much less common are the grasses of the Spreading/prostrate group. 'Plateau' belongs to this final group and all initiated growth from the nodes is almost horizontal. The leaves also lay prostrate and present maximum surface area to the light. This category of grasses will only revert to upright growth under the heaviest shade.

Growth energy in 'Plateau' is directed laterally. This provides for a rapid spread of the grass at establishment and when recovering from damage. The lack of upright growth significantly reduces the mowing frequency of 'Plateau' without compromising the turf quality or recovery from damage. Scalping is for the most part eliminated, particularly in the peak growth periods.

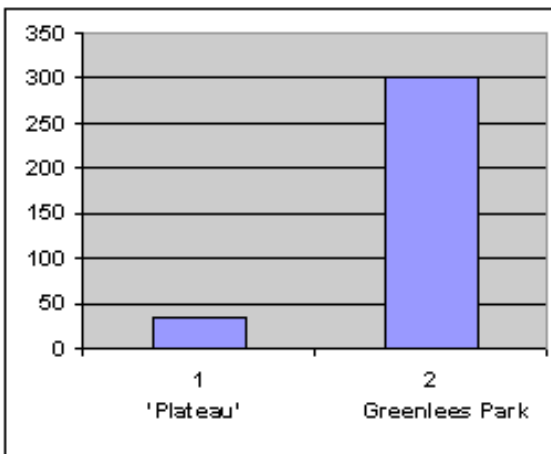


Fig 1. Seasonal unmown growth height (mm) of 'Plateau' compared to Greenlees Park. Data from PBR trial 1999.

The establishment rate of 'Plateau' was compared to that of Greenlees Park as a preliminary trial for PBR. Four replicates of 100 (mm) turf plugs of each variety were planted in bare ground of the same soil type. The area of ground covered by the grasses was calculated weekly for eight weeks. Given that the total area covered by all replicates is 100%, it can be seen in Fig 2 that segment (1) 'Plateau', covered significantly more area in the time period than Greenlees Park in segment (2).

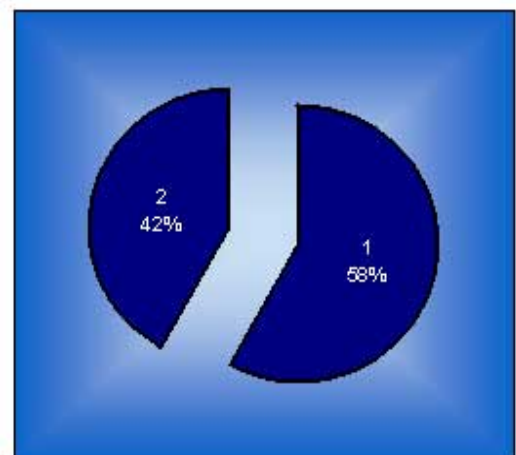


Fig 2. Area of coverage of (1) 'Plateau' and (2) Greenlees Park over 8 weeks. PBR data 1999.

Shade tolerance

If you refer to the literature, the shade tolerance of *Cynodon* spp. will be referred to as poor. 'Plateau' is an outstanding exception to this, particularly in warm shade.

The reluctance of 'Plateau' to initiate upright growth and the light absorbing orientation of the leaves, provide a unique mechanism for shade tolerance. Coupled with this feature is the important fact that under shade 'Plateau' escapes the severe defoliation that mowing imposes on other species that grow upwards in an elongated form (etiolate) in search of light.

'Plateau' has been the subject of shade tolerance trials conducted at the QLD Department of Primary Industry research station at Redlands and Nambour. The trials included 3 *Cynodon* (couch/bermuda) varieties and 4 other genera of turf grasses. See Fig 3.

In this trial the growth height of 7 turf grasses was compared when subjected to 3 different light regimes. It is clear that in full sun all the grasses produced little difference in growth height within the 12 weeks period (with the exception of *Poa pratensis*). When the light intensity is lowered to

40% of full sun, significant growth height occurs in all grasses with the exception of 'Plateau'. This effect is greatly increased at growing conditions of 20% of full sunlight. The growth elongation of 'Plateau' does not change significantly under all the light conditions. If mowing was applied to the trial, it could be assumed that the severity of the defoliation and resulting plant decline would be directly related to the growth heights.

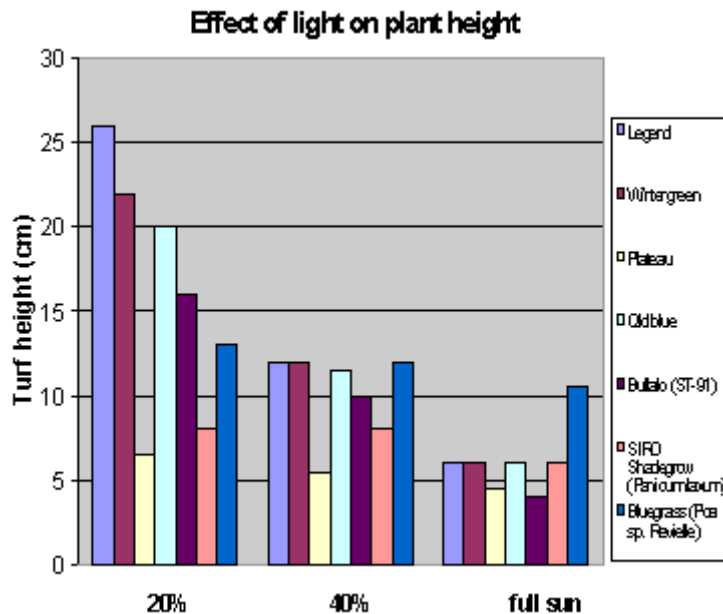


Fig 3.

Menzel, C

and Loch, D. 2001.

Effect of light on plant height and shoot dry matter production of turf grasses at Nambour in southern Queensland (latitude 27°S) is illustrated below.

Data are the means of two trays (950cm²) per treatment after twelve weeks. Plants established from sods or plugs, except for SIRO Shadegrow, which was established from seed.

Turfcrafter issue 76 2001, pp16-18.

Colour

Colour is a significant feature for a turf grass. As technicians, we tend to look at the botanical features of the grasses and overlook the obvious at times. I was pleasantly surprised when one prominent golf course chose 'Plateau' finally on the basis of colour. This, after accepting all the botanical features, is a prominent advantage of the variety.

Most of the best Australian couch/bermuda varieties are a pale to mid-green colour. 'Plateau' by contrast is a deep rich green. As we have found, this is not a disadvantage. The colour is retained into the cooler times of the year up to frost conditions.

The photo below shows 'Plateau' as the darker green colour in the replicated trial plots for a university thesis (yet unpublished) including three other industry standard *Cynodon* varieties.

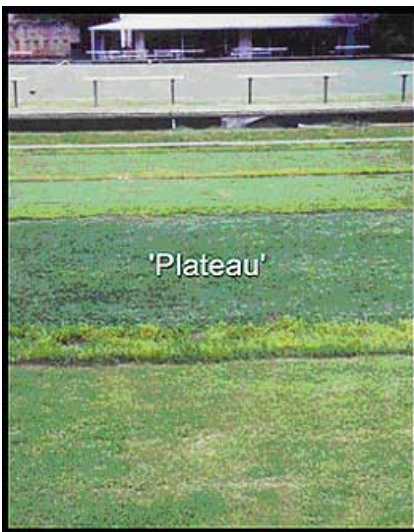


Photo 1. Sydney trials, March 2000.

Scalping

Scalping by mowing equipment is a major factor in colour loss on all turf grasses. This is a common problem in peak growth times when low mowing is required on sports turf or infrequent mowing is the practice on domestic lawns, as well as on municipal and roadside turf. The low growth habit of 'Plateau' avoids much of this problem, therefore retaining colour and vigour where others do not.

The photo below is an example of the effects of mowing once per week at 10mm height at a period of peak growth. The resultant scalping of the comparator *Cynodon* varieties is evident on the foreground plot as well as the two furthest plots.



Photo 2. A roll of 'Plateau' washed sod displaying the strong rhizome development and the dense, dark green leaves.

Sod strength

Most *Cynodon* varieties would be regarded as possessing good sod strength. However, there is significant variability within the varieties that do influence the plant's tolerances for wear and recovery from injury, drought hardiness, cold tolerance and recoveries as well as harvest potential and quality for sod production.

It is common to focus on the above ground features of grasses and neglect the all-important root and rhizome structures. I have observed in the trials conducted that two *Cynodon* varieties possess significantly superior stolon, rhizome and fibrous root strength. These are the PBR varieties 'Plateau' and 'Riley's Supersport'. Both these grasses are prostrate growing types.



What are the benefits of growing 'Plateau'?

Environmental

Without a doubt the reduced mowing requirement whilst maintaining a quality turf grass is by far the most significant feature of 'Plateau'. If we take the average home lawn as an example it would be fair to say that the lawn requires mowing weekly in peak growing season to provide a functional surface. At mowing heights between 10 to 25mm, 'Plateau' would only require mowing every 4 to 5 weeks.

Using conventional grasses, the home lawn can be mowed 30 times per year. Using the 'Plateau' example of mowing once per month commencing in October and concluding in April, mowing events are reduced to seven per year.

This represents a mowing reduction of 76.6%. It is not difficult to understand the significance of this on a large scale in reduced fossil fuel emissions alone without factoring in the reduction of green waste from clippings.

These reductions are proportional to the type of turf surface required. Parklands, nature strips and roadside verges and other utility areas may only require mowing once or twice a year with 'Plateau'. This would also apply to golf course rough and semi-rough where currently these areas require mid range mowing frequencies.

Specialist sports turf areas such as sports fields, and golf tees and fairways require low mowing heights and high mowing frequencies. In peak growing times this could be up to 2 to 3 times per week. 'Plateau' will provide a high quality turf surface with one mowing per week.

"A recent study by the CSIRO division of Atmospheric Research and Energy technology found that when grass is mowed, it increases the production of the chemicals classed as volatile organic compounds (VOCs) by 100 times. The chemicals, known as hexenyl compounds, are harmless to humans on their own but become photochemically active when they react with heat and sunlight.

They combine with oxides of nitrogen from cars and industry and create what is commonly known as photochemical smog. Ozone, which is the main component of smog can be harmful to humans and has been linked to asthma and deaths from respiratory illness.

Grass responds to an injury when mowed and produces massive amounts of the chemicals, up to 100 times more than usual as a defence mechanism".

An EPA spokesman said, "This doesn't let anyone off the hook in terms of controlling air pollution that we humans produce. It actually reinforces the importance of controls on air pollution from sources we can control".

Quotes (in italics) from the Daily Telegraph page 3 item. 1st June 2001. Simon Benson, Environmental Reporter.

The use of 'Plateau' on a large scale in urban areas would go a long way toward reducing chemical pollution at one end of the scale.

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