



Beeftalk

Taking stock of your future

Prime news and views for beef producers of south east Queensland

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Issue 18 Spring/Summer 2004

editorial

Welcome to the 18th edition and, would you believe, 9th year of Beeftalk. Look out for the 'commemorative' spring-summer issue next year. All suggestions welcome!

This edition has a suite of articles relating to managing our challenging climate, including reflections on drought management from New South Wales beef producers. Complementing our regular climate outlook from Dave McRae are articles explaining some of the terms and statistics used in climate and rainfall prediction.

At the time this issue goes to print, the National Livestock Identification System Implementation Plan for Queensland is still to be finalised. However we have included articles covering frequently asked questions and the identification number system.

Information regarding Property Maps of Assessable Vegetation is also included. Landholders are encouraged to check these with the Department of Natural Resources, Mines and Energy if you haven't done so already.

A recent flurry of new publications and reports has provided some interesting reading, listed for your interest. Of particular note is 'Old Salty's Misadventures in Paradise' by Dave Daniel, a former Beeftalk editor, who has been spreading his creative wings in retirement.

Damien O'Sullivan, editorial team member, has taken up a post with the Falkland Islands Department of Agriculture for a couple of years. We wish him every success and will miss his input, although perhaps not as much as he will miss Kingaroy's 'balmy' (when compared to the Falkland Islands) weather.

Good reading!
The Eds



Break of season rules for forage budgets

In previous editions of BeefTalk we have discussed dry season budgets as a way of ensuring you stock a paddock at a rate that leaves you with enough feed for your cattle and enough stubble on the ground for your pastures.

At best, dry season forage budgeting is a guesstimate. One of the big variables is the date you nominate as the end of the budget period, usually a date by which you can reasonably expect sufficient rain to give significant grass growth. For most areas it is later than we might expect. This may be because we tend to remember those few years when 100 mm falls in spring. We remember them because they are exceptions to the rule rather than the rule itself.

So what constitutes a break in the season and what are the chances of it occurring by a certain date? How effective rain is depends on how quickly it falls and how dry conditions were prior to the rain. The resultant pasture response is also variable, depending on the soil type and the land condition. Generally, pasture on lighter soils responds more quickly and to smaller rainfall events than pasture on heavy clays.

At a recent workshop we discussed 'break of season rules' for forage budgeting. We asked participants what they regarded as being an effective break in the season. Many considered 100 mm of rain over a two-week period by the end of September as an effective break (and it certainly is!). Others nominated 50 mm in a week by the end of November. How often do we see these sorts of rainfall events?

Packages such as Rainman or How Often enable us to view the rainfall records for many districts over many years to determine safe break of season rules.

As an example, if we look at the past 113 years of rainfall records for Gin Gin, we can determine the chances of meeting three 'break of season rules'; 30 mm in 3 days, 50 mm in a week, or 100 mm in a fortnight, by the end of each month from September to January.

	Percentage of years where the break of season rule is met by the end of the given month		
	30 mm in 3 days	50 mm in a week	100 mm in a fortnight
September	30%	12%	4%
October	61%	42%	15%
November	80%	61%	28%
December	94%	85%	53%
January	98%	96%	79%

At Gin Gin, you cannot rely on getting 100 mm of rain over a fortnight by the end of September. It has only happened four times in the last 113 years; i.e. 1906, 1933, 1947 and 1998!

The table highlights the unreliability of a spring break. In setting safe break of season rules for forage budgeting you need to consider your attitude to risk. A break of season rule that is met about 70–80% of the time (seven or eight years in ten) is relatively safe.

In this case, 30 mm in 3 days by the end of November will be a safe rule for most land types. So when you calculate your forage budget in the area around Gin Gin, you would want the available feed to last until the end of November. For land types with heavy clay soils, 50 mm over a week by the end of December would be a safer bet.

Remember, forage budgeting is an inexact science. Be realistic about when you can reasonably expect a break to the season.



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Climate watch

Following quite remarkable fluctuations over the past few months, the SOI is now relatively stationary and has remained in negative values.

In what should not be a surprise to anyone, based on the recent negative pattern of the SOI (minus 13.9 at the end of June; minus 6.4 at the end of July) it is more likely than not, that spring and early summer will be drier than normal across nearly all of eastern Australia.

For example Emerald only has a 25 percent chance of getting at least its long term August to October median rainfall of 75 mm. This also means that there is a 75 percent chance of NOT getting at least 75 mm through to the end of October.

Another way of looking at this is that in 2 to 3 years out of 10 (or one quarter of years) with the current SOI pattern, Emerald has received at least 75 mm for August to October. Therefore in 7 to 8 years out of 10 (or three quarters of years), Emerald has gotten less than 75 mm for August to October.

Now this doesn't mean there will be no rainfall at all. It simply means that in most years like the current

year below average rainfall is recorded overall.

So have a look at what happened in your area over August to October in the following years: 1997, 1994, 1993, 1992, 1987, 1982, 1977, 1972, 1946, 1941, 1940, 1919, 1914, 1911 and 1905 and compare the rainfall recorded with your 'normal' rainfall for August to October.

For example at Taroom, historical records show that with this SOI pattern for August to October below average rainfall was recorded nine times, near average rainfall was recorded four times and above average rainfall was recorded twice.

Information on what rainfall patterns were like for August to October in those years can be found at www.longpaddock.qld.gov.au or in Australian Rainman.

There has also been some renewed speculation regarding an El Niño situation this year. Although we are not in a "classic" El Niño sea surface temperature

pattern, our own research has shown that the current El Niño "like" pattern can in itself reduce winter, spring and potentially, summer rainfall in eastern Australia.

For there to be an overall improvement in the seasonal outlook for Queensland, it would help if the SOI rose to a "Consistently Positive" pattern for a couple of months at least. It is also worth remembering that for northern Australia we are still in our "traditional dry season" of July, August and September.

For more information give us a call through the DPI&F Call Centre on 13 25 23.



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Reflections on the drought – Producer's review

Graziers of the north-west slopes of NSW (from Tamworth and Inverell to Moree) came together to evaluate their drought preparation and business strategies for 2003.

While each business responded individually to changing seasonal conditions, depending on personal attitudes and circumstances, there was general agreement that their best decision was 'destocking to critical dates' and their worst decision was 'not acting early enough'.

Overall the key messages focused on forward planning. 'Know what you are going to do and when' was seen to be the key to staying in control.

It was agreed that 'successful drought management' is about staying in control of the following aspects of the business:

Financial

- Limit equity loss.
- Maintain cash flow as much as possible.

People

- Stay positive and in control. Be an opportunist.
- Maintain harmonious communications with business and family.
- Ensure networking and educational needs are met.

Landscape

- Monitor soil moisture.
- Maintain target ground cover.
- Maintain pasture species for best resilience.

Production

- Maintain the strength of the business.
- Make use of off-farm investments, farm management deposits (FMDs), grass in the paddock, or fodder in storage.

Of crucial importance is to:

- have a plan
- set critical dates
- progress personal educational needs
- have a strategy for recovery.

Thirteen key lessons learnt:

1. Drought occurs when stocking rate exceeds carrying capacity (i.e. drought is not only rainfall-induced).
2. Humans control stocking rate.
3. Nature controls carrying capacity.
4. Success in drought is achieved in the same way as at other times (e.g. using sound business management principles).

5. We should start with goals, and write and communicate the plan, including the recovery plan. (Plan now for next time. Write the plan down. Have the plan in the folder. Don't lose the folder.)
6. Fine-tune the plan regularly once it is put into place.
7. Move early.
8. Remain positive – keep in touch with positive people.
9. Set critical dates.
10. Beware the emotional load! Share the responsibility with family members. Don't be afraid to seek help.
11. Watch out for unmanageable equity losses.
12. Look on mistakes as learning opportunities.
13. Preserve the resource base for financial recovery and future generations.

Reference: Review of drought preparation and business strategies for the North-West Slopes 2002-03, David Llewelyn, Senior Livestock Officer (Beef Products), Moree.

<http://www.agric.nsw.gov.au/reader/drought-lessons/review-drought-nw-slopes.htm>

Betting on the rain

Farming is a gamble no matter which way you look at it. The biggest gamble of all is the weather. It is possible however to use information like probabilities to help you make risky decisions. Probabilities can provide a useful rule of thumb for the rainfall we may receive.

If we need a certain amount of rainfall in a particular month, for example for a planting opportunity, we can determine from past rainfall records if we are likely to receive that rainfall. If we needed 50 mm for sufficient moisture in April to plant a winter crop, we can see (from the probabilities table below) that at Goomeri there is a 40 per cent chance of receiving 52 mm of rain in April. Here is another way of looking at this: in 4 out of

every 10 years at Goomeri, since records have been kept, there has been at least 52 mm of rainfall in April. If we decide we need at least 75 mm in September to get a break in the season, we can see there is a only a 10 per cent, or 1 in 10, chance of getting 78 mm of rain in September.

Sometimes we have unrealistic expectations of the rainfall we may expect and probability tables can help us put our likely weather in a more probable perspective. Statistics for selected rainfall recording stations are available in the computer program Rainman StreamFlow Version 4 or from Ross Ballin at DPI&F, Toowoomba, on 07 4688 1468. Rainman StreamFlow is available for \$125 for farmers and business from the Queensland Centre for



Climate Applications (QCCA) on 07 4688 1200 or qcca@dpi.qld.gov.au

Previous articles in BeefTalk 17, 'Climate package gives rainfall insights' (pages 4-5) and BeefTalk 13, 'How often has it rained?' (page 4) provide more information on Australian Rainman and the Howoften program. Howoften is available from the APSRU website at www.apsru.gov.au/apsru/products/ho2001.htm

Author:
Damien O'Sullivan

Probabilities of monthly rainfall recorded at GOOMERI POST OFFICE

Amounts of rain (mm) received or exceeded in 100%, 90% ... 0% of years.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Lowest on record	0	3	0	0	0	0	0	0	0	0	1	2	414
90% yrs at least	34	24	13	7	5	3	5	5	2	12	22	34	560
80% yrs at least	51	48	31	14	13	9	13	7	5	27	32	53	613
70% yrs at least	66	58	39	22	21	13	19	11	10	39	53	78	687
60% yrs at least	83	71	48	29	26	17	23	17	20	51	62	93	726
median, 50% yrs	103	90	60	39	39	26	29	21	25	63	77	104	787
40% yrs at least	122	99	77	52	47	35	37	29	34	71	89	109	823
30% yrs at least	143	130	92	67	53	52	46	35	45	83	114	126	872
20% yrs at least	182	157	115	81	65	63	60	52	59	99	129	164	955
10% yrs at least	230	193	162	99	96	83	78	67	78	119	153	225	1,066
Highest on record	342	348	229	281	240	200	277	141	152	224	220	355	1,419

Statistics, lies and statistics

Statistics are an important part of assessing anything in today's world, and rainfall figures are no different. Like all statistics, rainfall statistics can be deceiving unless they are understood fully. Here is a guide to the many terms used to describe rainfall statistics.

- Mean, or average, rainfall for each month provides an indication of our wettest and driest months. Rainfall averages change over the years. Extreme rainfall events, either very high or very low, can cause the average to be an unreliable indicator of usual rainfall.
- Median rainfall can be a better indicator of usual rainfall than average rainfall. The median is calculated by ranking the total number of rainfall measurements for the period in question from lowest to highest. Median rainfall is the figure in the middle. For example: using the rainfall totals recorded at Emerald each November from 1985 to 1993, the mean/average is 95 mm, but the median is 70 mm, the mid-point between 15 and 255 mm.

1985	70	1987	15
1986	23	1986	23
1987	15	1993	28
1988	126	1989	33
1989	33	1985	70 ←
1990	255	1992	82
1991	127	1988	126
1992	82	1991	127
1993	<u>28</u>	1990	<u>255</u>
	759 ÷ 8		
Average = 95 mm		Median = 70 mm	

In this example, the mean is higher than the median due to the very high total of 255 mm that fell in November 1990. The median can therefore give a more accurate indication of likely rainfall because it is not affected by these one-off extreme wet or dry periods.

- Standard deviation indicates how much the monthly rainfall total deviates from the mean. The higher the standard deviation, the more variation there is in rainfall. In this example, the standard deviation for both July and October is 36 mm. However the median rainfall in July is 15 mm and the median in October is 31 mm, indicating rainfall is much more variable in July than October.
- Highest and lowest rainfall totals indicate just how variable rainfall can be. No rainfall has been recorded in every month of the year except December at some time in the Emerald rainfall record. Likewise, unusually high rainfalls have also been recorded during all months of the year at some time.
- Number of rainfall days indicates the number of days in the month rain is likely to fall. Generally rainfall is more effective if it falls over a short period of time without runoff.

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Emerald rainfall 1882–1993 (statistical summary) (from: Australian Rainman, 1994 QDPI)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Mean	102	99	69	36	35	34	29	21	24	39	59	90	637
Median	89	76	53	19	24	21	15	11	10	31	49	79	606
Std deviation	86	85	65	41	43	44	36	26	31	36	46	69	208
Lowest rain	0	0	0	0	0	0	0	0	0	0	0	2	205
Highest rain	556	471	340	191	258	299	200	131	131	166	246	317	1406
Mean raindays	8	7	6	4	4	3	3	3	3	4	6	7	58
No. of years	112	111	111	111	111	111	111	111	111	111	111	111	111

We need your new/correct postal address

Recently we have heard from a number of people who have not been receiving their copy of Beeftalk. This may be due to a minor change in address, such as a mail service number or rural property number, that we don't know about.

To make sure we have your correct mailing address, please:

1. Check your address on the address label of this Beeftalk issue, and

2. If it is incorrect, let us know by writing your new address on the address label sheet and posting or faxing this to us. (To update our mailing list, we need your old address as well as your new address.)

If someone you know has not been receiving Beeftalk, please let us know their details. We will send them the latest edition and update their address details.

Thanks. Eds

Ground cover – protect your assets

Soil surface cover is the key to erosion control in grazing lands. It prevents erosion by maintaining the soil in a condition that is able to absorb rainfall. Any run-off that does result is impeded by the ground cover and is less likely to concentrate into an erosive force.

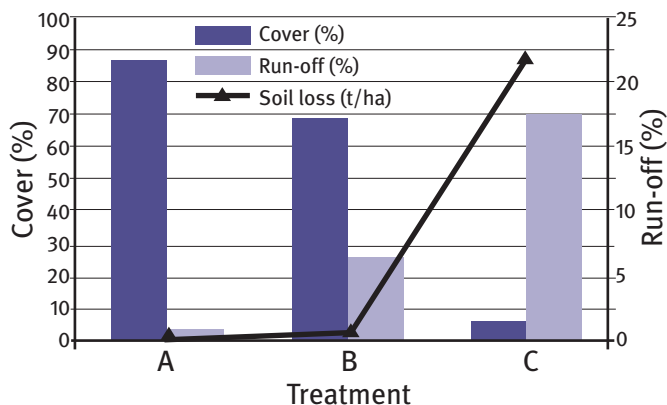
Maintaining ground cover ensures your all-important soil is a 'fixed' asset and not a 'liquid' one.

The critical level of cover for pastures in tussock grasslands is about 40 per cent cover and 1000 kg/ha of dry grass. Ideally this level of cover will exist at the beginning of the summer storm season.

The table and graph below demonstrate the importance of ground cover during a 54 mm storm at an experimental site at Mt Mort, near Ipswich.

Treatment	A	B	C
Percent cover	87	69	6
Total run-off from storm (mm)	1.5	14	38
Percent of rainfall that ran off	3	26	70
Soil loss (t/ha)	0.03	0.3	22
Depth of soil loss (mm)	0.002	0.02	1.7
Sediment concentration (g/L)	1.5	1.9	63
Nitrogen removed (kg/ha)	0.14	1.9	15.3
Phosphorous removed (kg/ha)	0.02	0.26	4.3

Relationship between ground cover, run-off and soil loss – results from a 54 mm storm at Mt Mort



Treatment C, maintained in an almost bare condition, had 70 per cent of the rainfall from a 54 mm storm lost as run-off. The resulting soil loss from this one event was 22 t/ha and may also adversely affect water quality. Treatments A and B with higher cover levels has much less run-off, soil and nutrient loss.

Regular monitoring of pastures is necessary to achieve the ideal stocking rate for current conditions, matching stock numbers to available feed. Opportunistic pasture spelling should be part of a grazing strategy. A total spell in a good year may be required to allow desirable grasses to recover from past grazing pressure.

Source: An extract from 'Erosion control in grazing lands', NRM Facts, available from local NRM&E offices or www.nrme.qld.gov.au

Some other NRM Facts sheets in the series include:

- 'Understanding soils'
- 'Soils of the Wide Bay region'
- 'Soil limitations to water entry – understanding restrictive soil layers'
- 'Managing acid sulphate soils'
- 'Understanding soil pH'
- 'Managing for drought in grazing lands'
- 'Guide to factors influencing carrying capacities in Queensland's rang5e lands'



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Reprinted Edition:

Plants of central Queensland

Due to popular demand, *Plants of central Queensland* has been reprinted.

This book clearly describes and illustrates 240 plants of central Queensland. The plants are grouped into major types – ferns, herbs, trees, shrubs, and grasses – to make it easy to identify plants in the field.

Plants of central Queensland is a valuable resource for graziers and other landowners, naturalists, conservationists, and anyone interested in land care and Australian vegetation.

Available from the
DPI&F Shop for
\$54.95
(including GST):

Phone: 07 3239 3163

Email: books@dpi.qld.gov.au

Website: www.dpi.qld.gov.au/shop

**new
product**



Water medication — A producer's guide

Meat and Livestock Australia (MLA) recently commissioned a report covering all aspects of using water medication as a method of supplementing cattle. Topics covered in the report include:

- ▶ Frequently asked questions
- ▶ Ruminant nutrition
- ▶ Water intake
- ▶ Water quality
- ▶ Equipment
- ▶ Supplements
- ▶ Case studies from producers using water medication as a method of supplementing their cattle.

The report, compiled by Keith Entwistle and Sandi Jephcott, will be available from MLA in December-January. To obtain a copy contact MLA Publications on 1800 675 717 or visit their web site at www.mla.com.au/publications

Herd rebuilding and tick fever in Queensland

Although there is still seasonal uncertainty ahead, many Queensland cattle producers have commenced the slow process of rebuilding their breeding herds after the drought. In many cases replacements are being sourced from areas a long way from their district. Managing animal health is a crucial aspect of this rebuilding process.

Department of Primary Industries and Fisheries Senior Veterinary Officer, Russell Bock, warned that while most producers are aware cattle from cattle tick-free country will be susceptible to tick fever, cattle born and bred in 'ticky' country can also be at risk.

Low cattle tick numbers during the drought meant that calves did not necessarily pick up tick fever infections before they were nine months old, and will therefore not be naturally immune to the disease. For this reason, many cattle born during the past two to three years are now at risk. This could derail breeder-rebuilding programs, whether dealing with homebred weaners and replacement heifers or purchased stock.

'Many producers believe that cattle are naturally protected if born in a cattle tick-infested area, so it may surprise some producers to know 75 per cent of recent tick fever outbreaks in south east Queensland and 64 per cent of those in central Queensland occurred in homebred stock,' he said.

Breeder cattle are going to be expensive so whether breeding your own or buying in, protecting them against disease is a sensible investment.

There is a vaccine available that will protect cattle from tick fever. Vaccinating weaners is recommended under normal circumstances. However, during herd rebuilding older cattle should also be vaccinated as a safeguard against tick fever. One vaccination is usually enough for the commercial life of the animal. Because female cattle stay in the herd for much longer periods than steers, a single tick fever vaccination is cheap insurance, especially in this class of stock.

The cattle tick carries three different organisms that cause

tick fever, so it is best to use trivalent (three-germ) vaccine for overall protection, especially after a drought. Some planning is needed to ensure adult cattle are protected from exposure to cattle ticks before and at least 3 weeks after vaccination.

Mr Bock said the vaccine can be ordered through stock and station agents, veterinary practitioners or directly from the DPI&F's Tick Fever Centre at Wacol.

Producers should also discuss programs for leptospirosis, clostridial and campylobacter (vibriosis) vaccinations with their veterinarian or stock inspector to further safeguard their breeder rebuilding program.

More information is available from the Tick Fever Centre, phone 07 3898 9655, or on the DPI&F web site www.dpi.qld.gov.au/tickfever or talk to your local veterinarian or stock inspector.

Further information:

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Pasture seed – value for money

The best quality seed is usually the best value; the quality of the seed used can make or break a pasture establishment program.

Establishing sown pastures is expensive and the risks of failed establishment are high. In previous Beeftalk articles we have discussed the pros and cons of establishing sown pastures. The principles of good land preparation, timing of sowing and selecting the best-bet pasture species apply.

An important consideration is the quality of the pasture seed. Compared with the costs of land preparation, the seed cost is relatively small. However, the quality of that seed can have a big impact on how successfully pastures establish.

The quality of pasture seed that you buy can be variable. A useful measure for comparing the true value of pasture seed is the percentage (by weight) of pure live seed (PLS). PLS is calculated by multiplying the germination percentage by the purity percentage. You can use PLS percentage to determine the true value of the seed and how much seed you need to sow.

As an example, you wish to establish a Callide Rhodes grass pasture and you have the choice of two lines of seed, one costing \$9 per kilogram, the other \$12 per kilogram. Which is the best value and how much should you sow?

Firstly you need to read the seed analysis report for the two lots. The 'truth in labelling' regulations require the vendor to provide the purchaser with both the purity and germination of the seed lot (usually on the label attached to the bag of seed).

In this example it is apparent that the 'cheaper' seed is really the more expensive because the quality is less than half that of the 'dearer' seed. To work out the real cost of seed per kilogram PLS:

$$\frac{(\text{Seed cost per kg as is} \times 100)}{\text{PLS}\%} = \text{Real cost per kg PLS}$$

You also use the PLS to determine the actual sowing rate. As a general rule of thumb, you need to sow grasses at a rate of 1 kg PLS per hectare for successful establishment. To achieve 1 kg PLS per hectare, seed lot 1 would need to be sown at 6.25 kg per hectare, whereas seed lot 2 only needs to be sown at 2.8 kg per hectare.

The seed label contains other useful information such as what other seeds (including crops and weeds) are present and at what percentage. Check for any weeds

that you do not want on your property. Examples include grader grass, Mexican poppy, star burr, parthenium and giant rats tail grass.

Remember:

- The best seed is usually the cheapest in the long run
- Check the germination and purity
- Calculate PLS
- Buy the best value seed (cheapest on a PLS basis)
- Adjust your sowing rates according to PLS (1 kg PLS per hectare)
- Check the label for weed seeds.

Further information:

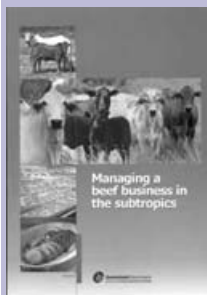
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Seed lot	Seed cost per kg as is	Purity	Germination	PLS	Real cost per kg PLS
1.	\$9.00	80%	20%	16%	\$56.25
2.	\$12.00	90%	40%	36%	\$33.33



New book: **Managing a beef business in the subtropics**

Managing a beef business in the subtropics provides information and tools to help you produce an environmentally friendly, market-driven beef product. It will assist you to proactively manage your business in an every-changing industry.

The book covers all aspects of subtropical beef production, including markets and selling, handling and husbandry, pasture and drought management, and cattle feeding, growth, breeding, and health. Contacts and sources of further information are listed to assist you in researching particular topics and keeping up with industry developments.

This book is a useful resource for commercial beef producers, small area landowners, agribusiness, consultants, students, and hobby farmers.

Stephen Smith, DPI&F
PO Box 6014, Rockhampton Mail Centre QLD 4702
Phone: 07 4936 0393 Email: beef@dpi.qld.gov.au

Available for
\$49.95
(including GST) plus
\$6 postage from:



Marty wakes up at home with a huge hangover. He forces himself to open his eyes, and the first thing he sees is a couple of aspirins and a glass of water on the side table. He sits up and sees his clothing in front of him, all clean and pressed. Marty looks around the room and sees it is in perfect order, spotless, clean. So is the rest of the house.

He takes the aspirins and notices a note on the table: 'Honey, breakfast is on the stove. I left early to go shopping. Love you.'

So he goes to the kitchen and, sure enough, there is a hot breakfast and the morning newspaper. His son is also at the table, eating.

Marty asks, 'Son, what happened last night?'

His son says, 'Well, you came home after 3 am, drunk and delirious. Broke some furniture, puked in the hallway, and gave yourself a black eye when you stumbled into the door.'

Confused, Marty asks, 'So, why is everything in order and so clean, and breakfast is on the table waiting for me?'

His son replies, 'Oh that! Mom dragged you to the bedroom, and when she tried to take your pants off, you said, 'Lady, leave me alone, I'm married!'

A self-induced hangover – \$100

Broken furniture – \$200

Breakfast – \$10

Saying the right thing –

PRICELESS

Tropical and temperate grasses: Why are they different

People often ask what perennial grass (native or introduced) they can grow to provide winter feed. There is no simple answer to this question.

Looking at the differences between the grasslands of northern and southern Australia gives us some idea about why it is difficult to get winter-active grasses in tropical areas.

Plants convert sunlight, water and carbon dioxide into carbohydrates, water and oxygen. The carbohydrates are used for plant growth. This process is called photosynthesis and occurs in the cells of green leaves.

Two types of photosynthesis that occur in plants use different enzymes, resulting in carbohydrates with either 3 or 4 carbon atoms. These plants are commonly referred to as C3 and C4.

C4 plants are mostly succulents or saltbushes of tropical or arid environments as well as many tropical grasses. All legumes and most shrubs and broad-leafed plants are C3 species. Generally there are more C3 grass species in southern Australia and more C4 grasses in northern Australia. C3 and C4 grasses prefer different growing conditions as summarised in the table below:

It is easy to see why C3 grasses generally grow better in wetter, cooler areas and C4 grasses are more suited to the tropics.

Some examples of local native C3 grasses are weeping ricegrass (*Microlaena stipoides*) and native wheatgrass (*Elymus scaber*). In our local environment these should grow in winter if we get some rain and generally die off in summer. Species of C4 grasses are black speargrass (*Heteropogon contortus*), kangaroo grass (*Themeda australis*), sugarcane, maize and sorghum.

Most of Australia's original grasslands had a mix of C3 and C4 grasses which took advantage of whatever weather occurred. So if we have a broad mix of native pastures and winter rain there can be some pasture growth. Generally though we are in a region that has predominately tropical C4 pastures and it is difficult to have a perennial pasture that will respond to winter rain.

Further information:

Bill Schulke

DPI&F, Bundaberg

Phone: 07 4131 5828

Email: bill.schulke@dpi.qld.gov.au

	C3 grasses	C4 grasses
Moisture requirements	Higher	Lower
Sunlight requirements	Lower	Higher
Temperature range	0-25°C - Optimum 25°C	15-45°C - Optimum 35°C
Nutrient requirements	Higher	Lower
Grass quantity	Lower	Higher
Grass quality	Higher	Lower

From: Goodacre and Cluff, Australian Farm Journal, December 2000

Property Maps of Assessable Vegetation

The Queensland Government recently passed laws to end broadscale clearing of remnant vegetation in Queensland by December 2006. An important feature of these laws is the creation of Property Maps of Assessable Vegetation (PMAVs).

Once approved, these maps will allow landholders to clear regrowth, now and in the future, without having to obtain further approval.

What are Property Maps of Assessable Vegetation?

These maps show the boundaries of areas that can be cleared without approval. The areas will be marked on the map as Category X, and contain vegetation most landholders would call regrowth. A property map of assessable vegetation will also show other categories of vegetation and land:

Category 1 –

- endangered vegetation
- areas unlawfully cleared
- areas declared of high nature conservation value
- areas declared as subject to land degradation

Category 2 – ‘of concern’ remnant vegetation

Category 3 – ‘not of concern’ remnant vegetation

Category 4 – pre-1990 regrowth on agricultural and grazing leases.

Categories 1, 2, 3, and 4 are considered assessable vegetation and require a permit to clear, unless the clearing is for an exempt activity. Category X shows the non-assessable vegetation known as regrowth. This category contains areas previously cleared which meet one of the following three criteria:

1. The area has less than 50 per cent of the original vegetation canopy.
2. Vegetation in the area is less than 70 per cent of the original average height.
3. The plant diversity in the area is not typical of the original vegetation or includes significant proportions of non-typical species.

An area only needs to pass one of these tests to be classified as Category X.

PMAVs will replace regional ecosystem maps to determine whether an application is required to clear. Regional ecosystem maps are broad in scale and based on aerial and satellite images, which means they cannot reliably distinguish the full range of species in an area, or areas of regrowth under five hectares. The information used to create and certify

the new PMAV maps will include finer detail and a greater degree of accuracy, at a scale of 1:15 000 or less, depending on the size of the property.

Why should I apply for a PMAV?

It is the landholder's responsibility to prepare a voluntary PMAV. Every landowner who is concerned about managing regrowth should consider a PMAV, especially those who believe that all or part of their property has been cleared previously and that the vegetation fits the Category X criteria. A certified map will permanently lock in the boundaries of non-assessable Category X areas which landholders will be able to clear in perpetuity, even if they regain remnant status on the regional ecosystem maps. The maps will give landholders confidence to manage regrowth on their properties, now and in the future. All PMAVs will be recorded in the Land Registry, which means they will be useful for potential buyers wanting to know which vegetation on a property is assessable.

How do I apply for a PMAV?

To apply for a PMAV, landholders need to provide evidence of past clearing and details about the vegetation on their property. If the Department of Natural Resources, Mines and Energy (NRM&E) agrees that the vegetation meets the criteria, it will certify the map to confirm Category X vegetation.

Further information:

Department of Natural Resources, Mines and Energy

Phone: 1800 999 367

Web site: www.dnr.qld.gov.au/vegetation

Topfodder for better silage

Topfodder workshops cover the production, management and handling of silage. The workshops run over 4 days, are open to all cattle producers, livestock feed producers and contractors and cost \$350.

Workshops are planned for the Burnett and Cooloola regions before the end of the year.

To register please call John Miller, DPI&F Murgon 07 4168 1777.

Blue heliotrope update

Blue heliotrope really exploded when the good rains came a few months ago.

I have heard many graziers say they have never seen it so bad. With its deep tap root and tough seed, blue heliotrope has a tremendous ability to respond very quickly after rain.

Blue heliotrope is difficult and expensive to control with herbicides. Grazon™ and Tordon™ 75-D are moderately effective and will give short-term suppression.

In 1996, the CSIRO embarked on a program to bring biological control agents in from South America. A leaf-eating beetle (*DeeuterCampta quadrijuga*) was released in 2002. This beetle feeds on leaves, flowers and fine

stems and will gradually exhaust the heliotrope by continuous feeding. If the beetle survives our conditions, I expect it will suppress rather than eradicate the heliotrope.

The breeding program started at the CSIRO in Canberra. Once the leaf-eating beetle was cleared for release in Australia, smaller breeding colonies were started at Tamworth and Kingaroy. Funding for the Kingaroy site was through Meat & Livestock Australia's (MLA) PIRD program.

The Kingaroy colony started off well, but then developed a fungal infection and had to be destroyed. Unfortunately, between the drought and the fungus, none of the beetles from this colony survived in the field.

Over winter and spring of 2003 the breeding colony was re-established at Kingaroy. Due to other technical hitches the production of beetles this summer has been slower than expected. However we now have some beetles in the field with new generation beetles at three sites. The MLA's PIRD program has provided an extra year's funding to continue the work.

As the breeding program is quite small and we need to supply large numbers of beetles to a few sites, there will be no spare beetles for general distribution at this stage. As the beetles' numbers build up in the field we hope to further distribute beetles and that the beetles will also spread naturally.

Further information:

Ian Crosthwaite

Blue Heliotrope Action Committee (Qld)

Phone: 0409 622 319

Old Salty drops in

Former Beeftalk project leader and now confirmed 'adventurer at large' David Daniel dropped in the other day to let us know about what he has been doing and how it has all been captured in his new book 'Old Salty's Misadventures in Paradise'.

It's about escaping into the slow lane he said, sailing over the horizon to new and exciting adventures, anchoring in secret coves and enjoying the company of some amazing characters.

In his words

'It's a fun romp up the Queensland coast where, along the way I, alias 'Old Salty' manage to launch the first mate into orbit at our first marina docking, find out the hard way that super-tankers and whales have right of way and that you can't raise the spinnaker when it's tangled around the propeller!'

David's long suffering first mate, Heather is the hunter/provider of the expedition and is always off hunting yabbies, fish or muddies while Salty is the dreamer, content to savour new places and philosophise about past days when the pearlshers, whalers, beche der mer fishermen, blackbirders and pirates ruled the waves!

The book is accompanied by many of David's trademark cartoons which also, for a cold beer, he provides for Beeftalk.

A second book currently with the publisher is about disappearing to exotic places over the Coral Sea and even making it back!

David tells us the transition from the beef industry to the sea wasn't all that easy in a writing sense. His manuscript kept coming back from the publisher with the comment 'you still write like a bureaucrat!'

'Old Salty's Misadventures in Paradise' is a laugh a minute reading experience and available through the publisher, Wyndham Observer Publishers, MS 396 Nanango 4615 by enclosing a cheque or money order for \$25.95 including postage.

Enquiries can be made through chris_kleiss@telstra.com or 0419 166 214 or David on 0438 833 967 and d.daniel@uqconnect.net



Phosphorus supplementation

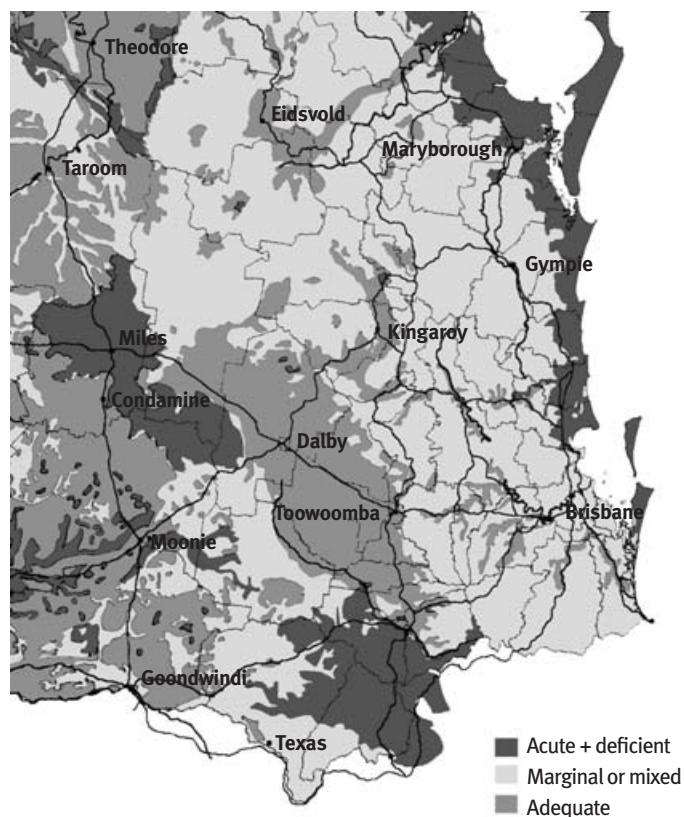
The most common mineral deficiency in grazing animals is likely to be phosphorus. Cattle with this deficiency will perform better if supplemented with phosphorus (P) when gaining weight during the wet season.

Is my country P deficient?

The map below shows soil P levels for much of south east Queensland as being marginal or mixed. Much of the coast is deficient while the Downs and brigalow country and other patches are generally adequate. Most of northern Australia is deficient to acutely deficient.

A representative soil test will establish soil phosphorus levels. When soil bicarb P levels are below 7 ppm (mg/kg), the soil is considered deficient.

Category	Acute	Deficient	Marginal	Adequate
Soil P level (ppm)	< 4	4 – 6	7 – 8	9 +



Source: Phosphorus nutrition of beef cattle in northern Australia (McCosker & Winks)

In livestock, deficiency is most obvious in cattle with high P demands such as first calf heifers and lactating cows. Signs include reduced feed intake, growth, fertility and milk yield. Bone chewing, poor coat, and peg leg (rickets) can also be seen. (Chewing bones and carrion can cause botulism deaths in unvaccinated cattle.)

Is it worth supplementing with phosphorus?

On acutely deficient soils, the response in cattle to supplementation can be significant. Benefits are extra calves and performance. If the deficiency is marginal then response will also be marginal.

In general, supplementation is the most beneficial when provided to high requirement cattle (i.e. pregnant/lactating breeders, young growing stock) in the wet season.

What and when to supplement?

When pastures are green and high in energy and protein, phosphorus can become the first limiting nutrient to higher performance. However if the cattle are not growing, the first limiting nutrient/s are more likely to be protein and energy, not phosphorus.

The table of phosphorus requirements indicates which cattle will benefit from a P supplement and when. For example:

- **Dry stock:** On acute and deficient country, most live-weight classes, if gaining good weight (i.e. sufficient protein and energy), will benefit from P supplementation. On marginal country, supplementation may benefit young fast growing cattle.
- **Breeders:** Highest P requirements are during late pregnancy and lactation. On marginal country, benefits of supplementing with P are most likely during peak lactation. On acute and deficient country, the greatest benefits will be seen during the wet season, but including some phosphorus in breeders' dry season protein supplements will help with pregnancy and replenishing bone phosphorus reserves.

Phosphorus requirements

This table indicates the supplementary needs (gP/head/day) on three categories of country for dry stock weighing between 200 and 600 kg at low (250 g/head/day) or high (750 g/head/day) rates of gain.

Liveweight (kg)	'Acute'		'Deficient'		'Marginal'	
	Low gain	High gain	Low gain	High gain	Low gain	High gain
200	4	8	2	6	1	5
300	3	7	1	5	0	2
400	3	7	0	3	0	0
500	3	6	0	1	0	0
600	3	5	0	0	0	0

This table indicates the *additional* supplementary needs (gP/head/day) for pregnant or lactating stock of two age brackets on three categories of country.

	'Acute'			'Deficient'			'Marginal'		
	Late preg	Peak lact	Late lact	Late preg	Peak lact	Late lact	Late preg	Peak lact	Late lact
Young cows	2-4	6-8	2-4	0-2	3-5	0-2	0	1-3	0
Mature cows	1-4	4-7	0-4	0-1	0-4	0-1	0	0-2	0

Which supplement?

Phosphorus can be fed as a dry lick, blocks in drinking water, or in roller drums. Which supplement to choose will depend on palatability, phosphorus content and price. Some trial and error is invariably required to establish satisfactory levels of intake.

Commercial licks

There are many commercial phosphorus supplements on the market. The following formula calculates the price per kilogram of phosphorus:

- phosphorus content in kg = (weight of bag/block multiplied by %P) divided by 100
- cost per kg of P = (price per bag/block) divided by phosphorus content.

Homemade licks

DCP (dicalcium phosphate, approximately 17% P) and Kynofos (21% P) are commonly used to supply P. They do not dissolve in water. Salt, molasses, pollard and protein meals have been used as carriers.

For example, mixes of from 2:1 to 5:1 of DCP or Kynofos to molasses have been used successfully. A cement mixer comes in handy. Add the molasses to

the DCP, not the DCP to the molasses. Start with 1:1 or 2:1 mix and then gradually increase the amount of P fertiliser until good intakes are achieved. Adding 2 parts salt may improve overall acceptance.

No recipe will suit all situations. The supplement mix should be adjusted to achieve the desired intake of phosphorus.

Fertiliser grade MAP/DAP and superphosphate are banned for feeding to cattle because of unacceptable levels of cadmium and fluorine.

Soluble P sources

Technical grade MAP (e.g. Liquifert) and food grade phosphoric acid can be fed to cattle. These products are more expensive than the insoluble products but are suitable for medicating water or using in urea/molasses roller drums. Technical grade MAP may not stay fully in solution in a roller drum mix, but is less corrosive to steel rollers and mixers than phosphoric acid.

Further information:

Roger Sneath

DPI&F, Dalby

Phone: 07 4669 0808

Email: roger.sneath@dpi.qld.gov.au

Product labels — what are they saying



When buying feed it is often difficult to understand the information on the label attached to the product. This information is generally a combination of what the manufacturer legally has to tell you and what they want to tell you about the product.

Many labels on protein supplements will look something like this:

Crude protein	30.0%
Equivalent crude protein	23.0%
Urea	8.0%
Calcium	8.0%
Phosphorus	4.0%
Salt	2.0%
Sulphur (S)	2.0%
Copper (Cu)	300 mg/kg
Iodine (I)	30 mg/kg
Zinc (Zn)	500 mg/kg

Crude Protein:

The total amount of protein in the feed. Crude Protein includes True Protein (from protein meals, grain, etc.) as well as protein derived from urea and Gran-Am. Crude Protein may also be listed as Protein and Total Protein. (Protein contains nitrogen).

Protein from urea and Gran-Am:

The rumen microbes use the nitrogen from these products to form protein. This protein is referred to as microbial protein. The nitrogen from these products is referred to as Non Protein Nitrogen (NPN) indicating that it has been derived from a source that is not a protein. The microbes also use the nitrogen from the True Protein in grass, protein meals and grains to form microbial protein.

Equivalent Crude Protein:

The proportion of Crude Protein that is derived from sources of NPN.

Urea:

The total percentage of urea included in the ration.

Sulphur:

Used in conjunction with nitrogen by the rumen microbes to form some amino acids. Sulphur and nitrogen are required in the ratio of 1S to 10N.

Calcium:

Included in most commercial licks but rarely, if ever, deficient in grazing cattle.

Phosphorus:

An important ingredient in phosphorus-deficient areas.

Salt:

Generally included to control intake of the supplement. The higher the salt content the less palatable the supplement.

Other Minerals:

Included to maintain a mineral balance.

Minerals are generally divided into two broad categories.

1 Macro minerals: needed by animals in grams per day:

Calcium
Phosphorus
Magnesium
Sulphur
Potassium
Sodium.

2 Micro (trace) minerals: needed by animals in milligrams per day:

Copper
Cobalt
Selenium
Zinc
Iodine
Iron
Manganese.

Calculating protein in a feed:

The protein in any feed is calculated by determining the amount of nitrogen in that feed and multiplying it by 6.25. This formula can also be used to calculate the protein equivalent of urea and other sources of NPN.

E.g. Urea with 46% N X 6.25
= 287% protein

Gran-Am with 20% N X 6.25
= 126% protein

In our example label, if you multiply the urea, 8%, by 287% it comes to 23% (rounded), which is the amount of Equivalent Crude Protein shown on the label.

This demonstrates that of the total 30% Crude Protein, 23% is due to urea and the remaining 7% comes from True Protein such as protein meals or in some cases grains that have been included in the feed.

Comparing supplements:

This can be done by calculating how much of a particular nutrient is supplied in an arbitrary weight of the product. For example 100 grams of this lick will supply 30 grams of crude protein (mostly from urea) and 4 grams of phosphorus. This means you would have to feed 500 grams per head per day to supply the recommended 150 grams of protein but only 125 grams to supply the recommended 5 grams of phosphorus.



Further information:

Russ Tyler

DPI&F, Gayndah

Phone: 07 4161 3726

Email:

russ.tyler@dpi.qld.gov.au

Collecting samples for NIRS

The development of NIRS (Near Infrared Reflectants Spectroscopy – see BeefTalk 11) as an aid to determining the diet quality of grazing cattle is continuing at Brian Pastures, Swans Lagoon and Toorak Research Stations and the properties of 140 producer co-operators in Queensland, Northern Territory and Western Australia. Six of the producer co-operators are in south east Queensland.

The demand for NIRS analysis is increasing as producers see the benefit in being able to more accurately estimate the diet of their cattle.

For the analysis to be of value, the dung samples must be collected, stored and transported correctly. Samples collected in the field must be kept cool and refrigerated as soon as possible. You must either refrigerate, freeze or dry your samples before sending them for analysis. Dried samples are much easier and cheaper to post.

Field data collection sheets are available from David Coates.

Collecting the sample

With a gloved hand or clean plastic spoon, take approximately one or two tablespoons from each of 10 to 20 animals or fresh dung pats. Ensure that the quantity of sample taken from each dung pat is about the same. Once enough individual samples have been collected, mix thoroughly. Now transfer 0.5 to 1 kg to a suitable plastic jar with a screw top lid or a ziplock plastic bag.

If only older dung pats are available, remove the top layer and take samples from the 'fresh' dung underneath. It is critical that the sample is not contaminated with soil, mucus or dung beetles.

Enter the appropriate information on your field data collection sheet and label the sample container with the following information:

- Owner's name
- Property name
- Paddock name
- Date of sampling.

Keep the faecal samples as cool as possible until you reach home.

Refrigerating or freezing

Refrigerate or freeze samples as soon as possible after collection.

Drying

If you are drying more than one sample, identify them carefully to avoid mixing them up.

Dry faecal samples by placing them on a piece of clean, flat galvanized iron sheet or other non-absorbent sheet (not wood or fibro, but laminex would be okay) in a sunny position. Spread the sample out like a pancake to a thickness of 10 mm or less.

You may need to take precautions to stop dung beetles, dogs and chooks messing up the samples! A gauze or netting cover would probably do the trick.

After samples have been in the sun for about 4 hours, turn them over using an 'egg slice' such as a piece of tin or galvanised iron. Try to keep each sample in one piece. To prevent wind blowing the sample off the sheet, secure it with a piece of chicken mesh.

If the weather remains sunny, the sample should be dry after another 4 hours.

Sun-dried samples can then be broken up and placed in labelled zip-lock plastic bags. Once dried, the samples do not need to be refrigerated but they should be stored in a cool, dry place.

Posting samples

Dry samples

Samples that are dried prior to shipping can be sent in a ziplock plastic bag in a padded envelope.

Frozen and refrigerated samples

Australia Post requires frozen or refrigerated samples to be sent in special shipping containers, which consist of plastic screw-top canisters in Styrofoam eskies. Insert each sample, still in its original plastic ziplock bag or plastic 250-ml screw top container, into the larger 1 litre plastic screw-top canister.

Frozen samples sent in the special shipping containers do not require an ice brick. However samples that have only been refrigerated must be accompanied by an ice brick in the shipping container.

Post frozen or refrigerated samples no later than Wednesday to ensure they arrive at CSIRO before the weekend.

Posting the sample

Post samples to David Coates at the address below.

Cost

Each test will cost \$27.50 plus the cost of postage.

Further information:

Russ Tyler

DPI&F, Gayndah

Phone: 07 4161 3726

Email: russ.tyler@dpi.qld.gov.au

David Coates

CSIRO Tropical Agriculture

Davies Laboratory

PMB Aitkenvale Q 4814



Out of season calves

This year there seems to be more calves born out of season than would normally be expected. This is most probably due to a run of below average seasons and cows going in calf following weaning last year.

While it is often said 'any calf is better than no calf at all', a young calf in autumn/early winter can present problems.

The nutritional requirements of a cow to maintain her own body weight and rear a calf are high. During winter and early spring most pastures do not provide sufficient nutrients to maintain the liveweight of a dry animal, let alone a lactating cow.

A cow that does not receive adequate nutrition will lose weight and either goes in calf late again next season or doesn't go in calf at all. This will particularly be the case if the cow was not in forward store to good condition at calving.

Some suggestions to manage this situation:

- Segregate all lactating cows from the main breeder herd.

- If the demand for re-stocker cows and calves is still high, consider cashing in these cow/calf units.
- If retaining lactating cows, supplement with protein and energy.
- Wean the calves when they are 3-4 months old (100-150 kg) and give these calves special treatment to ensure they keep growing. (See *BeefTalk* 15 articles 'Early weaning - practical experience' and 'Make weaning a success without stress' for more information.)

By doing this, a cow will maintain weight and hopefully be in good enough condition to go in calf in early summer.

How much supplement does a lactating cow need?

	Energy (MJ ME/day)	Protein (grams/day)
Requirements for a 400 kg lactating cow to maintain weight	75	864
Nutrients supplied from pasture	39	270
Deficiency	36	594



This deficiency can be made up by feeding

- 4 kg of molasses with 5% urea, or
- 2.7 kg of whole cottonseed.

A weaned cow only requires an additional 145 grams of protein to meet her daily requirements. This can be supplied by 50 grams of urea. A sold cow doesn't require any input.

Further information:

Russ Tyler

DPI&F, Gayndah

Phone: 07 4161 3726

Email: russ.tyler@dpi.qld.gov.au

NLIS frequently asked questions

How do I implement NLIS?

To get started in NLIS for cattle follow these 10 steps:

- 1 Decide on the cattle you wish to tag.
- 2 Calculate the number of tags you require.
- 3 Determine if you need breeder or post breeder tags:
 - white breeder tags are for cattle born on your property;
 - orange post-breeder tags are for cattle not born on your property.
- 4 Decide on the type of tag (i.e. ear tag or rumen bolus) you wish to

use and choose an NLIS-approved supplier. Rumen boluses have an associated management ear tag that must be applied to the off side (right) ear at the same time the bolus is inserted.

- 5 If using NLIS ear tags, establish the number of new applicator guns you require from the manufacturer. Conventional applicators cannot be used for electronic ear tags.
- 6 Take this information as well as your property number to your local DPI&F stock inspector. The stock inspector will verify your

property registration details and ask you to complete an Application for Permanent Tags form. Application forms can only be completed as originals - facsimiles and photocopies are not acceptable.

- 7 The stock inspector will then complete his section of the form and provide you with two copies, one copy for your records and one copy for the tag supplier.
- 8 Establish if you wish to have an on-property numbering system included in your NLIS number (maximum of five numbers). If you do, determine the serial

numbers you want included e.g. 00001 to 00250.

- 9 Place your tag order with an approved supplier of NLIS tags, supplying them with:
 - the copy of the Application for Permanent Tags form; and
 - the serial numbering system you want included in your NLIS number.
- 10 Production of NLIS devices normally takes a week but delays can be experienced so please allow plenty of time.

How do I apply the NLIS tags to an animal

Devices come with instructions for application. Correct application is essential. The NLIS ear tag must be applied to the off-side (right) ear of the animal. The management tag supplied with the rumen bolus must also be applied to the off-side (right) ear of the animal when the bolus is inserted. Specific instructions accompany the bolus, and first-time users may find some training by an experienced administrator necessary. Animals that are already tagged with an NLIS device must not have another NLIS device applied.

How well do NLIS tags stay in an animal's ear

Ear tags used in the NLIS are required to meet retention and readability standards. The NLIS trademark is printed on NLIS-approved tags, indicating that they meet those standards. They are much smaller in size and designed to be attached well inside the ear to ensure they cannot be pulled out. It is essential to use the correct applicator and follow the manufacturers instructions. The tag and applicator should also be dipped in an antiseptic solution prior to application to prevent infection, which can lead to tag loss.

What happens if purchased cattle lose a tag?

An orange post-breeder NLIS ear tag is available for purchased animals with either no tag or a tag that does not read electronically.

If the number of the original tag is known, producers can advise NLIS database staff of the new number. This will maintain the lifetime traceability of the animal.

Can the tags be removed and re-used?

Once applied to an animal, the device is designed to remain with the animal for its entire life. It is illegal to remove an NLIS device unless it is damaged or faulty. If a tag has been accidentally applied to the wrong animal(s), it can only be removed or replaced with an inspector's approval. If an animal dies or is slaughtered on property, the tag may be removed, recorded, and the NLIS database advised, however this is not compulsory. The tag is tamper-evident and cannot be re-used.

What is to stop cattle thieves cutting out my NLIS ear tags and replacing it with their own?

Unauthorised removal of an NLIS device is an offence under Queensland law, however, it is possible to remove the tag and replace it with another. Producers concerned about stock theft may consider using the rumen bolus as a more permanent form of identification. Producers are advised to consult with their customers and processors to ensure acceptance of rumen boluses before they adopt them widely in their herd. A button tag combined with a DNA sampling system is also available as an aid to stock security.

Will I still need to use tail tags on NLIS-identified cattle?

Eventually the NLIS ear tag or rumen bolus will replace the need for a tail tag, however during the implementation phase tail tags will still be required.

What will it cost me to participate in NLIS?

For a cattle producer, the basic cost of participating in NLIS is the cost of the NLIS ear tag or rumen bolus and associated applicator. NLIS devices will vary in price. On average, an ear tag device will cost

between \$3.70 to \$4, depending on the quantity ordered. A rumen bolus (including a visual management tag) costs between \$3.80 and \$5.80. Applicators range from \$25 upwards. While not everyone will need a reader, the cost of readers and other equipment that may accompany the tags will vary from a base rate of approximately \$950.

Do I need to buy a computer and a reader to use NLIS?

Producers who breed and sell cattle via saleyards or direct to abattoirs may never need to interact with the database, and will therefore not need a computer and reader. A computer and reader will, however, be necessary to track and record movements of livestock from property-to-property on the database. For small numbers of cattle (no more than 20 in one transfer) this can be done via fax to the database. Larger herds will need to be read electronically, requiring a computer and internet connection so that the database can be notified directly.

Who will be responsible for scanning NLIS devices and notifying the database?

NLIS-identified cattle will need to be read at saleyards and abattoirs. The facility operator will be responsible for reading tags and sending livestock movement information to the NLIS database. In the future, movements of cattle between properties will also need to be reported to the database. While this will be the responsibility of the purchaser or receiver of the animals, it may, by arrangement, be carried out by the consignor or a third party en route.

When is NLIS being introduced?

NLIS is being rolled out in Queensland on 1 July 2005.

Further information

Contact your local DPI&F stock inspector or beef extension officer
Phone: 13 25 23 Web sites: www.dpi.qld.gov.au/nlis and www.nlis.com.au



Timely tips for south east Queensland

October – November

Dry season management

- Re-assess pasture quantity and quality in relation to ground cover and feed values
- Review supplementary feeding program. Is it worth the cost, time and effort versus the benefits?
- Feed supplements to maintain good breeder condition, particularly first calf cows (and second calf cows if yearly mating). Lactating cows have high nutritional needs to maintain liveweight and milk production.
- Estimate future supplement needs and contract supply where necessary.

Breeders

- Assess breeder condition for mating. Heifers and first calf cows may need extra care.
- Move pregnant breeders to a calving paddock, close to homestead and yard facilities.
- Check calving cows, especially heifers, regularly.
- Record all cows and heifers that have calving problems and cull them and their calves.
- Order NLIS ear tags or rumen boluses for calves branded this year. Implementation of NLIS in Queensland to start 1 July 2005.

Bulls

- Purchase replacement bulls according to guidelines.
- Have breeding soundness evaluations done on all bulls prior to mating.
- Vaccinate bulls for three-day sickness and vibriosis (two doses one month apart initially, then annual booster).
- Check:
 - that purchased bulls are in working condition, not show or sale condition
 - whether purchased bulls have been vaccinated against tick fever and vaccinate if necessary
 - all bulls for any injuries, stiffness of gait, cuts or swelling.

Pastures

- Check pasture yields following

the spring break – is there enough ground cover? If you have enough standing dry feed to carry a fire (you don't have to burn), then your ground cover and stocking rate are about right.

- Consider spelling pastures early in the growing season for a positive impact on pasture composition.
- Implement a planned burning program for native pasture where appropriate. Only burn for a specific reason, such as to
 - control woody weeds and regrowth
 - even out patch grazing
 - positively change species composition
 - remove moribund pasture.
- If pasture development is a part of your overall plan, sow pastures if seasonal conditions are favourable.
- Weed control is most successful if implemented early. Actively patrol known 'hot spots'.

Parasites

- Start tick control program.
- Obtain cattle dip analysis.
- Check early (late winter) calves for scrub tick.
- Check weaners for worms (Early Bird Wormcheck kit) one month after season has broken.

Property management

- Check mating paddocks are secure.
- Check fence lines, creek crossings, etc.
- Check firebreaks and fire fighting equipment.

November – March

Breeders

- Assess breeder condition for mating. Heifers and first calf cows may need extra care. Are cows cycling?
- Put bulls out with breeders:
 - Where nutrition is adequate, mate heifers one month before the main herd.
 - Mate young bulls with young cows.
 - Avoid mixing different aged bulls if possible.
- Brand, dehorn, castrate, tag and vaccinate calves ('5 in 1' or '7 in 1').
- Assess individual calf performance. Consider culling dams of poorly grown calves.

- Enter new calves onto herd performance recording program.

Bulls

- Check that bulls are in working condition, ready to mate.
 - Check for any injuries, stiffness of gait, cuts or swelling.
 - Check for signs of tick fever or three-day sickness.

Growing cattle

- Weigh growing cattle: assess them individually rather than on average.
- Consider HGP implants for steers for non-EU sale.
- Evaluate markets and plan sales. Do you have to book cattle into meatworks or feedlots?

Supplements

- Start phosphorus supplementation program where soils are deficient. Continue until the end of the growing season.
- Evaluate effectiveness and cost benefit of last winter's supplementation program and plan for next winter.

Pastures

- Consider spelling native pastures. Spelling native pastures for a full wet season once every four or five years will have a very positive impact on species composition. Paddocks can be spelled on an annual rotation.
- Spell leucaena for at least 2 months during the growing season.
- Consider applying maintenance fertiliser to sown pastures (e.g. superphosphate).
- Consider growing a summer forage crop to carry cattle while pasture paddocks are being spelled.

Parasites

- Continue tick control program.
- Control buffalo fly where applicable with insecticidal ear tags or buffalo fly traps.
- Check young cattle for worms (Early Bird Wormcheck kit).

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Science snippet: Rumen microbiology and function

Cattle and sheep, or ruminants, are very important to the world's agriculture and the economy. Australia earns approximately \$10 billion of Gross Domestic Product from ruminant productivity annually.

Ruminants are able to convert pasture and agro-industrial by-products into products for human use (meat, dairy and woollen products). However, the animal itself does not have the physiological capabilities to utilise a feedstuff that is largely composed of plant structural material, such as cellulose and hemicellulose. To accomplish this the animal has evolved a forestomach or rumen. This chamber is very large, up to 80 litres in adult cattle. The rumen supports a mixed ecosystem of microbes that are able to ferment the plant material, digesting it to release volatile fatty acids (VFAs) and enabling the microbes to grow in number. The animal can then utilise the VFAs primarily as a source of energy and the bodies of the microbes as a protein source. The microbes that live in the rumen are in extremely dense populations and constitute four major groups: bacteria, protozoa, anaerobic fungi, and bacterial viruses.

Bacteria are the most numerous of the rumen inhabitants and number up to 100 billion individuals per millilitre of fluid. There are 60-100 species regarded as normal rumen inhabitants and, although each species can only undertake a few specific tasks, the bacteria as a whole are capable of degrading all the constituents of a plant-based diet.

Protozoa are much larger organisms and are present at numbers around a million per millilitre. There are more than 100 species in 2 main families. Protozoa feed on simple sugars and starch, and some species may have a role in plant fibre degradation. A downside to protozoa is that they predate heavily on bacteria, thus reducing the amount of microbial protein that is available to the animal.

Five genera of *anaerobic fungi* are known in the rumen. The fungi are important for the breakdown of low quality fibrous diets. They have a complex lifecycle and the motile zoospore stage is present in rumen contents at around one hundred thousand per millilitre.

Bacterial viruses (bacteriophages) are present in high numbers (up to 100 billion per millilitre) and are overall thought to be detrimental through killing bacteria. However they may also confer benefits by maintaining the balance of bacterial populations or transferring genetic material.



Obviously these groups of organisms don't exist in isolation and there is considerable interaction between them. Interactions can be positive, such as the synergism between species required to fully utilise plant material, or negative such as through competition for resources, predation by protozoa, or pathogenesis by bacteriophages.

In essence, cattle and sheep mostly digest microbes and the products of microbial fermentation. The mainstay of their nutrition is the rumen VFAs and microbial crude protein that is the balance of the outcomes of all the positive and negative interactions that occur in the rumen ecosystem.


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While attending a marriage seminar on communication, Tom and his wife Mary listened to the instructor declare, 'It is essential that husbands and wives know the things that are important to each other.' He addressed the men: 'For instance, gentlemen, can you name your wife's favourite flower?' Tom leaned over, feeling very confident, touched his wife's arm gently and whispered, 'Self-raising, isn't it?'

The rest of the story is not pleasant.

The Falkland Islands – An introduction

The Falkland Islands lie off the coast of South America, and would probably be still rather unknown had it not been for the Falklands war in 1982 when Argentina decided to invade Isla Malvinas (as they call it) and reclaim them.

As everyone knows, under the Prime Ministership of Margaret Thatcher the islands were reclaimed by the UK. Not without significant cost and loss to both countries. Luckily during the conflict very few locals lost their lives. Despite the passing of time, there is still deep-seated distrust of the Argentinians, particularly as many of them still make claim to the Falklands. As a result most trade in the Falklands is with the UK or Chile.

A reading of the islands' history makes things no clearer. Over the years the islands have been settled by inhabitants of many countries and there is no native population. To complicate matters further, geologically the Falklands broke off South Africa.

The Falklands can rightly be said to be at the end of the earth; only the southern tip of South America is further south. Being this close to the Antarctic Peninsula means average temperatures of around 5°C or less. Presently our winter temperature ranges from -3°C to 4°C. If you thought Melbourne weather was variable, one day here it snowed three times, and it rained. In between the sun shone brightly, and the day ended with slippery ice covering the ground.

Agriculture here is based on wool. The sheep population is around the 600 000 head mark and the wool industry here, as in Australia, is struggling with low wool prices. There are approximately 88 properties on the islands ranging in size from 500 ha to 105 000 ha.

There is a long history of beef cattle on the islands. Cattle arrived with the first settlers. They were mainly dairy breeds which mixed with a few beef breeds to obtain a Falkland Islands breed that I have not seen but which apparently lives in a mountain range called 'No Mans Land'. There is a program being run currently to upgrade the herd with Angus/Hereford and other cold climate *Bos taurus* breeds from the northern hemisphere.

Current beef numbers are only around 2000 head and there is much debate as to whether this should be increased. Being on the doorstep of the huge low cost beef producers of Argentina, Brazil and Uruguay makes it difficult for a beef industry to exist here.

A recent development, though, has been the construction of a meat works, which has operated for two seasons. This has provided some extra options for culling sheep which previously were slaughtered for no



return. The current prices are 78 cents/kg dressed weight for mutton and \$2.40 for lamb. There has been a recent move to slaughter beef for the local market to compete with imported Uruguayan beef. Price on offer is \$3.53/kg dressed weight.

Diversification is a typical agricultural topic and one of the options has been reindeer brought in from the South Georgia Islands (which are even closer to Antarctica). There has been no immediate up take of the reindeer and I spent a day helping cut off their antlers so they could be shipped to one of the smaller islands for tourists. As I get around the islands, I hope to bring you some more updates on agriculture in the Falklands.

Damien O'Sullivan

*Agricultural Adviser, Department of Agriculture
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China – huge market potential but lot of work to be done

China has one of the world's largest populations and an economy that has continued to grow over the last three years. Its acceptance into the World Trade Organisation (WTO) in 2001 offered huge potential for the Australian beef industry. History has shown that as Asian countries become more affluent, their beef consumption increases.

At the Kingaroy Meat Profit Day in March, Tim Kelf (Regional Manager – South Asia, Meat & Livestock Australia) gave a comprehensive update of Asian markets in relation to Australian beef. This article is based on the key points of Tim's presentation relating to China.

Trading with China is not easy. Experience with live export has shown that there are many areas that need to be addressed. Establishing the right political and business connections is essential to enabling the trade to open.

Some barriers that need to be considered are:

- The Chinese people are not traditionally red meat eaters, preferring pork and chicken.
- While the economic growth has been significant, a great number of Chinese consumers do not have access to refrigeration.

- China has a large red meat industry and is reputed to be a net exporter of meat.
- The Chinese have a long-term view of business, being happy to delay decisions for many months, sometimes years, to allow for more consideration and to better position themselves before making any agreements.
- The United States and Brazil already have access to the Chinese market.

Export health protocols for beef and sheep meats have been agreed between AQIS and the relevant Chinese authorities.

However problems have been encountered with gaining accreditation for our processing plants to export meat to China. The use of a systems audit by AQIS to accredit Australian abattoirs was not readily accepted by a Chinese delegation that reviewed the major Australian processing plants. Only three plants were accredited to export and China is currently not issuing any additional import permits for Australia. A further review is planned but the process tends to be time consuming and frustrating for the commercial parties involved.

The situation is further confused by the long-standing tradition of meat being smuggled into China. Chinese authorities are looking at ways to stop this illegal movement of meat.

Meat & Livestock Australia (MLA) are working to establish Australian meat products in the Chinese market place in anticipation of the trade opening up. This has been largely through

- promoting the Australian product for its safety and versatility and our industry for its export focus
- identifying potential trading partners within China
- identifying the product requirements of the Chinese market
- investigating the Chinese red meat industry and its impact on future opportunities to import Australian meats
- establishing an MLA office in China
- organising market missions for Australian processors to China to develop networks for the handling and marketing of our meat products.

China offers Australia a very significant potential market. The Chinese market will take time to establish and will present many challenges that will need to be resolved before Australia can position itself as a major player.

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Research update



Composite breeds and gene technology: boosting calving rates

A three-way composite breeding plan involving African cattle could significantly increase fertility gains in cattle.

An innovative breeding program, crossing Brahman (*Bos indicus*), British (*Bos taurus*) and an African 'Sanga' breed, is one of a range of projects conducted by the CRC for Cattle and Beef Quality to improve the fertility rate of the beef herd in northern Australia.

Sanga or Sanga-derived breeds such as the Belmont or Bonsmara are tropically adapted *Bos taurus* derived from southern Africa. They have similar fertility, meat quality and growth attributes to British breeds, but they are more resilient in tropical environments.

An economic analysis of this breeding plan suggests that fertility gains in the composite cows could increase gross margins by \$17 per adult equivalent (estimated as a 450 kg breeding cow) relative to the Brahman breed.

Other research has explored the correlation between male and female fertility rates. The research demonstrated that selecting sires for larger scrotal circumference or higher testosterone levels improved the fertility rates of their female offspring.

Because scrotal circumference is heritable and more easily measured than actual calving rate, genetic gains can be achieved more quickly from this indirect selection method. Scrotal circumference can also be measured in young, growing bulls prior to joining age whereas cow fertility can only be measured later in life.

Scientists with the CRC for Cattle and Beef Quality are looking for genetic markers for female fertility. Fertility has a low heritability. However it may be linked to other body composition traits such as fatness and muscularity, which could provide indirect measures of improved fertility.

The bovine genome sequencing project and recent advances in gene technology will fast track the identification of genes for fertility and other performance indicators. It is anticipated this information will allow both genetic and non-genetic options, such as husbandry and management regimes, to be developed to boost the calving rates and ultimately the productivity and profitability of the northern Australian cattle herd.

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Export Slaughter Intervals (ESIs) for cattle - June 2003

The export slaughter interval (ESI) is the minimum time interval that should elapse between the last treatment of an animal and slaughter for export. ESIs are an industry standard to ensure export requirements are met. The withholding period (WHP) for meat is the minimum period that must elapse between the last treatment of an animal and slaughter for human consumption in Australia. The WHP is a statutory requirement. WHPs listed in this table are for meat.



Chemical product	WHP (days)	ESI (days)	Chemical product	WHP (days)	ESI (days)	Chemical product	WHP (days)	ESI (days)
Abamectin Pour-on	35	42	Excenel Inj	1	#	Nu-Tic	0	0
Acatak	42	42	Farnam Worma Drench	8	14T	Optimizer Ear Tags	0	0 ^c
Alamycin LA Inj	42	#	Fasicare	21	56	Oxazole	8	14
Alamycin 300 (normal dose)	28	#	Fasimec	21	56	Oxfen C	8	14
Alamycin 300 (elevated dose)	35	#	Fasinex	21	56	Oxfen LV	10	14
Alamycin 10 Inj	15	#	Fenbendazole (incl 100)	14	14	Oxymav100	21	#
Albendazole Cattle Mini-drench	10	10	Fencare 25 & 100	21	21	Oxytetracycline 100	5	#
Alternate	21	21	Ficam Gold	0	0	Oxytet 200 LA	42	#
Amitik EC & WP	0	0	Finadyne	7	#	Panacur 25 & 100	14	14
Amitraz EC Spray	0	0	Flukare C	21	56	Paramectin Injection	30	42
Aquacaine L/A	30	#	Flukare S	21	56	Paramectin Pour-On	35	42
Aquacaine G	5	#	Flumav	28	#	Paramax Pour On	42	42
Arrest Easy-Dose	0	21	Flunix	28	#	Patriot Ear Tags	0	0 ^c
Avomec Antiparasitic Injection	30	42	Flunixil Injection	7	#	Poron	0	10
Barricade S	8	21	Flunixon	7	#	Propen	5	#
Baymec Pour On	42	42	Fly Strike Powder	3	3	Python Ear Tags	0	0 ^c
Bayticol Dip & Spray	0	0	Gallimycin	14	#	Roscocycline	22	#
Beefmec Pour-on	42	42	Genesis Injection	42	42	Rycomectin Injection	30	42
Benacillin	30	#	Genesis Pour-on	21	21	Rycozole (incl RV)	3	7
Betamox Inj	28	#	Genesis Ultra Injection	28	42	Scour-X & Scourban	14	#
Bimoxyl LA	30	#	Imizol	28	na	Spike Ear Tags	0	0 ^c
Bivotop 200 LA	21	#	Injectible Levamisole	3	7	Stampede Pour-on	21	21
Blockade S Dip and Spray	8	21	Ivomec Eprinex	0	0	Strategik Mini-Dose	10	10
Bomacillin	5	#	Ivomec Antiparasitic Injection	28	42	Sumifly Insecticide	0	0
Bomacillin LA	30	#	Ivomec Pour-On	42	42	Supona BF (backrubber)	0	10
Bombard	0	21	Ivomec Plus Injection	28	42	Supona BF (backspray)	0	0
Bovicare	0	0	Kleen-Dok	14	21	Systemex Oral/Drench	8	14
Citarin Pour on	3	7	Leotrox (IM)	16	#	Systemex Rumen Injection	8	14
Coopafly Pour-on	0	21	Leotrox (IV)	10	#	Taktic EC & WP	0	0
Coopers Easy Dose	0	21	Levamisole – various brands	3	7	Tempor	42	120
Cydectin Injection	14	28 ^a	Levipor	3	7	Terminator Ear Tags	0	0 ^c
Cydectin Pour-On	0	0	Mamyzin 5	#	#	Terramycin (oral)	5	#
Cypafly	3	3 ^b	Metacam	20	8	Terramycin LA	42	#
Dairymec Pour-on	42	42	Micotil Inj	28	#	Terramycin 100 Inj	14	#
Dectomax Injection	42	42	Moxylan LA Inj	28	#	Tetravet (oral)	5	#
Dectomax Pour-on	42	42	Moxylan RTU Inj	14	#	Tetravet 100 inj	18	#
Defiance S	3	14	Neguvon	5	5 ^T	Tetravet 200 LA	42	#
Demize	14	28	Nemadet Drench	10	10	Tetroxy LA	42	#
Depocillin	5	#	Neoject 200 Inj	30	#	Tiguvon Spot-on	10	21
Di-Jet (backrubber)	3	10	Neomycin-Penicillin	35	#	Tixafty	0	21
Di-Jet (backspray)	3	3	Neomycin-Sulfate Inj	10	#	Tolfedine CS Injection	10	#
Diazinon (backrubber)	3	10	Neo-Sulcin	14	#	Tremacide	21	56
Diazinon (backspray)	3		Neo-Terramycin	5	#	Tylan Inj 200	21	#
Diazinon Cattle Ear Tags	0	0 ^c	Nilverm Pour-On	3	7	Trodax	28	28 ^T
Diazinon (fly strike powder)	3	3	Nilverm Injection	3	7	Valbazen Mini-Dose	10	10
Ditik	0	0	Nilverm Oral	3	7	Vetmec	30	42
Dopharma Amoxyject	14	#	Nilverm LV	3	7	Virbac Deltamethrin Pour-on	0	21
Dopharma OxyjectLA	21	#	Nilzan LV	14	14	Virbamax Pour-on	42	42
Dopharma Penject	5	#	Norocillin LA	30	#	Virbamec Antiparasitic Injection	30	42
Dopharma PenjectLA	30	#	Norocillin SA	5	#	Virbamec LV Pour-on	42	42
Duotin Injection	30	42	Nucidol 200 EC (backrubber)	3	10	Virbamec Plus Injection	28	42
Duplocillin	30	#	Nucidol 200 EC (backspray)	3	3	Virbamec Pour on	35	42
Engemycin	14	#	Nuflor Injectable	42	#			
Eprinex (also Ivomec Eprinex)	0	0	Nulev (Incl LV)	3	7			

Continued on page 23

Potato and leek tarts with rib roast and horseradish cream



Makes 6 tartlets

Ingredients

- 2 sheets frozen short pastry sheets
- 200 g potatoes, peeled and quartered
- 30 g butter
- 2 medium leeks, cleaned and sliced
- ½ teaspoon caraway seeds
- 20 g plain flour
- 250 ml vegetable stock
- 6 slices rib roast (cooked medium)
- 4 teaspoons horseradish cream
- 1 egg yolk

Method

Prepare shells

1. Line 6 tart shells with thawed pastry. Prick bases and glaze with beaten egg yolk.
2. Bake in moderate oven until crisp and brown.

Prepare filling

3. Boil potatoes until tender. Drain, cool, and set aside.
4. Heat butter in pan and add leeks. Cook, stirring, until soft. Add seeds.
5. Stir in flour and stock. Simmer and continue to stir until thick. Add chopped potatoes.

Assemble

6. Place mixture into prepared pastry shells. Place rolled slices of beef on top.
7. Garnish with horseradish cream and herbs.
8. Return assembled tartlets to the oven briefly to warm before serving.

Warbex	14	14
Warrior Ear Tags	0	0c
Young's Levamisole (incl LV)	3	7

Notes:

a: ESI for Cydectin Injectable is 40 days if multiple treatments are given.

b: ESI is based on the correct re-treatment interval being applied (ie a re-treatment interval of 21 days or more).

c: Removal of Ear Tag prior to slaughter is recommended to prevent possible contamination.

T: ESI is under review and the final ESI may be longer.

#: These are veterinary drugs that require a veterinarian to prescribe actual treatment regimes. Your veterinarian will advise you of the period of time the animal should be held before slaughter. This advice must be adhered to. Shorter periods than the WHP are not acceptable for cattle slaughtered for export.

IMPORTANT INFORMATION

- The label WHP is the minimum legal requirement at all times.
- Label directions for use must be strictly adhered to for the ESI to apply.
- Lean cattle usually have higher residue levels than normal. It is wise to add a

margin to ESIs for very poor stock or stock losing condition.

- 'na' (not available) indicates that an ESI is yet to be determined.

For the latest ESI Information contact Meat and Livestock Australia on 1800 635 445 or visit the MLA website at www.mla.com.au/esi

DISCLAIMER: MLA does not accept responsibility for the accuracy or completeness of the ESIs and the WHPs. The ESIs are advisory only and are subject to change. The ESIs and WHPs have been provided to MLA by third parties and have not been verified by MLA.

If you would like a copy of Beeftalk mailed to you, please complete the following form and send to
Editor, Beeftalk, DPI&F, PO Box 395, Gympie, Qld 4075.

Name:

Address:

Postcode: Shire: Property Number: No. of cattle:

Phone: Fax: Email:

Which of the following best describes you?

- Beef producer Agribusiness outlet Education Other (please state)

Annual checklist for bulls

Current herd bulls...



Bull Health

- Wormcheck and treat if necessary.
- Administer annual booster vaccinations
 - > vibrio
 - > ephemeral fever (3-day sickness).



Body Condition

- Check for forward store condition (score 3–4), which is ideal for optimum sperm quality (over-fat bulls can be sub-fertile and excess strain can be placed on legs and spine).



Structural Soundness

- Check legs and feet for:
 - > injuries
 - > stiffness, lesions
 - > cuts or swelling.
- Check penile and sheath structure for mating ability.



Bull Breeding Soundness Evaluation (BBSE)

- Get your local vet to conduct an annual BBSE (a scrotal and physical exam, semen and morphology evaluation, serving capacity if required) prior to joining to identify bulls that are declining in fertility.

If you need to purchase bulls...



Look at your Breeding Objective...

- Consider the following points and make a list of
 - > traits of economic importance
 - > customer/market requirements
 - > herd production targets
 - > current herd performance
 - > breeding goals and selection criteria, and prioritise.
- Consider suitability of breed to your environment.



Research


- Talk to potential suppliers about your bull requirements and the information they have available on their sale bulls.
- Look at BREEDPLAN figures (EBVs) for a range of traits eg fertility, growth, carcase, temperament etc and identify those bulls that meet your requirements.
- If gene marker information is available look for opportunities to utilise this information in your selection.
- Use sire summaries (Group BREEDPLAN EBVs) to compare bulls across herds within a

breed. This information is published on breed society websites.

- Check the dam information of potential sires eg age at first calving, calving interval.



Selection

- Study sale catalogues and identify bulls with EBVs and \$Indexes that match your criteria.
 - Work through your bull cost per calf (see BeefTalk 16, page 9), set your price limit and stick to it!
 - Look at your list of selected bulls and assess structural and reproductive soundness (look for the BBSE).
 - Make your purchases.
-  **At home**
- Make sure you allow enough time for your new bulls to adapt to new environment.
 - Let down to working condition before joining if they are in sale or show condition.
 - Check vaccination history of purchased bulls; vaccinate if necessary.

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