



FutureBeef

BeefTalk

Taking stock of your future

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ISSUE 38 AUTUMN 2014



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Editorial

Welcome to BeefTalk's latest edition

FOR many this is the worst drought in experience, combined with low cattle prices, water shortages and escalating feed prices.

There has been some relief rain, though still very patchy. Hopefully there are more good falls by time of printing. Irrespective of forecasts it is timely to adjust stock numbers according to current pasture yields and water supplies to be able to last until next summer.

This *BeefTalk* edition has a list of drought aid contacts as well as the Rural Financial Counselling Service outline how they can help. Pasture growth and grazing management decisions are discussed as well as an example of calculating a break even price for feeding.

Several spreadsheet tools are available on the FutureBeef website to also help in assessing the economics of selling versus feeding, production feeding, custom lotfeeding, as well as costing nutrients in purchased feeds, visit www.futurebeef.com.au/topics/business-management/beef-business-tools.

The FutureBeef website also has forage budgeting videos and a webinar called 'Decisions for drought affected producers'. The 'High output forages' project is finishing soon. The results of three years' data collection of forage, animal and economic information from 25 paddock sites from Taroom to Capella will be displayed at three field days on April 1, 2 and 3 at Capella, Rolleston and Wandoan. While on forages, one article warns of potential prussic acid and nitrate risks.

Also the new *Forage oat variety guide 2014* can be downloaded from www.daff.qld.gov.au/plants/field-crops-and-pastures/broadacre-field-crops/oats/forage-oat-variety-guide. Other winter forage options include barley, triticale, wheat and canary. Check with your local seed supplier/s for more information about the forage crop varieties they sell and specific establishment and management guidelines for each. For those within or close to the tick line, there are a range of tick related articles.

We welcome feedback and ideas for future topics – simply include them in the quick survey at www.surveymonkey.com/s/beeftalk38.

Wishing good rain for all!

The BeefTalk team

RIGHT: The Forage oat variety guide 2014 is now available at www.daff.qld.gov.au/plants/field-crops-and-pastures/broadacre-field-crops/oats/forage-oat-variety-guide



EDITORIAL COMMITTEE

Roger Sneath, Damien O'Sullivan, Kiri Broad, Felicity McIntosh, Rebecca Farrell (DAFF) and Carli McConnell representing the South East Queensland Regional Beef Research Committee.

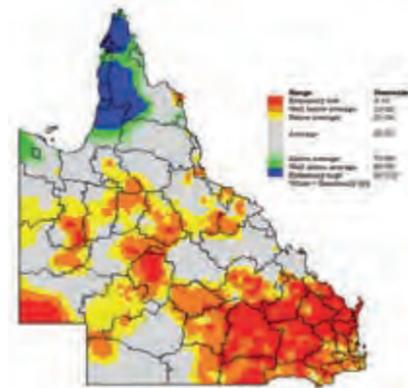
ENQUIRIES

Roger Sneath, PO Box 102, Toowoomba, Qld 4350
Phone: (07) 4688 1244
Email: roger.sneath@daff.qld.gov.au
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CS2264 05/13 ISSN 13266101

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Climate Watch: When is it too late?



Don't procrastinate over key decisions

AS the end of the summer rainfall season rapidly approaches, a key question springs to mind: when is it too late to realistically expect a significant improvement in seasonal conditions?

The answer to this question will depend on your definition of the end of the summer rainfall season or 'brown day', your location and your approach to normal risk management. As always, it is important to have a realistic expectation of what your 'normal' rainfall is and how it can change throughout the year.

For example, Proston has a median (happens 50 per cent of the time) wet season rainfall (October to April) of 555mm. However, the distribution of monthly rainfall within that period varies greatly (February 92mm, March 50mm, and April 30mm). A similar pattern can be found throughout Queensland. For example, Roma (with a median wet season rainfall of 435mm) has a median monthly rainfall for February of 61mm, March of 45mm and April of 20mm. Waiting until the end of April before making management and husbandry decisions such as the setting of stocking rates for our normally drier winters is a higher risk approach. It also does not allow adequate time for pasture growth and recovery between the end of the summer rainfall season and the arrival of cooler winter temperatures leading to tropical grass dormancy.

An alternate approach is if a minimum of 50mm event within a consecutive 3-day period is considered your 'green day' (the minimum rainfall required to provide an improvement in seasonal and pasture conditions), what is the likelihood of it occurring during the past few months of the summer rainfall season. Using Roma as the example, historically only 40pc of the time is more than 50mm recorded during March. This drops to 20pc of the time for April.

Therefore, an appropriate rule of thumb could be that if the season has not improved by the end of February, management decisions such as adjusting stocking rates or early weaning need to be considered.

To investigate rainfall data for your location download the Rainman Streamflow package from www.daff.qld.gov.au. For more information please email david.mcrae@science.dsitia.qld.gov.au.

Dave McRae, DSITIA, Toowoomba
Phone: (07) 4529 1343

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Timely tips for autumn 2014

BREEDERS

- Draft cows according to body condition for tailored management and possible supplementation.
- Start dry season supplementation if the season deteriorates.

CALVES

- Brand - correct legal position.
- Ear tag - NLIS tags must be applied to the RIGHT (offside) ear.
- Dehorn calves (the younger the better).
- Castrate males that are not potential bull replacements.
- Vaccinate with 5-in-1 or 7-in-1.

BULLS

- Remove from breeders.
- Check for defects or physical problems (e.g. sheaths, leg injuries) - cull.
- Cull bulls older than seven years unless they are still in good condition and not showing signs of arthritis. Plan to semen test all bulls nearer to joining time.

WEANERS

- Train weaners correctly to receive substantial benefits.
 1. Less stress on animals and people.
 2. Teaches animals to work through yards, crushes etc.
- Animals get to know yard layout. Once settled animals can be tailed out to learn paddock mustering control.
3. Teaches animals to eat supplements.
 4. Better long term productivity.
 5. Quiet well trained animals are usually calmer, perform and sell better.

6. The process allows you to identify problem animals sooner and you can make a management decision regarding their future.

- Wean early if necessary - instantly reduces stress on cows and allows breeders to gain condition before winter. Wean, weigh and identify mothers of poor calves and sell them.
- Draft off any small weaners (less than 150kg) for special care.
- Feed weaners good quality hay in yards, feed in racks if possible to minimise wastage. Introduce weaners to supplements.
- Must have adequate supply of good clean water.
- Yards and paddocks should be in good condition with plenty of shade.
- Consider coccidia control measures if hand feeding for a considerable amount of time in the yards.
- Vaccinate with booster 5-in-1 or 7-in-1.
- In tick infested areas, vaccinate for tick fever, if possible do not administer more than one vaccine at a time. Immunity produced by tick fever and other vaccines may be more reliable if these vaccines are administered at different times. As a general rule, administer tick fever vaccine at least two weeks after any other vaccine but before the weaners leave the yards.
- Wean into best paddock available.

ASSESS MATING PROGRAM

- Do my herd mating practices give me the maximum number of calves on the ground, at the correct time of the year, without putting undue stress on the cows?

- If you feel you ought to calve earlier, start by joining your maiden heifers early and eventually the whole herd will calve earlier.
- Were my animals produced for the least financial, labour and environmental cost? Breed suitability for your area, ease of calving, and tick resistance all make a difference.
- Would changing my bull give me the most financial reward? Changing breeds is expensive, but perhaps a different breed bull over your cows would make a difference to weaner saleability.

ASSESS MARKETING PROGRAM

- What are the best markets? Are they going to be the best for

many years?

- What criteria do my cattle have to fit to be eligible for these markets?
- Are my cattle suitable for the most profitable markets?
- Could my animals be suitable for other types of markets?
- What inputs are required to make my cattle suitable for the different market? Is it worth it?
- Have my previous markets changed - are there new legal requirements?

GROWING CATTLE (STEERS, CULL HEIFERS)

- Steers and cull females should be ready for market by now
- If you sell direct to works make sure you book them in well

in advance of when you want to sell

- If selling through the sale yards, draft the cattle into similar weight and type. A well presented pen will usually get better money than one with some lighter and not as finished animals in it
- Once the fattening paddocks are empty, check the fencing and watering points before moving the next mob in as new cattle always try fences and may need to be mustered to an unfamiliar watering point

NUTRITION: DRY SEASON MANAGEMENT

- Assess pasture quantity and quality in each paddock. Estimate how much, its carrying capacity, and for how long you can carry that number of stock
- Assess current stocking rates. Is an adjustment required to keep stock and country in good condition?
- Evaluate effectiveness and cost benefit of winter supplementation program
- Start your dry season management plan that was developed earlier, and stick to it
- Make sure you have sufficient supplements to meet your dry season management plan requirements
- Check feed-out equipment.

PASTURES

- Start preparing land for sowing improved pastures next spring or summer.

PARASITES AND DISEASES

- Start strategic dipping for pre-winter treatments
- If ticks are a problem consider testing some ticks for resistance, call the Department of Agriculture, Fisheries and Forestry on 13 25 23
- Check worm burdens in weaners. Treat if necessary.

BUSINESS MANAGEMENT

- Conduct tax planning meeting with accountant
- Assess success of previous year's business plan
- Plan management strategies for next 12 months (budget, property maintenance and development, marketing etc)
- Are your on-farm Livestock Production Assurance (LPA) records up to date?

Have you records of when you bought chemicals, the with-holding period and use by dates, and are they stored correctly?

Do you have mob records showing date of use of chemical and when that mob comes out of the with holding period?

- Would you pass a random audit?

PROPERTY MAINTENANCE

Once the weaners are in their new paddocks, reassess your yards:

- Did they stand up to the weaners well.
- Do rails need replacing.
- Was your water system adequate.
- Check and do any maintenance on your hay feeders.

Carli McConnel, Mt Brisbane, Esk
Phone: (07) 5426 0169
Email: carlimcconnel@westnet.com.au



Grazing decisions into 2014

THE dry months of 2013 have had a dramatic impact on water and fodder reserves in much of central and western Queensland, and many people are now considering their options for the coming season. A missed second wet season with only very patchy rainfall will force some major decisions for the year ahead. Whenever possible adjust stock numbers according to the available pasture and water resources for the year. Options for the coming season depending on rain are:

GOOD BREAK TO THE SEASON

Even if there is good break, the ideal growing season for many of our pastures is coming to a close. Shortening day length means that many grasses will go to seed quickly rather than grow a bulk of feed, so even if rain does fall the capacity for a property to return to a "normal" stocking rate is unlikely. If a property has mulga there will be some rejuvenation but the recovery rates will be reduced in a shorter season. Whilst there is some opportunity for winter rain and herbage, do not rely on it occurring.

Strategies:

- keep stock numbers low
- spell as many paddocks as possible
- group mobs together and rotate to maximise pasture and fodder recovery
- market saleable stock
- consider planting a winter forage crop if this opportunity is available but this also has its risks.

VARIABLE BREAK TO THE SEASON

It is safer to be very conservative. Often with a variable break, any pasture regrowth is quickly consumed by stock on hand, and the feed will often not have the bulk needed to make a significant difference to the long term condition of the stock. Grass protein levels will be high but there will be little bulk to balance it and some stock will lose weight chasing the pick.

Strategies:

- adjust stock numbers according to available pasture feed and water
- maximise spelling period of any pasture that

has some growth

- group remaining stock together and rotate them through paddocks
- market any stock that are saleable
- assume it will be dry, and feed budget for at least eight months of dry weather.

NO BREAK TO THE SEASON

Any remaining pasture and fodder resources need to be assessed. The odds of reasonable grass growing rain in much of Queensland decrease rapidly after the end of March. Stocking rates on the remaining resources need to be calculated for when we may next expect reliable pasture growing rain (a green date) and for many locations this may be December or later (more on this was covered in BeefTalk 36, which is available at www.futurebeef.com.au).

If a property is currently feeding and has already fed through one winter the capacity to feed again is severely limited, particularly with the variable supply and high cost of supplementary feeds.

Strategies:

- sell sell sell
- maintain a core herd only if there is adequate fodder to last the year calculated by doing a feed budget. If not, consider total destocking. Some unexpected rain later in the season will help pasture recovery and may give an opportunity for cashflow from agistment.

OTHER FACTORS

- set critical dates for sale before the end of the growing season. Moving early often achieves better prices and leaves more paddock feed for remaining stock
- there is a point in any feeding program where the cost of feed exceeds the value of the stock
- high roo numbers may compromise spelling strategies
- monitor seasonal outlook. 2013 was a neutral year for SOI but if we move into an El Nino there is little doubt of continuing climatic challenges.

Damien O'Sullivan, DAFF, Kingaroy
Phone: (07) 4160 0717
Email: damien.o.sullivan@daff.qld.gov.au



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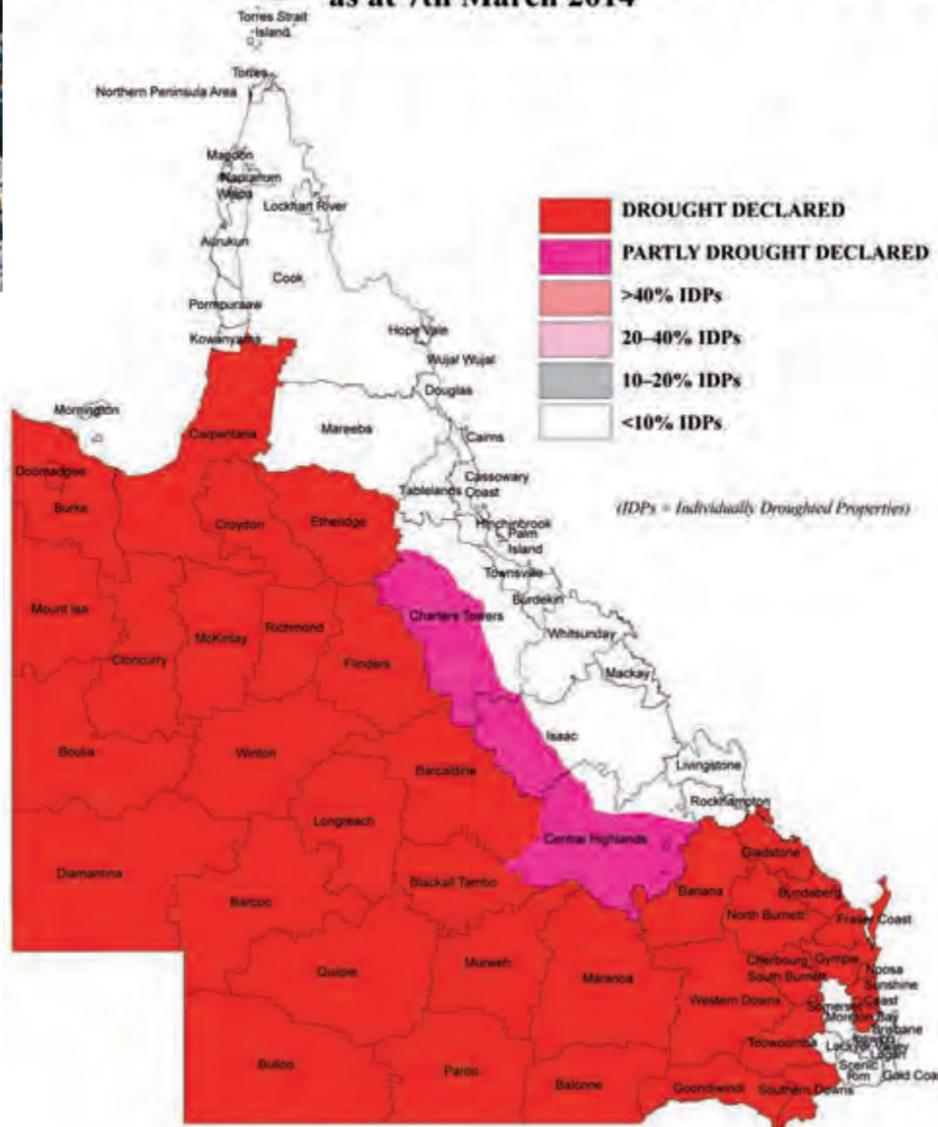
Aid package available as drought worsens

Your guide to services offering business, personal and family help



A full list of drought-declared shires is available at www.longpaddock.qld.gov.au

QUEENSLAND DROUGHT SITUATION as at 7th March 2014



Eighty per cent of Qld drought declared

THE Queensland Government announced a new drought-assistance package in January 2014 that includes an expansion of the existing measures announced in May last year, and a range of new assistance to help farm families, farm businesses and farm communities affected by drought.

FINANCIAL ASSISTANCE

Drought assistance package: Visit www.daff.qld.gov.au/environment/drought/assistance/new-drought-assistance-package or call 13 25 23.

Assistance is available to producers with properties in drought-declared areas or with an individually droughted property (IDP) declaration, including:

- A freeze on rural land rents in 2013-14 financial year.
- Transport concessions for drought-affected primary producers.
- Mental health and community support workshops to help those who may be finding it difficult to cope.

Drought Relief Assistance Scheme (DRAS): This scheme provides up to \$20,000 (or up to \$30,000 with an approved property drought-management plan) each financial year to help graziers transport fodder and water during drought, and after the drought has ended, freight subsidies for returning livestock from agistment or restocking after the drought.

DRAS now also includes the emergency water infrastructure rebate (EWIR) (up to 75 per cent) on water infrastructure purchased for emergency animal welfare needs. To be eligible a DAFF officer needs to approve a water availability statement completed by the claimant. A federal government top-up of \$20,000 per financial year is also available with an approved drought management plan. Examples EWIRs include sinking a bore on properties where surface water has run out, or piping water to a trough in a grassed paddock that is too far from the nearest watering point for livestock to walk. All forms for claiming water and freight rebates are available at www.daff.qld.gov.au/environment/drought or at local DAFF offices on 13 25 23.

Income support: Call the Drought and Farmer Assistance Hotline on 13 23 16 or visit the federal Department of Human Services. Income support, Interim Farm Household Allowance and assistance for isolated children information is available at www.humanservices.gov.au.

Rural Financial Counselling Service: For free rural financial counselling, visit central/southern region, www.rfcsqcsr.com.au, south-west region, www.rfcsw.org.au, or call 1800 686 175.

QRAA: For information on farm finance concessional

loans or productivity loans, call 1800 623 946.

Land rent relief: Rural land rent increases will be frozen for the 2013/14 financial year for those farm businesses in drought-declared areas. Visit www.nrm.gov.au or call 13 74 68.

Transport concession and assistance for road trains: Assistance for drought-affected primary producers may be available for the payment of fees and permit requirements, including vehicle inspection fees, drought road train permits, pilot escorts and vehicle height limits when transporting livestock or

SOCIAL AND COMMUNITY SERVICES

- **Lifeline:** 13 11 14. Crisis counselling line, 24 hours, for individuals and families.
- **Salvation Army:** 1300 36 36 22. Telephone counselling 24 hours a day, 365 days.



- **BeyondBlue:** 1300 224 636. Help with personal issues, depression or anxiety.
- **Relationships Australia:** 1300 364 277. Confidential counselling and family support services.
- **Kids Helpline:** 1800 55 1800. A national, 24-hour telephone counselling service for children and young people (ages five to 18).
- **Women's Infolink:** 1800 177 577. Free, confidential information and referral service Queensland-wide to support women.
- **Mensline Australia:** 1300 789 978. Helps men with relationship issues.
- **Queensland Health:** 13 43 25 84. Provides a series of mental health and psychological support workshops across drought-affected areas. Workshops aim to enhance mental health and well-being in communities affected by drought, and provide community members and human service workers with the skills to identify, support and protect people who may not be coping during difficult times.
- **Frontier Services:** 1300 787 247. Provides health, family, community services and pastoral support in remote Australia.
- **Outback Links:** 1300 731 349. Places volunteers with rural and remote families for short periods.
- **The Bush Connection:** (07) 4639 7897. Provides free confidential support and referral, including personal support, identifying options and advocacy in crisis situations.
- **Other assistance:** Local doctors, clergy, hospitals or community health centres can also help.

machined baled hay. Visit www.tmr.qld.gov.au or call 13 74 68.

School Transport Assistance Scheme: Families who drive their children to school or connect with a school bus run may be eligible for an increase in the school transport allowance. Visit www.tmr.qld.gov.au or call 13 74 68.

Farm management deposits: Visit the Department of Agriculture at www.daff.gov.au/agriculture-food/drought.

Electricity rebates or concessions: Visit www.dews.qld.gov.au or call 13 43 87.

Ergon Energy: For drought-relief rebates or concessions visit www.ergon.com.au or call 13 40 46.

Legal Aid Queensland: Rural legal services for severe, debt-related problems, lender disputes, or financial hardship with farming businesses. Visit www.legalaid.qld.gov.au or call 1300 65 11 88.

The Telstra Bill Assistance Program: Short-term emergency relief to residential customers if you are unable to pay your Telstra fixed home telephone bill. Administered by national welfare organisations including the Salvation Army, Smith Family, Anglicare and St Vincent de Paul. Queensland – Salvation Army, (07) 3222 6666; NSW – Smith Family, (02) 9085 7222.

CLIMATE AND MANAGEMENT INFORMATION

- The current **Queensland drought situation** report, map and seasonal outlooks are at www.longpaddock.qld.gov.au/queenslanddroughtmonitor.
- **DAFF** 13 25 23 and **FutureBeef** have resources on feeding and management of livestock during drought, strategies to help cope with stress, and software packages to evaluate options and assist in decision-making. Email callweb@daff.qld.gov.au or visit www.daff.qld.gov.au/environment/drought or www.futurebeef.com.au/topics/nutrition.
- The booklet 'Dry season management of a beef business' can be downloaded free from www.futurebeef.com.au/resources/publications.

SW Qld counsellors ready to assist

Rural Financial Counselling Service gives assistance, information

WITH the majority of Queensland in drought conditions, many primary producers are contacting the Rural Financial Counselling Service to seek information on various assistance programs, the application processes, and to discuss other business and financial queries in relation to their enterprise.



Location	Rural financial counsellor	Contact number
Biloela	John Lacey	0448 124 016
Charleville	Angie Bowden, Alicia East, Brian Dodson	07 4654 3455
Gatton/Toowoomba	Frances Harvey	0419 732 591
Innisfail	Nick Birchley	07 4064 3007
Kingaroy	Alan Broome	07 4160 0736
Lockyer Valley/SE Queensland	Cath Carter	0477 056 074
Roma	Sally Ottaway, Vicki Beitz, Rod Garland, Dale Murphy	07 4622 4858
Warwick	Donna Neale-Arnold	0438 738 693

The contact numbers for the RFCS Queensland South Western Region rural financial counsellors.

The RFCS Queensland South Western Region provides services that are confidential, impartial, and free of charge to rural producers and small rural businesses.

DROUGHT RELIEF ASSISTANCE SCHEME

The Queensland Drought Relief Assistance Scheme (DRAS) is available for eligible primary producers located within a drought-declared area.

The scheme has been set up by the Queensland government to help primary producers in the grazing industries manage their livestock resource during drought and to help in the restoration of that resource after drought.

DRAS provides freight subsidies on the transport of fodder and water during the drought, and the transport of animals returning from agistment and animals purchased for restocking after the drought.

The DRAS scheme also provides a rebate on emergency water infrastructure (EWI), which includes assistance for the purchase, supply and installation cost of water infrastructure purchased for emergency animal welfare need.

A completed Water Availability Statement to confirm water need must be approved by the Department of Agriculture, Fisheries and Forestry prior to applying for the EWI rebate.

Original tax invoices must accompany any DRAS application.

The Federal Government is now providing an

additional 25 per cent rebate of the total cost of emergency water infrastructure.

The total rebate the applicant may now receive is now 75pc of the total cost of the water infrastructure only.

If the producer has no drought-management plan in place, the maximum amount of rebate/subsidy an applicant can receive under all of the DRAS schemes (including freight and EWI) is \$20,000.

With a drought-management plan in place, the maximum amount the applicant can receive is \$50,000. The extra 25pc only applies to EWI and is retrospective, and will be automatically paid to those who have already received the 50pc Queensland Government rebate for EWI.

For any inquiries or assistance with a drought-management plan or an application for assistance, a rural financial counsellor may be able to assist.

INCOME SUPPORT – INTERIM FARM HOUSEHOLD ALLOWANCE

The federal government has announced a new program known as the Interim Farm Household Allowance (IFHA).

Primary producers have been able to lodge an application for this assistance from March 1, 2014.

IFHA is provided to help farm families experiencing financial hardship to meet basis household needs and

improve long-term financial security.

Claims for IFHA will be accepted until June 30, 2014.

ELIGIBILITY BASICS

Applicants must:

- Be a farmer.
- Contribute a significant part of your labour and capital to the farm enterprise based on specific criteria.
- Meet with a rural financial counsellor.
- Meet an income and assets test.

Producers who currently receive the Transitional Farm Family Payment will be automatically transferred over to the Interim Farm Household Allowance.

Former primary producers who have previously received 12 months' support through the Transitional Farm Family Payment or Transitional Income Support can submit a claim for IFHA.

More information on IFHA can be found at www.humanservices.gov.au/customer/services/centrelink/interim-farm-household-allowance, by telephoning Department of Human Services on 13 23 16 or contacting your rural financial counsellor.

The RFCS can help rural producers with further information on this and other government assistance programs. The RFCS program is supported by the Federal government and the Queensland Government.

Australia's variable rainfall poster 1890-2013

A GREAT way of examining Australia's rainfall variability is a poster showing annual rainfall in Australia from 1890-2013.

All major droughts and floods are highlighted.

It's very popular with producers and can be seen on the walls of many rural homesteads.

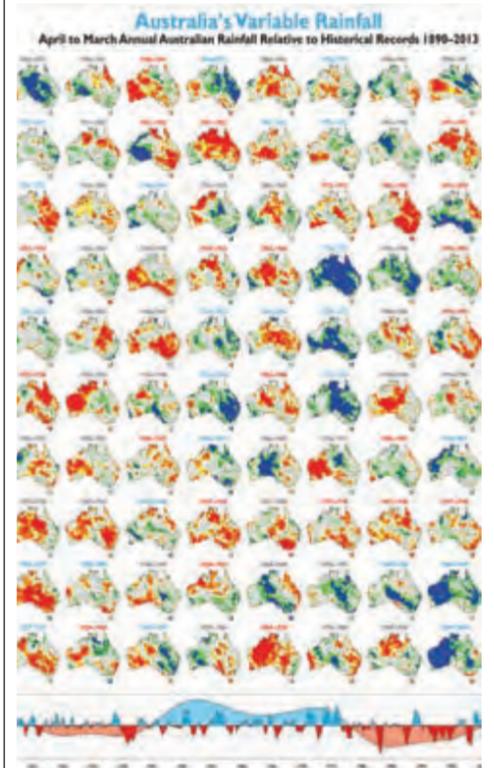
It's also a useful extension tool because it connects with producers' experience of rainfall and shows the association with the El Nino Southern Oscillation (ENSO), a key driver of rainfall in eastern Australia.

Understanding ENSO can help producers manage rainfall variability.

The posters have just been updated to include up until 2013.

They are available on the LongPaddock website (www.longpaddock.qld.gov.au/products/australiasvariableclimate), or printed copies can be picked up free of charge from the Toowoomba DSITIA office (Tor Street), various south region DAFF offices (Goondiwindi, Dalby, Roma, Charleville, Cunnamulla, Warwick, Taroom) or the EcoSciences Precinct, Dutton Park, Brisbane.

Another interesting way of examining our variable rainfall is using the slider bar generated by the ABC news website www.abc.net.au/news/2014-02-26/100-years-of-drought/5282030.



Detail of the poster giving a colourful representation of 123 years of rainfall data.

Rural Financial Counselling Service

What Can A Rural Financial Counsellor Help You With?

- Help clients identify financial and business options
- Help clients negotiate with their lenders
- Help clients develop an action plan
- Help clients meet their mutual obligations under the Interim Farm Household Allowance
- Give clients information about government and other assistance schemes
- Refer clients to accountants, agricultural advisers and educational services
- Refer clients to Centrelink and to professionals for succession planning and family mediation

Rural Financial Counsellors do not provide family, emotional or social counselling or financial advice – but they can provide referrals and information.



The purpose of the Rural Financial Counselling Service Program is to provide FREE support to primary producers, fishers and small rural businesses who are suffering financial hardship, and who have no alternative sources of impartial assistance, to manage the challenges of change and adjustment.

If you are affected by drought contact one of our rural financial counsellors for information on assistance programs.

The Rural Financial Counselling Service Program is supported by the Australian Government and Queensland Government.



CONTACT US:

BILOELA: John Lacey 0448 124 016
CHARLEVILLE: Angie Bowden 07 4654 3455
CHARLEVILLE: Alicia East 07 4654 3455
CHARLEVILLE: Brian Dodson 07 4654 3455
GATTON: Frances Harvey 0419 732 591
INNISFAIL: Nick Birchley 0448 460 309
KINGAROY: Alan Broome 0448 999 742
LOCKYER VALLEY: Cath Carter 0477 056 074
ROMA: Vicki Beitz 07 4622 4858
ROMA: Sally Ottaway 07 4622 4858
ROMA: Rod Garland 07 4622 4858
ROMA: Dale Murphy 07 4622 4858
WARWICK: Fiona Mead 0438 738 691

www.rfcsqsw.org.au
 Roma Head Office
 (07) 4622 5500



CONTACT US:

MILES: Glenn Budden 0429 894 474
LONGREACH: Rachel Bock 0427 583 096
GYMPIE: Derk Abberfield 0428 755 708
MUNDUBBERA: Tony Kassulke 0428 654 544
COALSTOUN LAKE: Kim Corfield 0427 296 848
EMERALD: Emma Cook 0427 373 572
GOONDIWINDI: Debbie Cowley 0439 067 944
MACKAY: Richard Lewis 0499 144 522
GULF: Ian Jackson 0427 374 371
ST GEORGE: Sarah Barron 0439 247 258
GAYNDAH: Ben Slack 0439 324 949

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Foraging for profitable beef production

Forage Oat Variety Guide 2014



— Picture courtesy Bruce Winter, DAFF, Toowoomba.

Getting to the business end of high-output forages in Fitzroy

KEY findings from a range of forage systems will be presented at field days across the Fitzroy basin district in April.

High quality annual and perennial forages play an integral part in beef backgrounding and finishing operations in the Fitzroy basin area. Forages such as oats, forage sorghum, lab lab, leucaena, butterfly pea, and perennial pastures are all used within beef production enterprises, but which ones perform the best?

The High Output Forages project worked with 13 beef producers between Taroom and Capella for over 3 years collecting forage, animal and economic information from 25 paddock sites. The project, co-funded by the Department of Agriculture, Fisheries and Forestry and Meat & Livestock Australia, benchmarked the commercial performance of a range of forages to identify ways to improve their profitability.

Each site provided information on soil nutrients and moisture, forage yield and quality, cattle class, liveweight gain, diet selection, stocking rate, grazing management, input costs, sale data and gross margin economics. The analysis of forage, animal and economic performance of the sites is almost finished, with some interesting results emerging:

- It is important to consider economic, forage and livestock performance when comparing forage options as the forage ranking may differ for these criteria;
- Forage profitability depends on a range of factors including plant biomass and quality, class of cattle, and grazing management (stocking rate, timing and length of grazing), as well as seasonal and market factors;
- Under current market and cost conditions, perennial legume-grass pastures may have an economic advantage over annual forages;
- The effect of annual forages on farm profitability can be marginal and the increase in business risk significant, therefore their use needs to be considered carefully;
- Not managing sown forages according to 'best-practice principles' may result in less than optimal productivity and profitability.

Along with data collection from these sites, five enterprises were selected for whole-farm economic



ABOVE: Cattle grazing at a High Output Forage Project trial site near Baralaba.



Cattle grazing butterfly pea-native pasture at a High Output Forage Project trial site near Moura.



High Output Forages technical officer Kylie Hopkins collecting real data from producer co-operator sites to assess forage profitability in the Fitzroy Basin.

case studies, to assess the importance of forages in the profitability of their whole farm operation.

A Forage Decision Support Tool is being prepared that will help in deciding how to best use land for forage production.

FIELD DAY CONTACTS

Contact DAFF staff to attend a free field day in your area:

- Capella, April 1 – Byrony Daniels (07) 4983 7467.
- Rolleston, April 2 – Kylie Hopkins (07) 4923 6215.
- Wandoan, April 3 – Tim Emery (07) 4622 9903.

The Forage Cost Calculator enables on-farm costs to be included so that the economics of different forages can be analysed using current costs and cattle prices.

An updated *Best practice guide to forage use for growing and finishing beef cattle* will be available mid-year, which will be an invaluable guide to growing forages in the Fitzroy River catchment.

Maree Bowen, DAFF, Rockhampton
Phone: (07) 4936 0291
Email: maree.bowen@daff.qld.gov.au

THE *Forage Oat Variety Guide 2014* is now available and can be downloaded free of charge from the Department of Agriculture, Fisheries and Forestry website.

It provides an overview of the latest practices and developments in the management of forage oat varieties. The guide was produced by DAFF with funding from Meat & Livestock Australia.

There are a range of alternative winter forage crops available that may also suit your fodder needs. Things to consider when choosing which variety include:

Provides an overview of the latest practices and developments in the management of forage oat varieties. The guide was produced by DAFF with funding from Meat & Livestock Australia.

- Adaptation/suitability to your region – rainfall and temperature.
- Sowing time.
- Feed quality and quantity required and when – maturity type, height, relative dry matter production, grain yield.
- Response to grazing.
- Disease resistance.
- Seed quality/germination rate.

Check with your local seed supplier/s for more information about the forage crop varieties they sell and specific establishment and management guidelines for each.

The guide is available at: www.daff.qld.gov.au/plants/field-crops-and-pastures/broadacre-field-crops/oats/forage-oat-variety-guide.

Financial assistance information workshops for drought declared areas

The Queensland Government is continuing its efforts to provide drought assistance information to drought declared areas across the state with a series of financial assistance information workshops throughout April 2014.

Department staff will be on hand, along with the Rural Financial Counselling Service and Queensland Rural Adjustment Authority to convey information on the drought financial packages and other available drought assistance measures.

The information workshops will be held at:

Goondiwindi	Tues 1 April, 9.30am – 1pm, Goondiwindi Cultural Centre
Moonie	Wed 2 April, 9.30am – 1pm, Moonie Crossroads
Tara	Thurs 3 April, 9.30am – 1pm, Western Downs Regional Council Tara Customer Service Centre
Chinchilla	Fri 4 April, 9.30am – 1pm, Chinchilla Cultural Centre
Texas	Tues 8 April, 12.30pm – 4pm, Texas Memorial Hall
Inglewood	Wed 9 April, 9.30am – 1pm, Inglewood Civic Centre

Millmerran	Thurs 10 April, 9.30am - 1pm, Millmerran Community & Cultural Centre
Stanthorpe	Tues 15 April, 9.30am – 1pm, Stanthorpe Civic Centre
Warwick	Wed 16 April, 9.30am - 1pm, Warwick Town Hall
Dalby	Thurs 17 April, 9.30am - 1pm, Western Downs Regional Council Corporate Office
Toowoomba	Wed 23 April, 9.30am - 1pm, All Seasons Function Centre

To RSVP, contact Sue-Anne Topp, DAFF Toowoomba (07) 4688 1605 or sue-anne.topp@daff.qld.gov.au

Producers wanting to apply for DRAS including the Emergency Water Infrastructure Rebate should contact DAFF on 13 25 23, or access the DRAS claim forms at www.daff.qld.gov.au

Forage budgets are key to calculate stocking rates

Use this management tool to allow early planning

MANY of us have received some reprieve from the harsh seasonal conditions being experienced at the moment with some welcome rain in recent weeks. This has allowed for some grass growth before it gets colder and it then slows again.

The question is, how much grass do we have and how long will it last? To find out, we can do an annual forage budget.

WHAT IS A FORAGE BUDGET?

A forage budget matches available pasture, or dry matter (DM) to the number of cattle that can graze it. It aims to ensure a balance between the amount of feed in a paddock at the end of the growing season and the number of stock in that paddock and their requirements of feed over the grazing period (usually the dry season).

It indicates whether this available feed will last the stock until the next time we expect to get grass growing rain.

Forage budgets allow early decisions. Knowing how many stock can be carried through the year minimises the need for last minute sales and/or potentially high cost feeding programs.

It can also be very useful to project extra feed availability and the potential for buying in cattle to utilise this.

Forage budgets can be used to plan when to buy and sell, grazing duration and rotations, pasture spelling programs and the use of fire as a management tool.

HOW DO I DO A FORAGE BUDGET?

The two steps are estimating feed supply, and estimating feed demand. These estimates are combined to give an overall budget.

ESTIMATING FEED SUPPLY

First, estimate the total forage available in the paddock. Use either photo standards for comparison or cut, dry and weigh samples from 5-10 quadrats to calculate average DM per hectare.

Remember to take into account patchy areas – the supply is an estimate of available forage across the whole paddock.

Second, estimate the amount of unavailable forage as a percentage of the total, including unpalatable forage (e.g. dead leaf, wire grasses), detachment (or leaf fall) and the amount of forage to leave behind after grazing (residual feed).

Leaf detachment is usually around 15 per cent of the total available pasture and the residual should usually be at least 1000-1200kg DM/ha.

Residual feed is especially important for maintaining groundcover and minimising runoff when storms arrive.

An example forage budget

SUPPLY	
Paddock area	500ha
Starting yield (kg DM/ha)	3000kg DM/ha
Start date	1 April 2014
End date	30 December 2014
Days	273
Unpalatable	20% = 600kg DM/ha
Detachment	15% = 450kg DM/ha
TOTAL AVAILABLE PASTURE	1950kg DM/ha
DEMAND	
Number AEs in paddock	100
Feed eaten (kg DM/ha)	(100AE x 10kg/day x 273 days) / 500ha = 546kg DM/ha
% of pasture eaten (should be <30%)	28%
Residual feed	1950kg – 546kg = 1404kg DM/ha

Relative adult equivalents, a guide only

Dry stock liveweight (kg)	AEs
100	0.30
150	0.40
200	0.50
250	0.60
300	0.75
350	0.80
400	0.90
450	1.00

– Source: Nutrition EDGE workshop notes, Meat & Livestock Australia, 2007.

MORE HELP ON WEB

If you would like more detailed information on how to calculate a forage budget, you can visit the FutureBeef website and watch the YouTube clips featuring Col Paton describing the process in detail at www.futurebeef.com.au/resources/multimedia/#GLM.

The Stocktake Plus app is also freely available (www.stocktakeplus.com.au). It helps with land condition and pasture monitoring as well as calculating forage budgets. You can also contact your local FutureBeef extension officer.

ESTIMATING FEED DEMAND

Feed demand depends on the size of the animal, stage of growth, quality of the forage and the stocking rate. To ensure all animals are being assessed on an equal basis, we first adjust them to adult equivalents (AE).

One adult equivalent = a 450kg dry animal at maintenance, and eats on average 10kg of DM per day. The table at left provides a guide.

An extra 0.3AE is added to any breeding animal that will have a calf during the year (a 450kg cow

would equal 1.3AE). We then need to calculate the amount eaten by one AE.

Although the average is 10kg/DM/day, this can change depending on the time of year, how green the pasture is, the digestibility of the pasture and the type of pasture.

Protein supplements (such as urea) can also increase intake by up to 30 per cent.

Generally, cattle will eat between 1.5pc of their bodyweight (in winter), to around 2.2pc during summer when grass is very palatable.

It is easy to use 10kg per day as an average across the year when doing a forage budget and this may also allow you to be conservative in your calculations.

Minus the demand from the supply to get your final budget.

In the above example, we would have enough feed to keep 100AEs in this paddock until the end of December, while also maintaining enough residual feed for good groundcover when it rains.

Kiri Broad, DAFF, Roma
Phone: (07) 4622 9915
Email: kiri.broad@daff.qld.gov.au



Cattle feeding break-even analysis

AS the window for useful summer rain closes in many areas, it is important that we keep assessing the forage situation across our properties and review our drought plans to make timely decisions.

These decisions include selling stock, finding agistment if possible, or starting/continuing with a feeding regime. Any decision needs to take into account a number of factors, including available feed, supplement/fodder costs, market access, and cattle condition.

One tool that may be useful when considering whether or not to feed is a simple breakeven analysis.

This is especially helpful when considering feeding steers or other cattle destined for market. It may also help in deciding whether to sell breeders now or feed and sell later if there is not a break.

Example

Breeders are currently worth 100c/kg and you are considering feeding for 60 days, in hope of useful rain, otherwise you will sell. You are feeding whole cottonseed at \$600/tonne (i.e. 60c/kg), 3kg every 2 days.

Weight now = 350kg = \$350/head

Feed costs for 60 days = \$1.80 every 2 days = \$54/head.

Weight after 60 days = 355kg.

Worth = \$350 + \$54 = \$404/head.

The breakeven price needed to cover the costs of feeding for 60 days = \$404/355kg = 114c/kg.

Is this price likely if there is not sufficient rain?

If this turned into a long-term feeding program, for example, for ten months with an average feed cost of \$1.20/day, it would cost \$360/head for feed alone. The new breakeven price becomes (\$350 + \$360)/355kg = \$2.00/kg liveweight just to cover the feed cost.

This does not include labour, fuel, repairs,

maintenance, interest, stock losses or the impact on pastures (one of the big unknowns is how much the feeding option sets back pasture recovery and future productivity). On these figures it is cheaper to sell and buy back.

A more detailed calculator for comparing feeding costs with selling and buying back later is available on the FutureBeef website www.futurebeef.com.au/topics/business-management/beef-business-tools.

Kiri Broad, DAFF, Roma
Phone: (07) 4622 9915
Email: kiri.broad@daff.qld.gov.au



Handy steps to costing nutrients for livestock

Comparing supplements, just like at the supermarket

Feed	Price				DM %	Energy			Crude protein		
	\$/t	Freight (\$/t)	\$/t landed	c/kg		ME (MJ/kg)	ME (MJ/kg)	Cents per MJ ME	CP%	CP%	\$/kg CP
	As fed		As fed	As fed		DM	As fed		DM	As fed	
			A + B	C ÷ 10		$G \div (E \div 100)$	$E \div 100 \times F$	$D \div G$	$G \div (E \div 100)$	$C \div 100 \times F$	$B \div G$
	A	B	C	D	E	F	G		F	G	
Grain	340	50	390	39	90%	12.0	10.8	3.6	11.0	10	3.94
Palm kernel meal (PKE)	330	70	400	40	90%	12.0	10.8	3.7	16.5	15	2.69
Whole cottonseed (WCS)	450	50	500	50	90%	13.0	11.7	4.3	24.0	22	2.31
Steam flake finisher ration	393	50	443	44.3	90%	10.5	9.5	4.7	12.0	11	4.10
Steam flake starter ration	382	50	432	43.2	90%	10.0	9.0	4.8	12.0	11	4.00
Hay	180	200	380	38	89%	8.5	7.6	5.0	8.5	8	5.02
Chickpeas	480	50	530	53	89%	12.0	10.7	5.0	20.0	18	2.98
Cottonseed meal	580	100	680	68	90%	12.0	10.8	6.3	43.0	39	1.76
Grape marc*	125	200	325	32.5	48%	10.8	5.2	6.3	14.0	7	4.84
Canola meal	480	100	580	58	90%	10.0	9.0	6.4	36.0	32	1.79

Prices and freight are by way of example only. CP = crude protein, DM = dry matter, MJ ME/kg = Megajoules of metabolisable energy per kilogram

*Beware chemicals

WHEN buying supplements the first step is to identify the primary limiting nutrient required by the stock. For example, protein, when there is ample low protein pasture available; phosphorus during the wet season in phosphorus-deficient country; or energy when pasture alone cannot meet stock requirements. Dung samples are a useful tool to help identify this in conjunction with observing pastures, cattle and dung.

The next step in evaluating feed options is to cost the nutrients of interest (dollars per kilogram of crude protein or phosphorus, or cents per megajoule of metabolisable energy), rather like comparing food prices at the supermarket.

You need to know the price, nutrient levels within the feed and the dry matter percentage of the feed. You also need to know if the nutrient levels on the label or analysis are being expressed on an as fed basis with the water included or on a dry matter basis with the water excluded. This enables consistent cost comparisons, either all on an as fed or dry matter (DM) basis.

Other factors to consider in choosing an appropriate supplement include safety (to stock and self), chemical residues, storage, mixing, delivery, troughing, shelf life, experience and ultimately livestock response and overall economics.

The table (above) demonstrates the process to cost nutrients. It is sorted on cost of energy (c/MJ ME). The last column shows cost of protein. Grain will still require processing and additives which would increase its price. These calculations are easy to do on paper or in a spreadsheet. This 'Comparing feeds' excel spreadsheet is on the FutureBeef website at www.futurebeef.com.au/topics/business-management/beef-business-tools/.

A cost calculator and feed nutritive value database

is also available at www.dpi.nsw.gov.au/agriculture/livestock/nutrition/values.

GRAIN

Grain is high in energy (11-12MJ ME/kg DM), moderate for protein (6-14 per cent), and low in calcium and sodium.

Grain poisoning, also called acidosis or founder, can occur if cattle eat too much grain too quickly or if there is a sudden change from one grain to another. A change in diet must be carried out gradually so that rumen microorganisms have a chance to adapt. This applies whether cattle are adapting from grass to grain or from one grain to another.

Rolling or only a coarse crack is preferred to increase digestibility. Avoid fine cracking as the greater surface area allows rumen microorganisms to ferment the starch faster to acids. If significant amounts of grain are being fed for survival then add 1 per cent limestone (10kg/t) and 2.5kg salt per tonne. Alternatively, a feedlot concentrate can be added to balance nutrients. For more information visit www.daff.qld.gov.au/environment/drought/managing-drought/drought-strategies/grain-for-survival-feeding.

CHICKPEA

Chickpea has energy similar to grain (12MJ ME/kg DM) and approximately 20 per cent crude protein (range 16-24pc). It has between 40-50pc starch which compares with grain ranging from around 58-75pc. While it is safer than grain it also has potential to cause acidosis, and should be introduced steadily with minimal chances for gutsing (as with any feed).

To increase digestibility it is best coarse cracked/rolled or soaked. Like grain it is also low in fibre (3pc), calcium (~0.1pc) and sodium (0.02-0.04pc). Phosphorus is moderate ~0.3pc and oil is around 6pc

(ranges from 4-10pc). If chickpea becomes a significant part of the cattle's diet due to drought conditions then add 10kg of limestone and 2.5kg of salt per tonne of chickpea (unless there is already sufficient sodium in their water).

WHOLE COTTONSEED (WCS)

WCS is high in energy (12-14MJ ME/kg DM), crude protein (22-24pc), oil (18-20pc), phosphorus (0.75pc) and fibre (24pc). It also contains a plant pigment called gossypol which is toxic to monogastrics (baby calves, pigs, horses).

Cattle, sheep and other ruminants can detoxify gossypol to a certain extent however WCS should be limited to 20pc or less of the complete diet, although up to 30pc can be fed in the short term during emergencies (e.g. -2-3kg per day for adults).

If feeding at high levels for survival, consider adding 1pc limestone to help correct the Ca:P ratio.

WCS can be used at lower levels as a protein supplement. Providing 1.5-3kg every three days is equivalent to 0.5-1kg per head per day, and the phosphorus content is a bonus. For better fibre digestion it is preferable that total oil in the diet is less than 5-6pc. While it is commonly said that cattle self regulate on WCS this is probably through rumen dysfunction with gutsing and then reduced intakes and then gutsing again. Over a period of time intake appears self regulated. While not crucial for WCS, it is better to limit gutsing. Smaller amounts of WCS will stimulate the rumen with its protein and nutrients while large quantities will suppress the rumen with excess oil and gossypol.

A number of producers have commented on better results using limited access rather than ad lib.

FutureBeef program

The FutureBeef program has hit the ground running this year. There are almost 50 events already scheduled for the first half of the year and more are on the way. A focus has naturally been on the drought conditions across much of Queensland.

Check out our FutureBeef website drought page: www.futurebeef.com.au/topics/drought, which gives you a snapshot of relevant information. If you weren't one of the 266 people who registered for our recent drought decisions webinar, then make sure you watch the recording on our website as it covers the decisions you may need to be making at this time. Roger Sneath presented on forage budgets, adjusting cattle numbers and choosing between different feed supplies. He also profiled a handy calculator, now on our website, to help you compare feeding versus selling.

All this FutureBeef activity is made possible through a partnership between Meat & Livestock Australia and the governments of Queensland, the Northern Territory and Western Australia.

Krista Cavallaro, Manager (FutureBeef)
Phone: (07) 3255 4324
Email: krista.cavallaro@daff.qld.gov.au



More information on WCS is available at www.dpi.nsw.gov.au/agriculture/livestock/beef/feed.

Roger Sneath, DAFF, Toowoomba
Phone: (07) 4688 1244
Email: roger.sneath@daff.qld.gov.au



Ongoing test to get breeders onto phosphorus-rich diet

New supplement strategy reveals emerging trends

A MAJOR experiment at Brian Pastures Research Station near Gayndah is evaluating better ways to get breeders to eat phosphorus (P). For the past seven months, 40 heifers have been individually fed to evaluate a new P supplementation strategy. Project leader Dr David McNeill explained that even though the experiment will not finish until April, some clear trends are already emerging.

About 70 per cent of the grazing land in northern Australia is P deficient, and the expense of P supplementation is a huge issue for profitability. Current advice is to supplement heifers with P to meet their immediate and greatest needs, that is, in lactation.

However, feeding P while heifers have a calf at foot is only useful if they actually eat the supplement.

The challenges of the wet season can make this difficult.

The 'pre-loading' strategy examined in this experiment is to try to pre-load heifers with phosphorus in the dry season, when they should be pregnant and it's relatively easy to get them to take a supplement. Bone is a rich source of P, and the heifer's skeleton could potentially be used to store large amounts of P.

The heifer could then draw on these body stores of P through the next wet season, when they should have a calf at foot. Phosphorus is especially needed to maximise the heifer's ability to produce milk, as milk is very rich in P.

The experiment started in June 2013 and will finish early April 2014. It covers the last four months of pregnancy and the first three months of lactation, followed by a recovery phase of six weeks after weaning when all heifers will be fed a high P diet.

Forty maiden heifers due to calve at three years of age were started on a diet rich in energy, protein and fibre with both diets identical apart from the presence or absence of Kynophos as the P supplement.

During lactation the fibre was reduced and energy increased to meet the nutritional demands of the heifers and calves. In pregnancy, half the heifers were fed the diet with Kynophos fully mixed into their diet, and the other half without. At calving these groups were split again into half with and half without Kynophos.

So, is it viable to supplement in the dry but not the wet? Emerging trends show that after four months on the high P diet the pre-loaded heifers gain an extra 45kg of live weight by calving, and use these body stores to produce about 30pc more milk than heifers on a low P diet through the experiment (Figure 1). In fact, the milk production of the pre-loaded heifers matched that of the heifers fed according to current advice (low P in pregnancy, high P in lactation), for the first four weeks of lactation.

However, after the first four weeks of lactation the heifers managed according to current advice began to produce much more milk than the pre-loaded heifers.

Over the three months of lactation, the 'current advice' treatment heifers produced about 20pc more milk than the pre-loaded treatment heifers. The team are also investigating how big a role bone-reserves play in the pre-loading strategy by taking bone samples from the heifers at key points in the experiment. Calf weaning weight data is still to be finalised.

MEASURING INDICATORS OF PHOSPHORUS IN MAIDEN HEIFERS

- Bone tissue is collected at the beginning of the trial, at calving, at weaning and after the replenishment stage to indicate the ability to store and release P.
- Faeces, urine, blood and milk samples are taken fortnightly to determine mobilisation of P in the body and P outputs.
- Phosphorus inputs measured through weekly feed intakes.

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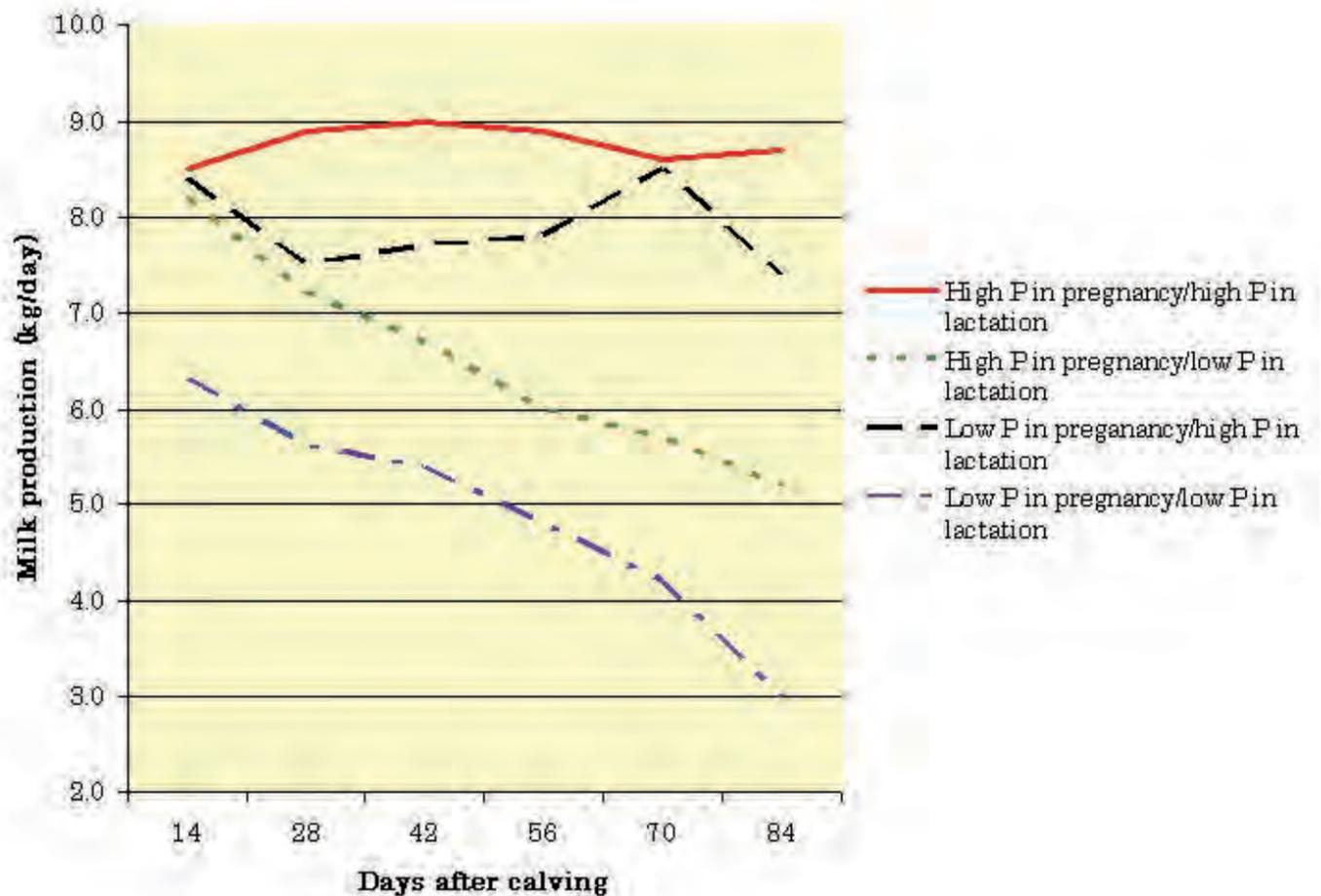


Figure 1: Milk outputs from first-calf heifers on different P supplementation strategies (high P in pregnancy/high P in lactation; high P in pregnancy/low P in lactation; low P in pregnancy/high P in lactation; low P in pregnancy/low P in lactation).

PRELIMINARY FINDINGS

- The high P and low P groups had a difference of approximately 45kg in live weight by calving.
 - Addition of Kynophos improved appetite dramatically.
 - There was no difference between the high P and low P groups in calf birth weights, indicating the extra nutrition in calving helped the high P heifers to continue to grow their own body stores of fat, protein and bone.
 - According to the expectation of P storage, the heifers fed high P in pregnancy but low P in lactation produced 30pc more milk than those fed low P throughout pregnancy and lactation (Figure 1).
 - The 'current advice' strategy still proved to be superior to the 'pre-loading' strategy. The heifers fed low P in pregnancy but high P in lactation produced 20pc more milk than the high P in pregnancy, low P in lactation heifers (Figure 1).
 - The heifers fed high P through pregnancy and lactation produced three times more milk than those fed the low P diet throughout, indicating the value of P supplementation in pregnancy and lactation (Figure 1).
 - During lactation, P supplementation allowed the heifers to continue to grow their own bodies as well as produce extra milk.
 - Calf data is yet to be finalised but current trends indicate that weaning weights will reflect the milk production rankings of P supplementation strategies.
- Ideally, P should be fed during lactation in the wet season in areas of Queensland deficient in P.
- However, if this is not possible, the 'pre-loading' hypothesis has merit – dry season supplementation can be a viable alternate to maintain P storage levels in the bone that can be drawn out and mobilised throughout the body to stimulate milk



High P in pregnancy / high P in lactation.



Low P in pregnancy / low P in lactation.



High P in pregnancy / low P in lactation (pre-loaded).



Low P in pregnancy / high P in lactation (current advice).

ABOVE: Examples of the first-calf heifers on each P supplementation strategy at weaning.

production when wet season supplements are restricted.

The research team includes Dr Llorenç Castells Domingo (UQ) and Kerry Goodwin (DAFF) at Brian Pastures Research Station, supported by Dr David

McNeill, Dr Rob Dixon, Dr Mary Fletcher, and Dr Lisa Kidd (UQ). Thanks to MLA, DAFF and UQ (School of Veterinary Science and QAAFI) for funding this project.

Dr David McNeill, University of Queensland
Email: d.mcneill@uq.edu.au



Registered acaricides

Treating cattle tick in Qld's herds

ALL agricultural and veterinary chemical products must be registered by the Australian Pesticides and Veterinary Medicines Authority (APVMA) before they can be legally supplied, sold or used in Australia.

The following table lists, as a guide only, the chemicals registered for treating cattle tick in Queensland as of February 13, 2014, from the APVMA PUBCRIS database at www.apvma.gov.au/products/databases/.

Registered products are grouped according to their key chemical active (for treating ticks) and the corresponding chemical family.

If you'd like more information or you're developing a tick-control program, talk to your local biosecurity officer and chemical supplier for the most up-to-date recommendations.



Chemical group	Chemical active	APVMA registered product name
Organophosphates	chlorfenvinphos	Barricade 'S' Cattle Dip and Spray Coopers Blockade 'S' Cattle Dip and Spray
Synthetic pyrethroids	cypermethrin	Barricade 'S' Cattle Dip and Spray
	deltamethrin	Barricade 'S' Cattle Dip and Spray Arrest Fly & Tick Dip & Spray for Cattle
	flumethrin	Coopers Tixafly Cattle Dip & Spray Bayticol Cattle Dip & Spray Bayticol Pour-on Live Export Clearing Tickicide
Amidines	amitraz	Amitraz EC Cattle & Pig Spray Bovitraz WP Cattle Dip & Spray Coopers Amitik EC Cattle & Pig Spray Coopers Amitik Cattle Dip & Spray Saicom Antic WP Cattle Dip & Spray Taktic EC Acaricidal Spray for Cattle & Pigs Taktic WP Cattle Dip & Spray Tickoff WP Cattle Tickicide Tikdip Cattle Dip & Spray
Macrocyclic lactones	abamectin	Abacare Pour-on Endectocide for Cattle
		Alpha2 Combination Pour-on for Cattle
		Avomec Pour-on Roundworm & External Parasiticide for Cattle
		Avomec A Pour-on Roundworm & External Parasiticide for Cattle Avomec Plus Pour-on Roundworm, Liver Fluke & External Parasiticide for Cattle Eclipse Combination Pour-on for Cattle Fasimec Cattle Pour-on Flukicide & Broad Spectrum Anthelmintic Genesis Injection Abamectin Antiparasitic for Cattle & Sheep Genesis Injection Abamectin Plus Vitamin B12 Antiparasitic for Cattle & Sheep Genesis Ultra Pour-on Roundworm, Liver Fluke & External Parasiticide for Cattle Paremection Injection for Cattle Paremection Pour-on for Cattle Paremection RV Pour-on for Cattle Vetmec Antiparasitic Cattle Injection Virbac Virbamec Pour-on Endectocide for Cattle Virbamec Antiparasitic Injection for Cattle WSD Abamectin Pour-on Endectocide for Cattle WSD Endomec Abamectin Pour-on for Dairy & Beef Cattle Young's Tricamec Cattle Pour-on Flukicide & Broad Spectrum Anthelmintic
doramectin	Dectomax Injectable Endectocide Dectomax Pour-on Endectocide	
eprinomectin	Epicare Pour-on for Beef & Dairy Cattle Ivomec Eprinex (Eprinomectin) Pour-on for Beef and Dairy Cattle	
ivermectin	Ausmectin Cattle Pour-on Baymec Gold Injection Broad Spectrum Endectocide for Dairy & Beef Cattle Baymec LV Pour-on Broad Spectrum Endectocide for Dairy & Beef Cattle Bomectin Antiparasitic Injection for Cattle & Pigs Bomectin F Broad-Spectrum Antiparasitic Injection for Cattle Bomectin Pour-on for Cattle Bovimection Antiparasitic Injection for Cattle & Pigs Bovimection Plus Injection Broad Spectrum Antiparasitic Injection for Cattle Bovimection Pour-on for Cattle Cattlemax Antiparasitic Injection for Cattle Cattlemax Pour-on for Beef & Dairy Cattle Coopers Paramax Pour-on for Beef & Dairy Cattle Genesis Injection Ivermectin Antiparasitic for Cattle Genesis Pour-on Ivermectin Endectocide for Cattle Genesis Ultra Injection Broad Spectrum Antiparasitic for Beef Cattle Imax CD Pour-on for Cattle Ivaoctol Broad Spectrum Antiparasitic Injection for Cattle Ivermectin Baymec Pour-on for Cattle Ivomec Antiparasitic Injection for Cattle Ivomec (Ivermectin) Pour-on for Cattle Ivomec Plus (Ivermectin Plus Clorsulon) Broad Spectrum Antiparasitic Injection for Cattle Noromection Antiparasitic Injection for Cattle & Pigs Noromection Plus Broad Spectrum Antiparasitic Injection for Cattle Noromection Pour-on for Cattle Pastoral Ag Ivermectin Injection for Cattle Pastoral Ag Ivermectin Pour-on for Cattle Phoenectin (Ivermectin) Pour-on for Cattle Starmec Pour-on for Beef and Dairy Cattle Stockrite Ivermectin Pour-on for Beef and Dairy Cattle Top End Mectin Pour-on for Cattle Topshot Antiparasitic Injection for Cattle Topshot Pour-on for Beef & Dairy Cattle Vetimec Ivermectin Pour-on for Cattle Vetmec F Broad Spectrum Antiparasitic Cattle Injection Vetmec F Broad Spectrum Antiparasitic Injection for Beef & Dairy Cattle Vetmec Pour-on for Cattle Vet's Choice Ivermectin Pour-on for Cattle Virbac Ivermectin Pour-on for Beef & Dairy Cattle Virbac Virbamec LA Injection Endectocide for Cattle & Pigs Virbac Virbamec LV Pour-on Endectocide for Cattle Virbac Virbamec Plus Injection Endectocide & Flukicide for Cattle Virbac Virbamec Plus Antiparasitic Injection for Beef & Dairy Cattle Virbac Virbamax Pour-on for Beef & Dairy Cattle Cattleguard Pour-on for Cattle & Red Deer Cydectin Injection for Cattle Cydectin Injection for Cattle & Sheep Cydectin Long Acting Injection for Cattle Cydectin Pour-on for Cattle & Red Deer Ensign Pour-on for Cattle & Red Deer Maximus Pour-on for Cattle Moximax Cattle Pour-on Stock guard Pour-on for Cattle & Red Deer Topdec Cattle Pour-on	
Insect growth regulators	fluazuron	Acatak Duostar Tick Development Inhibitor & Broad Spectrum Pour-on Acatak Pour-on Tick Development Inhibitor Flutik Pour-on Tick Development Inhibitor Oztik Pour-on Tick Inhibitor for Cattle Procure Tik Bos Pour-on Tick Development Inhibitor Tickstar Pour-on Tick Development Inhibitor Tik Shot Pour-on Tick Development Inhibitor Wintix Pour-on Tick Development Inhibitor Young's Flutik Pour-on Tick Development Inhibitor
	moxidectin	Cattleguard Pour-on for Cattle & Red Deer Cydectin Injection for Cattle Cydectin Injection for Cattle & Sheep Cydectin Long Acting Injection for Cattle Cydectin Pour-on for Cattle & Red Deer Ensign Pour-on for Cattle & Red Deer Maximus Pour-on for Cattle Moximax Cattle Pour-on Stock guard Pour-on for Cattle & Red Deer Topdec Cattle Pour-on

Resistance to acaricides

ACARICIDES are chemicals used to kill acarids, including ticks and mites. Like all living things, ticks have the ability to overcome adversity in order to survive.

The prolonged or incorrect use of acaricides can lead to resistance in ticks, enabling them to tolerate and survive chemical applications.

When resistant ticks survive an acaricide, they pass on this genetic capability to their offspring. Initially, the frequency of the resistant gene in a tick population is very low, although with time, further selection pressure through continued use of the chemical results in a population of resistant ticks (Agnote: Acaricide resistance in cattle ticks, Kearney, NT DPIF, 2011).

There are five chemical groups available in Australia for treating cattle ticks: organophosphates (OPs), synthetic pyrethroids (SPs), amidines (e.g. amitraz) and insect-growth regulators (IGRs, e.g. fluazuron). How they work and the time it takes to see an effect after treatment varies, and is briefly explained in 'How acaricides kill cattle ticks' in this edition of BeefTalk.

Acaricide resistance is more prevalent in coastal areas but can occur in any part of Queensland. In free and control zones, resistance is generally associated with the introduction of cattle ticks from the infected zone. Occasionally resistance in the free and control zones develops due to long periods of active infestations. If you suspect your tick treatment isn't working, or not as well as it should, get your ticks tested for acaricide resistance before starting your next round of treatment.

To reduce the risk of acaricide resistance developing on, or being imported onto, your property:

- Have measures in place when buying stock to minimise the risk of introducing resistant ticks. For example, a treatment protocol with a combination of chemicals, quarantine paddocks, feedlot
- Always follow the manufacturer's directions for the chemical you're using. That is, don't under-dose with pour-ons or injectables; treat the mob at the rate of the heaviest animal; check that equipment is calibrated and working properly
- If you're getting a poor tick kill, call your DAFF Biosecurity Queensland officer on 13 25 23, who can get your ticks tested for acaricide resistance and explore different tick-control strategies if necessary.

Testing cattle ticks for resistance

CATTLE ticks (*Rhipicephalus microplus*) are tested for resistance to acaricides at the Department of Agriculture, Fisheries and Forestry's Biosecurity Sciences Laboratory in Coopers Plains, Brisbane.

The larval packet test (LPT) is the standard testing methodology for a variety of acaricides. This test relies on a good supply of larvae to be produced by the adult female ticks submitted.

To get meaningful results, they need a good sample of cattle ticks to test.

● Continued on page 47



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Spare a thought for prussic poisoning

WHILE the number of stock deaths due to prussic or nitrate poisoning is small compared to the number of stock grazing sorghums, it still deserves some consideration. Problems increase with the level of prussic acid or nitrate in the plant and the speed at which animals consume the forage. Particular care should be taken when feeding hay, as high levels can persist in hay and it can be consumed quickly, especially by hungry stock.

PRUSSIC ACID POISONING

All sorghums, including Johnson grass, can cause prussic acid poisoning by releasing the toxic compound hydrogen cyanide (HCN) when the animal consumes leaf material. Grain sorghums, sweet sorghums and perennial forage sorghums can contain the highest concentrations of HCN. Sorghums x Sudan grass hybrids have intermediate amounts, and Sudan grass the least.

Cattle are most commonly affected, but goats, sheep and horses have also been poisoned. Ruminants are more susceptible because cud chewing and rumen bacteria both contribute to cyanide release. Monogastric animals, such as horses and pigs, are less susceptible than ruminants because the enzyme responsible for hydrolysing HCN from cyanogenic glycoside is destroyed in stomach acid. Prussic acid levels are highest in:

- young plants
- early regrowth
- plants stressed from lack of moisture, cold weather, or attack by grasshoppers or other insects
- plants grown in high nitrogen and low phosphorus soil.

To minimise risk:

- wait until the crop or regrowth is 80cm high (at least 50cm for Sudan grass) before grazing
- do not put hungry cattle onto a suspect crop and introduce only a few animals at first
- watch stock continuously for the first hour and then intermittently over the next few days
- avoid grazing troublesome plants after a light frost or after rain has ended a summer drought. Wait at least a week after a killing frost before grazing
- ensure adequate phosphorus nutrition of the crop
- consider providing animals with a sulphur supplement

— for example, free choice salt with 5-12pc added sulphur (sulphur is used to detoxify prussic acid)

- analyse suspect forage samples before feeding.

Vaccination of cattle for pulpy kidney with 5-in-1 is also recommended for stock placed on lush forage crops.

Effect on animals	ppm HCN (dry matter basis)
Generally safe	0-500
Potentially toxic, should not be the only feed source	600-1,000
Dangerous to cattle and usually will cause death	1,000 and above

Level of prussic acid in forage (dry matter basis) and potential effect on cattle.

SYMPTOMS OF ACUTE POISONING

The clinical signs are seldom seen because most HCN-poisoned animals die once the toxic agent gets into the blood stream, usually 15 to 20 minutes after animals consume the forage. Cyanide acts by preventing the release of oxygen in the blood and the animal suffocates.

The blood remains bright red. This contrasts with nitrate poisoning where blood goes chocolate brown. Symptoms include:

- rapid heavy breathing
- frothing at the mouth
- muscular twitching/convulsions
- staggering and severe difficulty in breathing
- coma.

HCN LEVELS IN HAY, SILAGE

Although some reduction in HCN potential occurs during hay making, it does not necessarily render the sorghum safe for

livestock. Do not make hay from sorghum crops which are considered unsafe to graze. If suspect hay must be used, get it analysed first and either test feed it or blend with safer forage.

Sorghum silage that has been stored for several months is much safer than hay, as the acid fermentation process normally releases any HCN present. If possible, analyse suspect forage, hays or silage before feeding.

Consult testing laboratories for information on representative sampling, labelling, handling and analysis.

NITRATE POISONING

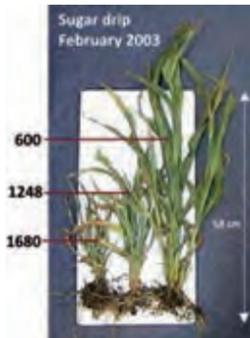
Nitrate can accumulate in many crops, pasture and weed plants such as sorghum, millet, pigweed, variegated thistle, capeweed, wheat, oats, barley, maize, rape, soybean and linseed. Forage sorghum, grain sorghum, Sudan grass and pearl millet are notorious nitrate accumulators.

Poisoning is most likely to be a problem with hungry stock (rapid intake), stressed stock, and under conditions that promote nitrate build-up in plants. Although all livestock are susceptible to nitrate toxicity, cattle and horses are affected most often. Sheep and swine generally do not eat enough high-nitrate forage to cause problems. Most soil nitrogen absorbed by plant roots is in nitrate form. Normally, nitrate in a plant is rapidly converted into protein given adequate sunlight, water, nutrients and temperature. Plants accumulate nitrate when soil nitrate is high, but conditions are not suitable for normal growth that allows the nitrate to convert to protein. This can occur during cloudy weather, cold weather, when plants are wilted, after herbicide application, or with combinations of these factors. High levels can occur when wet, overcast days follow a severe drought.

PLANT FACTORS

Nitrates normally accumulate in stems with highest levels in the lower one-third of the plant stalk. It is generally highest in young plant growth and decreases with maturity, though sorghums and Sudan grasses are exceptions as concentrations usually stay high in mature plants. If plants are stressed at any stage of growth, they can accumulate nitrate.

More information: www.daff.qld.gov.au/animal-industries/animal-health-and-diseases/protect-your-animals/poisonings-of-livestock/cyanide-and-nitrate-poisoning



Levels of prussic acid (dry matter basis) at different stages of plant growth.

Testing cattle ticks for resistance (continued)

● Continued from page 46

The following steps are a general explanation of how to collect ticks most likely to lay a suitable amount of eggs for resistance testing. For more information or to arrange tick collection call your local Biosecurity Officer on 13 25 23.

1. Collect your ticks from the second to eighth day or the 14th to 24th day after dipping or spraying.

● Ticks can be collected over a number of days within these periods, but they must reach the Biosecurity Sciences Laboratory before they start to lay eggs.

● If you're using Cydectin or Ivomec, allow four days after treatment before collecting ticks.

2. Collect ticks early morning — before 7.30am if possible.

Female ticks engorge in the last 12 hours of their time on the animal and most drop off early morning.

3. Collect only the fat, fully engorged ticks.

Half-engorged and small ticks only lay a few eggs and aren't

useful for testing. Avoid collecting nymphs (9-12 days old). This stage is the hardest to kill, and a few may survive dipping, even if they are not resistant to the acaricide.

4. Select ticks from a range of cattle. That is, a few ticks from a number of cattle, to provide a better representation of the tick population. Supply a separate sample from each mob using another dip or spray facility.

5. Collect at least 40-50 fully engorged ticks. A minimum of 40-50 healthy active fully engorged ticks are required; however, it's better to send in more if you can.

6. Put ticks in a ventilated container.

● A plastic takeaway container with air holes punched in the lid is suitable.

● Don't put anything else in the container with the ticks.

Keep away from all chemicals, sunlight and excessive heat, as ticks can die or be seriously affected if not treated properly and become useless for analysis.

7. Supply as much information as possible on the advice sheet — this helps the parasitologist make a diagnosis.

Download a copy from www.daff.qld.gov.au/__data/assets/pdf_file/0006/65733/GEN008SpecimenAdviceSheet.pdf or get a copy from your biosecurity officer.

8. Give promptly to your local biosecurity officer or send by mail or courier to the Biosecurity Sciences Laboratory.

When posting, use protective packaging such as cardboard to protect the ticks in transit.

9. Ask your biosecurity officer about collecting ticks for adult immersion testing. This is the current test used for detecting resistance to fluzuron.



Fully engorged female cattle tick.

Cattle tick life cycle – saving time, money and effort

WITH the cost of chemicals and labour and fluctuating cattle prices, it makes sense to understand the cattle tick and its life cycle to get the best possible treatment results.

The cattle tick (*Rhipicephalus microplus*) life cycle is complex with two stages: the parasitic stage in which the tick feeds on the host animal, and the non-parasitic stage when the tick is on the ground.

PARASITIC STAGE OF THE TICK LIFE CYCLE

This stage begins when the six-legged 'seed tick' (larvae) attaches to the host. The larvae feed for six to nine days, then moult and become nymphs with eight legs. Nymphs feed for six to eight days, moult and develop into adult ticks. Moulting nymphs are less susceptible to acaricides than larvae or adult ticks.

In the adult stage, male ticks are more active than females. The male tick travels around the host for up to two months mating with females before dying and dropping off. The female tick feeds for seven to 10 days, engorging rapidly in the last 24 hours on the host. It then drops to the ground to lay about 3000 eggs before dying.

NON-PARASITIC STAGE OF THE TICK LIFE CYCLE

This 'on-ground' stage of the tick life cycle begins when the fully engorged female lays her eggs. The duration varies depending on environmental conditions.

Under optimal conditions of high humidity and temperature (summer) eggs can hatch in three to four weeks, while eggs produced during late autumn may not hatch until the following spring.

Hatched larvae climb to the top of grass where they

can attach themselves to passing hosts. Temperature and humidity affect the length of time larvae can stay alive without attaching to a host.

Their life span ranges from two or three weeks in hot, dry seasons to five or six months over some winters.

MANAGEMENT IMPLICATIONS

A strategic program for susceptible cattle covering a period of 18 weeks will normally control cattle ticks from dropping off and laying eggs.

If this is started at the correct time during the year — for example, at the time of the spring rise in October (south-east Queensland) — you can avoid unnecessary treatments and save thousands of dollars on chemical, mustering and labour.

You can also use your understanding of the tick life cycle to run a pasture-spelling program to reduce the number of ticks on the ground.

The desired duration of pasture spelling varies from four to five months in summer to seven or eight months over winter.

Being aware of, and able to identify, the various life cycle stages can help you avoid wasting resources, and target your treatments and pasture management to the most susceptible stages in the tick's life cycle.

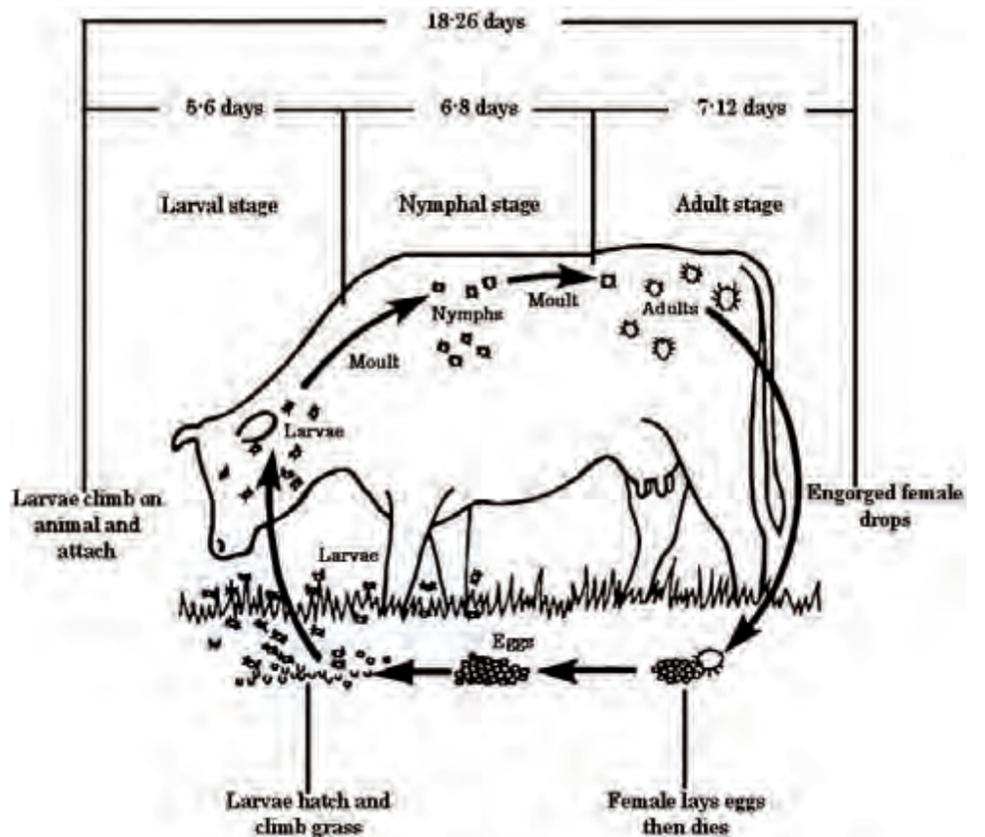
Contact your local Biosecurity officer on 13 25 23 for more information about cattle tick eradication or control strategies for your area and situation.

Doug McNaught, DAFF, Oxley. Phone: (07) 3310 2828.

Email: douglas.mcnaught@daff.qld.gov.au

Peter Mowett, DAFF, Warwick. Phone: (07) 4660 3673.

Email: peter.mowett@daff.qld.gov.au



Cattle tick life cycle.

