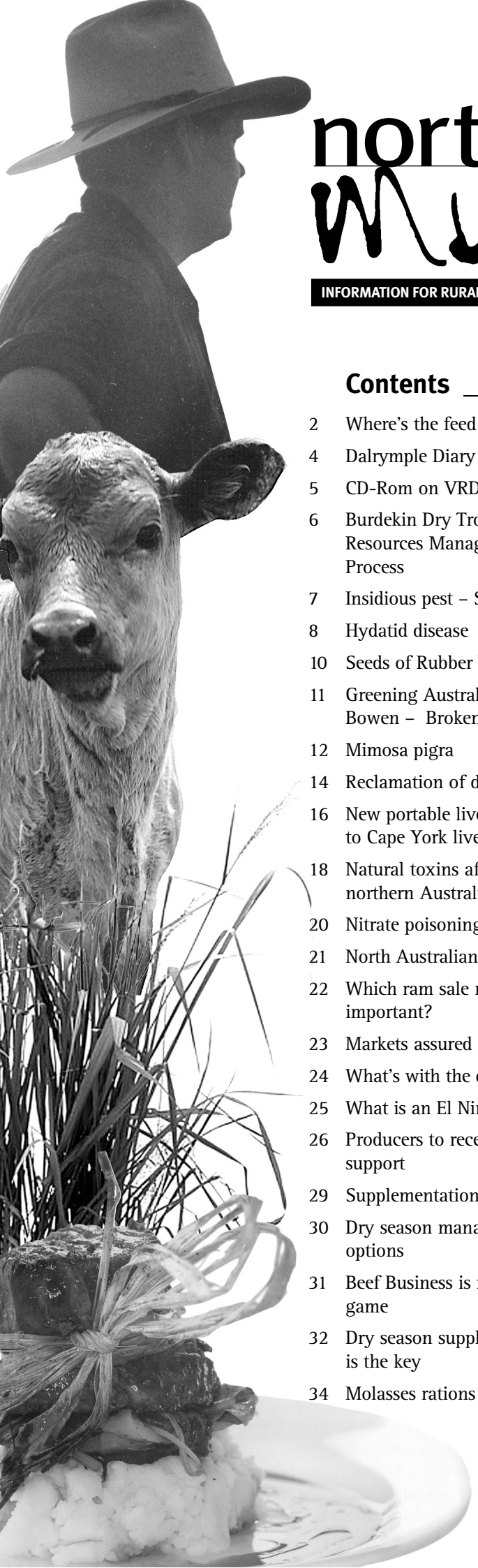

northern Muster

Producing healthy food and quality fibre for a healthy bottom line

INFORMATION FOR RURAL BUSINESS IN NORTH QUEENSLAND Issue 2, Winter 2003

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Editorial

Welcome to the Winter 2003 Edition of the Northern Muster.

Winter has arrived, when many of us thought we were not going to get any. Some frosts have knocked the feed value of some pastures. Frosted pastures may need to be supplemented to enable your cattle to be competitive in the market place. While others have little pastures left, due to drought, to be frosted. Articles in this issue address some of the sustainability issues of dry season feeding.

This issue also carries successful reclamation work, updates on various weeds, Federal drought support and where the drought is at.

Valuable information sources:

DPI Website (www.dpi.qld.gov.au)

DPI Call Centre: 13 25 23 (8am to 6pm weekdays)

DPI Drought Hotline: 1800 825 656

We thank all contributors and advertisers for their contribution.

Enjoy the newsletter.

Alan Laing
Editor

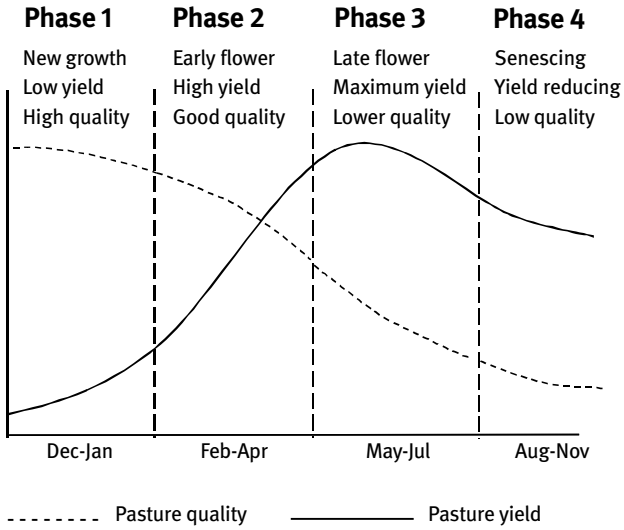
Queensland Government
Department of Primary Industries

Where's the feed value gone?

Here we are it's mid winter and the growth cycle of our native pastures is over and they have browned off. Animal liveweight gains are either just maintaining or starting to fall off unless supplements are being fed. And it only gets worse from here until the next rain – most likely at least 4 months away.

The main aim of perennial pastures is to firstly set seed and then to transfer sufficient nutrient into the roots to kick start growth once the new season rains come. With annuals the only goal is to set seed. The last wet started late and finished quickly so the chances are that not only were pasture yields down but also not much seed was set and root nutrient stores are likely to be modest. However, provided dews, mists or out of season drizzle hasn't rotted the standing feed then quality may not be too bad since nutrient hasn't been distributed throughout a large bulk of material as it can be in wet years. It is likely though that it will still be below maintenance.

In the figure to the right (adapted from the *Edge GLM package*®) pastures are now into Phase 4. Crude protein (CP) levels will be less than 6% and dry matter digestibility (DMD) only around 40% compared with 10% and 60% for CP and DMD respectively in Phase 1. If there is a plus side in this it is that so long as a ground cover of more that 40% is maintained then the pasture is relatively immune to grazing pressure since seed and plant stores are safely tucked away.



Kevin Shaw
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Vibriosis
"The quiet profit taker"

Vibriosis in cattle

Vibriosis has been called "The quiet profit taker". It is a disease that can significantly reduce herd fertility and reproductive performance without distinctive or obvious signs.

Vibriosis is a venereal disease of cattle caused by a bacterial infection with Campylobacter fetus subspecies venerealis. It is widespread throughout Australian cattle herds and is a major cause of infertility and sporadic abortion. Vibriosis is unlike other more noticeable diseases like botulism where dead animals can be counted and valued. Vibriosis is the quiet profit taker - reducing calvings and increasing the number of unproductive cattle on the property with few, if any, visible signs.

Infection

Vibriosis is spread at joining either from an infected bull to an uninfected cow or vice versa. Infected bulls can be carriers for many years and are therefore the main source of infection in a herd.

Clinical Signs

Low pregnancy rates and therefore low branding rates are usually the initial indication of Vibrio Infection in the herd. Vibrosis most commonly causes an increased number of cattle returning to service. Sporadic abortions in mid to late pregnancy may also be noticed. Infected herds often have conception rates reduced to levels below 50%[1]. Vibrio infection results in reproductive damage and can cause permanent infertility in up to 11% of heifers[2]. Infected bulls show no obvious signs but can act as long term carriers, infecting cows and heifers at service.

The most important cattle in a herd are usually the replacement heifers and the bulls - they are the future of the herd. The cattle most at risk from Vibriosis are the young female cattle. This is because heifers are less likely to have developed an immune response to Vibriosis than older females in the herd. While the reproductive losses are a result of the cow not delivering a calf, it is the bull that spreads the disease from one cow to another and therefore it is critical that all bulls and young female breeding cattle are vaccinated to prevent the losses associated with Vibriosis.

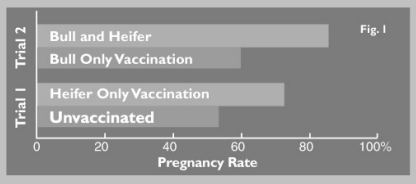
Treatment and prevention

Treatment programs should be discussed with your veterinarian. The program for bulls may include an antibiotic treatment, while the vaccination of all breeding animals; bulls, cows and heifers, with Vibrovax™, will help reduce the incidence of infection and reproductive losses caused by Vibriosis.

Vaccination with Vibrovax™ is the best way to prevent vibriosis in cattle. Unless the entire herd is infected and suffering significant reproductive losses from Vibrio, it is usually unnecessary to vaccinate the older cows after the first year, but heifers and bulls should be vaccinated every year.

A trial conducted in an infected North Queensland beef herd (Fig. 1) showed that vaccination of heifers resulted in a pregnancy rate of 76%, versus 55% in unvaccinated heifers[3].

A further trial comparing the vaccination of bulls only with the vaccination of both bulls and heifers demonstrated a pregnancy rate of 61% and 85% respectively[4].

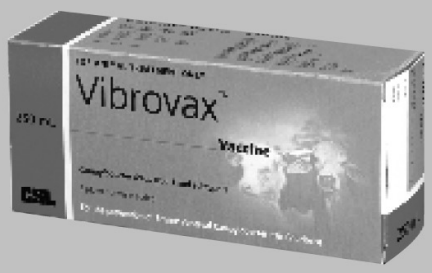


	All vaccinations should occur at least 4 weeks before joining	
	First Year	Annual Booster
Bulls	2 doses (5mL) 4-6 weeks apart	1 dose (5mL) prior to joining
Cows (18+ months)	1 dose (5mL) prior to joining	1 dose (2mL) prior to joining*
Cows (<18 months)	2 doses (5mL) 4-6 weeks apart	1 dose (2mL) prior to joining*

* An alternative to this is a single 5mL dose every two years

Vibrovax™ is a unique vaccine

- A single dose given to cows over 18 months will confer protection against Vibriosis.
- On-going vaccination of female cattle can be annually or every two years.
- Oil based adjuvant helps to provide maximum level of protection.



CSL animal health

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1. Hum S, & Worsley A, (1994) *NSW Agriculture - Agfact A2.9.7,* 1st Ed 2. McCool CJ, Townsend MP, Wolfe SG, Simpson MA, Olm TC, Jayawardhana GA, Carney JV, (1988), *Australian Veterinary Journal,* 65: 153 3. Allan PJ, Mutch CB, (1971), *Australian Veterinary Journal,* 47: 184 4. Allan PJ, (1972), *Australian Veterinary Journal,* 48:72

CSL Limited, ABN 99 051 588 348, 45 Poplar Road Parkville, Victoria 3052 Australia. Phone: 61 3 9389 1610
Fax: 61 3 9389 1646 Freecall: 1800 333 011 www.cslanimalhealth.com.au CSB0007/1002/The Hopkins Part.

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DALRYMPLE DIARY DALRYMPLE DIARY DALRYMPLE DIARY

Where to from here for landcare projects ?

There is a whole new way of doing business for community-based landcare projects. We are evolving from a state and commonwealth focus to a regional or catchment focus for identifying and prioritizing land, water and conservation issues. For the Burdekin Catchment, the Burdekin Dry Tropics Board is developing a regional plan over the next 12 months, which identifies priorities for natural resource management and where injections of future funding should occur. Government agencies, local landcare groups and the community are helping to ratify these priorities and are working together to develop appropriate projects and targets linked to these priorities. This is the pathway for future funding from Natural Heritage Trust and National Action Plan for Salinity and Water Quality (NAPSWQ) to roll out from 2004 onwards.

Everyone is invited to a community forum on Monday 8 September at DPI Charters Towers to advance projects, outcomes and targets for the Burdekin Rangelands. For more details, contact members of the Burdekin Rangelands Implementation Group (BRIG) or phone 4754 6120.

Potential landcare funds in 2003

Another round of the Australian Government Envirofund is scheduled for release in September 2003. Small grants up to $30 000 per group or individual are available for projects involving conservation, waterway health, erosion control, protecting cultural heritage, sustainable farming and forestry, management techniques to increase biodiversity and habitat, and monitoring of resources where there is benefit to conservation or sustainable natural resource management. Priority will be given to applicants who have not previously received Envirofund funds. Individual applications need to demonstrate high public benefit (e.g. activities will improve catchment natural resources). Visit the website www.nht.gov.au for guidelines and application forms or contact your local Landcare Coordinator (Clermont, Barcaldine, Charters Towers, Townsville, Ayr, Upper Herbert) or the Burdekin Dry Tropics Board (ph 4724 3544) for more details.

Congratulations to the Cape-Campaspe Landcare Group, Balfes Creek Catchment Group and five individual properties in Dalrymple Shire that secured funding from the Drought Recovery Round of Envirofund in 2003 for establishment of off-stream waterpoints to protect riparian health. The Towers Hill Bushcare Sub-Committee (Charters Towers District Landcare Group) also secured funding to continue native plant revegetation of a section on Towers Hill in Charters Towers.

Focus on land condition and the rest will follow

We are continually bombarded by the media debate about the impact of land management on water quality and the Great Barrier Reef Lagoon. What is accurate science and what is extrapolation has become very hazy.

At a recent Dalrymple Landcare Committee meeting in Ravenswood, guest speaker Professor Bob Carter from the James Cook University said, “After 25 years of international research by scientists, there are no peer-reviewed, published scientific reports that can clearly demonstrate that increases in sediment or nutrient have had adverse regional effects on the Great Barrier Reef”. The Queensland Premier’s Panel of Scientist’s Report (2002) and the Productivity Commission Report (2003) into the impacts of water quality on the Great Barrier Reef indicate that there is a decline in water quality in the lagoon, but there is no conclusive evidence of damage to inner reefs.

The focus of landholders should be improving land condition and keeping the top soil and nutrient in the paddock for long-term productivity and conservation. If we all could manage to retain at least 40% ground cover over all paddocks throughout the year, there would be less run off carrying sediment and nutrient, and hence an improvement in water quality and sustainable production. Add in techniques such as wet season spelling for pasture regeneration and we are on the pathway to long-term productivity.

Congratulations to Landcare Groups receiving additional Weeds of National Significance funding in 2003

Within Dalrymple Shire, six groups received additional Weeds of National Significance (WONS) funding towards rubber vine management in mid 2003. This WONS funding has been matched two to four-fold with labour and operating costs from graziers and other in-kind contributions.

1. Strategic control of rubber vine along the Basalt River in Dalrymple Shire (Birdbush Basalt Landcare Group) $2000.
2. Improving rubber vine management and potential weed awareness amongst the Hann Creek Landcare Group (Hann Creek Landcare Group) $6000.
3. Managing isolated rubber vine plants where accessibility is difficult in basalt country in the upper reaches of the Gregory, Clarke and Basalt Rivers (Headwaters Landcare Group) $3900.
4. Expediting active rubber vine management on small

properties (< 600 ha) in the upper reaches of the Broughton River Catchment, near Charters Towers (Blackjack Weeds Group) $9000.

5. Barter Days and Grazier Best Practice Management Control of Parkinsonia and Rubber Vine - Seventy Mile Range (Seventy Mile Range Landcare Group) $4000.
6. Re-engagement of the Gugu Badhun traditional owners in the community of the Greenvale district area by managing isolated, scattered rubber vine (Lynd Landcare Group Inc.) $6915

All new and existing WONS projects are to be completed by December 2003 with Final Reports due by February 2004. Any future funding opportunities for weeds will be delivered through the regional delivery of NHT projects.

Composed by:
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Landcare Coordinator
Dalrymple Landcare Committee Inc.
Burdekin Rangelands Implementation Group
PO Box 976, Charters Towers QLD 4820
Ph 07 4754 6120

CD-Rom on VRD fire management

The Tropical Savannas CRC and the Bushfire Council of the NT have released a CD-ROM on fire management in the VRD and Sturt Plateau region.

It features the following sections:

- an introduction and frequently-asked questions about managing fire in the region;
- a section on how to use information from satellites: to locate "hotspots" where fires are actually burning over the last few hours; to map out where fires have burnt over the last few weeks and months; and to monitor the greenness of grassy fuel. Links to useful websites for obtaining satellite information are given;
- the fire histories of a number of locations in the VRD;
- a description of fuel dynamics that shows how the fire intensity depends on the fuel load in the pasture, and how the flammability or "greenness" of grassy fuel varies with time of year and type of country, this section also contains a pdf of a Fuel Curing Guide for the VRD/Sturt Plateau,
- a guide to how fire can be used to manage grazing and pasture condition as well as how it can be used to manage woody weeds,
- a pdf of Rodd Dyer's thesis *Fire and vegetation management in pasture lands of the Victoria River District, Northern Territory*;
- case-studies of the costs and benefits of fire management from five stations in the region;
- summaries of the effect of different fire patterns on native plant and native animal communities;
- excerpts from the book *Savanna Burning* and Darrell Lewis' study of landscape change in the VRD *Slower than the Eye can See.*

The disk features animations, videos and links to websites to make the research findings easier to understand.

The CD was produced by Rohan Fisher and the project was supported by Meat and Livestock Australia, the Natural Heritage Trust and the NT Department of Business, Industry and Development.

To order a copy of the CD which will run on PCs or Macs and sells for $10, contact

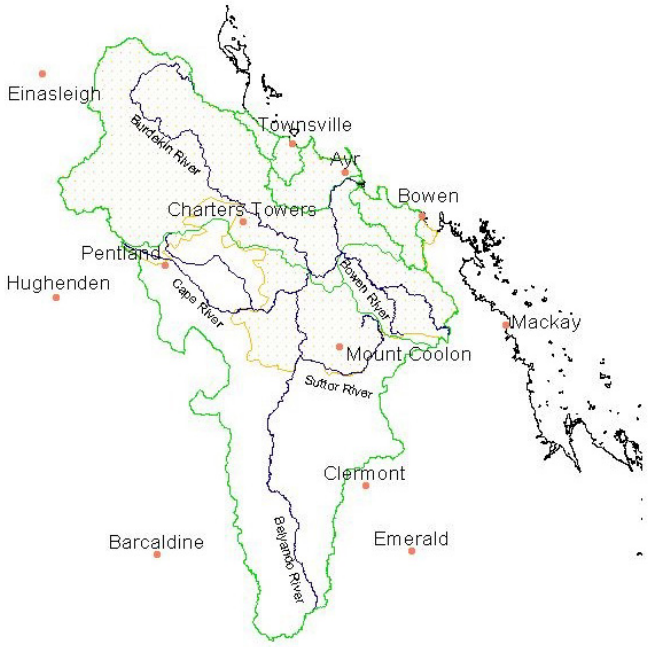
Janely Seah,
Tropical Savannas CRC,
Ph: 08 8946 6764 Fax: 08 8946 7107
email: janely.seah@ntu.edu.au.

Burdekin Dry Tropics Regional Natural Resource Management Planning Process

Who is the Burdekin Dry Tropics Board?

The Burdekin Dry Tropics Board is a community based natural resource management regional body established in 2002 to deliver the National Action Plan for Salinity and Water Quality, Natural Heritage Trust Mark 2 and other funds to the Burdekin River Catchment and surrounding coastal areas (Townsville to Bowen) region.

It services the community of the region through five sub-regional groups and through coordination with the Desert Uplands Build Up and Strategy Development Group (for that area of the Desert Uplands Bioregion that is in the Burdekin River Catchment).



- Burdekin-Bowen Integrated Floodplain Management Advisory Group (BBIFMAC)
- Townsville-Thuringowa Natural Resources and Environment Forum (NaREF)
- Burdekin Rangelands Implementation Group (BRIG)
- Belyando-Suttor Implementation Group (BSIG)
- Eastern Desert Uplands (EDU)

The Board has 9 voting members which contribute a range of specialist skill sets and geographic representation. Four government advisory members assist the Board. The structure and membership of the Board was determined during a series of whole of region community forums in 2000 and 2001. Aboriginal Traditional Owners are being engaged through the formation of a regional group that will liaise with the Board.

What does the Board do?

The Board has a goal of facilitating community based natural resource management through the development of true partnerships between stakeholders. It has a goal of empowering the community to deliver solutions to natural resource management issues that ensure the best environmental, social and economic outcomes for the region.

The immediate task for the Board is the development of a Regional Natural Resource Management Plan. This plan will guide investment in natural resource management in the region and outline plans of action and targets that the community and stakeholders can implement. The development of the Plan will involve extensive community engagement and consultation and will build on the best available science and community knowledge. It will be an ongoing process so that recommendations can adapt to updated information.

Why Plan?

The Burdekin Dry Tropics Board is embarking on a Regional Planning Process in line with the State and Commonwealth Government Guidelines for the implementation of the National Action Plan for Salinity and Water Quality (and for Natural Heritage Trust Mark Two when it unfolds). This plan is also required because the region has been extended to include the Belyando Suttor part of the catchment and some of the Desert Uplands bioregion and there is new science and legislation that needs to be included.

A Regional NRM Plan can help to ensure integration and coordination of all the different activities that relate to natural resource management in a region and ensure that a region's issues are put on the table at a State and Commonwealth level. It will be the tool that the Burdekin Dry Tropics Board will use to obtain funding to address key natural resource management issues in the region and to guide the activities to be undertaken.

How can you be involved?

Community forums will be held regularly in the major centres across the region enabling community members and stakeholders to have input to the planning process and to discuss issues of concern with the Board. The sub-

Mark Fenton facilitating discussion about NRM Planning for the Burdekin Dry Tropics.

Mark Fenton presenting the NRM Planning guidelines to the community in the Burdekin Dry Tropics region.

regional groups also provide direct links to the Board and will be major players in the planning process.

A community involvement plan is currently being developed for each sub-region, to guide the consultation process – these will be made available for public comment in documents titled "Community Information Paper". These papers will also outline the Board's intention to undertake a planning process and provide a summary of the issues it will be pursuing. This will enable community and stakeholders to comment on the process before it is carried out – it can then be tailored to their needs.

Once comments have been received on the Community Information Papers, the Board will begin the planning process via workshops to determine goals, visions and objectives, to identify the main natural resource management issues that need to be addressed and to develop targets and action plans to address them. These workshops will be widely advertised and where possible will be carried out at the same time as other community meetings (i.e. Landcare, Agforce) to reduce the drain on people's time. The Burdekin Dry Tropics Board intends wherever possible to use and build upon existing community and government plans.

Figure 1 (overpage) outlines the steps involved in the NRM Planning Process.

For more information please contact

Arwen Rickert
Strategic Projects Coordinator-
Burdekin Dry Tropics Board
Ph: 07 4724 3544 Fax: 07 4724 3577
Email: Arwen.Rickert@nrm.qld.gov.au

Insidious pest - Siam weed

The Department of Natural Resources and Mines is determined to protect the North from the ravages of Siam Weed, one the world's most invasive wild plants.

Mr Vic Little, Land Protection Officer at South Johnstone, said Siam weed *(Chromolaena odorata)* has already caused considerable devastation overseas, destroying hectares of productive agricultural land and large numbers of stock.

"We are determined that won't happen here," he said.

"Our control program is already up and running in the Cardwell Shire and the team will recommence surveys and control in the Johnstone Shire in the next couple of weeks.

All known sites will be visited and further surveys will be undertaken."

Mr Little said that any uncontrolled Siam weed would flower shortly and that the resulting pale lilac to pink flowers would make the plant more visible.

"Siam weed looks similar to blue top but has a growth habit more like Lantana," he said.

"In the open it is a shrub 2 to 3 metres high, but in rainforests it will scramble 20 metres up trees to reach the light. Flowers are pale lilac, darkening to pink as they age, and may appear through to July."

Members of the general public are encouraged to be observant and report any sightings to their Local Government pest management officer or the Department of Natural Resources and Mines at South Johnstone.

For further information contact:

Vic Little
Land Protection Officer
Natural Resources and Mines
Ph: 07 4064 1143

Hydatid disease

What is hydatid disease?

This disease is associated with cysts (hydatid cysts) that can form and grow in the liver, lungs, brain, kidneys, bones and other tissues. This occurs in humans but also in animals such as cattle, pigs, goats, wallabies and kangaroos.

These cysts are stages in the life-cycle of a small tape-worm of dogs and dingoes. The dog or dingo eats the cysts, the tapeworm develops from them, and the eggs that are shed develop into new cysts if humans or animals, other than dogs or dingoes, eat these microscopic eggs.

Is it common in Queensland?

Human hydatid disease is most common where there is regular contact between dogs and sheep and where dogs are fed raw offal (lung, liver, kidney etc) from sheep especially, but also cattle, wallabies, kangaroos or feral pigs. If dogs are fed offal containing hydatid cysts, a high proportion become infested with the tape-worm.

The true level of hydatid disease in humans in Queensland is hard to determine because many cases go undetected or unreported. About 10 human cases are notified each year. These are generally in older people who were exposed as children, many years ago. Newly detected childhood cases are a major concern because they indicate active infection is occurring.

Hydatid cysts are commonly found in sheep and cattle at slaughter in Queensland. While many of these cysts are coming from exposure of sheep and cattle to dingo faeces containing hydatid eggs, producers should also review the management of their domestic or working dogs to ensure they are not a source of infection for their livestock or for people.

How could I get the disease?

People become infected when the tapeworm's eggs are transferred to the mouth on fingers eg while smoking, or on food. If a dog has the tape-worm, eggs pass out of the animal with faeces and the environment becomes contaminated. The dog may roll in this area and the eggs may transfer to the coat. Usually, the eggs get onto a person's hands as they pat a dog. Occasionally people may be exposed to eggs present in grass contaminated with dog or dingo faeces.

Are any groups at particular risk?

Due to their close contact with dogs and their tendency to transfer eggs to their mouths with their hands, children are most at risk.

The risk of hydatid disease is highest in rural areas or on the edge of cities where dogs and other grazing animals or wildlife come into contact. People in large cities whose dogs are only fed proper pet meat or canned/dry dog food are at much lower risk but should still take precautions against hydatid disease.

Where does the disease occur?

Usually sheep and dogs or dingoes and wallabies/ kangaroos are needed to allow the tape-worm's life cycle to be completed. So any area where these combinations occur can be at risk from this disease.

While the risk of hydatids has been well recognised in sheep producing areas, the popularity of working dogs in cattle producing areas of Queensland has increased dramatically in recent years. This has lead to a potential increase in the risk of hydatid disease in people because of the large numbers of dogs now being kept on farms that have not traditionally kept working dogs. Recreational pig hunting is also a popular sport, and people in rural or urban areas who keep pig dogs have also been identified as a group at particular risk of contracting hydatid disease from their dogs. Pig dogs often work unsupervised in rural areas where animal carcasses are found and can become infected quite easily.

What treatments are available?

With human hydatid disease, the cysts usually need to be removed by surgery. Some drugs can be used in special circumstances, but their effectiveness is sometimes disputed.

Hydatid tapeworm infection in dogs can be treated with a drug called Praziquantel. This drug is highly effective at controlling all stages of hydatid tapeworm infection in dogs, preventing them from shedding eggs in their faeces. To ensure dogs never pass hydatid tapeworm eggs in their faeces they should be dosed with worm tablets containing praziquantel every 6 weeks. Praziquantel is now a common ingredient in most "all wormer" worming preparations available from veterinarians, produce stores and from supermarkets and pet shops, but people should read the label of any worm tablets carefully to ensure this drug is present. Worm tablets containing only praziquantel can be purchased where necessary and this may represent a cost saving, especially in working dogs.

What are the keys to prevention?

- Ensure children and adults wash their hands after handling dogs of any description and before eating or smoking.
- Don't allow dogs access to uncooked sheep, wallaby, kangaroo, cattle or feral pig offal (including lungs, liver, kidneys and intestines).
- Restrain working dogs to prevent them from roaming and getting access to dead animal carcasses, especially sheep, wallaby or kangaroo carcasses. Producers with large numbers of dogs should construct dog runs and cages for their dogs.

- Treat dogs regularly for tape-worms with tablets containing praziquantel.
- Avoid handling dingoes, whether alive or dead. Take care in areas that could be contaminated with dingo faeces.

Acknowledgment

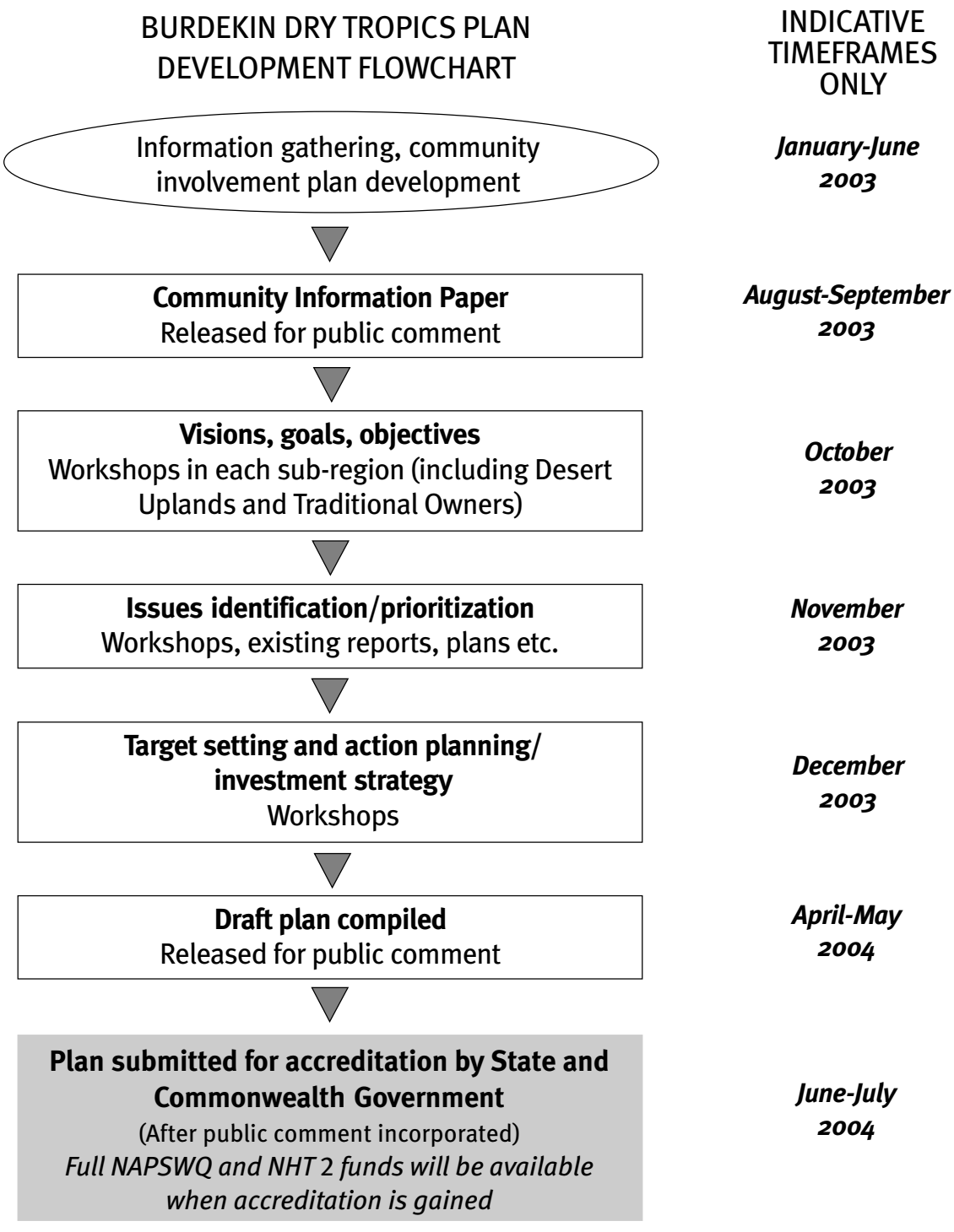
This information was developed jointly by Queensland Health and the Department of Primary Industries.

Further information

Call the DPI Call Centre 13 25 23. Phone 8 am to 6 pm weekdays. Non-Queensland residents phone 07 3404 6999. Email callweb@dpi.qld.gov.au.

Lee Taylor
Animal and Plant Health Service
Department of Primary Industries, Biloela
Phone: 07 4992 9182

Figure 1



Seeds of Rubber Vine are short-lived

Researchers at the Tropical Weeds Research Centre in Charters Towers have just completed a study into the length of time that seeds of the exotic weed Rubber Vine will remain alive in the soil. The Department of Natural Resources and Mine staff monitored seed survival under two types of moisture availability (natural rainfall or simulated dry conditions using shelters).

Key findings

Fresh Rubber Vine seeds, which fall to the ground after maturing in pods on the plant, were found to be highly germinable. This means that virtually all seeds will germinate and develop into seedlings if they receive sufficient moisture.

This is very unusual for weeds as they often have some kind of mechanism that prevents all seeds from germinating at once. For example, many of our major woody weeds, such as Prickly Acacia and Mesquite, have a hard seed coat that has to be broken down before seeds will germinate. This allows some seeds to survive for many years even if there is a great deal of rain.

The high germinability of Rubber Vine seeds resulted in no live seeds remaining in the soil seed bank after one year under natural rainfall conditions. In contrast, the number of live seeds under conditions where rainfall was excluded averaged 68%, 29% and 0% after 1, 2 and 3 years, respectively.

These results indicate that the soil seed bank of Rubber Vine will be short-lived (<12 months) when environmental conditions are conducive for seed germination. In contrast, under moisture limiting conditions, where germination is prevented (such as during drought) longevity of the seed bank could be extended to in excess of two years. This is still relatively short in comparison with some weeds. For example, Parthenium has a seed bank that will last for in excess of eight years.

The key implication from this study is that in order for Rubber Vine to consistently maintain seeds in the soil under conditions of average rainfall or above, it needs a continual input of seeds from fruiting or mature plants.

Management implications

This lack of a persistent seed bank is potentially a major weakness of Rubber Vine and provides an opportunity for land managers to contain this widespread exotic weed.

Where it has established, an introduced rust pathogen has proven very effective in reducing the amount of seeds that Rubber Vine plants produce. When there is adequate moisture around to help the rust spread and work effectively, the number of pods in an area will be greatly reduced. What this means is that if the rust has been present for a couple of years, and there has been a normal wet season that has enabled seeds to germinate, the Rubber Vine soil seed bank will be very low. Under these circumstances, if control activities are performed which kill the initial infestation, the amount of seedling regrowth should be minimal.

However, in areas where the rust is not effective (such as around Hughenden and some areas of the lower Gulf region) or in locations which have experienced a number of dry years that have prevented the rust from re-establishing, it is highly likely that large numbers of live Rubber Vine seed will be present in the soil seed bank. Eradicating Rubber Vine in these situations is a much harder proposition as there is a fair chance that substantial seedling regrowth may occur following implementation of control activities. Nevertheless, the fact that the seed bank is so short lived means that follow up control should only need to be undertaken for one to two years after the initial infestation has been treated.

Previous research has found that it takes approximately 500 days, under average rainfall conditions, before a newly emerged seedling grows into an adult plant capable of producing pods. Therefore, delaying follow-up control of seedling regrowth to around 1.5 years after initial control should be an effective strategy for achieving long-term management of Rubber Vine. By this time, the seed bank should have declined to zero, and seedling regrowth would not yet have commenced producing pods. If extremely wet conditions prevail after implementation of control treatments, follow-up control may need to be brought forward as plants will grow faster. Conversely, if extremely dry conditions prevail, the seed bank will persist for longer.

Conclusion

The short lived nature of Rubber Vine seed banks is a weakness in the lifecycle of Rubber Vine that can be exploited to help manage the threat imposed by this exotic weed. Commitment to follow-up control for the first few years after control of original infestations should be sufficient to run down the seed bank to a negligible level. However, eradication of a localised infestation does

Rubber Vine ripe seedpod and individual seeds (inset)

not necessarily mean that the threat of Rubber Vine is over. Rubber Vine is capable of long-distance dispersal of its seed, so there is a risk of re-establishment even if the local seed reserves are depleted and all plants killed.

Dr Faiz Bebawi,
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Natural Resources and Mines,
Charters Towers Phone: 4787 0616,
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Greening Australia ready to launch Bowen –Broken NAP project

Greening Australia and the Burdekin Dry Tropics Board are ready to kick off a new project in the Bowen-Broken catchment. The program is based on Improving Water Quality Through Land Management Changes in the Bowen-Broken Catchment. The project partners will work with landholders to move towards the adoption of grazing strategies that are both financially and ecologically sustainable. A large incentives package will be available to support graziers to make changes to their enterprise. The incentives package has been designed to allow landholders to achieve on-ground natural resource outcomes, and as such does not limit funding to fencing and waters. Financial support will also be available for activities such as training, property planning, business skill development, and rehabilitation solutions.

Leith Hawkins has been appointed as the Technical officer for the project and will be based in Bowen at the Council Offices to service the catchment for an initial period of Twelve Months. In this period he will be working with landholders and a series of partner agencies including CSIRO, DPI, QP&WS, Australian Centre for Tropical Fresh Water Research and Conservation Volunteers Australia. Specific goals are:

- Building upon existing community capacity and knowledge through providing training and skills to land holders
- Improving management of identified priority habitat and conservation areas
- Providing technical advice, training and support to landholders within the catchment

Leith will be in the field from the 12 August and will contact everybody within the catchment as soon as possible. Any landholders with questions are invited to call Leith on his mobile.

Leith Hawkins
Technical Officer
Greening Australia
mobile 0439 676698
e-mail: lhawkins@qld.greeningaustralia.org.au

Mimosa pigra

One of the world's worst environmental weeds, mimosa pigra, was discovered at Peter Faust Dam near Proserpine in 2001. This invasive woody shrub already infests 80,000ha in the Northern Territory (NT) impacting on barramundi fisheries and causing significant economic, environmental and social consequences. It invades waterways, floodplains, and wetlands forming dense impenetrable thickets that choke out native vegetation, grassland and crops.

Peter Faust Dam is the only known location of mimosa pigra outside of the Northern Territory, in Australia. Its presence threatens the cane, tourism and cattle industries in the Proserpine area.

Mimosa pigra has a pale pink flower and rose like thorns.

Research carried out at Peter Faust Dam by NR&M Tropical Weeds Research Centre staff Joe Vitelli and Barb Madigan indicates that the mimosa pigra plants can produce viable seed in as little as four to six months after germination. With seed viable for 20 or more years it is a critical part of eradication to control all plants prior to seeding.

The receding water level in Peter Faust Dam from 80% in 2001 to the current level of 40%, has created an ideal environment for seeds to germinate. In some areas more than 18,000 mimosa pigra seedlings per m^2 have been found. Though there will be natural death of some of these seedlings, many will survive if not controlled. Once plants reach 50cm in height, less than 1% of them die without outside intervention.

It is this ability to reproduce that allows mimosa pigra to form dense impenetrable thickets to a height of 3-5 metres. Mimosa pigra is distinguished from other similar plants by pale pink, ball shaped flowers, touch sensitive leaves and thorns similar to those on rose stems. It has the ability to grow both in and out of water.

Mimosa pigra develops clusters of hairy pods which when mature turn brown and break into segments. The hairy nature of the pods allows them to float as well as to stick to animals and vehicles including boats. It is also easily transported in soil. To avoid the spread of weeds like mimosa pigra it is recommended to clean vehicles, machinery and equipment frequently.

Since its discovery in 2001 the Department of Natural Resources and Mines, SunWater, Whitsunday Shire Council and Mackay Whitsunday Natural Resource Management Group have joined forces and are committed to the eradication of mimosa pigra from Peter Faust Dam.

The combined control program has so far killed more than 5 million plants. Without this work there would be a monoculture of mimosa pigra around parts of the dam.

Two field staff will soon be employed to work on the ground to deal with the problem. NR&M Research is continuing and a statewide extension and education campaign will be implemented to raise community awareness and knowledge concerning the plant identification and to relay progress on activities.

Mimosa pigra is also sometimes referred to as Giant Sensitive Tree or Mimosa and is not to be confused with the Giant Sensitive Plant (*Mimosa invisa*), Mimosa bush (*Acacia farnesiana*), Leucaena or sesbania pea.

For more information on mimosa pigra contact:

Cassandra Chopping or Peter Austin
Mackay NR&M office Ph: 07 4967 0860

or to report a possible sighting contact your local government office.

Individual mimosa pigra plant can grow to a height of 5m and is not to be confused with mimosa bush and other weedy shrubs.

Mimosa pigra chokes out vegetation along waterways (photo courtesy of the Northern Territory Government).

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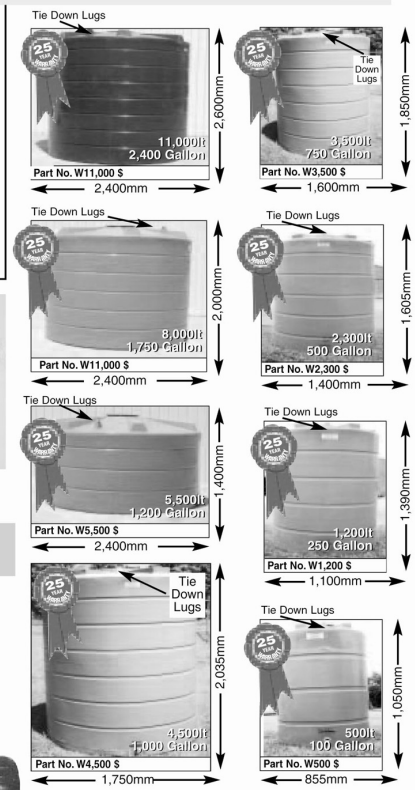

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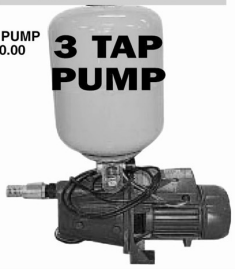

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Long Troughs

SIZE		PART No.	PRICE
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Molasses Tank

All molasses tanks have lockable lids and fittings of 2", 3", 4" & 6" are available on order.

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PART No.	CAPACITY Litres	CAPACITY Gallons	HEIGHT	DIAMETER	PRICE
M 500	500	100	1,050mm	855mm	$
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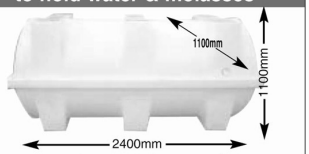
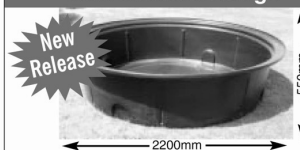
M 2,300	2,300	500	1,650mm	1,400mm	$
M 3,500	3,500	750	1,840mm	1,600mm	$
M 4,500	4,500	1,000	2,035mm	1,750mm	$
M 5,500	5,500	1,200	1,400mm	2,400mm	$
M 8,000	8,000	1,750	2,000mm	2,400mm	$
M 11,000	11,000	2,400	2,600mm	2,400mm	$
M 21,600	21,600	4,800	2,450mm	3,525mm	$
M 26,400	26,400	5,800	3,000mm	3,525mm	$
M 37,400	37,400	8,200	2,800mm	4,500mm	$

1640 Ltr Transport Tank – designed to hold water & molasses



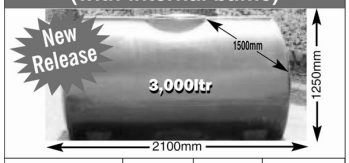
Size		Part No.	Water Price	Molasses Price
360 gallon	1,640 Ltr	Trans 1640	$	$

New Release Trough



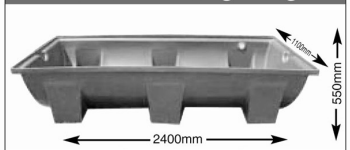
Size		Part No.	Price
370 gallon	1,700 Ltr	T FEED TROUGH	$

3000 Ltr Transport Tank (with internal baffle)



Size		Part No.	Water Price	Molasses Price
675 gallon	3,000 Ltr	Trans 3000	$	$

New Release Long Trough



Size		Part No.	Price
180 gallon	820 Ltr	T 2.4 H/D	$

New Release Trough

Size		Part No.	Price
130 gallon	600 Ltr	T S/LICK 1.2	$

Cups and Saucers

Part No.	Cup Capacity Litres	Diam. Saucer	Price $
CS2.2x2,300	2,300	2.2m	$
CS2.4x4,500	4,500	3.5m	$
CS3.5x11,000	11,000	3.5m	$
CS4.5x21,600	21,600	4.5m	$
CS4.5x26,400	26,400	4.5m	$

Licker Ball Trough (Patent Pending)

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Part No.	Price
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Reclamation of degraded frontage land

Uncontrolled grazing of fertile river frontages along the upper Herbert and Burdekin Rivers has left many areas degraded with exotic weeds such as lantana, rubbervine, flannel weed, pink burr and devils fig. The grazing and environmental values of these areas have been severely reduced. The Mt Garnet Landcare Group recently completed a NHT funded project to evaluate the ability of improved pastures to rehabilitate these degraded river frontages

The project rationale was that once exotic weeds become established on the fertile river frontages they out-compete native grasses and even with fencing to control grazing pressure the native grasses have little chance of reversing the situation.

A number of properties representative of the alluvial soils on the upper Burdekin and upper Herbert river systems were involved. On each property, 100 hectare river frontage paddocks were cleared of exotic weeds, fenced off and sown with a mixture of improved grasses and legumes. The landcare group received $92,000 in Natural Heritage Trust funding for the project.

The project clearly demonstrated the ability of the improved pasture species to establish and out- compete weeds in the alluvial soils. Results from two of the properties involved are detailed below.

Goshen Station

The paddock used in the trial had been previously ringbarked and logged commercially. It had thickened with native timber and weeds to the extent that carrying capacity had been rated as nil. The thick regrowth and weeds were cleared into windrows. The piles were burnt, followed by discing, planting and rolling the seed into the ground to enhance seed and soil contact. Planting commenced in December 2000 with a second planting in February 2001. A shotgun mixture of 7kg/ha of grasses and legumes was sown to find the best adapted species.

The pasture established extremely well with the outstanding grasses being Katambora Rhodes, Keppel Indian couch and Splenda setaria. Jarra, Bissett and Signal also established but were not as prolific as the first three listed. Several legumes were sown but their establishment was generally disappointing. This was not entirely unexpected due to the vigorous growth of the grasses that out-competed the less aggressive legumes. The pasture has resulted in a 100% ground cover minimising any potential soil loss and enhancing rainfall infiltration.

Both plantings received good rain after sowing. Fertiliser was not used at planting but was applied the following year in December 2001 at a cost of $85/acre. This took the total establishment cost to **$380/acre** or **$940/hectare**.

The paddock was stocked at 2 weaners per hectare in April 2002 and they recorded a liveweight gain of 0.4 kg/day over a 5 months period.

A sediment trap was installed in the trial paddock and also in an area of uncleared native pasture adjacent to the trial. The amount of soil was measured in both sediment traps after the 2001/2002 and 2002/20003 wet seasons. The results demonstrated a three-fold reduction in soil loss in the improved pasture paddock compared to the native pasture. This reduction was attributed to the superior ground cover in the improved pastures compared to the native pasture.

Woody weed control has been ongoing. Considerable

effort has gone into the chemical control of wattle and eucalypt suckers as well as lantana.

Wairuna Station

The site was sown in November 2000. The site had been commercially logged in previous years but the tree tops had not been pushed up by the loggers. The manager at the time, Jim Teitzel, estimated establishment costs at $100/acre in areas where a stick rake was needed to push up the tree tops and lantana and $50/acre in the areas that had not been logged. Land preparation involved one discing followed by planting.

Initial establishment of both grasses and legumes was extremely successful. After the first wet season the dominant grass was Gatton panic but floods in the following year killed it out and by August 2001 the paddock had become dominated by Rhodes grass with some Higane and Jarra. Of the legumes, Cardillo centro was the most successful. Milgarra butterfly pea and Wynn cassia were also performing well although the stylo's were struggling against the heavy grass competition.

Jim Kernot
Senior Project Leader
Department of Primary Industries, Mareeba
Ph: 07 4048 4628

New portable livestock weigh scales a boost to Cape York live cattle

The Cape York grazing industry has received a boost with the acquisition of north Queensland's first portable multiple livestock weigh scales.

Jointly funded by the Department of Primary Industries and The Cape York Peninsula Live Export Group (CYPLEG), the $50,000 weigh scales have the capacity to weigh up to 26 head of cattle at a time and are available for use by all graziers across Cape York Peninsula.

The scales are situated at the current livestock holding yards at Weipa's Humbug Wharf. However, due to their unique design, the weigh scales can be transported by semi-trailer and relocated to other areas for use.

The scales are a great marketing tool and are considered vital in the export process to enhance the export of Peninsula livestock out of Weipa.

The scales were commissioned on the 26 May 2003 in time for the first shipment of the year from Weipa. Approximately 1,700 head of high grade Brahman cattle bred on the Peninsula were weighed in the initial shipment. The scales were a huge success and have received very positive feedback from producers, the current exporter and his agent. The availability of the scales further enhances the prospects for future business on the Peninsula.

There are currently three to four shipments totalling about 5,000 head of cattle that leave the Weipa port every year, generating an annual income of about $2.4 million, for peninsula cattle producers. Feedback in recent years suggests peninsula cattle perform very well in overseas feedlots.

The weigh scales operate manually using an electrically operated digital weigh indicator and were constructed by Brisbane-based company Queensland Weighing Machines.

CYPLEG will manage the weigh scales, but as part of the agreement with Queensland DPI they will be available for use by all Cape York graziers, whether they are members of CYPLEG or not. More information contact:

Rick Dunn
Senior Stock Inspector, Live Animal Exports
Department of Primary Industries, Townsville
Ph: 4722 2506 Mobile: 0418 876 689

Natural toxins affecting ruminants in northern Australia

This is a project supported by the Department of Primary Industries (Queensland) and Meat and Livestock Australia.

Background

In the past, residues of pesticides in meats and other agricultural products have caused enormous loss to export markets. Residues of antibiotics are also of some concern. These problems occur despite thorough testing of these synthetic compounds before registration for use on livestock. In contrast, many rangeland plants and fungi, and even cyanobacteria growing in water supplies contain natural toxins, which can be more poisonous to livestock and humans than pesticides and antibiotics. Scientists and food quality authorities are concerned that some of these might produce residues in meat and milk, when livestock consume them, and that such residues might adversely affect markets for meat.

It is important that we assess the risk of natural toxin residue occurrence. This is a complex process that includes an assessment of where the plants occur, whether the concentrations of natural toxins vary with season, how much of the plants are consumed by livestock, whether this varies with season, whether a particular toxin will produce residues in meat, and the comparative toxicity of those residues.

This project will address the issue of natural toxin occurrence in plants and water supplies in northern Australia, the risks of residue occurrence, and recommend means to minimize the risk. Project leaders will consult widely with producers and rangeland experts across Queensland, the Northern Territory and north of Western Australia. Methods will also be developed to detect some natural toxins of most concern, to allow implementation of quality assurance in any circumstances judged to be of high risk.

Project Objectives

- Compile a plan to manage the impact of natural toxins on the grazing industries of northern Australia.
- Assess the risks for human health and trade, of residues in livestock products, resulting in consumption of toxic plants, fungi and bacteria.
- Establish methods to detect residues in livestock products.
- Recommend management procedures to ensure that products meet market requirements in respect to natural toxins.

Industry and community benefits

- National agriculture bodies consider that there is a low to moderate risk that residues from toxins occurring naturally in rangeland plants and water supplies might occasionally be present in meat. There is a greater chance that the mere possibility of such residues could be used to ban Australian meat from international markets.
- This project will provide industry with greater confidence that products will continue to meet market specifications, and allow industry to defend the quality of product against unfounded claims to the contrary.
- By predicting circumstances where the risk of residues is greater, the project will allow for effective management of stock and rangelands to minimize that risk.

Support sought

The project team is seeking the advice and assistance of anyone with knowledge of the occurrence and seasonal prevalence of a range of plants in different locations. This includes both producers and supporting organizations. For ease of consultation, the project will be conducted in several regions. SW and central inland QLD, northern QLD, coastal QLD, NT top end, NT central, Kimberley and the Pilbara. The booklet focuses on northern Queensland.

The plants in which we are particularly interested in northern QLD, include:

- Rattlepods (*Crotalaria* species)
- Heliotropes (*Heliotropium* species)
- Camel Bush (*Trichodesma zeylanicum*)
- Brachen Fern (*Pteridium* species) and mulga fern (*Cheilanthes sieberi)*
- Birdsville indigo *(Indigofera linnaei)*
- Zamia (*Cycas* species)
- Ergot fungi on grasses (*Claviceps* species)
- Cyanobacteria (blue-green algae) in water supplies.

Project Contacts

Mr Barry Blaney, Senior Principal Chemist
07 3362 9470 Barry.Blaney@dpi.qld.gov.au

Dr Ross McKenzie, Senior Principal Veterinary Pathologist
07 3362 9432 Ross.McKenzie@dpi.qld.gov.au

Mr Keith Reichmann, Principal Biochemist
07 3362 9511 Keith.Reichmann@dpi.qld.au

**Mail to: Department of Primary Industries,
Locked Mail Bag No 4, Moorooka Qld 4105
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Nitrate poisoning

Forage sorghums are often noted for their ability to cause prussic acid poisoning but they can also (along with a number of other plants) cause nitrate poisoning in animals.

In the recent drought, some drought-affected breeders died from nitrate poisoning after being fed baled irrigated forage sorghum. It was grown on a former lucerne paddock to which additional nitrogen-rich fertiliser had been added to boost performance. The hay-making process further concentrates nitrate in the fodder.

Nitrate poisoning is most likely to happen when

1. stock are hungry (i.e. rapid intake),
2. stock are stressed, and
3. conditions promote nitrate build-up in plants.

Ruminants (cattle, sheep, goats) are susceptible to nitrate toxicity because bacteria in the rumen easily convert plant nitrate to nitrite which is absorbed into the bloodstream where it depletes oxygen.

Uptake of nitrate by plants

Nitrate can accumulate in many crop, pasture and weed plants such as sorghum, ryegrass, pigweed, variegated thistle, capeweed, mintweed, wheat, barley, maize, rape, soybean and linseed. Oats, forage and grain sorghums, Sudan grass and pearl millet are notorious nitrate accumulators.

Nitrate accumulates in plants when soil nitrate is high but conditions are not suitable for normal growth, allowing the nitrate to convert to protein. This can occur when the weather is cloudy or cold, when plants are wilted, after herbicide application, or with combinations of these factors. High nitrate levels can occur when wet overcast days follow a severe drought.

Nitrates normally accumulate in stems with highest levels occurring in the lower one-third of the plant stalk. Nitrate accumulation is generally highest in young plant growth and decreases with maturity. Sorghums and Sudan grasses are exceptions because concentrations usually remain high in mature plants. If plants are stressed at any stage of growth, they can accumulate nitrate.

Nitrate will persist in hay. Ensiling normally reduces nitrate levels by 40–60 percent, but forages with extremely high levels at harvest may still be dangerous and should be tested.

Ruminants can tolerate fairly high levels of nitrates in their diets if intake is spread over the feeding day and if their diet is also high in readily available carbohydrate needed to fuel rumen microbe activity.

Signs of toxicity in cattle

Signs may appear within hours or not for several days. The most obvious signs are difficulty in breathing, with gasping, rapid breaths. Affected animals are weak and trembly and will stagger. Severely affected animals will go down, convulse and die. Death can occur within hours of access to toxic plants. In some cases the main problem with excess nitrates is abortion occurring a few days after exposure.

Treatment

Remove animals from the suspect paddock and place on safe feed. Seek urgent veterinary attention.

Prevention options

Stock management

- Avoid hungry stock accessing at-risk forage.
- Don't give stock access to hazardous forage in cold and dull weather, and early in the morning.
- Remove stock from potentially susceptible forage for 7–14 days after drought-ending rain.
- Do not feed potentially hazardous forage to stressed animals that are sick, hungry, pregnant or lactating. These animals have lower tolerance to nitrate.
- Beware of ponds or ditches that collect runoff from feedlots, heavily fertilised fields, septic tanks, manure piles, abattoirs etc which may contain nitrates.
- Beware of holding yards around stockyards that may contain weeds high in nitrate such as pigweed, liverseed grass or button grass.

Feed management

- Analyse potentially hazardous forage, such as sorghums, for nitrates before feeding.
- Urea feeding may worsen the problem by increasing the total amount of nitrogen in the rumen.
- Supplement stock with grain or molasses to dilute the amount of nitrate in the total ration and to provide energy for rumen microbes to quickly use the nitrite.
- Feed stock frequently in limited amounts through the day rather than large amounts once a day.
- Don't graze ryegrass pastures less than 7 weeks after planting or 3 weeks after fertilising.
- Mixed clover–ryegrass pastures will significantly reduce the risk of nitrate poisoning.

Harvesting feed

- Green chop should be fed immediately after cutting and not allowed to heat up. As plants respire, nitrates are converted to nitrites which are about 10 times more toxic.

- Delay harvesting stressed forages. A week of favourable weather helps reduce accumulated nitrate.
- Raise the cutter bar 6 to 12 inches to exclude basal stalks and weeds that may have accumulated nitrate due to shading.
- Ensile harvested plants high in nitrate rather than baling for hay.

Further information:

Roger Sneath
Senior Extension Officer
QDPI, Dalby
Ph: 07 4669 0808

John Chamberlain
Extension Officer
QDPI Clermont
Ph: 07 4983 2854

Reprinted from *Beeftalk No 15 Autumn/Winter 2003*

North Australian Grassland Fuel Guide

A field guide that helps land managers and fire authorities estimate the amount of fire a pasture can carry, as well as the flammability of those pastures is now available.

Written and compiled by Andrea Johnson, formerly of the NT Department of Business, Industry and Resource Development, the *North Australian Grassland Fuel Guide* focuses on the red and black soil country of the VRD and Sturt Plateau , but should also be useful in other parts of north Australia.

It features two sections:

- Section 1 shows high definition photos of different red soil and black soil plots at various stages of curing from green (0-10% cured) to tinder-dry (80-100% cured). These photos can be used to gauge the curing of red and black soil country in the region.
- Section 2 shows high definition photos of different types of country with various fuel loads ranging from lightly grassed pastures (0-1000 kg per hectare) that will normally only carry a patchy fire, to thick pastures of up to 6000 kg a hectare that can carry intense wildfires. When combined with the curing photos, these fuel load photos can be used to help gauge the types of fire a pasture can carry.

The production of the all-weather, full-colour, 25-page booklet was supported by the Bushfires Council NT and the Tropical Savannas Management CRC and fits in the glove box or a large pocket.

The guide is available from the Tropical Savannas–CRC for $5 (includes GST). To order a copy, go to the Publications Link on the Tropical Savannas CRC website.

Or you can call the Tropical Savannas–CRC on
Ph: 08 8946 6285 or Fax: 08 8946 7107

Which ram sale measurements are important?

Of all of the possible information that may be presented with sale rams, those of greatest interest to improve current flock productivity should be:

- traits for which you are paid (eg fibre diameter, fleeceweight and bodyweight)
- other traits that will help you reach your production objective
- a selection index combining the traits for which you are paid and any other traits you believe generate income.

The top three traits

Fibre diameter, fleeceweight and bodyweight typically account for up to 95 per cent of the variation in Merino sheep incomes.

Therefore, you should patronise a stud that, at the very least, provides information on these top three traits, as long as they also use this same information for selecting their stud sires.

This information will be particularly useful when expressed as deviations or differences from the average of the drop from which the rams came (i.e. –1 micron, +0.5 kg fleeceweight, +2 kg bodyweight).

Information expressed as absolute values (ie 21 microns, 5 kg fleeceweight, 55 kg bodyweight) is of little use in describing rams as it includes environmental influences such as nutrition and management, which are not heritable.

Indexes

The selection index should combine all of the heritable and valuable traits on which the stud is selecting its rams.

The index values are related to the profitability of the rams as breeders; rams that rate higher on the index will breed more profitable progeny.

If the stud from which you wish to buy has a selection index, all its potential sires should be ranked in index order.

A stud breeder should select the highest-indexed rams for use in the stud.

For a commercial breeder, purchasing the highest-ranked rams available will lead to improved flock profitability and move the producer's flock closer to the stud's genetic level.

Estimated breeding values

Estimated breeding values (EBVs) for a trait are an estimate of the value of that sheep as a parent; that is, its genetic value.

EBVs can only be used to compare sheep that have been born in the same season, run together and tested together.

Comfort/prickle factor

If you are buying rams from a stud that is lowering fibre diameter it will automatically improve the comfort factor (ie reduce prickle factor) of the wool, as there will be fewer fibres greater than 30 microns.

If the average fibre diameter of your flock is less than 21.5 microns, comfort/prickle factor is not a problem as there will be less than 5 per cent of the fibres greater than 30 microns.

Coefficient of variation or standard deviation of fibre diameter

Coefficient of variation of fibre diameter (CVFD) is a measure of the relative spread of fibre diameter around the mean within a fleece. It is expressed as a percentage.

If CVFD is reduced by 5 per cent the wool processes equivalent to a 1 micron finer wool.

However, it would take more than 10 years to reduce CVFD by 5 per cent by selection as this represents most of the range of CVFD in a flock. In the same time fibre diameter could be reduced by up to three microns.

CVFD is well correlated genetically with wool strength. Low-variation fleeces have higher staple strength so CVFD may be useful as an indirect method to improve wool strength within a flock.

Standard deviation (SD) is another measure of the degree of variation in fibre diameter around the average fibre diameter. The higher the standard deviation, the more variable is the fleece sample.

Both SD and CVFD provide information on the variability of fibre diameter of fleeces. They are different ways of looking at the same thing.

Average fibre diameter is the major price determinant of wool. Lowering the average fibre diameter of the flock can reduce CVFD and SD.

Spinning fineness

Spinning fineness is a number (in microns) that attempts to combine mean fibre diameter and CVFD into a single measure of fineness to estimate the performance of wool when it is spun into yarn.

Placing emphasis on the spinning fineness of an individual animal can be misleading, as it is likely that the spinning fineness will be lower than the measured average fibre diameter.

Spinning fineness is unimportant in determining the price of wool relative to average fibre diameter.

Curvature

Wool fibres typically have a wave or crimp pattern and fibre curvature is a measure of crimp.

There is a tendency for broader wools to have bolder crimps (fewer crimps per cm) but this is frequently not the case.

There is an assumption that low-curvature wools have the same slight processing advantages as low-crimp wools but this is yet to be proven.

Curvature also seems to be associated with longer staple length and higher fleeceweight.

However, the current machines used to measure curvature cannot provide consistent or accurate results, so all curvature measurements should be viewed sceptically.

For further information refer to the DPI Note *Sheep breeding: use of ram sale measurements*, available from the DPI web site at http://www.dpi.qld.gov.au/sheep/12122.html or the DPI Call Centre on 13 25 23 between 8 am and 6 pm weekdays.

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Markets assured

Queensland has met its annual sampling target to assure overseas markets that we are free of transmissible spongiform encephalopathy (TSE). The national transmissible spongiform encephalopathy surveillance program (NTSESP) has been in operation since 1998. The NTSESP is a national program funded by industry and government. It demonstrates Australia's ongoing freedom from bovine spongiform encephalopathy (BSE). BSE is better known as "Mad Cow Disease" and the related sheep disease, scrapie.

DPI Animal and Plant Health Service Veterinarians and Stock Inspectors in conjunction with private and abattoir based Veterinarians collected over 189 cattle and 57 sheep brains for testing. This was in excess of the state surveillance targets of 156 cattle and 40 sheep brains, which are based on the numbers of cattle and sheep in Queensland. The Queensland contribution has been part of a national program. It has seen the required number of cattle and sheep brains sampled in 2002 to be able to claim ongoing freedom from TSE's for Australia.

The achievement has come at a time when international markets (particularly Japan) have been looking to source beef and sheep meat that is free of these diseases. One of the main reasons for the rapid recovery of market share for Australian product, much of which comes from Queensland into the Japanese market is our guaranteed ongoing freedom from BSE.

Queensland has achieved the cattle target for TSE surveillance for the past four years. The NTSESP program is ongoing, so any producers with animals appropriate for sampling should contact their nearest Vet or Stock Inspector. An incentive of $150 for cattle and $25 for sheep (plus GST) is payable to producers who provide suitable animals showing nervous signs (2 year olds or more) or downer animals (4 year olds or more). Not a bad bonus for an animal that is likely to die. In addition, you get a diagnosis of what is wrong with the animal. Under Queensland conditions, the nervous signs most often seen include botulism, three day sickness or plant poisonings for cattle, and "humpy back syndrome" and metabolic disease for sheep.

Details of samples collected are available from the Animal Health Australia web site on www.aahc.com.au. For more information on the NTSESP in Queensland call your local Veterinarian or Stock Inspector or call the DPI Call Centre on 13 25 23.

What's with the drought?

Over the past 12 months we have seen, for many areas of eastern Australia, the driest year on record. Drought declarations for Queensland have generally remained stable over the past few months with currently 90 shires and 5 part shires drought declared under state processes, an area representing approximately 65% of the state. There are also 114 Individually Droughted Properties (IDP's) in a further 14 shires.

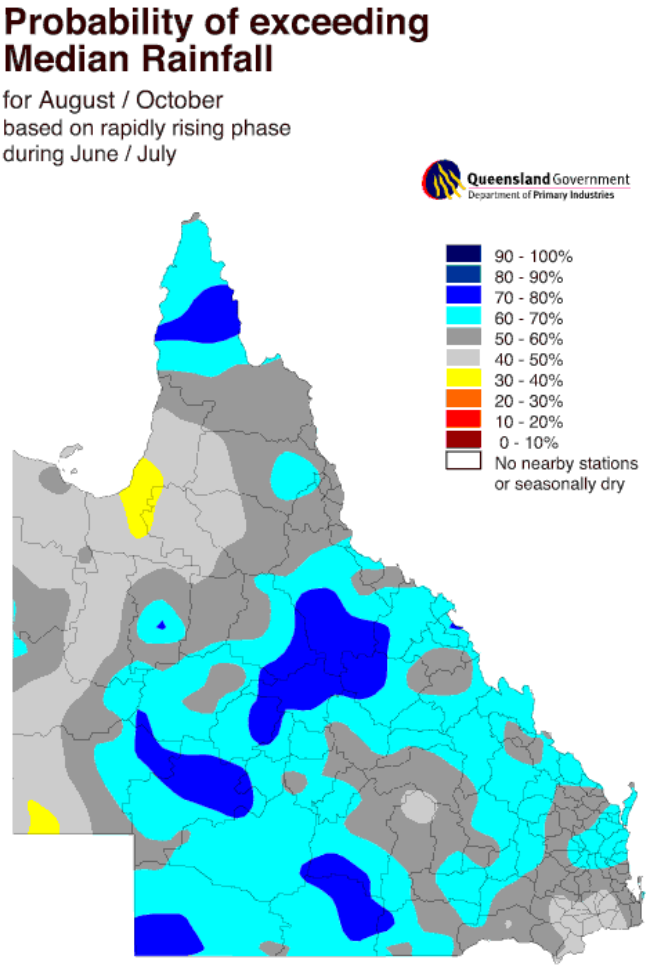
So what were the climate processes which brought about these conditions, and are they expected to continue into the coming season? For those who read the April 2002 Northern Muster article you will remember the early warming signs of the impending "El Niño event" were highlighted, including the westerly wind bursts, twin cyclones on the equator, Kelvin waves and changes to the Peruvian fisheries in response to warming of the eastern equatorial Pacific Ocean. For more on this, see "What is an El Niño?".

The latest information from both the United States Climate Prediction Centre (www.cpc.ncep.noaa.gov/) and the Bureau of Meteorology (www.bom.gov.au) show that sea surface temperature patterns in the critical Nino regions of the Pacific Ocean are currently neutral (near the long term average). While this is an improvement over the last 12 months it has not changed significantly to guarantee a large improvement in overall conditions throughout Queensland. Unfortunately recent atmosphere and ocean temperature trends do not support the development of a La Niña in the next few months. Some concern has also been raised about some rewarming of subsurface ocean temperatures throughout the central Pacific over the last few weeks following strong westerly winds bursts during late May and early June.

Due to these ongoing changes the chance of an El Niño regenerating while remaining low has increased marginally. However a late winter or spring transition into an El Niño sea temperature pattern is quite unusual. In addition to the physical changes that are occurring in the ocean and atmosphere, we also use the Southern Oscillation Index (SOI) to forecast rainfall probabilities over the coming months. From the end of June (-13.2) through to the end of July (+ 3.2), the SOI has slowly risen and is now in a "Rapidly Rising" phase which has improved the rainfall probabilities for the next three months across much of Queensland. Currently there is a 50-80% chance of getting or getting above the long term August to October median rainfall across most of the southern two thirds of Queensland as well as the top half of Cape York Peninsular (refer to map). For the strip from Townsville to Cooktown across to the Gulf most areas have a 40%-60% probability of receiving above median rainfall. However, it is worth remembering that August and September are the two driest months of the year across most of Queensland so high rainfall totals are not common at this time of year. For example, the long term Aug/Sept/Oct median rainfall for Townsville is only 39mm, Mareeba 16mm, Cloncurry 16mm, Normanton 6mm, and Weipa 22mm.

For there to be increased confidence in the longer term outlook (3-6months) the SOI needs to remain in more positive monthly values with sea temperatures in the central and eastern Pacific continuing to cool. For those areas that are drought declared, status is revoked if and when there has been sufficient rainfall to promote enough pasture growth to permit stocking at 'normal' or 'near-normal' carrying capacities for the given time of year.

For the latest seasonal conditions report and information on the number of drought declared shires: http://www.longpaddock.qld.gov.au/QueenslandDroughtMonitor/. Other information on the current drought situation and available financial assistance, drought planning advice, social, community and counselling services can be found on the internet site http://www.dpi.qld.gov.au/drought/ or through the DPI Call Centre on 13 25 23. For those who like to follow the fluctuations of the SOI, daily updates are available on 07 4688 1439.



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What is an El Niño?

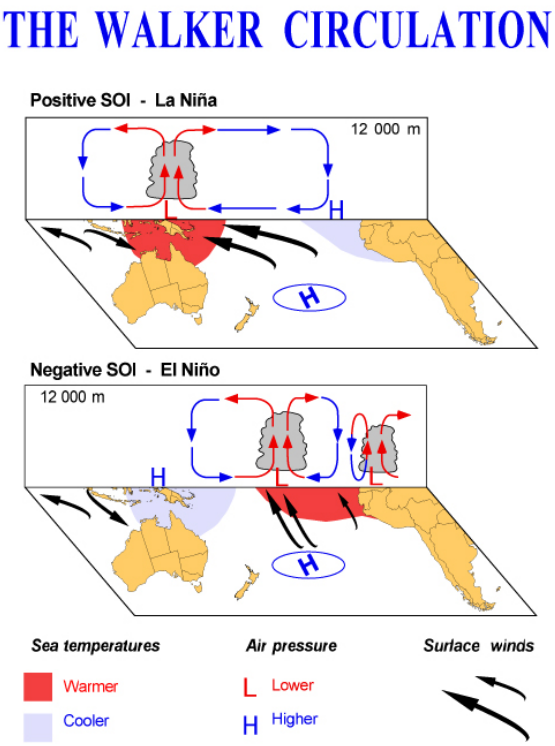
The western Indo-Pacific region around northern Australia is an area of warm water, low air pressure and ascending air that generates convective cloud and rainfall. This air then travels at higher altitudes as upper level westerlies to the eastern Pacific, a region of cool, dry descending air and low rainfall. The circulation is completed by low level easterlies along the equator which form a positive feedback loop by pushing warm surface water along the equator to the western equatorial Pacific warm pool, exposing an area of cool sea surface temperatures (SSTs) in the eastern equatorial Pacific.

If this circulation intensifies, the eastern equatorial Pacific sea surface temperatures around Tahiti become cooler and the western equatorial Pacific becomes warmer than normal. This scenario is known as a La Niña pattern which generally brings an increased chance of above average rainfall to northern and eastern Australia, Indonesia and other western Pacific regions, and drier than average conditions to the eastern Pacific and central Americas.

La Niña represents one phase of the Southern Oscillation, the other of which is El Niño where water in the eastern equatorial Pacific is unusually warm. During an El Niño event a mass of surface warm water in the western equatorial Pacific moves eastward along the equator, depressing the surface cold water in the eastern equatorial Pacific. The resulting changes in the sea surface temperatures are reflected in the atmosphere with moist, rising air and a region of convection moving towards the eastern Pacific and cooler, drier, descending air falling over the western Pacific around Australia. The trade winds that normally bring rain along the east coast slacken, and may revert to westerlies, and upper level winds blow towards the east. Rainfall across northern and eastern Australia tends to be below average with increased chance of drought conditions, while in the eastern Pacific the chance of above average rainfall increases and flooding is common.

What kicks off an El Niño event is complex and not yet fully understood. Early signals of an impending El Niño include a series of westerly wind bursts along the equator (possibly as a result of a pair of twin cyclones forming either side of the equator), changes in upper level winds, a slackening of the south-easterly trade winds, a build up of warm water in the western equatorial Pacific, and a movement of warm water eastward along the equator. Other studies indicate that a complex pattern of surface ocean waves known as Kelvin and Rossby waves, which move back and forth across the Pacific, set in motion changes which both initiate and collapse an El Niño event. This theory is known as the 'delayed action oscillator' effect and is currently considered as providing the most probable mechanism for ENSO changes.

During El Niño events the northern Australian monsoon trough is displaced further north and is weaker, due probably to reduced vertical wind shear and warmer SSTs around northern and north-western Australia, with maximum rainfall tending to occur slightly earlier. Tropical cyclone activity is reduced off the north-east coast but increased off the north and north-west coasts for similar reasons, and the subtropical ridge or high pressure belt over southern Australia is stronger. An El Niño event typically occurs every 2-7 years and has a tendency to be locked into the seasonal cycle, lasting on average for 18-24 months.



Together these two extremes form a linked ocean-atmospheric pattern which sea-saws back and forth across the Pacific called El Niño / Southern Oscillation (ENSO). This complex ocean-atmosphere system, which is second only to the seasons in generating large-scale variability within the climate, explains up to 40% of the rainfall variability in eastern Australia.

The Southern Oscillation Index (SOI) is a measure of the difference in air pressure variations from the long-term mean between Tahiti and Darwin and extends back to 1882. Positive values of the SOI represent a La Niña event and negative values an El Niño. The SOI is used as an indicator of rainfall across northern and eastern regions of Australia which are affected by the El Niño / Southern Oscillation and so exhibit greater rainfall variability than those which are not. The relationship between the SOI and rainfall are strongest in winter and spring and weaker in summer and autumn, due perhaps to influences from the Australian summer monsoon.

Producers to receive Federal drought support

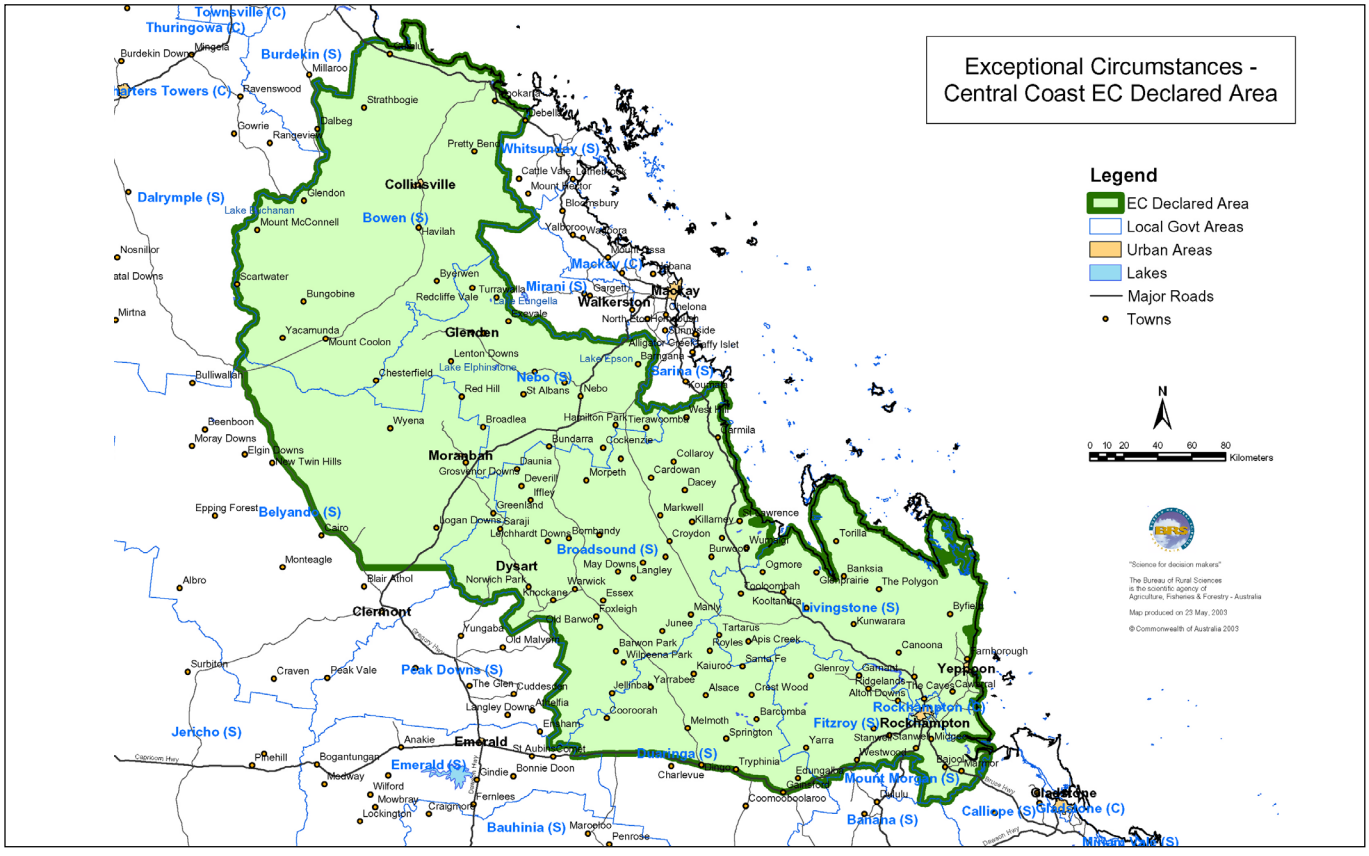
Farmers in Queensland's central coastal region have been declared eligible for Exceptional Circumstances (EC) drought support from 23 May 2003. EC assistance is now available to livestock producers (including dairy), and broadacre crop producers who can demonstrate that their summer crops were severely affected by drought during the past two seasons. Eligible producers in this area can now apply for interest rate subsidies of up to $100,000 a year for two years, and can access income support through Centrelink for up to 24 months.

The EC declaration for the central coastal region covers the Bowen, Nebo, Broadsound, Fitzroy and Livingstone shires; the Duaringa shire north of the Capricorn Highway, Belyando Shire east of the Gregory Development Road and north of 22.6 degrees south latitude, as well as Rockhampton City. A seven-kilometre buffer zone has been declared, extending into the adjoining shires of Burdekin, Dalrymple, Emerald, Whitsunday, Mirani, Sarina, Banana, Calliope, Mount Morgan and Mackay City, and those parts of the Duaringa and Belyando shires which adjoin the EC declared area. The buffer zone excludes the already EC-declared shire of Peak Downs.

Eligible producers should apply for EC Relief Payments at their local Centrelink office, or by calling Centrelink's **National Drought Hotline 13 23 16** (except on national public holidays). They should contact the Queensland Rural Adjustment Authority on **1800 623 946** to apply for EC interest rate subsidies. People operating small businesses experiencing a downturn because of drought in these areas can also apply to Centrelink for interest rate relief on new and existing loans of up to $100,000. They should also use Centrelink's National Drought Hotline.

EC application are assessed by the National Rural Advisory Council (NRAC) – an independent panel of farmers, agribusiness and industry experts – to determine whether a full case has been made against the EC criteria. NRAC provides a recommendation to the Federal Minister for Agriculture, Warren Truss on whether the application region should be EC declared. The Minister is ultimately responsible for declaring if an area is experiencing exceptional circumstances.

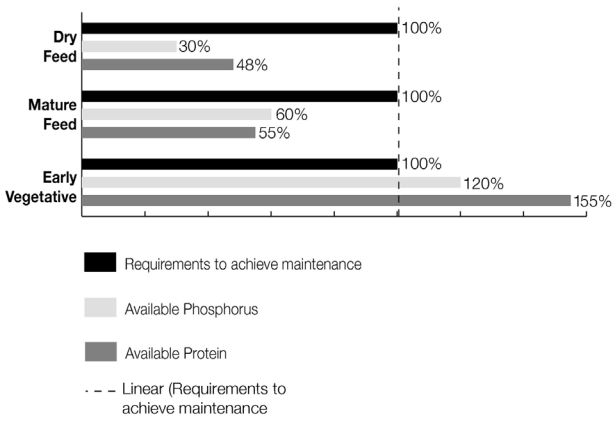
While EC assistance was being provided only to livestock and crop producers at this time, other producers in the region will have their eligibility for EC reviewed again later in the year. NRAC recommended that a decision on EC for horticulture and sugar cane growers in the central coastal region should be deferred until September 2003. NRAC said that insufficient evidence had been provided to justify a decision that the key EC criteria of a 'severe and prolonged downturn in income' for these industries at this time. However these producers remain eligible to apply for interim assistance until 9 October 2003. Interim assistance includes six months' income support and two years' interest rate relief on new and additional loans of up to $100,000.



Mature and Dry feed Supplementation for Breeders.

As pastures mature (go out in seed and dry off), they commonly have lower protein, energy and mineral levels. At the same time the fibre component of the feed is increasing. The net result of these changes is that cattle are eating less feed, the feed that they are eating is less digestible and it has a lower nutrient value.

The diagram below gives an example of how feed deteriorates as it matures. The values represented are a percentage of the requirements to achieve maintenance on a lactating cow. When the values are equal to, or greater than 100%, the cow has sufficient nutrient in the grass to feed her calf and meet her own requirements. If the values are below 100% than the cow has to draw upon her own body for nutrients. If she doesn't have the body reserves then she will break down and both the cow and/ or calf will suffer.



As it can be seen from the nutrient levels of the early vegetative pasture, these samples were not taken from inherently deficient country. As this example illustrates, even in country where the wet season nutrient levels are adequate, cattle will still benefit from a carefully constructed supplementation program.

Not only does the nutrient density of feed fall rapidly as it matures, but the animal's ability to eat enough of the feed is reduced as well as the digestibility of the feed is reduced.

By adding a carefully balanced supplement to the diet of cattle on dry grass both the digestibility and the animals ability to eat dry feed can be improved dramatically.

In the case of Breeder cattle it is important to consider their specific supplementary requirements during the dry season. This is especially the case at joining, the last trimester of pregnancy and early lactation. For example, licks excessive in urea, cost a cow energy to deal with the excessive nitrogen. Not only does excessive nitrogen cost valuable energy to deal with, but it is toxic to developing embryos.

It is the job of a breeder Supplement to provide a cow with essential nutrient for energy metabolism, calf development and milk production. At the same time it has to improve dry matter intake, feed digestibility and maintain the soundness of the breeder unit.

With this in mind, Ridley AgriProducts set out to develop a new block for its Rumevite range that would be unparallel in its ability to meet the nutrient requirements of breeders.

Rumevite® Revolver is a premium grade breeder block, built tough enough for Northern conditions. Utilising technology known to improve urea utilization in the rumen, **Revolver** will deliver a high-density protein and nutrient boost for breeders when they need it most.

For free information on how to tailor a supplement program to give you best value for all classes of livestock phone 1300 666 657.

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RIDLEY AGRIPRODUCTS
High Performance Animal Nutrition.

RID 0273

For FREE information on how to tailor a supplement program phone 1300 666 657

Supplementation - the property plan

In north Queensland we are into the dry time of the year and animal performance will be falling.

Most producers feed supplements (blocks or loose supplement) to the breeders and growing cattle during the wet and dry season.

Below are some points to consider in your overall property management that will impact on your supplementation costs and profitability.

It does not matter what sort of grazing system you use (rotational, cell, continuous) the most important influence on animal production is the overall stocking rate. Animals that do not have much grass to eat are expensive to supplement.

Good water distribution allows cattle to access all of your grass resource (ideal to have cattle walking only 2-3km to water)

Use wet season supplements when grass is green to maximise animal performance (phosphorous in most areas, salt and sulphur on the basalt) so that the cattle go into the dry season in as good a condition as possible.

Spell paddocks over the wet season for use by the new weaners.

Wean hard as soon after the wet season as you can (down to 120 kg) as the weaning will allow cows not in calf to conceive and therefore calve at the end of the year.

If weaning down to 100kg plan to feed these separately on a high energy/protein ration.

Weaning calves down to 100kg in July, August will benefit the breeders condition better than most supplementation programs.

Energy and protein are the two major nutrient requirements of our breeders at this time of the year. Removing the calf by weaning nearly halves the nutrient demand on the cow. See table below.

	Daily requirements	
	Energy MJ/day	Protein
400kg cow maintaining live weight plus 4 month old calf	75	864g
After weaning dry 400kg cow maintain weight	46	360g
The 100kg weaner gaining 0.25kg/day	23	180g

The table below shows that after the calf is removed, the cow can meet a large proportion of its requirements from reasonable dry grass.

400kg dry cow eating fair quality dry spear grass	Energy	Protein
Daily requirements	46	360
Approximate nutrient intake from pasture	38	350

To improve your animal nutritional skills and pasture supplementation program consider attending a Northern Nutrition Workshop.

Contact:

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Dry season management – consider all options

With the recent run of dry years, it is easy to fall into the trap of 'doing what we've always done' for dry season management rather than considering all options. Now is a good opportunity to review past management and plan for the future.

Some questions to think about when reviewing your dry season management program are:

- What did I do?
- Did I achieve my objective?
- Would I do it again?
- What would I change?
- What advice would I give someone else about what I did?

What is different about this season?

- Because of the late break in the season, few properties will have a 'big' body of dry feed.
- Feed supplements will be hard to get (remember the shortages earlier this year).
- Because of the shortage of feeds, what is available may be more expensive.
- Cash reserves to feed cattle may be lower than normal.

Feeding

Feeding is only one of a range of options that can be used to manage cattle through a dry season. Another option to consider first is to reduce numbers by either selling or agisting.

- Before deciding what to feed there are a number of points to consider:
- What performance do you want from the animals? Maintenance? Production? If production, what level of production – 0.2 kg per day or 0.5 kg per day?
- What nutrients are going to limit animals reaching the/your deserved performance target?
- Cost.

Protein

Mature, dry pasture is usually low in protein. This results in reduced rumen microbe activity, prolonging digestion and reducing pasture intake. Providing a small amount of protein (150 g per day for breeders or 75 g per day for weaners) will reduce weight loss and may, in the early dry season, allow animals to make slight weight gains.

Energy and Protein

If growth of greater than 0.2 kg per head per day is desired, energy and protein will both be limiting production.

Energy as well as protein will also be required in the late dry season if animals are to maintain weight on pasture that has been dry for three to four months and lost most of its leaf.

Minerals

Many producers spend a lot of money feeding minerals when a deficiency of protein and/or energy is the main cause of reduced performance. Make sure a mineral deficiency exists by testing before starting any feeding program.

Phosphorus

Phosphorus is the mineral most commonly deficient in grazing cattle. However it is only required when animals are producing (growing and lactating). Therefore the demand for phosphorus in winter, when animals are not growing, is very low.

Sulphur

Sulphur and nitrogen are required by the rumen microbes to form microbial protein. Most supplements contain sufficient sulphur to meet the needs of the microbes. However when urea (non-protein nitrogen) is fed in a dry mix with, say, salt there is insufficient sulphur. To over come this deficiency, feed 1 kg Gran-am to 5 kg urea or 1 kg elemental sulphur to 20 kg urea. These feeding rates are calculated to feed 10 units of nitrogen to 1 unit of sulphur.

Selecting a supplement

Once you have determined the level of production required and the nutrients that are limiting production, you can select a supplement to meet these requirements. To do this it is best to categorise supplements into the nutrients they provide as below:

To meet nutrient requirements it may be necessary and more cost-effective to combine some supplements such as

Protein only	Protein (some energy)	Energy (some protein)	Energy only	Protein and minerals
Urea	Protein meals • Copra • Cottonseed • Soybean Whole cottonseed	Grain	Molasses	Commercial • Blocks • Loose mixes • Liquids

urea and molasses to get both protein and energy.

Once supplements have been grouped then a selection can be made depending on

- cost
- availability
- palatability
- ease of feeding
- preparation required
- equipment and skill required to feed.

If you are feeding a protein supplement it may be useful to compare the cost of that supplement with the cost of a supplement that gives both energy and protein. Sometimes a supplement that provides protein and energy is the same cost as a protein supplement. This would mean performance could be above the target for the same cost.

Further information:

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Beef Business is not just a numbers game

(or the importance of record keeping in your beef business)

If you are branding less than 60 calves for every 100 cows carried or your female turnoff is only about 40% of total turnoff then there is a good chance that you can run fewer cattle without sacrificing income.

The benefits accrue because by removing passengers in the herd, the better performing cattle have more grass to select a better diet, and production efficiencies are increased. Look at the comparison of the 2 herds in the Table and see that with only small gains in efficiency significantly fewer animals can be run without affecting income.

Points to note:

714 fewer cattle, including 421 breeders, allowing those remaining to select a better diet. This in turn results in:

- a 4% lift in branding rate from 55% to 59%
- a 2% drop in death rate from 7% to 5%
- annual liveweight gains of sale cattle increase from 110 kg to 120 kg

Cattle sale prices used are the same at $1.30/kg live for female sales and $1.40/kg live for male sales. (After Freight).

Supplement, vaccines, bull replacement costs, etc are the same per head for each herd.

Other significant benefits of fewer cattle

- You get a cash benefit by removing the passengers
- Rainfall infiltration will increase and water runoff will decrease
- Pasture yield will be higher, better pasture species will dominate and will respond quickly to rainfall
- Weed invasion will be reduced
- Increased competition from pastures will reduce the rate of tree thickening
- May allow increased long term carrying capacity after pasture recovery
- Less variation in income in low rainfall years.

But you need to keep records – it really is the secret to good cattle management now and for the future.

	Actual figures from NQ property	Production efficiency with fewer animals
Total cattle carried	3423	2709
Total breeders mated	1737	1316
Total calves weaned	960	783
Weaners/cows mated	55%	59%
Breeder deaths	7%	5%
Female sales as % of total sales	41%	44%
Cows and heifers sold	309	296
Steers and bullocks sold	443	369
Average female price after freight	$482	$499
Average steer/bullock price after freight	$534	$562
Cattle sales income	$385,946	$355,276
Cost of supplements, vaccines, bull replacement etc	$128,871	$97,882
Herd gross margin	**$257,075**	**$257,395**

Bernie English
Extension Officer
Department of Primary Industries, Mareeba
Ph: 07 4048 4627

Dry season supplementation - Intake is the key

At this time of the year our native pastures are deteriorating in energy and protein and animal performance is falling.

Feeding urea based supplements is widespread across the North and the general recommendation is for breeders/ large steers to be eating 50-60g of urea per day (150g of protein) and growing cattle 30g of urea (75g protein per day).

Listed below are some examples of dry season recipes.

Mix No.	1		2		3		4	
	kg	%	kg	%	kg	%	kg	%
Urea	20	20	30	30	30	30	40	31
Copra	5	5			5	5	6	4.7
Kynofos21			15	15	20	20	20	15.5
Sulphur			1.5	1.5				
Gran AM	4	4			6	6	8	6.2
Salt	71	71	53.5	53.5	39	39	55	42.6
% Protein	**63.5**		**86.3**		**94.7**		**97.8**	

Note: Some type of country can have higher %'s of protein meal and lower levels of salt to achieve desired intakes of the supplement.

The important point is the intake or consumption rate of your supplement. The Calculation to determine how much supplement/head/day. $= \frac{\text{Protein required x 100}}{\text{\%Protein in supplement}} = \frac{\text{150g x 100}}{\text{(mix 3) 94.7\%}} =$ 158g head/day (mix 3)

	Protein daily req.	Daily intake/head	
		Mix 1	Mix 4
Large animal or cow- calf	150g	236g	153
Yearling heifer, steer	75g	118g	77

Then calculate the ideal intake for your paddock of cattle eg 500 cows x 166g day (Mix 1) x 7 days = 581kg week of Mix 1.

If your intake is above or below this figure you can make adjustments to your recipe to get the daily intake about right so that your feeding is cost effective.

To increase or restrict intake the levels of salt, urea, meal and gran am can be varied, also if gran am is replaced with elemental sulphur this will usually increase intake.

Points to consider when feeding protein supplements

1. Urea can and will kill cattle if consumed too quickly.
2. Identify and satisfy any depraved appetites cattle may have, usually using salt, before including urea in a supplement.
3. Urea must always be fed with sulphur at a ratio of 10N:1S which is 20kg urea to 1kg sulphur or 5kg urea to 1kg gran am.
4. Effective urea supplementation generally results in a reduction in the rate of weight loss; seldom weight gain.
5. While horses cannot utilize urea like cattle they are less likely to suffer from urea toxicity than cattle.
6. Hard dung is an indication of reduced rumen activity and poor intake of protein supplement.
7. A response to urea supplementation is likely to occur when faecal protein falls below 8% (1.3%N).
8. For best animal results supplementation should commence before animals lose too much weight.
9. All loose mixed urea supplements should be fed in covered areas or in open ended troughs with good drainage.
10. Determine target intakes of urea (50g a day for breeders and 30g a day for growing cattle) and aim to achieve these intakes each and every day.
11. Effective urea supplementation can increase animal feed intakes by up to 30%. Consider this when calculating stocking rates.

For further information contact: your local DPI Beef Extension Officer.

Bernie English
Department of Primary Industries, Mareeba
Ph: 07 4048 4627

Molasses rations for high weight gain

Production feeding is a planned program to value add steers, bullocks, cull females or store or boat cattle. The aim is to put on extra live weight and carcass weight at a time when cattle usually lose weight or gain very slowly (that is, May onwards). This means you choose when to market rather than accept prices at peak turn-off times.

The target

High weight gain requires a high level of energy, balanced with protein and minerals. Most pastures at this time of year are low in all nutrients. Therefore, supplements high in energy and other nutrients are needed to achieve high weight gain.

Planning

1. Choose the cattle to be fed. For example 500 kg steers with 4 or 5 teeth, or cull cows about 380 kg, or young cattle for live export
2. Target the market. For example
   (a) 6 tooth ox and >300 kg carcass with 7 to 22 mm of fat
   (b) 220 kg cow or heifer carcass
   (c) heavier live export cattle
3. *Feed a cost-effective supplement. Keep an eye on the costs.*
4. Attempt to arrange contracts for feed (e.g. molasses, protein meals) and forward prices for cattle.
5. Calculate and monitor Growth Rates usually 0.7 to 0.85 kg/day

Molasses finishing rations

Northern producers have the advantage of access to readily available supplies of molasses. Molasses is the most economical energy base for finishing rations across large areas of North Qld.

Balancing the molasses ration

Molasses is a cheap energy source but is deficient in other important components of nutrition. It is essential to balance the ingredients that are lacking.

(a) Urea 3%
Add urea at 3% of molasses weight. Urea is the cheapest source of nitrogen to feed the rumen microorganisms. *A minimum of 3% urea is required for the rumen bugs to be able to handle the molasses. Higher levels of urea will reduce intake of supplement.*

(b) Protein meal 5 to 10%
True protein such as cottonseed meal, copra meal or palm kernel extract (meal) is necessary to promote optimum weight gains.

On typical poorer quality roughages, this minimum level of urea plus protein meal becomes even more important.

(c) Salt 1%
Salt is added to balance the high potassium content of molasses. It is especially needed at high intakes of molasses.

(d) Phosphorus
For maximum performance add phosphorus. (Phosphorus deficiency can occur if P is not put in.) Sources of P include dicalcium phosphate (DCP), Kynofos or Technical Grade MAP. Kynofos and some DCP's will settle out in molasses mixes.

(e) Rumen modifier
To improve feed efficiency (conversion of molasses into meat) and increase weight gains add Rumensin 100® at 0.5 kg per tonne molasses or another suitable alternative product. (Rumensin 100® is a registered trademark for Elanco Animal Health's brand of monensin sodium.)

(f) Hormonal growth promotant (HGP)
A HGP is recommended to maximise your return. If not used, growth rates will be lower.

CAUTION: Do not feed *Rumensin 100*® to horses and Also make sure that the botulinum and 5 in 1 vaccinations are up to date. A mechanical mixer is essential to mix in the urea.

Production feeding ration

The additives are added as additions to each 100 kg molasses.

Molasses	100
Urea	3
Protein meal	10
DCP	1
Flossy Fine Salt	1
Add Rumensin 100®	0.5kg per tonne of molasses mix

Liveweight Gain is about 0.7 kg/d

This ration is also fed to bulls being grown out for sale.

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Agency for Food and Fibre Sciences, QDPI Ayr
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METALCORP STEEL
Deals in Steel

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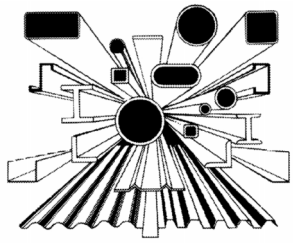
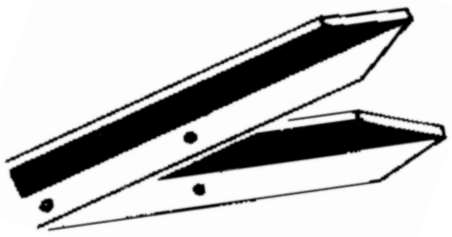


RHS SECONDS

RHS 50 x 50 x 1.6 x 6m	$16.00
RHS 50 x 50 x 1.6 x 7.2m	$18.50
RHS 50 x 50 x 1.6 x 8m	$22.00
RHS 75 x 50 x 1.6 x 8m	$29.70
RHS 75 x 50 x 2.5 x 6m	$35.00
RHS 75 x 50 x 2.5 x 8m	$46.75
RHS 75 x 50 x 3.0 x 8m	$55.00
RHS 100 x 50 x 4.0 x 8m	$71.50
RHS 100 x 100 x 4.0 x 8m	$103.00
RHS 100 x 100 x 5.0 x 8m	$130.00

All prices include GST ex our yard in Mareeba.

Phone the Team: Ken, Jeni, Brian and Miles on 4092 3000



OTHER PRODUCTS

Barb 1.57ht 500m	$46.20
Barb 2.20ht single strand 500m on wooden spool	$42.90
180cm (6') black posts	$ 3.85
165cm (5'6") black posts	$ 3.69
Goat and sheep panels 2100 x 1300	$44.00

While stocks last

METALCORP STEEL
Deals in Steel

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