

## Grasses for mine rehab

The 2001 Annual General Meeting held at the Ebenezer Mine, near Amberley, Ipswich was attended by 30 members, who were joined by another 20 visitors for the field trip.

With Col Middleton as MC, the field trip started at 2pm with a welcome by the Ebenezer Mine manager, Thor Berding. The mine operates 2 shifts a day for 363 days a year to produce 1.4 million tonnes of steaming coal. Most of this is exported to Japan but about a third goes to the Swanbank power station.

### Environmental plans

Ebenezer is required to produce a detailed plan for rehabilitation, and it funds a research program for this with CSIRO. Future land uses could include grazing, planting trees for carbon credits, composting of rumen contents from the AMH meatworks to generate more top soil and using the void (the hole in the ground) for landfill from Ipswich City.

### The ecosystem is changed

In his neat overview of rehabilitation, Dr Richard Silcock pointed out that the government owns the minerals but that the mining company extracts them for a profit subject to a set of agreed protocols including those dealing with the final landform and vegetation cover.

Points to consider are that rehabilitation delivers a completely new ecosystem.

There is no logical reason to try return the land to an original or natural form because there have been too many changes. The hole has to be filled with reject geological material that has expanded in volume. There is no bedrock parent material and what is there may be full of undesirable materials. Returning to a pristine condition is an impossible dream.

*continued on page 3 ...*



*David Illing, TGS President for 2001 explains how he established grass cover for mine rehabilitation. Col Middleton, field day MC and past TGS President looks on before he retires from DPI after 45 years service.*

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

## Society News

Note our  
new Web  
address

### Our Internet address

Our old Web address of [www.powerup.com.au/~tgsoaust](http://www.powerup.com.au/~tgsoaust) was difficult to remember, our new web address has a shorter and friendlier address:

[www.tropicalgrasslands.asn.au](http://www.tropicalgrasslands.asn.au)

See it for membership forms, an updated book list and pdf version of the newsletter.

Our Society e-mail address: [tgs@tag.csiro.au](mailto:tgs@tag.csiro.au)

### Newsletter on line

We put the newsletter on the Web site as .pdf files in two forms. There is a small sized file without pictures and (sometimes) a much larger file with the photographs included.

In the coming year, we aim to make the newsletter available only through a password.

## Your Executive for 2002

### President

David Orr  
Tropical Beef Centre  
PO Box 5545, Rockhampton Qld 4702  
Phone: 07 4923 8134 Fax: 07 4923 8222  
e-mail: [David.Orr@dpi.qld.gov.au](mailto:David.Orr@dpi.qld.gov.au)

### Vice President

Bruce Cook  
DPI, PO Box 395  
Gympie, Qld 4570  
Tel: 07 5480 4421; Fax: 5482 1529  
e-mail: [Bruce.Cook@dpi.qld.gov.au](mailto:Bruce.Cook@dpi.qld.gov.au)

### Past President

David Illing  
"Hillview"  
PO Box 346, Pittsworth Qld 4356  
Phone: 07 4693 7220  
Mobile: 0428 455 288  
Fax: 07 4693 7220

### Secretary

Anthony Whitbread  
CSIRO Sustainable Ecosystems  
PO Box 102, Toowoomba Qld 4350  
Phone: 07 46 881137  
Fax: 07 46881193  
e-mail:  
[Anthony.Whitbread@tag.CSIRO.au](mailto:Anthony.Whitbread@tag.CSIRO.au)

### Treasurer

Ben Mullen  
School of Land & Food  
University of Qld, St Lucia Qld 4072  
Phone: 07 3365 3474  
Fax: 07 3365 1188  
e-mail: [b.mullen@mailbox.uq.edu.au](mailto:b.mullen@mailbox.uq.edu.au)

### Journal Editor

Lyle Winks  
McNeills Rd  
MS 825, Ipswich, Qld 4306  
Phone: 07 5467 2314  
Fax: 07 5467 2314  
e-mail: [lwinks@gil.com.au](mailto:lwinks@gil.com.au)

### Newsletter Editor

Ian Partridge  
QDPI, PO Box 102  
Toowoomba Qld 4350  
Phone: 07 4688 1375  
Fax: 07 4688 1199  
e-mail: [Ian.Partridge@dpi.qld.gov.au](mailto:Ian.Partridge@dpi.qld.gov.au)

... AGM and mine rehab contined

One of the main aims is to stabilise the land form with vegetation by getting ground cover as quickly as possible; this will reduce surface erosion on steep slopes and control water. Grasses offer the best chance of quick cover and are best at binding the soil. Trees and shrubs are slower to grow but have deeper roots. They may be desirable eventually but will compete with and suppress the grass cover.

Trees may have an immediate value for carbon credits or an eventual value as timber but the value of grass can be realised only through a grazing animal.

### Aliens or natives?

Bruce Cook described how the species chosen must have suitable characteristics and have to be adapted to what could be hostile soil conditions—salinity, sodicity and acidity. Introduced grasses are more likely to give the desired quick ground cover than native species. In addition, there are few sources of seed of native grasses and little knowledge of how to establish them. And how 'native' are native species? Is seed harvested in north Queensland native to south Queensland. For example, a ruling for the USA says that seed must be harvested within 20 miles of the area to be sown to be classified as 'native'.

### Give us some C credit

At least spoil from coal mines is relatively benign compared to that from mineral mines, according to CSIRO forester Dr Alistair Spain, with the material at Ebenezer starting as clay over sandstone. The Japanese owners of the mine are keen to see whether they can gain carbon credits to offset CO<sub>2</sub> produced when burning the coal. Alistair is testing suitable tree species on both well- and poorly drained sites. Species planted include *Melaleuca*, *Casuarina* and eucalypts.

We then went to the reclaimed slopes where David Illing described how he planted the area and with what. David likes a rough soil surface to provide suitable microclimates for seeds to germinate. However, the Ebenezer

slopes were very steep, and David had to have a grader running ahead of his 4WD utility and airseeder to prevent the utility tipping over on large clods. David planted his 'Supermix' of grasses (Finecut rhodes, Bisset bluegrass, Premier and Strickland digit grass) and legumes (Wynn cassia and atro siratro). The aim of the mix is to give rapid establishment on newly deposited top soil with the rhodes grass plus species that are slower to establish but better adapted to declining fertility.

We then boarded a bus for a tour of the mine as private vehicles are not allowed for safety reason. Thor pointed out that my line in the last newsletter about 75 tonne dump trucks was an understatement—his trucks carry a load of 175 tonnes!

The final stop was in an older established area where Bisset bluegrass had started to strengthen and become dominant.

### What will the future be?

A final remark was that land use in decades to come may be completely different to the present use, so one need not be too precious about the present. The view from the top of the hill suggests good real estate (if it was not for the adjacent Willowbank raceway and city tip to be).

Thanks very much to Thor for being such an informative guide and to the mining company for the hospitality.

*Successful day?  
Said one lady  
visitor –  
'I never knew it  
would be as good  
as this.  
I'm glad I came.'*

*Field day visitors look at and listen about pasture cover against a backdrop of David Illing's mounted pasture air seeder.*



---

# New Fellows of TGS

## Bela (Bert) Grof

– for his major role in sown pasture R & D in Australia, Asia and Tropical America.

After academic studies at the Royal Hungarian University of Polytechnic, Bert migrated to Australia in 1949. He joined the Department of Primary Industries working at Biloela and then South Johnstone Research Station evaluating and selecting forage species. Bert has been responsible for the selection of many of our cultivars, including Biloela buffel grass, Callide rhodes grass, Cook and Endeavour stylo, Johnstone hetero, Belalto centro, Basilisk signal grass, Kennedy ruzi grass, and Makueni guinea grass. Seed of Basilisk signal grass became a major export to South America with some 25 million hectares planted in the Cerrados of Brazil

In 1971, Bert joined Centro Internacional de Agricultura Tropical (CIAT) in Colombia, targeting forage species adapted to acid-soil savannas (Llanos and Cerrados) and to cleared tropical forest regions of South and Central America. He tested a wide range of *Stylosanthes* accessions for resistance to anthracnose, leading to the release of *Stylosanthes capitata* cv. Capica. *S. guianensis* CIAT 184 was selected for degraded forest regions and subsequently released as cv. Pucallpa in Peru. CIAT 184 has since found wide acceptance in southern China (released as cv. Reyan II Zhuhuacao), Thailand (cv. Tha Phra), Viet Nam, Philippines and Indonesia.

Preliminary testing of a *Centrosema pubescens* x *C. acutifolium* hybrid was carried out at CIAT HQ and at the Quilichao sub-station. This hybrid (CIAT 438) was released in Honduras and showed good promise under grazing in Peru, Mexico, Guyana and Paraguay. Bert then moved across to the savannas of the Llanos Orientales where he identified Carimagua 1 gamba

grass for low fertility oxisols. Some 3 million hectares of this variety have been planted in Brazil alone. *Arachis pintoi*, *Centrosema acutifolium*, *Brachiaria dictyoneura* and *Brachiaria humidicola* have all been brought through to cultivar status as a result of Bert's work in Carimagua.

Still with CIAT, he linked up with EMBRAPA/CPAC at Planaltina in Brazil in 1985 working on selection of forages adapted to the seasonally flooded acid-soil savannas. Promising accessions were led to the subsequent release of cultivars of *Paspalum atratum*, *Brachiaria brizantha*, *Arachis pintoi*, *Desmodium ovalifolium* and *Stylosanthes* spp. In 1989, he moved south to Campo Grande in Brazil in the quest for forage species for Cerrados conditions. Following evaluation of *Stylosanthes capitata*, *S. macrocephala* and *S. guianensis*, Mineirao, the large cultivar of *S. guianensis* was released for commercial use.

In 1992, Bert moved to the Philippines to work on the S E Asian Forage Seed Production Project, selecting material for regional trials in the Philippines, Malaysia, Thailand and Indonesia. This activity led into the highly successful Forages for Smallholders Project which is still operating in the region.

In 1994, he severed his ties with CIAT but returned to South America in Brazil to select *Stylosanthes* species for anthracnose resistance and adaptation to Cerrados conditions. This led to development of a cultivar based on two species, *S. capitata* and *S. macrocephala*, released by EMBRAPA as cv. Campo Grande.

Bert returned to Australia in 1997, but not to retire. In the current phase of his long career, he has been instrumental in introducing into Australia some of the more promising material of *Stylosanthes* and *Brachiaria* he worked with in

Campo Grande. He is now collaborating with DPI and the seed industry to assess the potential of these lines in Australia.

In the field of tropical pasture species evaluation, Bert is a global treasure whose work has contributed greatly to our understanding of exotic species ecology, and improved the incomes and lifestyles of innumerable families around the world. His enviable reputation for 'having an eye for a good plant' is well known among his colleagues and peers.

### Ian J. Partridge

*– for communicating pasture science to the grazing industry through his publications*

Ian graduated from Reading University in English before completing a postgraduate Diploma in Tropical Agriculture from the University of the West Indies in Trinidad.

His first posting through the British Ministry of Overseas Development was to Kenya where he investigated high altitude pastures. In 1969, he went to Fiji and spent the next 13 years investigating all aspects of pasture development for hill land in SW Viti Levu. This work included species evaluation and plant nutrition and culminated in long-term grazing trials of the naturalised mission grass. This led to his appreciation of creeping species and grasses able to persist under commercial grazing management.

In 1983, Ian migrated to Australia and joined the DPI in Bundaberg as an extension agronomist dealing with pastures and cropping. He studied

the potential and problems of Wynn cassia under its first long-term grazing trial and identified the importance of sulphur deficiency for legume growth on the granadiorite soils of the coastal Burnett. He was then transferred to Gayndah and at the same time started producing books on pastures, starting with *Leucaena: the shrub legume for cattle feed*, which sold some 5000 copies through the TGS.

In 1991, Ian transferred to Toowoomba to write the series of seven Grazier Guides covering the native pasture communities of Queensland and northern Australia. He has written, edited or produced some 20 publications on various aspects of pasture development and use, as well as those on seasonal forecasting of climate variability. These books have included most of the Occasional Publications of the TGS. He has been involved in the establishment and maintenance of the TGS Internet site and the *Pasture Picker* interactive database that refers back to *Better pastures for the Tropics and Subtropics*.

Ian has been involved in pasture-based consultancies for the South Pacific Commission, Crawford Foundation, FAO and ACIAR in the New Hebrides, Solomon Islands, Indonesia, Thailand and Vietnam

Ian has been a member of the Society for some thirty years and has been the longest serving Executive member. As Newsletter Editor for the last 12 years, he has taken the format from typed A5 to the current professional A4 layout, and provided a wide range of stories and information.

### Who cares about pastures?

The impression we gather from government funding priorities is that pastures are not really important compared to more exotic new industries.

However, two counterviews have cropped up recently

One is from the DPI's Annual Report which shows the value of gross primary industry commodities over the last 2 years.

So the grazing industries provide just over 50% of the total gross value of our primary industries commodities.

### Estimated gross value of primary industry commodities in Queensland

	1999/2000	2000/2001
	\$ million	
Cereal grains	585	459
Sugarcane	820	635
Cotton	447	489
Vegetables	552	584
Fruit	493	532
Pigs	177	189
Poultry	157	170
Cattle	2257	2680
Milk	324	218
Wool	164	186

*continues on page 7 ...*

## Satellites can see 'hot spots'

A new fire-detection website developed by the Department of Natural Resources and Mines can help land managers locate and track large bushfires in the more remote regions of Queensland ([www.dnr.gov.au/longpdk/SatelliteFireMonitor](http://www.dnr.gov.au/longpdk/SatelliteFireMonitor))

Check  
[www.dnr.gov.au/  
longpdk/  
SatelliteFireMonitor](http://www.dnr.gov.au/longpdk/SatelliteFireMonitor)

Fire hotspots can be detected daily (or at least nightly) in a region, or even in a large paddock, and managers can monitor the progress of approaching fires.

The website provides the coordinates of the hot spots and these can be overlaid on GIS maps showing local boundaries, major roads and towns. The Department also has a free automated e-mail service that alerts subscribers or district fire inspectors to fires within nominated areas, such as a large property or state forest. The e-mail message includes an ArcView 'shape' file so that subscribers with GIS software can overlay property boundaries, roads and infrastructure.

### What the satellites see

**Active fires.** Sensors on NOAA satellites that record emitted energy can detect hotspots—but only from evening and night-time overpasses in the tropics. This is because the most sensitive thermal

channel of the AVHRR sensor saturates at 51°C—at soil temperatures typical in the tropics over much of the dry season. Thus small fires that go out at the end of the day may be missed.

**Burnt areas.** The thermal channels from daytime NOAA and Landsat images are used in combination with the reflected channels to map the extent of fires; black ash on the ground surface absorbs heat and raises the temperature of the burnt area above that of the surrounding unburnt landscape.

### Same time or real time?

The NOAA satellites can detect hotspots up to three times each day, using different satellites. But as both the AVHRR and ETM sensors cannot see through clouds, all fire detection needs cloud-free conditions.

Fire history updates are restricted to the cycle of daytime overpasses; thus NOAA-derived fire maps can be updated on a nine-day cycle and Landsat-derived fire maps have a 16-day cycle.

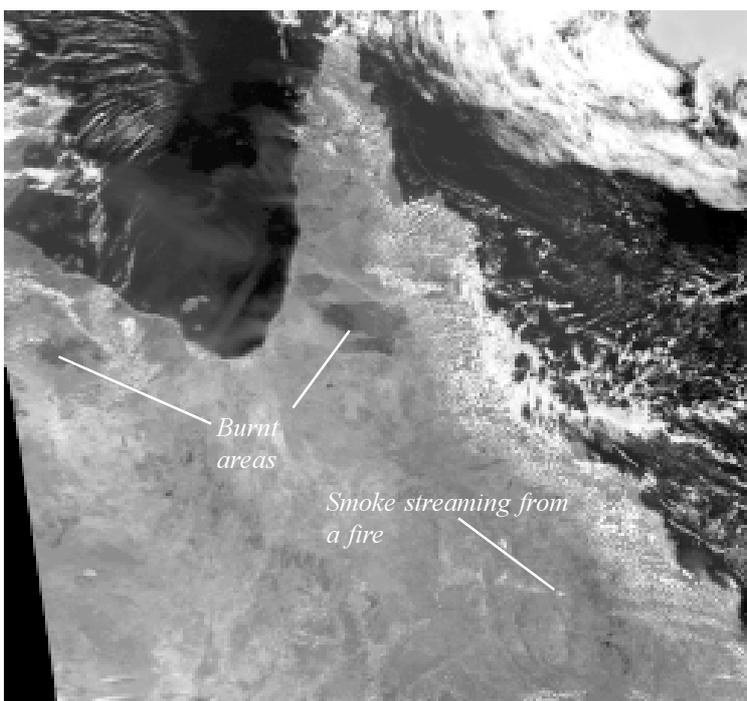
### Who provides the info?

Three agencies in Australia collect and process the NOAA-AVHRR and Landsat ETM satellite images to give a continent-wide coverage.

The Department of Land Administration (DOLA) in Perth collects NOAA-AVHRR images for the western portion of Australia; the Queensland Department of Natural Resources and Mines in Brisbane collects NOAA-AVHRR images for the eastern portion of Australia. Both agencies have websites with hotspot and fire extent information.

The Australian Centre for Remote Sensing (ACRES) is responsible for Landsat images, and has receiving stations in Alice Springs and Hobart with data processed in Canberra. The Bureau of Meteorology also have satellite receiving stations for NOAA images in Melbourne and Darwin.

Active fires and fire scars in Queensland





**What hotspot information?**

Hotspot information is available as maps, lists of geographic coordinates and as digital files for use in a GIS. The maps are picture files showing the location of active fires on a generalised land tenure map with some road and river information. Red crosses are most likely to be active fires while the green crosses are possibles. The lists of geographic coordinates and the GIS digital files, with the Department of Natural Resources and Mines ArcView shapefiles, provide more accurate information on the location of hotspots.

**How accurate?**

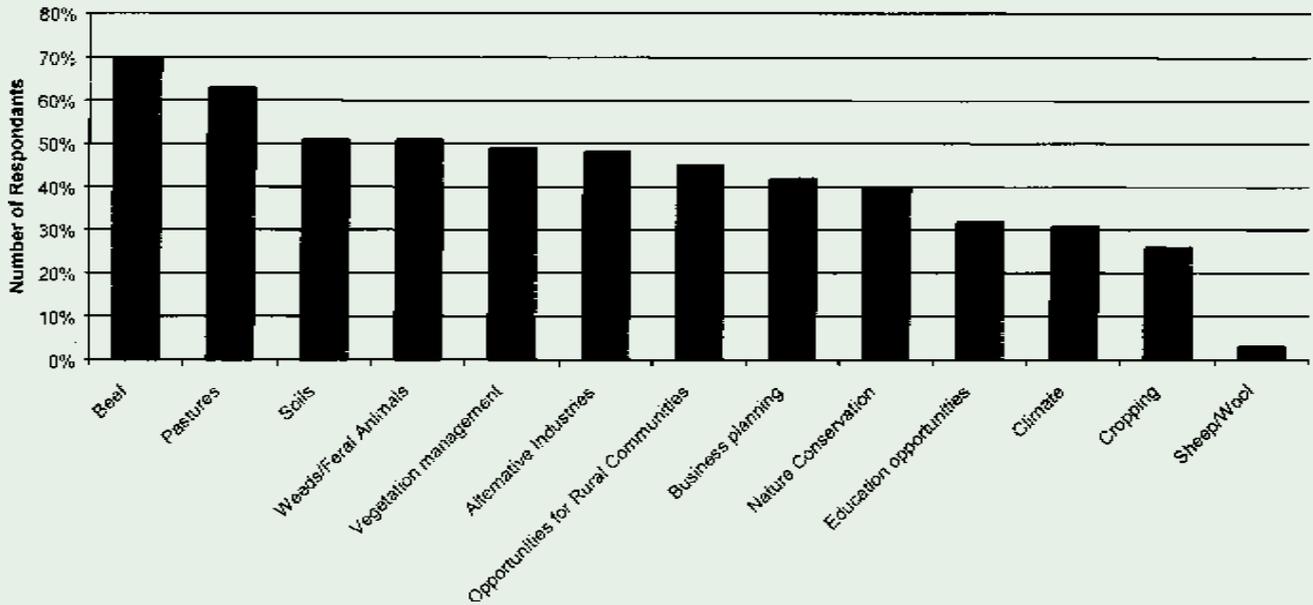
The location accuracy of the hotspot data is, at best, 1–2 km. The best time for collecting data is when the satellite is looking straight down and the worst time is on days four and five of the cycle when the look angle is greatest. Thus the quality of the data is lower on two out of every nine days.

**Who cares about pastures?** ... continued from page 5

The other was the results of a survey on topics of interest to readers of the Maranoa Rural news—a news letter put out by number of State government departments, community groups

and private enterprises who have an interest in rural issues in the Maranoa region. Here pastures were rated as the second most important topic of interest.

Topics of interest for Maranoa Rural News readers



---

# Letter to the Editor

## A wider role for the Journal?

I received the latest addition of the TG journal last Thursday and, as usual, perused the list of titles, authors and location of the research published. I lamented briefly on how little plant-based R&D is happening across the tropics and subtropics of Australia and that the journal was becoming less and less relevant to me.

But need this be so? Does our journal need to be so closely focused on the study of plant responses from small trials.

## Managing the environment

I see that R&D in the wet and semi-arid tropics and subtropics of Queensland has shifted focus towards management directed at environmental maintenance or rehabilitation. Production R&D has shifted towards value-adding responses more directly linked to consumer demand, and in general terms R&D has shifted towards more community involvement and participation. Both state and federal governments and major funding bodies are on this boat and all are looking towards more integration across traditional disciplines (systems thinking), efficiency in conduct of projects, and adoption of results leading to identified outcomes for the industries, the environment and the community. These funding bodies have been heading this way for half a decade or more. Our society has apparently moved not at all.

## Time for a rethink

Obviously our journal has a clientele base for the current editorial policy and it would be inappropriate to abandon these. No doubt the society is part of a valuable network providing products and information on pasture development and management in the pan-tropics, and more particularly in developing countries. It should retain these.

In light of changes by major funding bodies the journal might consider papers or discussion type articles which address the areas of community capacity building (participative R&D), environmental rehabilitation or management of its "patch" and also in more directly linking production with end users. In this way the journal might be restructured to cover a number of theme areas to become more broadly applicable in northern Australia while still retaining its existing capital. I found many articles from the proceedings of the last conference thought provoking and might offer clues on how the "regular" journal could be structured.

I envisage articles, which could be appropriately refereed, from landcare and other community groups on their project activities and learnings, from agencies involved across the resource use and management spectrum as well as linking tropical grassland use to products at the consumption end.

## Broader debate needed

The thoughts above may not necessarily provide answers to the journal's difficulties as I see them. I do believe, though, that the society should initiate a debate across the membership as to the ongoing role of the journal. This could be achieved at the policy level, through the newsletter and also in the journal itself. I suggest sooner rather than later might be the time to start.

Kev Shaw

Queensland Beef Industry Institute  
Rockhampton

What do readers think? How are your interests changing? Ed.

The newsletter is always willing to carry articles of interest on production, and resource management and how to improve the uptake of better practices.

## Leucaena Made Easy

### Leucaena Network meeting at Emerald (16-17 November 2001)

The 'Leucaena Made Easy' meeting was a great success with about 140 attending from grazing, industry and government sectors.

Col Middleton and George Lambert, QDPI stalwarts, gave a great overview of the productive benefits of leucaena in fattening systems.

### Establishment the key

However, Peter Emmerly made the most telling point when he reminded us that a high rate of establishment failures still prevails, and this was bad news for the industry. The risk of failure was creating uncertainty for 'would be' leucaena growers. Graziers know that the technology is good but they are not sure they can get the stuff successfully established.

Unfortunately, the meeting did not resolve this problem. In fact, it may even have inadvertently created the impression that leucaena was too difficult for the average grazier. Many felt that success was elusive without farming experience and access to sophisticated machinery. We were told about the intricacies of Spinnaker™, the finer points of planting machinery and the intimate details of spray technology. One grazier, clearly dismayed by the complexity of it all, said that his most sophisticated machine was his crow bar, and leucaena seemed too difficult for him.

Getting establishment procedures right, and accessible to graziers, therefore remains a big issue limiting expansion of the leucaena system.

### \$ same as cropping with less risk

Fred Cudleigh's talk on the economics of leucaena, though cautious, convincingly demonstrated that leucaena was a viable alternative to dryland cropping with similar profitability to sorghum but lower inherent risk (apart from the risk



*Peter Larsen, John Chamberlain and Sergio Burle check Kelwyn Janke's 9-month old leucaena.*

of planting failure). Peter Larsen made the point in discussion that leucaena always allows the grazier to go for the best price, an advantage difficult to factor into economic analyses.

### 90% of the breeding thru the mouth

We were entertained by Lance Smith, cattle buyer from Central Queensland, who emphasized that graziers should not be mesmerized by the claims of stud breeders, but to focus on the important aspects of conformation—long wide cattle, well sprung ribs, and four good legs.

There was the usual interchange of stories about planting approaches and, as usual, everyone had a different angle.

### Keith his tireless self

On Friday evening we were treated to dinner at the Emerald Pastoral College, and an enjoyable report on the Leucaena Network by President Keith, who was tireless in his organisation of the event.

*Leucaena Network news continued on page 11 ...*



*Keith McLaughlin tests his strength probing for moisture.*

# Practical Abstracts

from *Tropical Grasslands Journal*, Volume 35, No. 3 (September 2001)

**Effects of plant spacing and sowing time on seed yield and seed quality of *Paspalum atratum* in Thailand**—by Chaisang Phaikaew, C. Khemsawat, Sayan Tudsri, Y. Ishii, H. Numaguchi and E. Tsuzuki, on pages 129–138.

Plants grown as different spacings (from 75 x 75 cm to 100 x 100 cm) had similar high seed yields (averaging 820 kg/ha) and high quality (85% germination), but the widest spacings tended to give most good quality seed.

In another study, atratum was sown at different latitudes. The highest yields and quality in the establishment year came from early sowing in March, with no seed from July sowings. Only the high latitude site produced acceptable yields from June planting suggesting that atratum needs long days to induce flowering.

**Juvenility and long-short day requirement in relation to flowering of *Paspalum atratum* in Thailand**—by Michael Hare, K. Wongpichet, M. Saengkham, K. Thummasaeng and W. Suriyajantratong, on pages 139–143.

*Paspalum atratum* cv. Ubong was confirmed as a long-short day plant exhibiting a quantitative response to long days followed by a qualitative response to short days. Ubon paspalum must have long day-lengths to flower and needs at least 60 long days to flower completely. Seed crops must be planted very early in the wet season to flower in the establishment year and older seed crops must not be cut late in the wet season. Ubon paspalum shows no juvenile stage.

**Effect of cutting on yield and quality of *Paspalum atratum* in Thailand**—by Michael Hare, M. Saengkham, C. Kaewkunya, S. Tudsri, W. Suriyajantratong, K. Thummasaeng and K. Wongpichet, on pages 144–150.

In the wet season, cutting Ubon paspalum at 20–30 day intervals gave higher nutritive value (by increasing crude protein, P and K concentrations and lowering the fibre content) than cutting every 60 days. In the early part of the dry season, the cutting interval can be extended to 40 days.

The most appropriate cutting interval will depend on what the farmer is producing, but good dairy production will still need supplementation with legumes and concentrates.

**Tiller dynamics in a bahia grass (*Paspalum notatum*) pasture under grazing**—by M. Hirata and W. Pakiding, on pages 151–160.

Bahia grass forms a highly persistent sward that tolerates severe defoliation. Under grazing with cattle in Japan, the density of bahia grass tillers remains stable because they are long-lived—despite low rates of appearance. This low rate of appearance of new tillers is due to low rates of site filling. Although rates of appearance and death were modelled in relation to meteorological or sward factors, more study is needed to enhance prediction.

**Forage yield and nutritive value of *Eragrostis curvula* and *Digitaria eriantha* in central-south semi-arid Argentina**—by A.O. Gargano, M.A. Adúriz, H.M. Arelovich and M.I. Amela, on pages 161–167.

In a 4-year experiment, cv. Irene and *E. curvula* cv. Tanganyika were cut in spring and summer and in autumn when they reached 25–30 cm height. *D. eriantha* had slightly lower yield but had better nutritive value (Crude protein 12.1% (spring-summer) and 5% (autumn) v. 9.2% and 3.9%; digestibility (64% and 50.8% v. 51.6% and 40.4%).

**Yield and nutritive value of tropical forage legumes grown in semi-arid parts of Zimbabwe**—by R.M. Jingura, S. Sibanda and H. Hamudikuwanda, on pages 168–174.

Lablab produced the highest yield of forage with a high protein content. Yields of lablab, siratro, silverleaf desmodium and finestem stylo were 5.9, 3.1, 3.3 and 2.9 t/ha respectively, with protein contents of 16%, 17%, 13% and 16%. The legumes should be harvested soon after flowering for maximum yield of good quality forage for supplementing dairy cows.

**The effect of harvesting at different growth stages on yield and quality of three late-maturing pearl millet accessions in northern Nigeria**— J.T. Amodu, M.S. Kallah, O.S. Onifade, A.T. Omokanye and I.A. Adeyinka, on pages 175–179.

Forage yields were highest when harvested at the milk stage of grain formation. Crude protein declined from 8.2% at flowering to 5.3% at the dough stage while crude fibre increased. Pearl millet should be harvested at the milk or dough stage yields increased with advancing maturity while nutrient changes were small.

**Yield and chemical composition responses of *Lablab purpureus* to nitrogen, phosphorus and potassium fertilisers**—by Y. Shehu, W.S. Alhassan, U.R. Pal and C.J.C. Phillips, on pages 180–185.

In the savanna zone of west Africa, no fertiliser combination increased yield of lablab in the first year. Nitrogen with phosphorus increased the yield of shed leaves but adding potassium eliminated this while reducing fibre levels. There were no responses in the second year. In both years, the protein and phosphorus levels were generally increased with phosphorus fertilisers but there were no consistent benefits from applying N,P and K fertilisers.

**Liveweight gains of steers at different stocking rates on mono-specific Gatton panic and Estrella grass pastures in the Chaco central region of Paraguay**—by A.J.N. Cabrera, D. Stosiek, Albrecht

Glatzle, Max Shelton and R. Schultze-Kraft, on pages 186–192.

Gatton panic produced greater liveweight gains per head than Estrella or African star grass (*Cynodon nlemfuensis*) at stocking rates below 1.4 AU/ha but was less sustainable at higher stocking rates. Gatton panic in the pasture declined from 80% to 30% over the 6 years of study whereas star grass remained over 90%.

There are over 1 million hectares of improved pastures of Gatton panic and African star grass in the Chaco Central region (edaphically and climatically similar to central Queensland, Australia), and it contributes 50% of milk produced in Paraguay and 20% of the beef. The area is increasing by land clearing at a rate of 50 000 ha/year. The results of this study are therefore important for understanding and preventing pasture degradation.

---

*Leucaena Network news continued from page 9 ...*

### **MLA funds to conquer psyllid**

Ruth Wade, representing MLA, made a public award of MLA funds to the Leucaena Network to produce a psyllid-resistant leucaena cultivar. The University of Queensland group, represented by Max Shelton and Scott Dalzell, responded. The meeting was closed after Peter Emmerly told us about the carbon and methane benefits of planting leucaena.

### **New broom sweeps clean**

Saturday morning was the real surprise. We were treated to an inspection of 120 hectares of recently planted leucaena on the property of Kelwyn and Jeanette Janke, on fertile downs country near Capella. The Janke's are a young couple commencing their first foray into leucaena. Kelwyn was clearly an excellent farmer, with all the skills and machinery that seemed so formidable the day before.

### **Weed-free establishment**

His 7-month old leucaena was already 2 metres tall, completely free of weeds,

and looked a picture. His main problem was which grass to plant in the inter-row—Callide Rhodes, Bambatsi grass, bluegrass, or even buffel on his high clay down's soils.

Membership has increased by over 20% since the meeting. Although some of the realities of establishing leucaena were presented, many large plantings have been projected by major pastoral enterprises looking to secure their future in the beef industry.

Max Shelton



*Weed-free inter row and 9 month growth of leucaena on Kelwyn Janke's property.*

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

TGS news & views

Print Post Approved  
424043-00007

SURFACE  
MAIL

POSTAGE  
PAID  
AUSTRALIA

## Contents

Grasses for mine rehab	1
Society news and new Executive	2
AGM field day cont.	3
New Fellows	4
Who cares about pastures?	4
Satellites can see hot spots	6
Letter to the Editor	8
Leucaena Network News	9
Practical Abstracts	10