



QR Code – Redlands Turf Research

TU08018 – Community Wear Study

Project update (Milestone #106)

The [TU08018 Traffic Tolerance of Warm-Season Turfgrasses under Community Sportsfield Conditions study](#) would not have been made possible if it was not for the financial or in-kind support from the following groups.



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Introduction

Following is information taken from Milestone #106 which was written and submitted to Horticulture Australia (HAL) as part of the reporting requirements for TU08018 – Traffic Tolerance of Warm-Season Turfgrasses under Community Sportsfield Conditions.

The Project Leader is working with Cynthia Carson, DEEDI Senior Extension Officer (Turf) and DEEDI Corporate Communications/IT to have earlier (four in total) TU08018 Milestone Reports and updates positioned on the DEEDI TU08018 project homepage (http://www.dpi.qld.gov.au/26_15272.htm) or onto a page of a stand alone, independent Redlands Turf Research web site (TBA). The latter would result in high quality information being uploaded in a timely manner as fewer restrictions would be in place.

We have also uploaded TU08018 images and videos onto flickr®. Further content will be added shortly. To view the first of the images please visit the Redlands Turf Research photo collection at <http://www.flickr.com/photos/redlandsturfresearch/collections/72157626950858707/>.

I would like to thank your organisation/association for your support in funding this study and the activities being undertaken by the Redlands Turf Research Team.

Kind regards,



Matt Roche

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Project Number: TU08018
Project Title: Traffic Tolerance of Warm-Season Turfgrasses under Community Sportsfield Conditions
Milestone Number: 106
Author: [Matt Roche](#)
Organisation: [Qld Department of Employment, Economic Development and Innovation](#) (DEEDI)
Date Due: 31 May 2011
Achievement Criteria: Trial sites established, simulated traffic imposed on experimental site (Redlands) and data collected on all sites. Progress report on initial traffic tolerance experiments and initial reports on efficacy data and mowing frequency also underway.

SUMMARY

In 2008 a two year research project (TU08018), funded by [Horticulture Australia Limited](#) (HAL), was setup to investigate the effect of wear and compaction of different turfgrasses, primarily for sports field use. Trial sites were established in Cleveland, Queensland at [Redlands Research Station](#) (RRS) and the Redlands Touch Association (RTA) located at Redlands Showgrounds. The two facilities had trial sites setup to assess and compare wear to that being imposed using DEEDI's wear traffic simulator at the RRS wear trial (Plate 2) and the four football fields undergoing actual wear (through the playing of touch football games) at the RTA (Figure 1).

To obtain meaningful wear tolerance and surface hardness ((de)compaction) information it was necessary that the trial work be extended to capture a minimum of two years of replicated data at both sites. Doing so would provide community sporting groups who rely on the performance, including safety, of natural turf surfaces with solid information on which to base future turf installation decisions.

The original two year HAL study ended in November 2010. Following discussions and support from various turf associations, members of HAL and the Turf Industry Advisory Committee, Voluntary Contributors were sought and an out of session project application to extend the project was submitted to HAL in December 2010. The extension project was approved by HAL on 3 February 2011.

As part of the extension work it was decided that smaller concurrent trials be setup to obtain further performance data on the grass species being trialled within the TU08018 wear trials (Table 1) and other common warm-season turfgrass cultivars (Table 2). The additional trials include: the construction of a larger trial site (case study) at the University of Queensland (UQ) St Lucia Campus to undergo actual wear and be rated against cumulative field usage hours; to undertake/analyse studies of morphological and agronomic characteristics (vertical growth rate, lateral spread etc.); efficacy/phytotoxicity testing of the growth regulator Trinexapac-Ethyl; ash and lignin fibre testing to correlate against wear tolerance data; and mowing frequency trials. The

studies are being undertaken on a range of warm-season grasses (Table 1) suited for sportsfield, recreational, golf and/or lawns bowls use.

All of the trials listed above have been setup and DEEDI staff are currently collecting and collating data. The establishment (Figure 2) of the case study site at UQ St Lucia tested the patience of everyone involved in the project. Planting initially was to commence 10 January 2011, however the [Brisbane Floods](#) and continued inclement weather did not allow planting at the site until 21 May 2011 (Plate 1). The Project Leader would like to thank Shane Biddle from UQ, Australian Lawn concepts, Evergreen Turf, Oz Tuff Turf, Turf Force and Twin View Turf for their professionalism and dedication in seeing the field preparation and planting through to completion.

NEXT STEPS

Data collection (Table 3) and decompaction work will continue at Redlands Research Station (RRS) until 13 May 2012 and Redlands Showgrounds until 17 March 2012. Application of wear will cease and damaged turf plots reinstated at RRS when the current touch football season comes to an end at Redlands Showgrounds. This will allow both venues a much needed break and provide the opportunity for turf to recover in worn areas.

Subjective assessments will commence at the University of Queensland (UQ) case study site to assess sportsfield usage and turf damage. The Project Leader will work closely with Shane Biddle, UQ Senior Supervisor Grounds to review field usage data and monitor turf quality of the four turf cultivars (Grand Prix, Oz Tuff Green, TifSport and Wintergreen) being studied.

Further morphological and agronomic (M&A) data, along with ash and lignin fibre testing is to be gathered and correlated against relative wear tolerance shown by the different turfgrasses being trialled at RRS, RTA and UQ. The information will provide the turf industry with a clear indication of the warm-season turfgrasses that are best suited for sportsfield use.

Work is continuing on the trinexapac-ethyl studies following the first application of trinexapac-ethyl treatments 5 April 2011 across 9 greens quality (Table 2b) and 19 medium- to long-textured grasses (Table 2b) growing at RRS. The two trial sites (Figures 3 and 5) have been setup to assess the phytotoxicity/efficacy and or mowing requirements of the 27 warm-season turfgrasses (Table 2). Such work, particularly with the medium- to long-textured grasses suited for fairways, sportsfields and/or recreational areas will be monitored and mown using the "one-third mowing rule" (i.e. never remove more than one third of the grass blade). The data will provide useful information (e.g. Figure 4) on how often particular grasses need to be maintained when compared to other species and cultivars under the same management regime.

COMMUNICATION / EXTENSION ACTIVITIES

At present no dedicated field days or major extension activities have been scheduled. However, as part of the successful project extension, a field day along with other deliverables (e.g. presentations at regional workshops and the 2012 Australia Turfgrass Conference) will be conducted. The Project Leader in the past has held multiple workshops for the Queensland Department of Sport and Recreation and Parks and Leisure Australia (PLA) tailored toward educating community sporting groups and people involved with the maintenance and scheduling of sports facilities. These are continuing on a semi-regular basis and updates on the results of this work will be incorporated into these presentations as the project progresses.

Since Milestone #105 the following media content has been released:

- Tough turf put to the test, *My Sunshine Coast*, General News, 1/12/2010.
- Radio interview by Project Leader Matt Roche with ABC Southern Queensland (Toowoomba) on 2/12/2010 – 10:22 AM (see appendix to view the summary).
- Tough turf put to the test, *Bayside Bulletin*, 14/12/2010, General News, Page 50 (see appendix to view the article).
- Tough turf put to the test, Turf Australia Industry Newsletter, Feb. 2011 p. 29.
- Radio interview by Project Leader Matt Roche with Radio 4GR Toowoomba on 22/02/2011 – 11:50 AM (see appendix to view the summary)
- Roche, M. B. (2011). DEEDI wear tolerance trials extended. *Australian Turfgrass Management* 13 (2) 42-43.
- [DEEDI Lifestyle Horticulture direct e-newsletter](#) (sent to 1,736 subscribers), 4 May 2011.
- PowerPoint presentation on project outcomes to date at the QLD Form and Mini Field Day, Caboolture, 12 May 2011. The day was jointly organized by Turf Australia and Sports Turf Association Queensland (STA QLD).

OTHER INCLUSIONS

Table 1. [Warm-season turfgrass](#) cultivars being trialled within the TU08018 wear studies.

Scientific name (common name)	Cultivar	RRS	RTA	UQ
<i>Cynodon dactylon</i> (green couch)	TifSport™	X	X ²	X
	Oz-Tuff® Green	X	X ^{1,2}	X
	Wintergreen	-	X ^{1,2}	X
	Hatfield ^A	-	X ^{1,2}	-
	Conquest™	X	X ^{1,2}	-
	Legend®	X	X ¹	-
	Grand Prix ^A	X	X ^{1,2}	X
<i>Digitaria didactyla</i> (blue couch)	Tropika	X	-	-
	Aussiblu ^A	X	-	-
<i>Pennisetum clandestinum</i> (kikuyu)	Whittet	X	-	-

Notes: RRS, Redlands Research Station; RTA, Redlands Touch Association; UQ, University of Queensland case study; ¹, planted on fields 3 & 4; ², planted on fields 5 & 6; ^A or A, denotes the cultivar is protected by Plant Breeder's Rights; TifSport™ has been planted on the remainder of the field, surrounding the trial areas in Phase One and Phase Two of the study.

Table 2. (a) greens quality and (b) medium- to long-textured turfgrass cultivars being trialled as part of the trinexapac-ethyl studies at Redlands Research Station.

(a)

Scientific name (common name)	Cultivar	
<i>C. dactylon</i> x <i>C. transvaalensis</i> (<i>Cynodon</i> hybrid)	Tifgreen *	MiniVerde™ *
	Tifdwarf *	Novotek™ *
	MS-Supreme ^A *	TifEagle ^A *
<i>Paspalum vaginatum</i> (seashore paspalum)	Sea Isle 2000 ^A *	Velveteen™ *
	Sea Isle Supreme™ *	-

Efficacy and phytotoxicity data of the golf and lawn bowls greens quality grasses is to be treated as confidential until 30 June 2017.

(b)

Scientific name (common name)	Cultivar	
<i>Cynodon dactylon</i> (green couch)	TifSport™	Grand Prix ^A
	OZ TUFF® Green	CT-2
	Wintergreen	AGRDA
	Hatfield ^A	Winter Gem ^A
	Conquest™	Premier
	Legend®	Blue Dynasty
<i>C. dactylon</i> x <i>C. transvaalensis</i> (<i>Cynodon</i> hybrid)	Santa Ana	Patriot
<i>Digitaria didactyla</i> (blue couch)	Tropika	QLD Blue
	Aussiblu ^A	MRD-1
<i>Pennisetum clandestinum</i> (kikuyu)	Whittet	-

Table 3. Timing of tests to be undertaken at RRS and the RTA (fields 5&6) as part of the TU08018 wear studies.

Task undertaken	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Subjective (C, Q & BG)												
Water Infiltration												
Rooting depth												
Traction, Clegg, Moist.												
Digital photos												
Soil testing												

Note: Not all tests are being conducted at the RRS and RTA sites.

Figure 1. Four touch football fields at the Redlands Touch Association (RTA) are undergoing formal assessment as part of the TU08018 wear study. Data stopped being collected on Fields 3 and 4 (phase 1 – indicated by the red squares) 27 May 2011, whereas data will continue to be collected on Fields 5 and 6 (phase 2– indicated by the yellow squares) until 17 March 2012. This will provide researchers with two full years of collected data for phase 1 and 2 of the RTA study.



Figure 2. The layout of observational plots located on Field 4 at The University of Queensland, St. Lucia Campus.

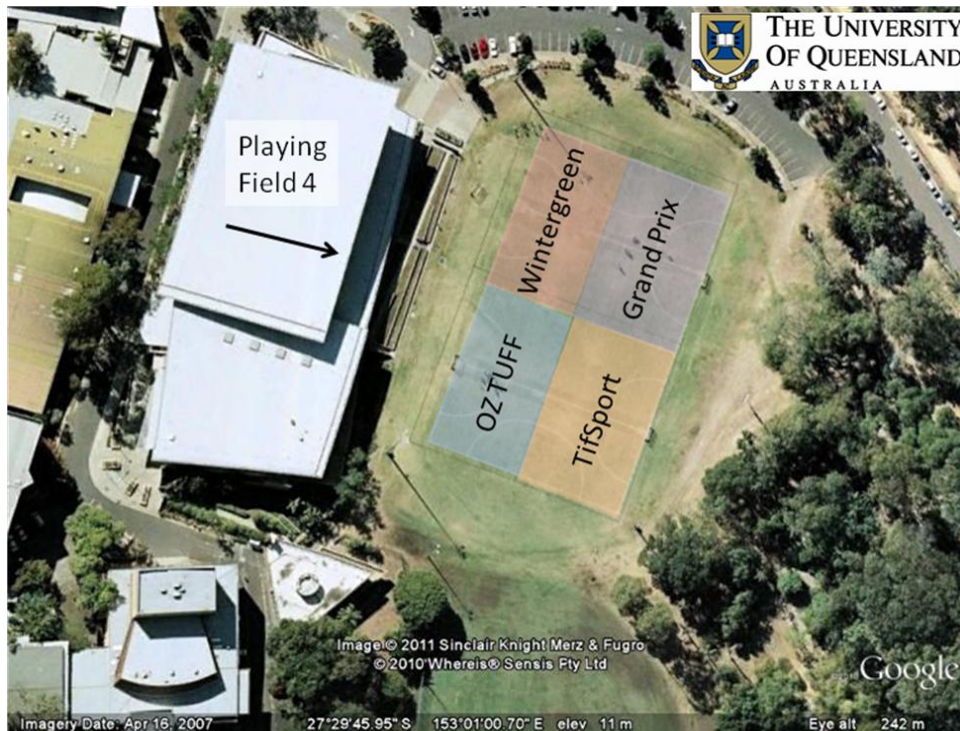


Plate 1. The January 2011 Brisbane Floods caused significant disruption to the setup and planting of the case study site at The University of Queensland, St Lucia. Photos taken of field 4 where the case study is located (a) torrential rain the week commencing 10 Jan. 2011, (b) The Brisbane River at its peak covering the playing field, (c) silt damage across the field once the water levels subsided and (d) all four turfgrass cultivars planted in situ 21 May 2011.

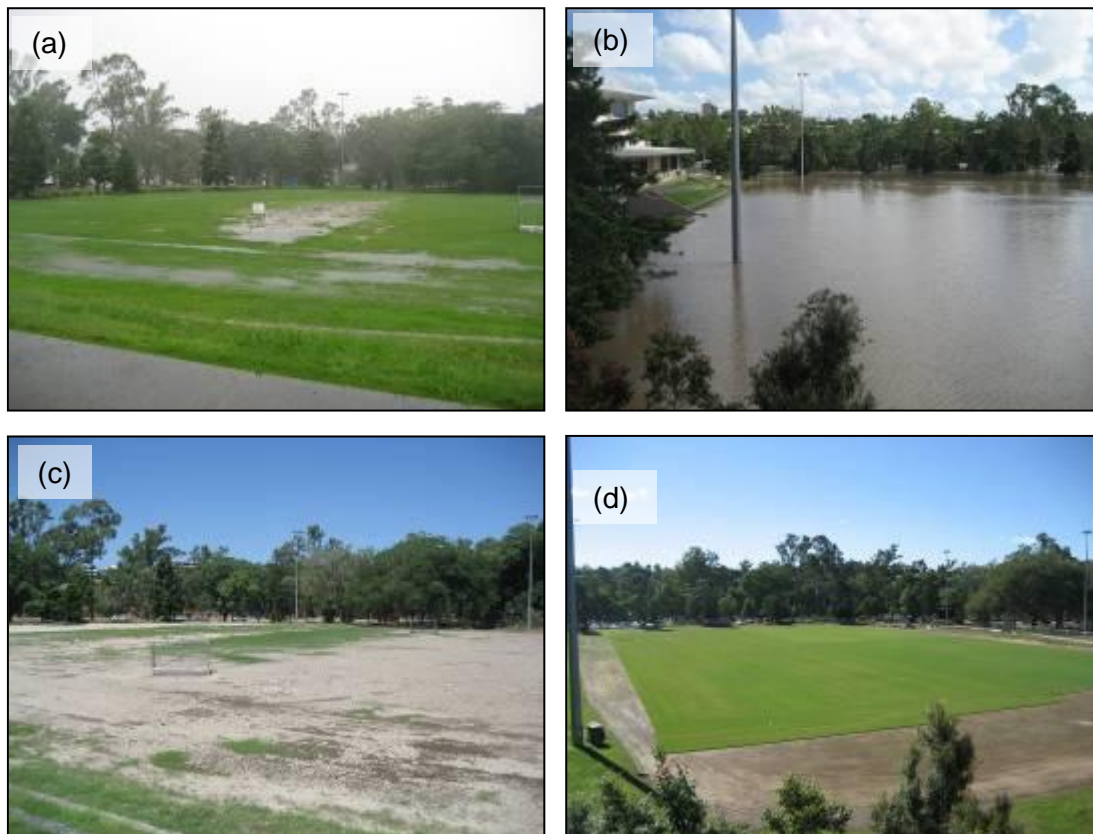


Figure 3. An example of how the trinexapac-ethyl treatments would be setup in one of the four blocks (replications) at Redlands Research Station. Plots were unmown in this particular photo; however a 30 mm height of cut using the 1/3 mowing rule is enforced.

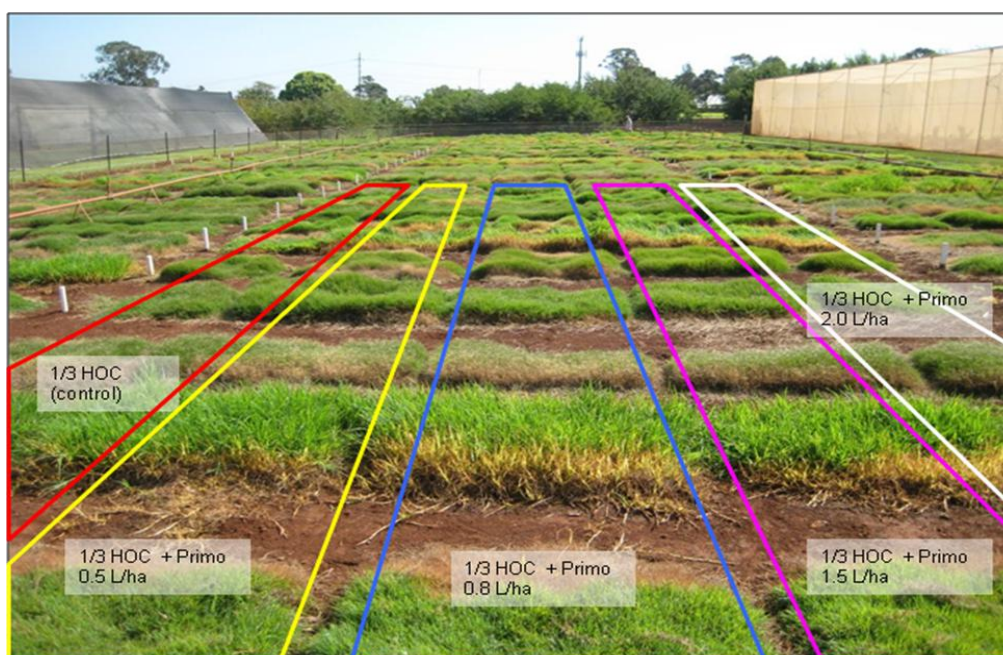


Figure 4. Average number the collective 19 medium- to long-textured warm-season grasses (Table 2b) have required mowing during the months of April and May 2011. Treatments are of various rates of trinexapac-ethyl and a Control.

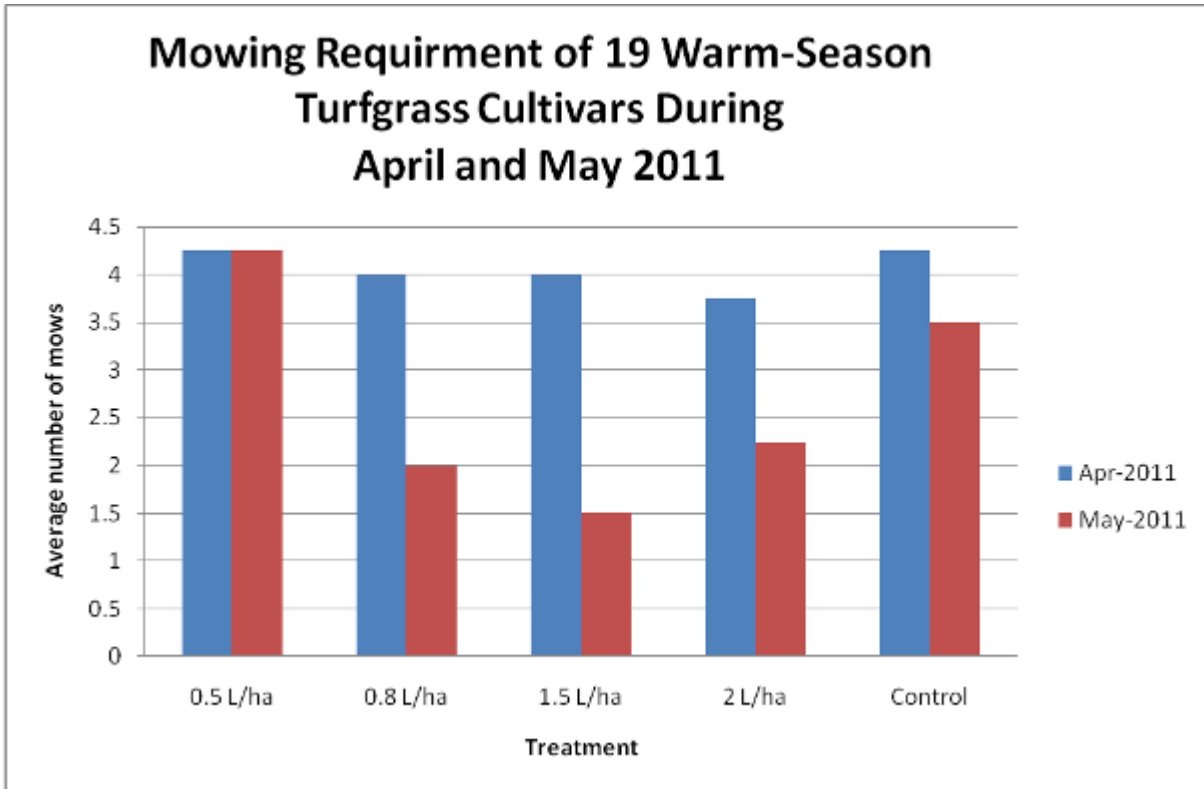


Figure 5. An example of trinexapac-ethyl applications that are being applied across the greens quality grasses being grown on the Redlands Greens Test Facility, Redlands Research Station.

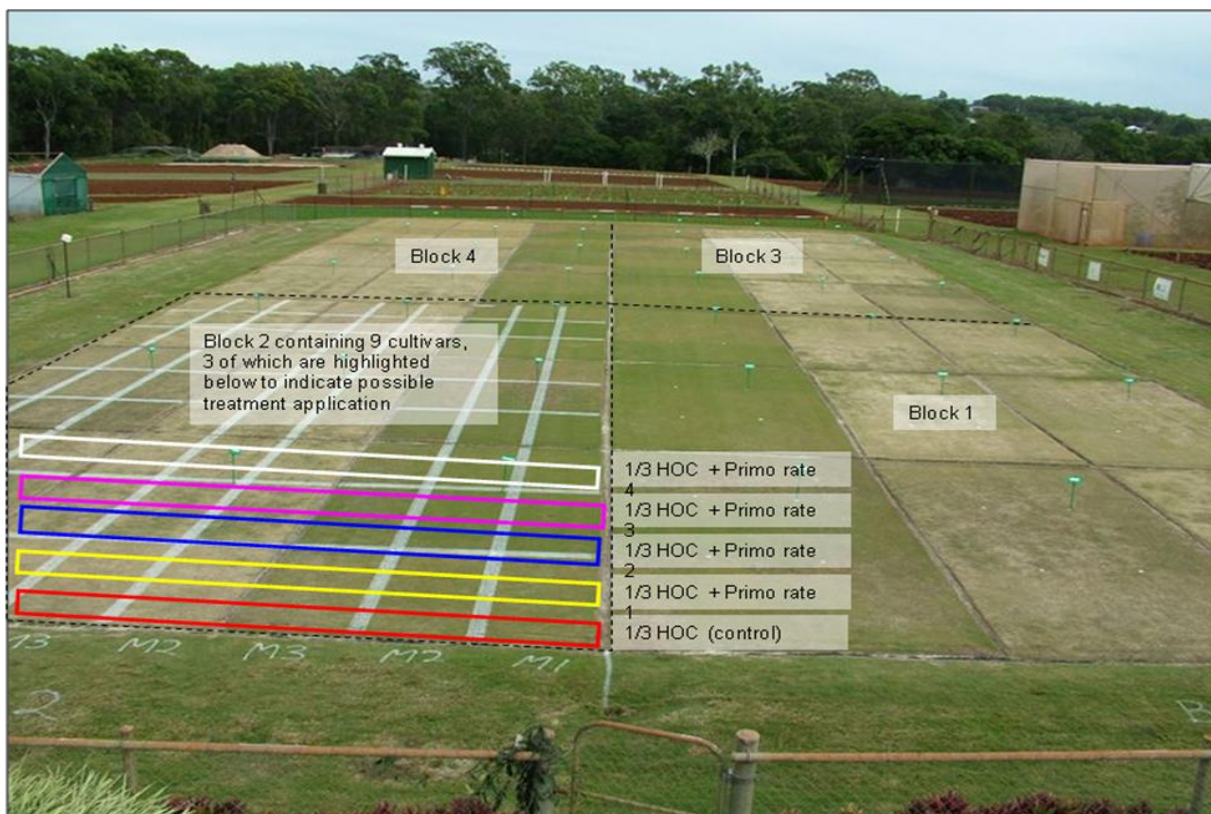


Plate 2. Aerial view of turf damage to wear study plots at RRS (4 May 2011).




ACKNOWLEDGEMENTS

DEEDI gratefully acknowledge support from the following organisations, clubs and business groups in funding, contributing in-kind or assisting with the trials. A special mention should be made about Redland City Council and University of Queensland who should be congratulated for their proactive approach to keeping the community's sportsfields safe and open and investing in research that will allow members of the community to continue playing sport and living a healthy lifestyle.

- [Horticulture Australia Limited](#)
- [Redland City Council](#)
- [The University of Queensland](#)
- [Redlands Touch Association](#)
- [Q Turf Machinery](#)
- [Sports Turf Institute](#) (Aust.)
- [Sports Turf Assn QLD Inc.](#) (STA QLD)
- [Sports Turf Assn NSW Inc.](#) (STA NSW) ²
- [Turfgrass Association Australia Inc.](#)
- [Golf Queensland](#)
- [Sygenta Crop Protection Pty Ltd](#)
- [Aust Golf Course Superintendents Association](#) (AGCSA)
- [Globe Australia Pty Ltd](#)
- [Oz Tuff Turf](#)
- [Australian Lawn Concepts](#)
- [Twin View Turf](#)
- [Turf Force](#)
- [Turf Solutions Pty Ltd](#)
- [Turf World](#)
- [Caboolture Turf](#)
- [Jimboomba Turf](#)
- [Progressive Seeds Pty Ltd](#)
- [Golf Course Superintendents Association Queensland](#) (GCSAQ)

APPENDIX

Radio interview by Project Leader Matt Roche with ABC Southern Queensland (Toowoomba) on 2/12/2010 – 10:22 AM.


MEDIA MONITORS

Broadcast NewsAlert

Kristal Hargraves - Department of Employment and Economic Development

▶ ABC Southern Queensland (Toowoomba)
Mornings - 02/12/2010 - 10:22 AM
Belinda Sanders
Producer Ms Vicki Thompson 07 4639 2878

Sanders discusses a new kind of turf that has been developed with Matt Roche, **Agri Science Queensland** Scientist, Department of Employment Economic Development and Innovation, says they have studied 10 types of turf grass, some Green Couch and some Blue. Roche says turf is important for different sports. He says they look at it from a condition point of view but also a safety aspect, as sports are played on them. Roche says they will continue researching at Redlands Research Station and also other grounds. He says DEEDI are looking into the issues with grasses.

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Interviewees: Matt Roche, **Agri Science Queensland** Scientist, Department of Employment Economic Development and Innovation
Duration: 4:20
Summary ID: W00041618672


Audience	
Male 16+:	1,500
Female 16+:	1,200
All People:	2,700

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Tough turf put to the test

NEW turf research could provide answers for sporting clubs faced with having to close their playing fields due to poor turf condition.

Agri-Science Queensland scientist from the Department of Employment, Economic Development and Innovation (DEEDI) Matt Roche said a two-year study had investigated the ongoing effects of wear and tear and soil compaction on warm-season turf grass used on sporting fields, with couch varieties coming out on top.

"The aim of this project is to help community sporting groups make informed choices on the performance of natural turf surfaces to help them decide on the right turf for their communities' needs," he said.

"We've found that grasses typically used for sport and recreational purposes can vary by as much as 83 per cent in their 'wear tolerance'.

"Choosing the wrong grass could potentially see a field closed for up to 52 percent of the usual playing time, due to the surface being unfit for play."

"As well as preventing people from using the field for sport or other healthy activities, the closure could be devastating for a local community as it affects a sporting club's ability to earn income."

Mr Roche said local sporting fields often received much heavier use than fields at elite venues,



MATT Roche with the DEEDI Redlands Wear Simulator at trial plots at Redlands Research Station showing the wear tolerance of grasses for community sports field conditions.

as well as lacking the resources and groundskeepers with top-of-the-range equipment to keep them perfectly manicured.

"Over the course of our study, co-funded by DEEDI and Horticulture Australia Limited, we have examined the wear tolerance and durability of turf in a simulated environment at Redlands Research Station, as well as under actual playing conditions at a local touch football club.

"Three species of warm-season turf grass, including green couch, kikuyu and blue couch, encompassing 10 varieties of each, were tested for wear tolerance.

"We found that four green couch varieties produced on average between three and 18 per cent bare ground over the course of the study.

"These are good levels of wear tolerance, with

anything less than 15 per cent considered acceptable for play."

Mr Roche said, in contrast, the blue couch turf grasses produced up to 98 per cent bare ground, but it recovered reasonably well.

"When choosing a turf for a sporting field or recreational area, the decision is often made on the price of the turf alone.

"However, a more expensive turf with favourable traits such as good wear tolerance and the ability to recover after high usage will often last much longer, meaning fewer management issues and turf replacement, and ultimately saving clubs money in the long run."

DEEDI acknowledges the support of Redland City Council, Redlands Touch Association and other local organisations, clubs and businesses that assisted with the trials.

Radio interview by Project Leader Matt Roche with Radio 4GR Toowoomba on 22/02/2011 – 11:50 AM



Broadcast NewsAlert

Kristal Hargraves - Department of Employment and Economic Development

▶ **4GR (Toowoomba)**
Focus on the Downs - 22/02/2011 - 11:50 AM
Graham Healy
Producer Ms Sonya White 07 4632 3333

Audience	
Male 16+:	3,200
Female 16+:	2,800
All People:	6,000

Interview with Agri-Science **Queensland** Senior Scientist, Matt Roche, who speaks of rebuilding sporting grounds post flooding. Roche says given fields and soil has sustained such inundation they can pose health risks to people as it is unknown what concentrations of contaminants the grounds are harbouring. Roche notes that much turf will need to be replaced but high temperatures of late and minor rainfalls can aid to flush out contaminants.

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Interviewees: Matt Roche, Agri-Science **Queensland**

Duration: 3:22

Summary ID: W00042616806

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