'PLATEAU'

Couch Grass

Breeders: Triodia Pty Ltd

June 2001

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 rllizomes on the mutation produced almost horizontal growth as apposed 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.

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.

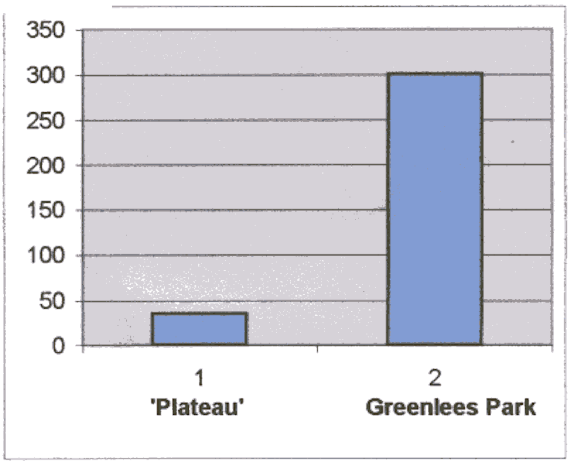


Fig I. Seasonal unmown growth height (mm) of 'Plateau' compared to Greenlees Park. Data from PBR trial 1999.

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).

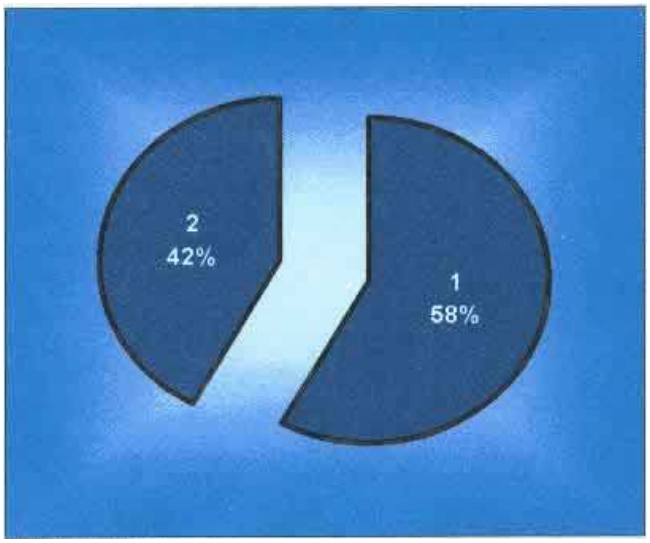


Fig 2. Area of coverage of (I) 'Plateau' and (2) Greenlees Park over 8 weeks. PBR data 1999.

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.

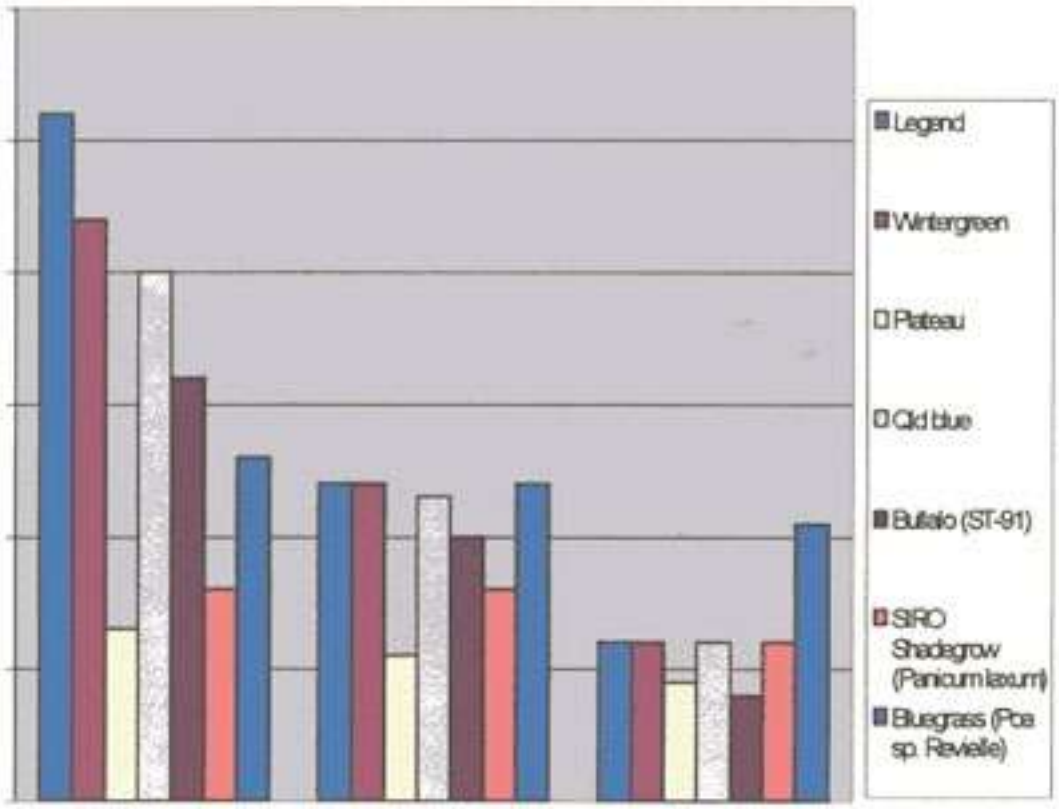
Fig 3.

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.

Turf craft issue 762001, pp16-18.

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

Effect of light on plant height



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' finallyon 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.

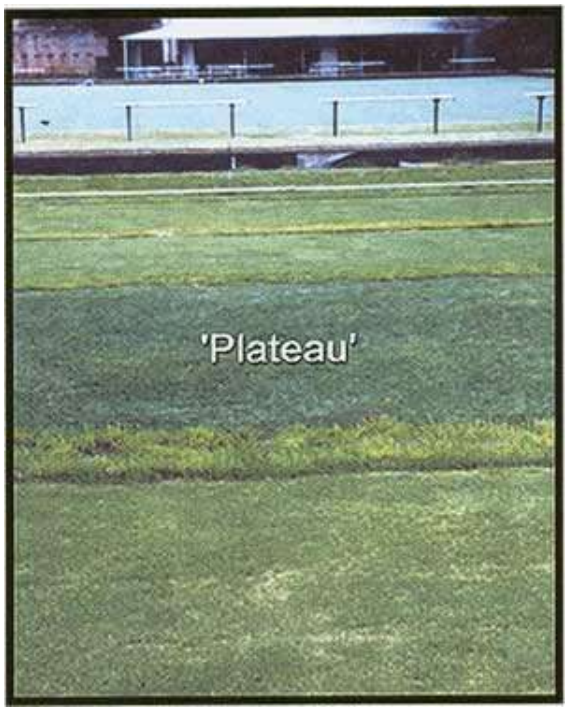


Photo 1. Sydney trials, March 2000.

Scalping 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 10rnm 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.

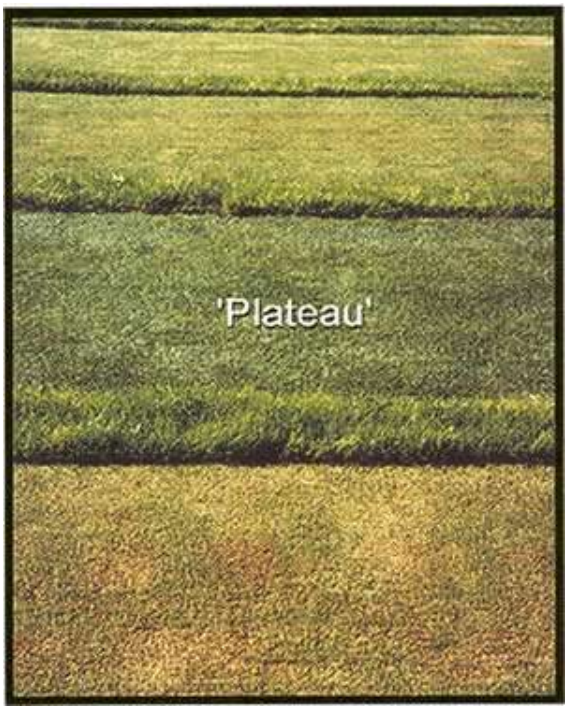


Photo 2. Sydney trial plots March 2000.

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.

It may be no coincidence that much of the growth energy that "conventional" *Cynodon* varieties devote to upright leaf and shoot growth is at the expense of the below ground development. By contrast, 'Plateau' devotes more growth resources to lateral spread and below ground development.

This energy resource distribution would appear to be a critical balance that 'Plateau' has got "just right".

The previous observations are a result of the PBR comparator trial, 1999.

Photo 3. A roll of 'Plateau' washed sod displaying the strong rhizome development and the dense, dark green leaves.

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 common/y known as photochemical smog. Ozone, which is the main component of smog can be harmful to humans and has been /inked 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 pollutionfrom 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.

Economic

Cost savings to individuals, businesses and government departments can be easily calculated using the guidelines in the previous chapter relating to reducing maintenance. You may also be thinking of situations where 'Plateau' can be utilised to save you money.

A bigger economic picture may emerge with the environmental advantages of using 'Plateau' to reduce atmospheric pollution and reduce fossil fuel emissions.

Additionally, time saved is put to other uses, be they business or recreational. We all know time is money.

Aesthetic

Grass or lawn after all is meant to provide a safe, pleasing medium for all forms of urban recreation. Most quality grasses fulfil this roll adequately but some varieties do this better than others. We consider "Plateau" to be superior in a wide range of applications, as we have described previously.

The shade tolerance of "Plateau" however enables it to provide a consistent sward of turf extending under most tree canopy situations without the need to raise the mowing height or the introduction of a different grass species to cope with the shade. A typical exmple of a situation where "Plateau" would solve this problem is the Sydney Royal Botanic Gardens where the appearance of extensive lawns is compromised by these abrupt changes at the canopy line.

Turf grasses are an integral part of our urban environment that we can derive benefit and enjoyment from in most of our everyday activities. We are fortunate that we have the climate and the available grass species to maximise these benefits to the utmost. We must now focus on the impacts that some turf varieties impose on our environment and be more selective and informed about our future choises.

The environmental benefits that "Plateau" provides will not in any way compromise turf quality. Therefore, I believe "Plateau" to be the grass of the future. The good news is that it is here now.

Availability

Triodia Pty Ltd is committed to making "Plateau" available for sale in all states of Australia. Considering that plant breeder’s rights for "Plateau" were granted as recently as February 2000, we believe outstanding progress has been made in establishing quality licensed growers in five states to date.

It must be appreciated that this process takes time and a good deal of financial input, not to mention he commitment required in producing top quality turf on a commercial basis. We are pleased to announce that in NSW we have been suppling an ever-increasing market during the last 12 months and turf is now available in Queensland and South Australia. Our Victorian growers have a late summer planting in the ground and will be expanding their stocks substantially in the 2001/2002 season. Our Victorian licences will also cater for Tasmania. We are presently negotiating with Western Australia growers and we are confident that "Plateau" will be available in that state by early 2002.

Research Trials

This document is descriptive of trils carried out by the QLD Department of Primary Industry under the direction of Dr. Don Loch. Additional trails are proposed in the future.

Currently, "Plateau" is included in trials conducted in Victoria and Queensland by the Australian golf course Superintendents Association (AGCSA). Both trials consist of prominent, commercially available *Cynodon* varities.

In the Victorian trials, assessment of the effects of chemical applications to the grasses (phytotoxicity) in the principal criteria. In Queensland, the focus of the trail will be turf quality and performance.

NATIONAL SUPPLIERS AND DISTRIBUTORS OF 'PLATEAU' COUCH

NEW SOUTH WALES:

Billabong Turf (02) 45784255 in association with Fairway Turf & Lawn Supplies (02) 4572 6002

VICTORIA & TASMANIA:

Anco seed & Turf (03) 9799 2150

SOUTH AUSTRALIA:

Cahill Turf in association with Hicks Instant Turf (08) 8258 2488

QUEENSLAND:

Cleveland Turf Supplies (07) 3206 4286

WESTERN AUSTRALIA:

West Coast Turf (08) 9575 7520

SOME SPORTS TURF ORGANISATIONS USING 'PLATEAU'

NEW SOUTH WALES:

Pymble Golf Club. Concord Golf Club. The Royal Sydney Golf Club. St Michaels Golf Club. Bonnie Doon Golf Club. Eastlakes Golf Club. Pennant Hills Golf Club. Avondale Golf Club. Fox Hills Golf Club. Woolooware Golf Club. Camden Valley Golf Club. Castle Hill Country Club. Manly Golf Club. Oatlands Golf Club. Marrickville Golf Club. Mona Vale Golf Club. Mollymook Golf Club. Hurstville Oval. Drummoyne Oval.

VICTORIA:

Optus Oval. Colonial Stadium. Kingston Heath Golf Club. Thirteenth Beach Golf Club.

QUEENSLAND:

The Gabba

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