

TGGS news & views

about pasture development in the tropics and subtropics

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The changing face of the Australian tropical pasture seed industry

Presidential Address by Tony Illing at the AGM

The tropical pasture seed industry in Australia today is small and relatively young (approximately 50 years) in comparison to Australian agriculture. Like other agricultural industries, the pasture seed industry has had to endure and adapt to downturns in the cattle industry (1975), droughts, and the withdrawal of matching R&D funding from government. Many changes have occurred over time but, in general, the people, the companies and the general structure of the industry have remained the same.

Cross roads coming up

In the 20 years that I have been in the industry, I have had the advantage of working for progressive companies and learning from the researchers and seedsmen who developed the industry into what it is today. However, the tropical seed industry is at a crossroad, and it will change quite dramatically over the next five to ten years. Many of the researchers, agronomists and seedsmen, along with their knowledge, are leaving or are not far from leaving the industry and this loss of expertise will impact not only on the tropical seed industry but also on producers. If climate change is the earth-destroying man-made phenomenon that scientists claim it to be, now is the

time for increased investment in plant breeding, extension and improving grazing management.

PBR

Plant Variety Rights (now Plant Breeders Rights) were introduced in the late 80s under the "user pays" banner being waved around by governments at the time. In principle, the system had merit. In return for exclusive marketing rights to a variety, a company would submit a tender that often contained an up-front payment, continuing royalty payments and a marketing plan; the funds would then go towards further breeding work.

Unfortunately, the reality has proved to be very different; the CSIRO Division of Tropical Crops and Pastures is no longer and the Queensland DPI & F seems to have little focus on pastures. The small volume of pasture seed sold in the domestic market has limited the amount of privately funded breeding being conducted by seed companies, and has limited the amount of revenue raised from royalties. Much of the breeding taking place at the moment (which is small anyway) is biased toward the export grass seed market, so any focus on Australian conditions needs to be collectively

continued on page 4...

Newsletter editor:
Ian Partridge
Tel: (07) 4688 1375
Fax: (07) 4688 1477
ian.partridge@dpi.qld.gov.au

Society News

Aiming to come to the conference?

Check on the TGS website (www.tropicalgrasslands.asn.au) for the registration form, lists of accommodation available in Goondiwindi, any updates to the program, information for contributed papers and poster papers and a pdf of the flier (see centre pages in this issue).

Note that you will need to organise your own accommodation while in Goondiwindi.

Use your centrefold or print the pdf to place the flier on your notice board.

Your Executive for 2009

President

Andrew Ferguson
Selected Seeds
Grevillea St
PO Box 210
Pittsworth Qld 4356
Phone: 07 4693 1800
Fax: 07 4693 1899
e-mail:
andrewferguson@selectedseeds.com.au

Past President

Tony Illing
David Illing Pastures Pty
57, Gipps Rd
Drayton, Toowoomba Qld 4350
Phone: 07 4630 2110
Fax: 07 4630 2188
e-mail: illingpastures@bigpond.com

Ex-officio

George Lambert
5 Benn Court
Highfields Qld 4352
Phone: 07 4696 8434
e-mail: george.lambert8@bigpond.com

Secretary

Richard Moss
DPI&F Mutdapilly Research Station
MS 825, Peak Crossing, Ipswich, Qld 4306
Phone: 07 5464 8737
Fax: 07 5467 2124
e-mail: Richard.Moss@dpi.qld.gov.au

Treasurer

Kevin Lowe
DPI&F Mutdapilly Research Station
MS 825, Peak Crossing, Ipswich, Qld 4306
Phone: 07 5464 8713
Fax: 07 5467 2124
e-mail: Kevin.Lowe@dpi.qld.gov.au

Journal Editor

Lyle Winks
44, McNeills Rd, MS 825,
Peak Crossing Qld 4306
Phone: 07 5467 2314
Fax: 07 5467 2314
e-mail: lwinks@gil.com.au

Newsletter Editor

Ian Partridge
DPI&F PO Box 102
Toowoomba Qld 4350
Phone: 07 4688 1375
Fax: 07 4688 1477
e-mail: Ian.Partridge@dpi.qld.gov.au

8th Australian Tropical Pasture Conference 2009

at Goondiwindi on 18th and 19th March 2009

Pastures for production, soil health and carbon sequestration

Draft Program

Wednesday 18th

8.00 – 9.30	Registration	
9.30 – 10.00	Welcome, Introduction and program Housekeeping	President and sponsor
10.00 – 10.45	Feed sources – building feed systems	Dr Lindsay Bell, CSIRO
10.45 – 11.30	Permanent pastures for grass-fed beef	Grant Maudsley, Napla Downs, Mitchell
11.30 – 11.45	Smoko	
11.45 – 2.15	Field trip to Undabri – old and establishing pastures (including lunch)	Tony Illing, Illing Pastures
2.30 – 3:15	Integrating pastures into farming systems – soil health and crop responses	Dr David Lawrence, DPI&F
3.15 – 3.45	Smoko	
3.45 – 4.30	Farmer experiences	Peter Thompson, Echo Hills, Wallumbillah
6.00	Socialising and drinks, Goondiwindi Memorial Club, 23 Albert St	
7.00	Society Dinner, Goondiwindi Memorial Club	
	Harry Stobbs Memorial Lecture Carbon Sequestration under Tropical Grasses	Dr Myles Fisher, CIAT, Colombia

Thursday 19th

8.30 – 9.00	The opportunity for leucaena in southern Queensland	George Lambert
	Field trip	
9.00 –	Leucaena, Cell grazing on Queensland bluegrass	Peter Fox and Andrew Richardson, 10 Mile, Balandry, Goondiwindi
1.00 – 1.45	Lunch	
1.45 – 2.30	Soil carbon under crops and pastures	Dr Mike Bell, DPI&F
2.30 – 3.00	Smoko	
3.00 – 3.45	Carbon and methane under animal production	Dr Beverley Henry, MLA Environment, Sustainability and Climate Change
3.45 – 4.30	The future of the Society Summary and close	Charles Nason

Continued from page 1

funded by industry and government for any significant advances.

On the negative side, seed of PBR varieties has, at times, been in short supply (with the exception of Rhodes grass). This has been because the companies that own the varieties have to fund the seed production and any carry-over of unsold seed whereas the open-traded varieties are funded by a larger number of producers and merchants. Given that the recent poor seasons generate erratic demand, it is understandable that these companies reduce production during the dry times or keep it at a level that ensures limited carry-over. I believe that this has resulted in the suppression of good varieties reaching their potential; in fact, there are varieties in the market that may never reach their potential. However, PBR has created a more secure environment for seed producers; they now have access to contractual arrangements with seed companies that are not available on many open-traded varieties.

Coated seed

The issue of coated seed is a bit like religion and politics; if you want a good argument, just jump on the coated seed bandwagon. However, coated seed is here to stay; there are now six companies in Queensland with their own, or access to, coating plants. They have hundreds of thousands of dollars tied up in infrastructure, and are not going to abandon it just because some individuals don't like the concept.

In the 1970s, Wright Stephenson were the first seed company to coat seed in Australia but they did not coat tropicals; it was not until 1987 that Hodder and Tolley began coating subtropical seed under the trademark 'Nutriprill'. Nutriprill had a large, hard membrane that took a lot of moisture to break down and so the seed took a long time to germinate. Since then, the coating process has evolved; the polymers are more advanced and the membranes dissolve rapidly to allow rapid germination.

There is no doubt that coating temperate species provides the consumer with

real agronomic advantages. Seed can be treated with chemicals such as Gaucho or Apron, and the strains of rhizobia are tough enough to allow for the pre-inoculation of legumes. Coating grass seed does not seem to provide the same agronomic advantages. I am not saying that this will not change in the future but, to date, I have not seen any **independent** research to prove otherwise. During the years I have spent in the field, I have not seen any advantage other than better ballistic properties and allowing the seed to be planted through conventional equipment.

Other claims include:

- ant protection – pelleted seed is not necessarily treated against ants, and most coated seed on the market does not contain an insecticide.
- fertiliser – apart for molybdenum, subtropicals have no significant response to micronutrients and it is not possible to place enough of the major elements in the coat to assist the seedling.
- pre-inoculated tropical legumes – as far as I can understand, few of the tropical strains of rhizobia can survive in a pellet for any length of time.

Seed companies that coat seed have often been their worst enemies in how coated seed is marketed. Over the years, the recommended planting rates have been kept low in an effort to bring the price per hectare down to compete with bare seed. This has given coated seed a bad name because of poor establishments and stands. Planting rates must be high enough to place the same amount of seeds per square metre as the equivalent bare seed planting rate—growers want results and most do not mind spending the extra dollars per hectare to achieve them.

There also needs to be uniformity in how the product is labelled. At present, the percentage of seed you are purchasing per bag is labelled as percentage by weight, percentage weight increase and seed to coat ratios. Until labelling includes seeds per kilogram, it is difficult to compare apples with apples when purchasing or selling seed.

Industry segregation

The lack of a specific industry body representing the tropical grass seed industry is an issue that will need to be addressed. Currently, the Australian Seeds Federation represents the industry but it focuses on the temperate and hybrid seed industries—which are much larger and wealthier. And because the Federation's office is in Canberra, it is also geographically separated.

We need a specific industry body that can focus on issues specific to Queensland and northern NSW such as labelling, seed production, revenue raising for further research, marketing, standards—and to combat some of the environmental scientists. Other agricultural bodies such as the Australian Mungbean Association have proved that collective marketing; promotion and research can be a powerful tool.

Seed production

In the 70s and 80s, the seed production areas were diverse; the Northern Rivers, central and southern Queensland and the Atherton Tableland were all major production areas. Today, the amount of seed produced in the Northern Rivers and central and southern Queensland is small and most of our production is based on the Atherton Tablelands. As Cyclone Larry has illustrated, having all our production reliant on one area can be dangerous. New areas such as the Burdekin need to be investigated; there is currently a small amount of production in the area but with scope for much more.

Drought and the lack of extension specialising in pastures have also had an impact on opportunistic seed production of 'bread-and-butter' species. Varieties such as Green and Gatton panic, Bambatsi panic and purple pigeon grass have become hard to purchase and the prices have increased accordingly. There is a general lack of information available to growers on how to fertilise, control weeds and harvest in production blocks. As a marketer, I have found that the shortages have helped with seed sales but, in the longer term, the decline in seed quality and supply may have a negative impact on the seed industry.

Environmental weeds

Over the past few years, agriculture has become a popular target for environmentalists and politicians and it will remain a target in decades to come. It matters little to these people that agriculture produces food and fibre for our nation and the world and remains a major income earner and employer for the economy.

The banning of the sale of Gamba grass by the Queensland Government this year brought the fight to the doorstep of the tropical seed industry, and I think we all have reason to be concerned. I speak at field days on a regular basis and the emerging topic from the environment people is how we are damaging the ecology by introducing improved species. The Weeds CRC web site openly stated that buffel is an environmental weed; other species on the environmentalists' hit list include green panic, Bambatsi and leucaena so I believe the tropical seed industry will have our own environmental issues to deal with in the future.

The EPA now requires native species to be used by Main Roads and for mine rehabilitation. It has not registered with them that the natives are soil specific and, in many cases, most of the stipulated species will not grow where they are planted. It does not register that naturalised species such as Rhodes and green panic will soon dominate in the areas planted or that it costs the tax payer up to ten times more to plant native species with little or no benefit.

I have followed with interest the debate on global warming and the exclusion of agriculture from any future trading scheme for five years; the reporting (mostly negative) is focused on agricultural carbon emissions but not the amount of carbon agriculture sequesters. Instead we are blamed for pulling too much timber and destroying the Murray Darling—and the list goes on.

Tony Illing
President
Tropical Grassland Society



**8th Australian Tropical Pastures
Conference
18-19 March 2009, Goondiwindi**

Pastures
for
**production,
soil health**

and carbon sequestration

**Also the Harry Stobbs Memorial Lecture
'Carbon sequestration under tropical grasses'
by Dr Myles Fisher from CIAT (International
Center for Tropical Agriculture) Colombia**

Check the TGS Web site at
www.tropicalgrasslands.asn.au for:
- conference details and program
- registration form,
or contact Ian Partridge (07) 4688 1375
ian.partridge@dpi.qld.gov.au

TROPICAL GRASSLAND
SOCIETY
OF
AUSTRALIA INC



Field Day and the AGM

The field tour on 27th November went off well. Heavy rain had fallen in the district over the previous week and the forecast was not especially encouraging. The morning was heavily overcast but we were blessed with good sunshine by the afternoon.

Some thirty people turned up for the bus leaving from Toowoomba and we were joined by another 10 at Bowenville so the turn-out was excellent.

NPCO's Wainui feedlot



Well-drained yards prevent a quagmire even after 100 mm of rain.

The first stop was NAPCO's Wainui feedlot where the manager, Geoff Cornford, came onto the bus to explain their operation as we drove around the feedlot and farm. Besides the numbers of cattle in the feedlots, one of the



Well-being of all cattle is checked daily

more impressive features was the basic earthworks done to ensure good drainage. All yards have two-way slopes feeding to drainage trenches and concrete vehicle access tracks. Thus despite well over 100 mm of rain in that previous week, there was little mud and the stock were pretty clean; each animal has 17.5 sq. metres of space.

Vertical integration

Wainui take in more than 800 cattle each week through automated NLIS readers and scales, and this is followed by HGP implants. Cattle are fattened for two markets—heifers fed for 70 days for the local supermarkets, and for 100 days for processing. Most cattle come from NAPCO's properties with breeders on the Barkly Tablelands and Gulf, weaners going to the Channel Country and then backgrounding in the Maranoa. All drafts of animals are evenly matched to be plus or minus 20 kg. Out of 35-40,000 cattle passing through, only 150-200 are rejected as unsuitable for fattening each year.

New cattle are settled in on an induction ration with 60-70% forage hay or silage and grain, before going onto full grain. All grain is steamed and rolled to improve digestibility; this reduces intake by some 2 kg/head/day for the same weight gains.

The manure is harvested twice a year and sold to local farmers for fertilising crops such as cotton or for landscaping.



Good growth of Rhodes, Bambatsi and creeping blue on the Wainui farm

Wainui farm

The Wainui property covers 4000 hectares with a mixture of irrigated cropping, dryland cropping and mixed farming.

The mixed farming land grows forage crops and pastures, with the pastures growing various mixtures of Finecut and Topcut Rhodes, Hatch and Bisset bluegrass, Premier and Strickland digit grass and Floren bluegrass. The main purpose for the pastures is to run the cattle that are rejected from the feedlot; pastures have tended to have been very heavily grazed in the past as grass-fed animals are definitely second-rate citizens on a feedlot property.

Off to the 'Bun'

After a packed lunch in a Dalby Park (for those who followed the bus and not the instructions!), we went to Dalby Downs near Bell/Kainkillenbun where the operations were described by manager Jonathon Schmidt. Dalby Downs runs an opportunity feedlot, a Brangus stud, crops, pastures and has more than 600 hectares of leucaena.

Leucaena and frost

All the leucaena on the flat land gets heavily frosted. All leaf and stems are killed back to ground level but the

leucaena sprouts again from the base in spring. Over the years, Jonathon has progressed from a 1-row corn planter to a dedicated Gyrat planter and establishment has improved despite the failure of rains in some years. Some of the leucaena has 3 rows where Jonathon replanted, fearing failure. Now he adds Starter Zn fertiliser and treats against insect attack. New plantings grow to about 100 cm high in the first year before being frosted.

Tarramba better for cold

Jonathon's experience with leucaena varieties has shown Tarramba to be more cold-tolerant on the frosted flats. It stays green for longer in autumn and the frosted leaf holds on for about 2 weeks whereas the leaf on Cunningham drops within 4 days. In spring, Tarramba keeps growing while Cunningham starts about 5 weeks later. Despite the dry conditions, Jonathon has managed to get grasses established between the leucaena rows, with buffel, Katambora Rhodes and Gatton panic the main species planted, and some purple pigeon. Tall leucaena is managed with breeders which ride down the stems.

On the whole farm system, the leucaena is used for growing out stud bulls and store cows. These all receive silage with the legume as it makes the leucaena stands go further. Overall, cattle getting leucaena put on about 40 kg more than those without.



Jonathon Schmidt describes his management of leucaena.



TGS President Tony Illing checks buffel and purple pigeon grass between the leucaena rows.

AGM

The day tour was followed by the AGM in the DPI&F Training Centre. The meeting was attended by 17 members which is a great improvement on last year, and we were most pleased to see our NSW DPI colleagues. The President gave his address on the tropical pasture seed industry (see page 1).

2009 still the finale

At present, the Society is still due to wind up at the end of 2009 unless we can attract a new core of members and workers at the conference in Goondiwindi in March.

Sulla

– potential new forage legume for cropping land

David Lloyd, Brian Johnson, Sue O'Brien and Graham Crocker
DPI&F Toowoomba and NSW DPI Tamworth

Sulla is a short-lived perennial winter-growing forage legume used for fodder, grazing or hay. It is palatable, highly nutritious, non-oestrogenic and equivalent in quality to lucerne. Sulla was *Hedysarum coronarium* but has been re-classified as *Sulla coronarium*.



This field of sulla at 'Richmond Downs', Roma produced 5.7 tonnes of biomass in 120 days after sowing in 2008.

Where lucerne grows

Sulla is likely to be used in the grain belt of southern Queensland and northern NSW as a short-term rotation in cereal cropping; it can produce 20 t/ha over 2 years, leading to significant increases in soil nitrogen and organic matter, and is much easier to remove at the end of the pasture phase than lucerne.

It is a semi-prostrate to erect (to 1.5 m high), growing well between autumn and early summer. Its deep taproot gives good drought tolerance but it becomes dormant in hot summer conditions even if irrigated. Individual plants live for two to three years but it will regenerate readily from seed.

Sulla is adapted to similar areas as lucerne; it cannot tolerate water-logging, acidic or saline soils.

It is best suited to calcareous soils but will grow on well-drained, neutral to alkaline clay to loam soils with pH of 6.5–8.5 and 550–950 mm annual rainfall.

Good pest and disease resistance

Sulla appears highly tolerant to lucerne aphids and is not known to be severely affected by virus diseases. It is moderately resistant to red-legged earth mite and lucerne flea. *Helicoverpa* larvae may cause soem damage before and during early flowering.

It is resistant to clover scorch disease, but susceptible to *Sclerotium rolfsii* and *Rhizoctonia solanum* AG 2-2, and moderately susceptible to *Phytophthora medicaginis*. It may be susceptible to powdery mildew but this is less severe than with medicus.

As nutritious as lucerne

The crude protein content can be up to 26%, digestibility to over 80% and metabolisable energy of 10.5–13 MJ/kg DM.

Forage quality peaks before flowering, when stems become more fibrous and the foliage less palatable.

In New Zealand trials, lambs grazing sulla grew up to 25% faster than those grazing ryegrass–white clover pastures and also had higher dressing out percentages.

Sulla makes high-quality hay. It does not drop its leaf like lucerne during hay-making, but the stalks of sulla are thicker and, even with conditioning, take longer to cure, especially in winter.



Lambs grazing sulla at Oakey

Home is the Mediterranean

Sulla is native to the central and western Mediterranean, Egypt and North Africa where it is also known as Spanish or Italian Sainfoin, French Honeysuckle or Sweet Vetch. It is the main forage legume species in southern Italy and Sicily, and has been used in New Zealand for more than 30 years for soil stabilisation as the heavy growth provides good soil protection.

Tested in south Qld and north NSW

After evaluation of many lines in South Australia, Queensland and northern NSW, three new Australian cultivars have been released under Plant Breeders Rights.

- Wilpena is an erect, mid- to late-maturing variety, suitable for hay or silage and for grazing. Seed of this cultivar is more readily available than Moonbi.
- Moonbi is a semi-erect cultivar with a strong crown, earlier maturing than Wilpena, and suited to grazing and forage production.
- Flamenco is a tall, upright variety that is less leafy than Wilpena and Moonbi.

Wilpena and Moonbi were developed by SARDI, QDPI&F and NSW DPI through the National Annual Pasture Legume Improvement Program (NAPLIP) while Flamenco was developed by CLIMA and the WA Department of Agriculture and Food.

Establishment and management

Sowing

Sulla seed (200,000 seeds/kg) is about twice the size of lucerne and should be sown at 5 (dryland) to 10 (irrigated) kg/ha into a fallowed, prepared seed bed. Seed should be inoculated with the specific WSM 1592 rhizobia. Dehulled seed gives faster and more uniform establishment than seed sown in the pod. Aim for an establishment density of 25 plants per sq. metre.

Seed is sown 1–3 cm deep in autumn so that the plants will develop before temperatures drop below -4°C , which slows growth of small plants. The plants become dormant in summer.

Ideally weeds should be controlled before sowing because no herbicides are yet registered of broadleaf weeds in the crop.

Sulla has a relatively large seedling, but is slow to establish while developing its deep taproot.

The plants, however, do form large rosettes that give good soil protection. Sulla is best sown alone as it is out-competed by tall and rapidly growing plants and is easier to manage as a single species stand.

Soils low in phosphorus or sulphur would need 100 kg/ha superphosphate every year.

Sulla can fix up to 500 kg N/ha over two years if effectively nodulated.

Grazing

Sulla should be allowed to grow 40–50 cm high and then grazed rotationally to 15 cm as most regrowth comes from the leaf axils rather than from the crowns.

It is best to use large numbers of livestock on relatively small areas for a short time. Grazing intervals of 6–10 weeks will depend on conditions, but regrowth is generally slower than with lucerne.

Flowering and seeding

The bright red to crimson flowers attract the bees needed for pollination and seed set (and are good for honey). Flowering starts in spring with pods maturing about 8 weeks later.

Hardseed

While the hard seed proportion is about 80% when first harvested, most of this breaks down during summer and germinates readily in the following autumn.



Sulla foliage with bright red flowers; slightly spiny seed pods contain cream to pale brown-coloured seeds about 3 mm in diameter.



TGS news & views

If not delivered, please return to
Tropical Grassland Society Inc.
306 Carmody Road
ST LUCIA QLD 4067

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Contents

Changing face of pasture seed industry	1
Society news – 2009 conference	2
Conference program	3
Conference flier	6
Field day and AGM	8
Sulla - potential new forage legume	10