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TGS news & views

about pasture development in the tropics and subtropics

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Breeding the best?

A recent article in the Farm Journal in June described how animal geneticists are breeding such productive dairy cows that it is difficult to get enough feed into them.

As a result, the cows' health is breaking down and they have to be culled after only 3 or 4 lactations.

These monster milkers have to be fed in the feedlot cowsheds that are becoming common in North America because they cannot get enough nutrition out in the paddock. And what happens in America seems to end up in Australia.

80% of breeding thru the mouth?

Pasture agronomists like to say that 80% of the breeding is through the mouth. Sustainable production seems to get lost in the striving for ever higher yields.

In some ways, the dairy cow case is analogous to that of the beef breeds. When Zebu cattle were introduced again to the north in the 1930s, the British breed producers scoffed at the lower potential weight gains of the Zebu, and it took many decades (see Bob Clements' Farrer Oration in the last issue) before the lower potential but much better adaptability of the Brahman won over the minds of commercial producers.

Big is beautiful?

A similar scene is unfolding in south-east Asia. The local cattle (yellow cattle in Vietnam or Bali cattle in Indonesia) are very well adapted but have small bodies—you rarely see a skinny Bali cow. The local agricultural departments feel that bigger is better and that large Australian breeds represent progress— but the local farmers often cannot feed the big animals well enough (and have problems with physical handling too). And live exports of high-potential European breed dairy cows to the humid tropics have often met with disaster due to poor nutrition and heat stress.

Big may be beautiful but small is often better adapted to local conditions

~~Horses~~ cattle for courses– Bigger is not necessarily better, each animal is suited to the local environment and management.

Bulls for Bali and northern Australia.

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Society News

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Your subscription renewal is now overdue

A newer look—News & Views in colour. The cost of 4-colour printing is tumbling, thanks to new print technologies and competition between printers. This newsletter is costing the same to print as the old 2-colour issue; on the other hand, the cost of a 2-colour issue would be considerably reduced and this would save our cash-strapped Society money. So let's have some feed back on whether you like full colour. Certainly, grey-scale photos of grass are not very effective.

The Journal archive

Past issues of Tropical Grasslands have been archived on our Web site to allow Internet searching. These archives are in a variety of forms. More recent issues are totally searchable pdf files but earlier issues have searchable titles and abstracts as pdfs but the main papers have to be as images. Basically the key words are usually in the title or abstract while the text images can be read on the screen or printed.

Issues 1 to 13 (1967–1969) are available as titles only so that the titles are searchable. If the paper content is wanted, it will have to be ordered from a library service.

Issues for the previous year are available only to journal subscribers.

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Crops for marginal cropping areas

Similar cases are found in the plant world. Crop geneticists are working hard to breed varieties of crops that can be grown in the marginal cropping regions – marginal because of soil constrains or unreliable rainfall. And these projects proceed at the same time that other projects in Queensland are making much effort to recover the marginal cropping regions by putting them down to permanent stable pastures that will restore soil structure and general fertility.

And pasture agronomists should not throw too many stones either. For decades, bigger and taller forages were beautiful and selected as 'improved', only to disappear unless fed (fertilised) and managed (grazed) carefully—while under our variable climate. Only in more recent years, has low maintenance with persistence driven the selection process in forages.

When I used to do cutting trials to evaluate new species, I remember thinking that a criterion for persistence in a species was that it could not be harvested with the old Allen motorscythe. If an Allen scythe could not get low enough, then neither could a cow's tongue and the species would not be grazed out.

A grass-fed beef revolution?

Beef raised wholly on pasture, rather than grain-fed in feedlots, may be better for your health--and for the planet
Time magazine (June 12, 2006) carries the following article by a Margot Roosevelt about a Texas rancher on the southern Great Plains who has turned from raising steers for the feedlot to rearing on grass. He restored his 1,350 acres to native tallgrass prairie, grazes rotationally, then has his steers slaughtered locally for the local market.

Although in the past five years, more than 1,000 U.S. ranchers have switched herds to an all-grass diet, pure pasture-raised beef still represents less than 1% of the nation's supply. Sales reached some $120 million last year and are expected to increase more than 20% a year over the next decade. Upscale groceries like Whole Foods and Trader Joe's are ramping up grass-fed offerings, including imports from Australia and Uruguay.

Last month the U.S. Department of Agriculture (USDA) proposed a certified grass-fed label to provide a federal standard.

The Union of Concerned Scientists, a Washington-based non-profit organisation, concluded that a change from grain-based feedlots back to a purely pasture-based system "would be better for the environment, animals and humans."

It was only after World War II that the U.S. began confining cattle in factory farms that can fatten 50,000 head a year on high-calorie grain. Until then, cattle grazed on grass their full lives--as they still mostly do in Europe, South America, New Zealand and other beef-producing nations. The new U.S. system grew thanks to vast surpluses of government-subsidized corn and soybeans, produced with modern petroleum-based fertilizers. Traditionally, steers had taken three to four years to fatten on pasture. Today they grow to slaughter size in less than two years--an efficient industrial process that has transformed beef from a luxury meal into a cheap fast food.

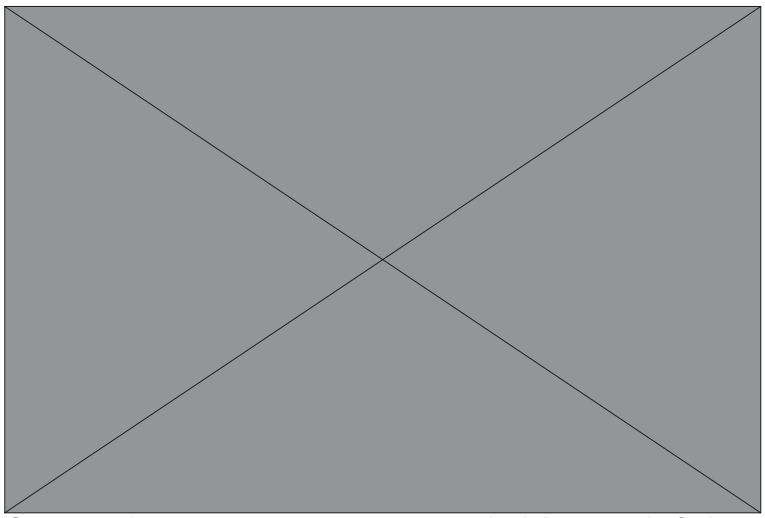
And feedlot beef has the taste and uniformity that U.S. consumers have come to expect. Grass-fed meat, by contrast, varies according to the breed of cattle and the pasture on which it was raised.

The National Cattlemen's Beef Association (NCBA), which represents ranchers and feedlots, welcomes grass-finished beef as another market choice but contends that it is no healthier than grain fed.

Consumers seeking to avoid chemicals have turned to certified-organic beef in recent years, but often it is merely feedlot beef that is fed pesticide-free grain.

Grass-fed beef can cost from 20% to 100% more than feedlot beef, reflecting in part

a longer growth cycle. And quality can be a problem. "Our customers rave about its tenderness and nutty flavor, but some grass-fed meat is too tough."



Steers on leucaena-grass pastures can rival those grain-fed.

Ed's comments:

The steaks from steers that take three to four years to fatten on native grasses are not going to be as tender as those from younger animals. Also animals grow more slowly when grazing our less digestible tropical grasses than on temperate species, and this is where pasture improvement becomes so important in northern Australia. Improved pastures with introduced grasses and legumes and fertiliser or mineral supplements in the more coastal regions or from introduced grasses on more fertile inland soils have been around for decades. But the most productive grass-legume system of all is that based on leucaena. Pasture-fed animals on leucaena can gain as much as 1.5 kg a day over extended periods, almost rivalling grain-feeding.

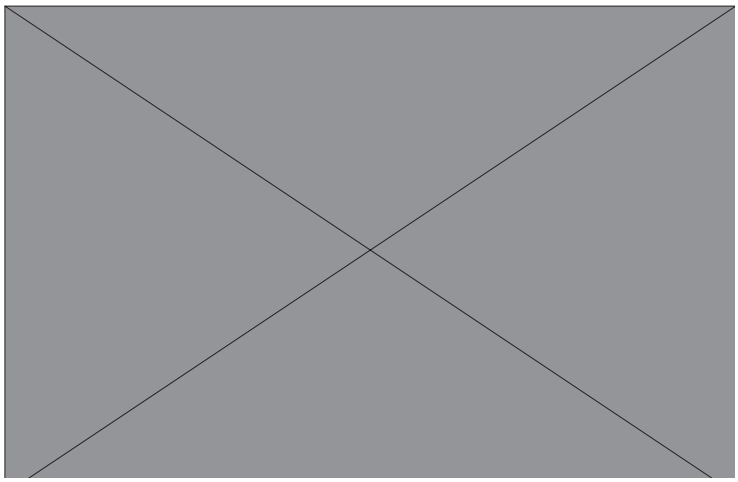
What's your beef?

(*This article is a repeat of an editorial from TGS News & Views Vol 18 (1) March 2002; it's still relevant especially as the lot-feeders and ethanol distillers could soon be fighting over a shortage of grain while the crop breeders are breeding varieties to expand into the marginal cropping regions. Ed.*)

The popular jargon covering strategies for agricultural development is 'triple bottom line'—it must have economic, social and environmental value. Beef production for the new and existing markets must be 'clean and green', produced ethically.

Fat and unhappy?

Grain-fed beef by popular demand – reliably tender.



But there are times when I wonder about the ethics of some of our beef production. The public demand reliably tender beef and, to get it, they are prepared to pay a premium for grain-fed beef. Our feedlot beef is fed grain for between 90 and 360 days days— originally just enough to finish the animals and to give a succulent reasonably tender steak with nice white fat, now for more premium export markets. In America, where steaks are allegedly even more tender and juicy, they also over-feed their cattle to get inter-muscle (marbled) fat. They then have to cut off centimetres of subcutaneous fat that no one wants, import our lean cull cows to blend with the surplus fat so they can sell it as hamburger mince.

When does feeding grain become 'unethical'?

Cattle are ruminants. Their value to the whole ecological system is that they can convert grass (poorly digested by most simple-stomached animals, be they humans, pigs or lions) into high-quality protein (for us or them). But we are feeding them grain which could be digested much more efficiently by the monogastrics. Ruminants are quite inefficient at

converting this grain at any stage of life but especially when they are depositing fat.

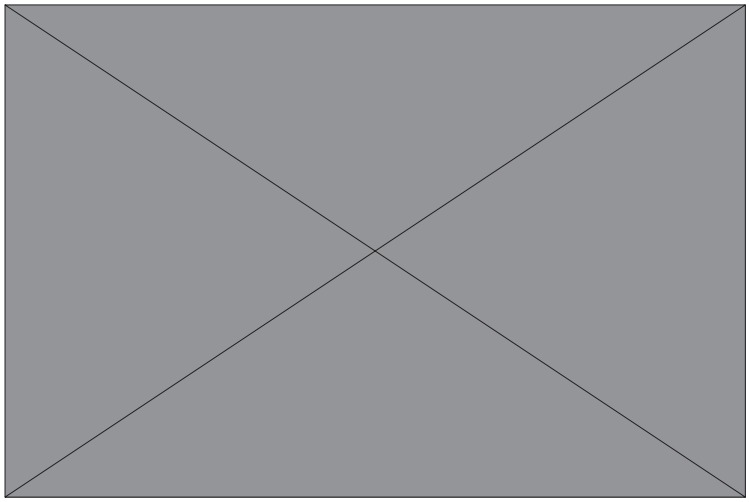
I'm not suggesting that feed lots could be or should be banned; they are efficiently run and profitable because of consumer demand. But they are 'inefficient biologically'— and inefficient ecologically in that there is transfer of nutrients from cropping land to great mountains of dried manure that are uneconomic to transport back to the land growing the feed crops.

So we cultivate our limited cropping land that is running down in terms of physical and nutrient fertility, fertilise it with urea produced with coal-generated energy, harvest and transport the grain with imported headers and trucks using non-renewable oil so as to feed animals with inefficient digestive systems.

Wow! Now I feel good when I see a paddock of improved pasture that is restoring the soil's condition, adding nitrogen through biological fixation, growing pasture species that have better digestibility for the ruminant, and generally producing good beef.

Don't tell me that all introduced forages are terrible environmental weeds while you chew your 'beautifully tender' grain-fed T-bone!

Ian Partridge



Contented beef on pasture

Cassia – wynner or loser?

I have received some good practical feedback and comments about Wynn cassia and it does not seem too popular for lighter soils in north Queensland.

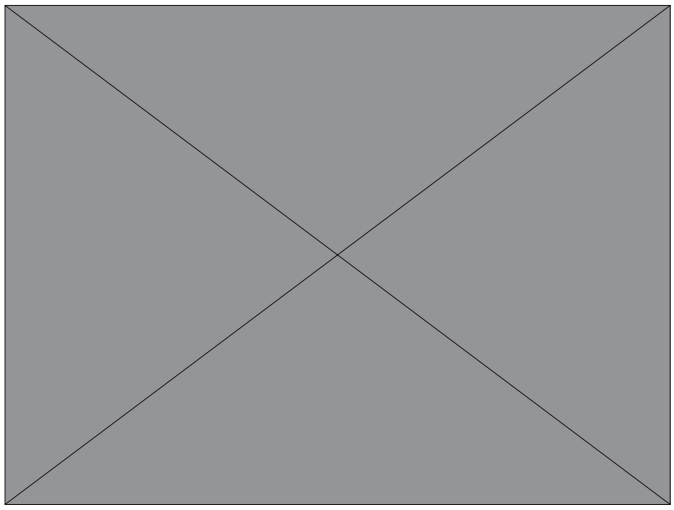
Kendrick Cox from Mareeba DPI&F says:

In my experience, Wynn can form dense, often mono-specific stands in heavily grazed areas of northern Queensland. These areas include, but are certainly not restricted to, freely drained basalt and granite country to the west of the dividing range (Mt Garnet) and granite country in Cape York. Typical companion plants may be native (e.g. Heteropogon, Themeda, Chrysopogon) or exotic (e.g. Urochloa, Bothriochloa) grasses and exotic legumes (Stylosanthes hamata and S. scabra). Unfortunately, these areas may often be grazed heavily because they are sown pastures (often augmenting native grasslands) designated for finishing animals or raising weaners.

It seems that the summer-wet/winter-dry rainfall distribution and lack of early frosts combined with stock grazing preference encourages Wynn dominance: seedlings establish following storms in November to January and grow during the Wet (Feb/Mar), during which time stock 'prefer' to graze grasses; Wynn begins to flower late in the Wet and early dry season and is an incredibly prolific producer; stock generally begin to eat the Wynn as the quality of companion grasses decline, so flowering largely occurs unabated; as soil moisture declines and seed is produced,

Last issue's photo but now in colour.

Cassia dominance under high rainfall.



plants often dry out and shed leaf providing no useful dry-season forage —under heavy grazing conditions, especially with clumping native grasses, this can leave a fairly open ground-cover reducing competition for emerging Wynn seedlings the following year.

Having said this, some graziers report that they find that Wynn is grazed in the Wet season. As it 'gets around', it then has the potential to be a useful plant.

There is conjecture about whether stock 'learn' to eat it, or whether different soil classes produce more palatable Wynn. Regardless, I prefer legumes such as S. scabra (e.g. Seca) to Wynn where plant adaptation and management allows as varieties of this species appear to better retain leaf into the dry-season, seem to have the potential to produce less seed and are grazed prior to and during seeding. Dominance of pastures by stylos may occur. However, where I have seen Wynn and Seca together, Wynn has been the dominant partner.

Bernie English from Walkamin DPI&F

After reading the grazing trial work from the NT and seeing the performance of the cattle there, I have been wary of recommending Wynn cassia on our light soils in the Deep North

The proof of the value of introduced legumes is always the performance of the cattle over the season

My observations are similar to those of Kendrick. Cattle seem to readily eat it during the wet season on our better basalt and frontage soils but on the light soils, cattle go for the grasses which are soon grazed to oblivion.

And the pure Wynn stand soon has plenty of weeds moving in.

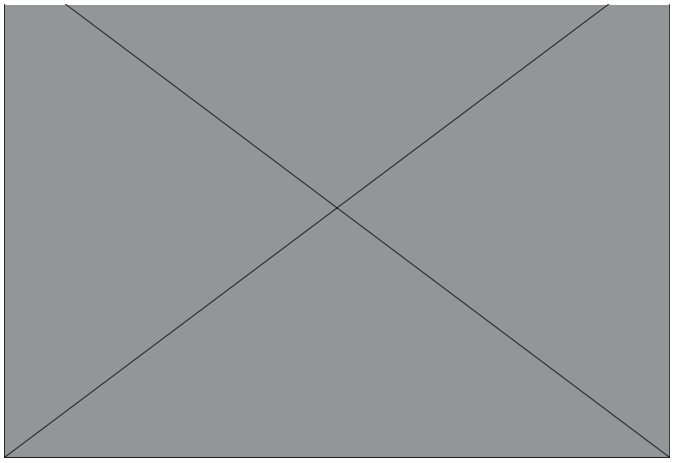
So without cattle performance figures from the deep North from good and poor soils I will be hesitant to tellgraziers to plant too much

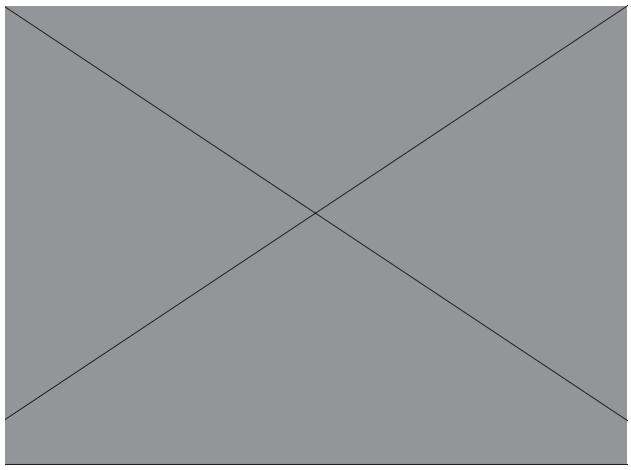
Kev Shaw from Mareeba DPI&F

Bernie's comments are spot on. I also am reluctant to recommend it these days because it dominates pastures on sandy infertile land types, and animal performance has a few question marks over it. Seeding is so prolific it would be difficult to keep away from those land types anyway even if they were not targeted. There is probably enough anthracnose-resistance in scabra now to diminish our concerns about the potential for catastrophic loss of stylo so we can just about crack Wynn off the list.

Having said that, some producers, as Kendrick rightly points out, are quite happy with it — particularly those on better soils where the native grasses are more competitive. Never the less, for new plantings I leave it off the list.

Last issue's picture now in colour. Wynn cassia under lower rainfall with a low-growing rosette. When there is no moisture left in a sandy soil, the cassia leaflets fold up, turn red and drop. In monsoonal regions where the dry season is more strongly defined, cassia has little to offer during the dry season except woody stems and leaf on the ground. Compare this with the more hardy (and palatable) Seca stylo (right).

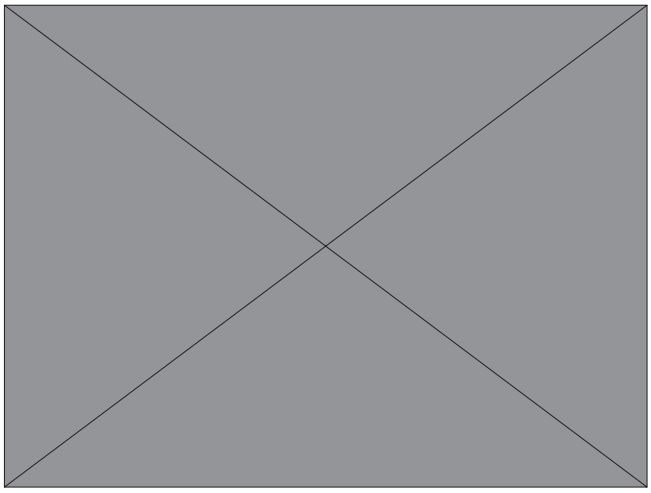


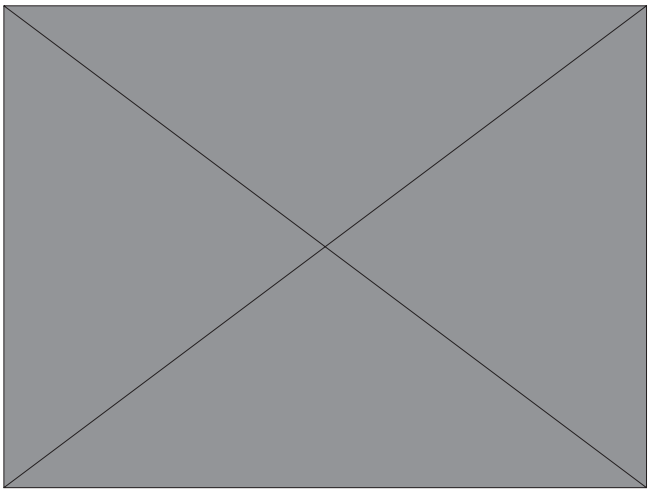


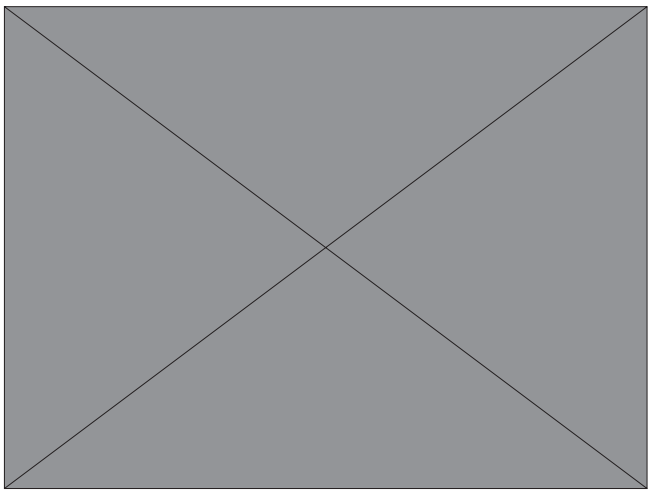
Pastures at Beef 2006

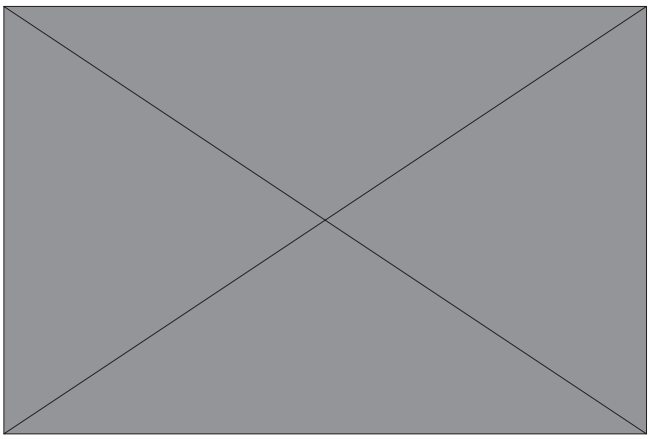
Queensland was once the world centre for research into tropical pastures so it was a bit sad to see there was no Commonwealth or State government stand flying the flag or dispensing information at the very international Beef 2006.

However, private enterprise did more than fill the gap with interesting and informative stands from David Illing Pastures, Selected Seeds, Southedge Seeds and, of course, the ever-enthusiastic Keith McLaughlin for the Leucaena Network.

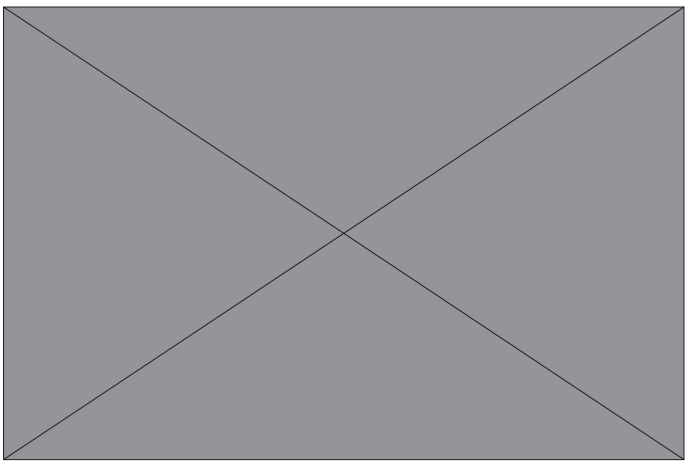








Clockwise from top left: Tony Illing of David Illing Pastures, John Rains of SouthEdge Seeds, Keith McLaughlin of The Leucaena Network and Robert Fry of Selected Seeds

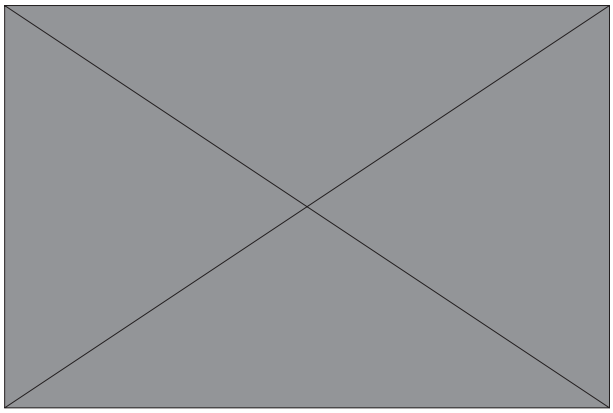


The pasture seed poster (on right of photograph) was the only pasture-related information in the Queensland whole-of-government stand.

Milk at Mutdapilly

The field day/open day at Mutdapilly was well attended under beautiful clear skies and the district had even received some rainfall in the days before.

The agenda of the day ranged from the release of a new booklet on feeding for milk protein to viewing plots of herbs for dairy pastures.



Feeding dairy cows is much more scientific than grazing for beef production.

My biggest take-home message lies in the difference between milk production and beef production. Whereas beef production is quite or very extensive with cattle battling out the substandard growing conditions of seasonally poor feed, the dairy cow is a cosseted beast that needs near perfect conditions for its intensive production.

Milk protein

A new booklet Protein Plus: a guide to increasing milk protein % and profit was launched by the Minister for Primary Industries. (See page 10).

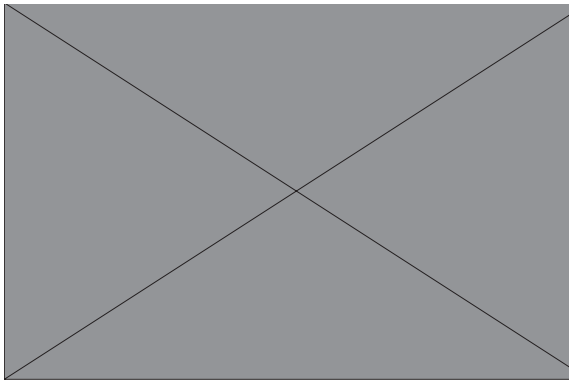
Other topics covered included QDAS, the Qld Dairy Accounting Scheme, that allows dairy farmers to bench mark their production and profitability. An excellent feature of this program is the use of standard accounting terms all based on Quicken. The same accounts can be used for this benchmarking and for tax accounting — no special or unique terminology.

Dairy predict - feed calendar to $$

The use of Dairy Predict for feed year budgeting through to profitability assessment is described on page 11.

Out on the station, we were shown the animal feed house in which the cows were heat-stressed when the temperature was as low as 26 C but the 90% humidity. The cows panted so much that they could only eat little, and took 2 to 3 days to return to normal when returned to outside temperatures. These high-yielding dairy cows are high powered physiologically.

In the paddock, the need for efficient use of irrigation water was explained. Too much water for the shallow-rooted (to 45 cm) rye grass and there is deep soil drainage with all its problems with salinity —besides the waste of an expensive resource. The need for calibrating the irrigation rigs was stressed.



Winter dairy pastures need irrigation. Mark Callow, our TGS Treasurer, explains plant available water and how water should be used efficiently.

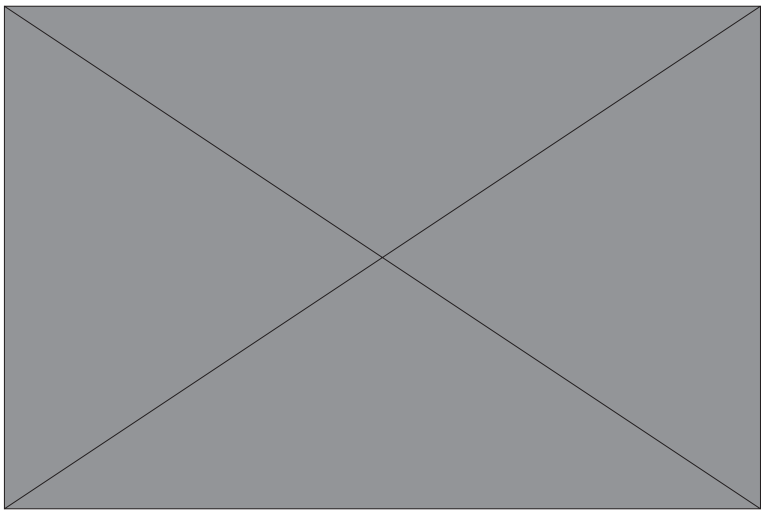
Rye grasses

Much of the pasture work at Mutdapilly concerns the winter forages with years of testing lucerne and rye grass lines bred for the cooler climes under our local subtropical environment. More modern technology is using DNA marking to identify lines of kikuyu grass that have lower lignin content, the cause of the low digestibility in tropical grasses.

Of the 11 local ecotypes and 6 cultivars DNA screeened and also field tested, Whittet was the best performing cultivar whereas the Numinbah Valley, Mt Mee and Bairnsdale ecotypes had the lowest quality leaf.

Herbs

Of speciality interest are the herbs with lines of forage brassicas including radishes and nutritious 'weeds' such as chicory and plantains. The selection of palatable

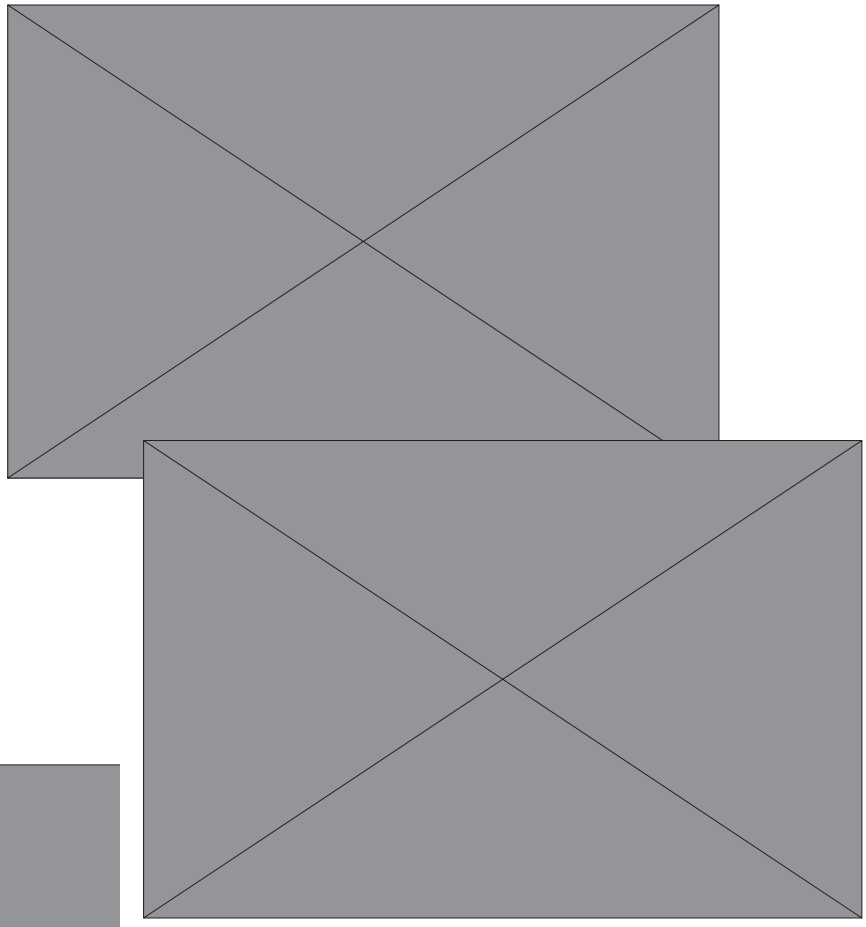


Kevin Lowe, TGS President, and Tom Bowdler explain the trials screening new annual rye grasses for production and rust resistance

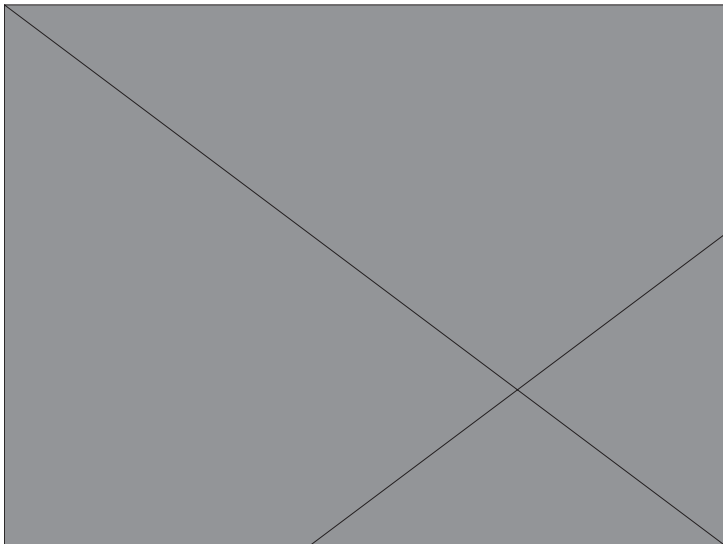
'Tonic' plantain (*Plantago* sp.) was novel to me; I spend my time spraying them out of my acreage grassland.

It can be difficult to keep a balance between some herbs and winter-growing grasses; their vigorous grown can smother grass seedlings, and too much herb in the cows' diet can taint milk.

Other trials have looked at the best management sytems for summer pastures of Amarillo forage peanut. For best growth of the legume while keeping good production of grass, Amarillo pastures should be grazed to between 3 and 5 cm in height every 2 to 3 weeks. Grazing for optimal production of grass in autumn will suppress the legume in kikuyu pastures but not in Pioneer Rhodes pasture. Amarillo gets frosted but recovers in spring.



Productive and nutritious but difficult keep in balance under grazing. Above. Herbs under comparison against lucerne (front row left). Right. Close up of edible plantains next to a plot of lucerne

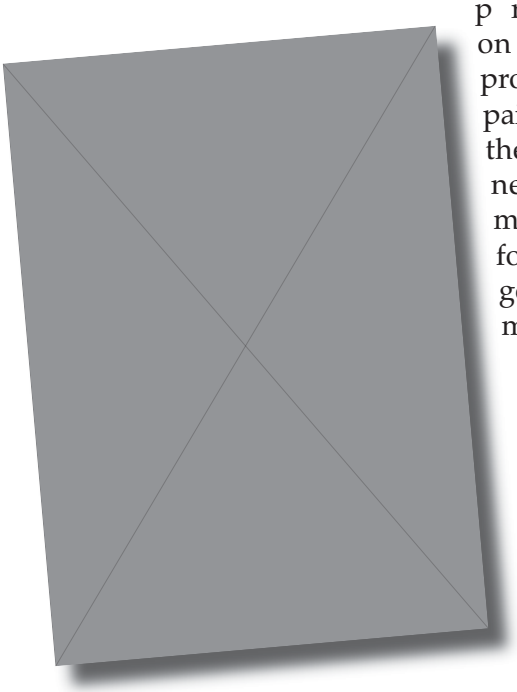


Heavy grazing gives Amarillo a chance to resist the competition from grasses; kikuyu grass is more aggressive than Rhodes.

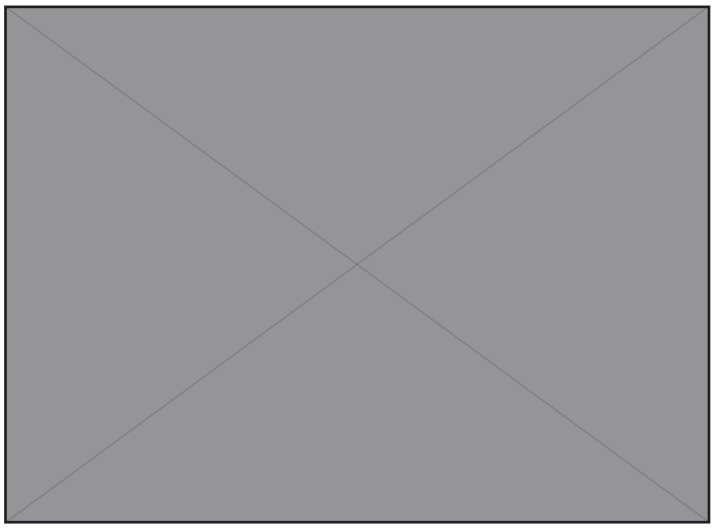
Increasing protein in milk

Protein Plus provides a guide to increasing the protein content of milk.

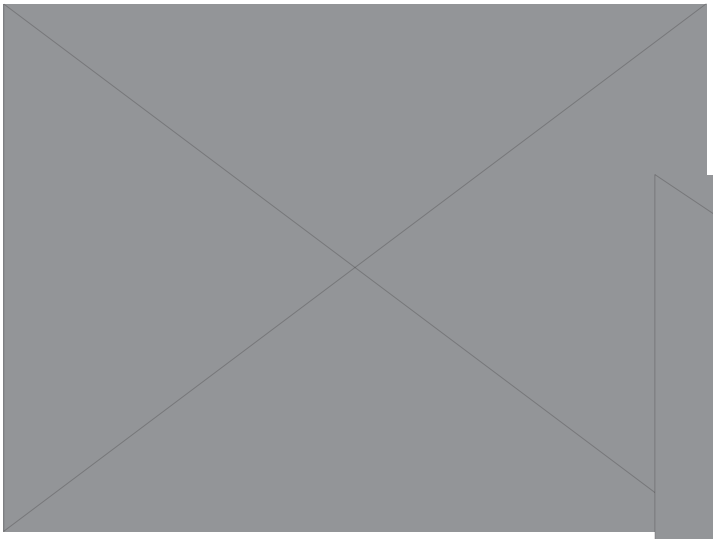
We heard about the problem with milk protein on which producers are paid and which the factories need for legal milk and for making good elastic mozzarella cheese. During summer, when the cows have to eat our fibrous tropical grasses, protein level in their milk drops. Add to that, a drop in intake under heat stress and the farmer is losing money.



This new booklet is very well presented. It's full of good technical information and advice, well laid out and well illustrated. After the quick guide summary and an introduction, there are sections on feed intake, diet quality, feeding management, cow and herd management and genetics and breed, before feed composition tables.



Methods of alleviation of low milk protein, how quickly the changes will occur, how large the change will be and the critical issues are neatly summarised in this 'Quick Guide'.



It's that time of year again with not a cloud in the sky, and no rain to bring relief. Clear skies at night and frost in the morning.

Predict milk from forage supply

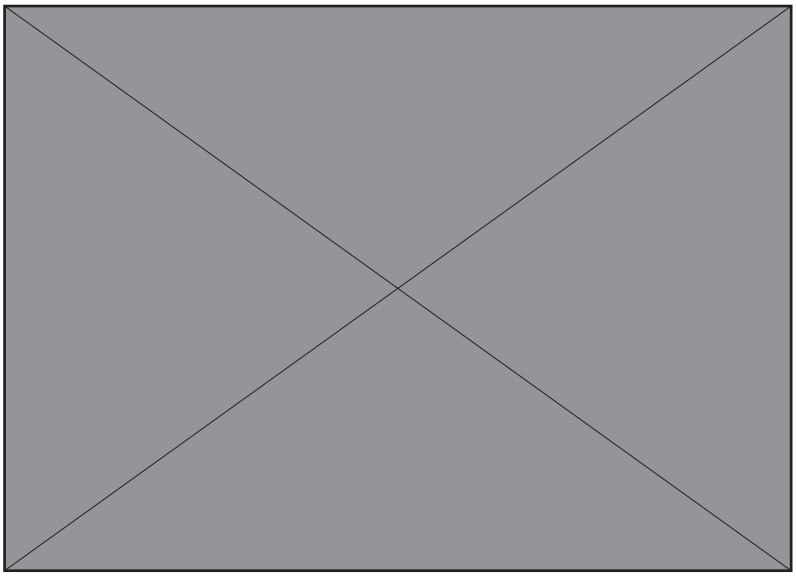
Decision support programs for agriculture have been around for some time. Early attempts might have been fairly basic but great leaps in computer power and in collections of good basic data are seeing programs that have great practical value to a farmer rather than being interesting exercises.

DSS allow almost instantaneous integration of great amounts of data in a way that could only be done with great effort and time in any other way.

Dairy Predict

Dairy Predict is one such practical based decision support program that allows users to quickly work out the best dairy farming systems to suit their region and conditions.

It allows you to explore the effects of different forages, different dairy herd sizes and calving patterns and supplementary feeding strategies on your dairy farm gross margin.



Forage production database

The program database holds forage data for subtropical and temperate pastures for the subtropics of Queensland and New South Wales — but users can enter their own figures if they have better local data.

The computer model combines this forage data with herd structure and supplementary feed plans to estimate milk production. Then a financial-analysis module allows dairy gross margins to be compared for each herd and supplement plan.

Using Dairy Predict

Step 1. Enter forage types

The forage database uses historical climate data for different locations in the simulation of monthly pasture growth. You enter the forage types (tropical and temperate grasses, legumes and forage crops) to be planted and the areas of each.

Step 2. Develop and analyse a forage plan

You can then make up a calendar showing in which months you want each forage to produce and how heavily you want to graze them. You can also adjust the Metabolisable Energy of these forage values from the standard figures.

The program calculates the monthly dry matter utilised (eaten) by the herd each month and shows the values as a table or graph

Step 3 Enter herd structure information

The next stage looks at the herd structure and the calving times. It allows you to take into account how far the cows have to walk each day and what sort of terrain, hilly or flat and enter the targets for milk production, fat and protein percentages. The model calculates how much dry matter and ME is needed and finally the milk production.

Step 4. Enter supplementary feed information

Now add the energy and protein supplements ranging from brewers grains to silage to made-up meal.

Step 5. Develop feed plans

The Feed Plan screen now shows whether and when the herd's nutritional requirements for energy and ME have been met. Multiple graphs allow all scenarios to be quickly compared.

Step 6. Enter financial information

Then throw in gross margins for the selected feeding and herd size option

Step 7. Financial analysis

… and end up with the calculated income.

More details about the program can be found on www.dairyinfo.biz

For a copy of Dairy Predict, contact:

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