FutureBeef

Beeftalk

Taking stock of your future

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Queensland Government

QUEENSLAND Country Life

Drought strategies, preparing for El Niño

WELCOME to Beeftalk 39. In this issue, there is a warning for impending El Niño conditions which often, but not always, bring drier than normal conditions.

The impact of El Niño is more relevant to some areas than others, such as far northern Queensland. A list of drought strategies and considerations is given, including the all important adjustment of stock numbers to match paddock feed and water supplies.

Supplementation of stock on pastures is still important, especially to help breeders hold condition. Several articles discuss assessing pasture quality (dung samples), animal requirements, supplementation needs and options.

While management of the business is important, Lifeline reminds us that "YOU and your family" are the most important part of the business also needing attention.

New landholders in particular are not always clear on their responsibilities for managing land and livestock. Several articles provide an overview and refresher of responsibilities for landholders big and small. Observing these responsibilities is so important to maintain clean landscapes and food to keep our export and domestic customers buying Queensland beef.

The update on the 2013 Northern Beef Situation Analysis reminds us that things are difficult, it also highlights that some businesses are managing for consistently better profits.

Please provide your feedback and suggestions for future issues using a short survey at www.surveymonkey.com/s/beeftalk39. Online versions of Beeftalk are also available for download or email. To receive the online version, please subscribe on the FutureBeef website www.futurebeef.com.au/sign-up

Happy reading!

– The Beeftalk team

Beeftalk edition 39

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Trialling two remote technologies at MLA Producer Demonstration Site, Richmond

IN 2011, a producer group at Richmond in North West Queensland started trialing two remote technologies as part of a MLA Producer Demonstration Site (PDS).

The project, coordinated by Cloncurry-based FutureBeef extension officers Rebecca Gunther and Emma Hegarty, demonstrates using remote equipment to automatically collect animal weights, draft animals, and photographically monitor waters, livestock in the yards, and pastures.

The automated weighing and drafting unit, supplied by Precision Pastoral, allows livestock to be monitored remotely in the paddock. Cattle are weighed every time they walk over the weighbridge to exit the main water yard. Each animal's NLIS tag is scanned with an Allflex panel reader and matched to their live weight, date and time by a Tru Test XR3000. This information is then sent to Precision Pastoral's online weight reporting software via mobile phone coverage using Observant telemetry. Satellite and UHF frequency equipment is also available to use with the system if mobile coverage is not sufficient.

A drafting unit adjoins the weighing unit and can be used to automatically draft stock on live weight or NLIS tag number into different yards. This enables drafting on sale weight specifications or weaning weights or even to compare stock with or without a treatment or supplement in the yards.

The remote weighing and drafting technology has allowed pin point timing of key management practices with the equipment through monitoring whether live weights are gaining, levelling or dropping. The group has been able to specifically target the introduction of dry lick supplementation when live weights began to plateau. The live weight data can then be used to see if there is a response to the supplement. Significant cost saving can be achieved by not supplementing too early and minimising weight loss over the dry season.

LEFT: uSee remote monitoring camera supplied by Harrington Systems Electronics keeps an eye on water trough and tank levels in main water yard.

Analysing the data has shown some interesting animal behaviour with some animals only watering every second or third day in cooler months of the year, despite the relatively small 1500ac paddock. The system also sends an alert when an animal's tag hasn't been read for several days. It also discovered that one animal in particular would go missing periodically, jumping the fence to return later.

The project has been very beneficial in demonstrating the practical application of the system, its potential, and its limitations. Importantly livestock need to be trained to use the spear traps which are an integral part of the system, as well as being trained to become accustomed to walking over the weigh bridge and waiting for their gate to open in front of them.

Since large paddocks in extensive grazing operations have multiple waters, it may be necessary to set the system up in a large holding paddock with controlled water, or accept monitoring of just a percentage of livestock in the paddock.

uSee Remote monitoring cameras, supplied by Harrington Systems Electronics, were the second remote technology demonstrated. One camera was set above the 'in' spear to monitor the water trough and tank levels in the main water yard, while a second camera was located two kilometres from water to monitor pasture condition.

Both cameras are programmed to take a set number of photos a day that are uploaded via mobile phone coverage to the uSee website at www.usee.com. The cameras can also be instructed to take a photo on demand, via a button on the website. Satellite cameras are available for areas outside of mobile coverage.

The remote camera was found to be an excellent tool in decreasing the amount of water runs required in day-to-day management.

The ability to check the water trough levels daily on the web site reduced the number of times required to check the trial paddock in person, saving a one hour drive round trip to the trial paddock each time. It was estimated that such savings in labour and fuel could pay for the system in as little as three months. A satellite camera would take slightly longer, but payback time still measured in months, not years.

With labour costs at a premium, the project has been successful in demonstrating the potential of remote technologies to improve management efficiencies in beef enterprises. The technologies and applications will only improve in time.

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Bureau of Meteorology rolls out new forecasting system

MetEye on BOM website – simple, interactive weather maps

THE Bureau of Meteorology (BOM) has been rolling out a new weather forecast system that provides more information to help you make important weather related decisions on your property.

The new system provides simple, interactive weather maps that will give you more detail, at a local level, up to 7 days ahead.

You can point and click anywhere on the map, and zoom down to a 6km square to get a 7 day forecast for:

- maximum and minimum temperature,
- forecast rainfall totals,
- wind speed and direction,
- weather phenomena like frost, fog, thunderstorms etc.

As well as providing forecasts for specific locations, the maps make it easier to understand how the weather is changing across your region over the coming week.

> As well as providing forecasts, the maps make it easier to understand how the weather is changing across your region over the coming week.

SPRAYING

Working out when to spray is becoming easier using the forecast maps. You can zoom into your local area and view maps of wind speed and direction on a three-hourly basis, out to three days ahead, enabling you to accurately assess the best time to spray. For an idea about conditions from three to seven days ahead, maps are available every six hours.

FROST

The new forecast maps will also be very useful for farms affected by frost outbreaks.

The maps allow you to zoom into your local area and get temperature information seven days in advance. Looking at the forecast overnight temperatures, you'll be able to anticipate and prepare for a period of frosty nights, well before the bureau issues an official frost warning.

PLANTING AND HARVESTING

With the new map service, it will be easier to plan your planting and harvesting activities around good rainfall. The rainfall maps can help to determine where, when and how much rain will fall at your location.

You can zoom in to your local area and click on the approximate location of your property for a seven-day forecast of temperature and rainfall. You can also find out whether the rain is likely to be in the form of showers or thunderstorms by using the weather condition maps. Timing of the rain event can be viewed by looking at the three-hourly rain forecasts to see when the rain will reach your location.

SHEEP PROTECTION

Using the new maps, you can get seven days notice of cold, wet and windy conditions that could lead to hypothermia in newborn or recently shorn sheep.

The maps can be used to identify upcoming periods of cold temperatures, rainfall and strong winds. Using this information, you can make early decisions about moving stock to sheltered areas of your paddocks depending on the direction of the wind, or decide when to shear based on the timing of the rainfall.

The BOM issues warnings to sheep graziers a day prior to these conditions occurring, however by analysing the maps you will be well prepared days in advance for harsh weather conditions that could significantly impact on your stock.

IRRIGATION

In another development for agriculture, a new evapo-transpiration tool has been included in the BOM's website. With easy to access information about daily reference (standard) evapo-transpiration combined with rainfall totals at a number of BOM weather station locations you will be able to make better informed decisions about your water requirements.

HEATWAVE

The BOM has recently trialed a pilot heatwave forecast service. The success of the pilot service is under review and pending a satisfactory review, it will restart sometime in spring 2014. The heatwave forecast is a set of graphical maps of heatwaves, severe heatwaves and extreme heatwaves for the current day extending out for the next four days which is planned to be made available through MetEye.

UNDERSTANDING EXTREME WEATHER EVENTS

Through MetEye you can access maps and graphs showing extreme events.

Extreme climate events such as heat waves, cold snaps, floods and dry spells can have a significant impact on your property or livestock.

The new extreme monitoring products will allow you to examine how extremes in your area have changed over time. For example, you can check how the number of extreme hot days or extreme cold nights has changed.

- *For more information visit the Bureau's website: www.bom.gov.au/australia/meteye.*

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What does El Niño mean for spring and summer rainfall?

A look at the the climate forecasts for Queensland

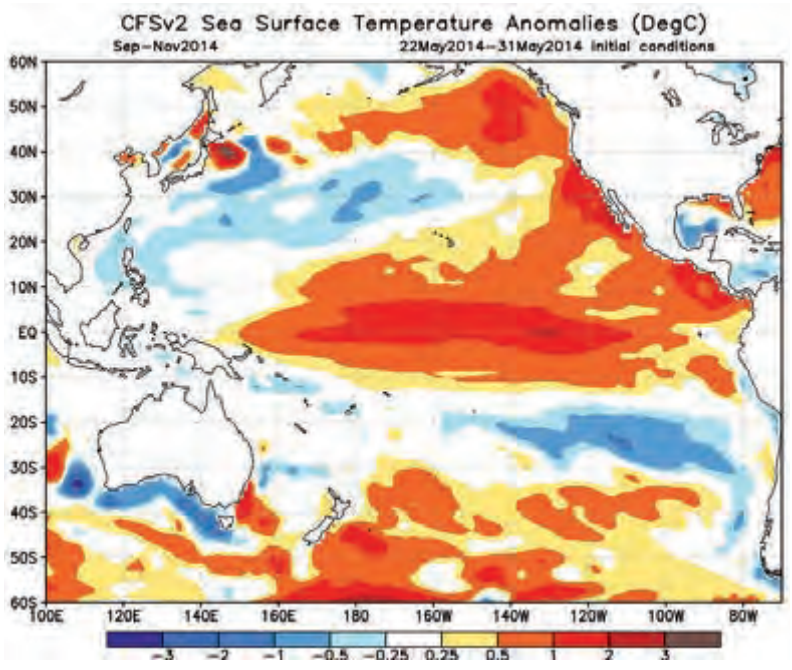


Figure 1. Pacific Ocean - tongue of warmer than normal water westward from America (Peruvian coast) showing the development of a possible El Niño between September-November 2014.
Source: www.cpc.ncep.noaa.gov/products/international/cfsv2/pacific_sst_anom.shtml.

Positive SOI - La Niña, warm water north of Australia

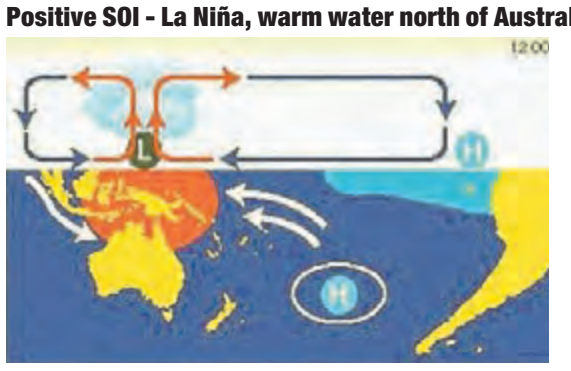
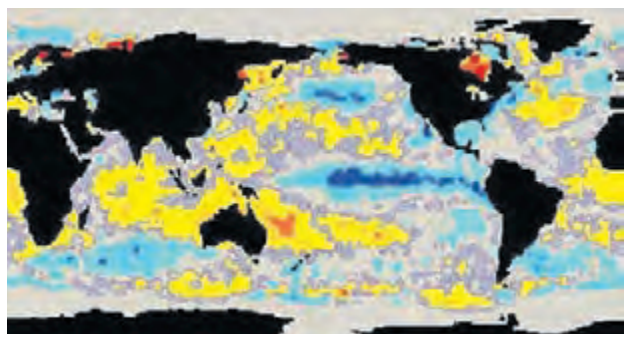


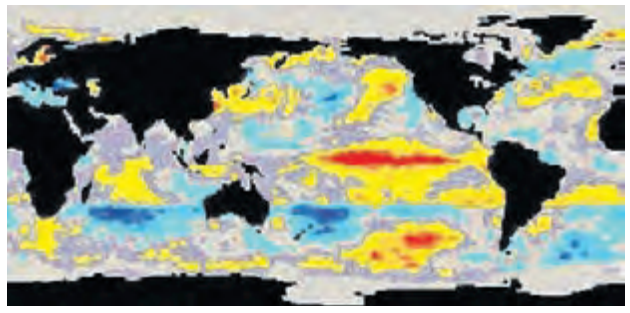
Figure 2a. Positive SOI, La Niña



2b. Sea surface temperatures, La Niña 2011

Negative SOI - El Niño, warm water near South America

Figure 3a. Negative SOI, El Niño



3b. Sea surface temperatures, El Niño 1982

CLIMATE forecasts are indicating that an El Niño may develop by spring 2014 (Figure 1). Generally speaking this is often associated with below average rainfall across large parts of Queensland.

HOW DOES AN EL NIÑO OCCUR?

Normal or non-El Niño conditions

The southern part of the Pacific Ocean circulates in an anti-clockwise direction. Cold water from Antarctica moves up the South American coast, and assisted by trade winds moves westward at the tropics. As this occurs the water becomes warmer so the sea surface temperatures become higher in the western Pacific than the eastern Pacific.

This warm water north of Australia helps low pressure systems to develop as warm moist air expands and rises producing rain over northern Australia. Cool water in the tropical eastern Pacific causes the air above to contract and become dense, producing high-pressure systems and dry conditions. With cold water (and high pressure) in the east, surface air flows westerly across the Pacific (trade winds) picking up moisture, and in areas over northern Australia it rises producing rain (Figures 2a and 2b).

El Niño conditions

El Niño conditions occur when warm water from the north or west Pacific Ocean (forced by westerly wind bursts) penetrates the cold water in the tropical eastern Pacific.

This can produce low pressure in the east and corresponding high pressure in the west Pacific, which weakens the trade winds, and causes a reversal of the circulation pattern.

The weaker trade winds slow the westerly ocean currents and the water north of Australia remains cooler than normal. High pressure systems prevail, producing lower than normal rainfall (Figures 3a and 3b).

The southern oscillation index (SOI) is a measure of the difference in air pressure between Darwin (western Pacific) and Tahiti (eastern Pacific).

A positive SOI indicates low pressure at Darwin (high in Tahiti) while a negative SOI indicates high pressure at Darwin (low in Tahiti). It's a useful indicator of the ENSO pattern mentioned above.

WHAT DOES AN EL NIÑO MEAN?

An El Niño is likely to develop by spring 2014 and by all indications its strength may well be classified as 'weak to moderate' as measured by the degree of warming in the central tropical Pacific Ocean. Generally speaking, but not always, an El Niño is associated with below average rainfall across Queensland, but the strength of the El Niño is not always associated with a similar impact on rainfall. For example, the 1997-98 El Niño was classed as 'very strong' but the impact on rainfall in Queensland was 'weak' (Figure 4a) (www.bom.gov.au/climate/enso/enlist/index.shtml), however the 1982-83 El Niño was classed as 'very strong' and the impact on rainfall was 'very strong' with drought conditions widespread

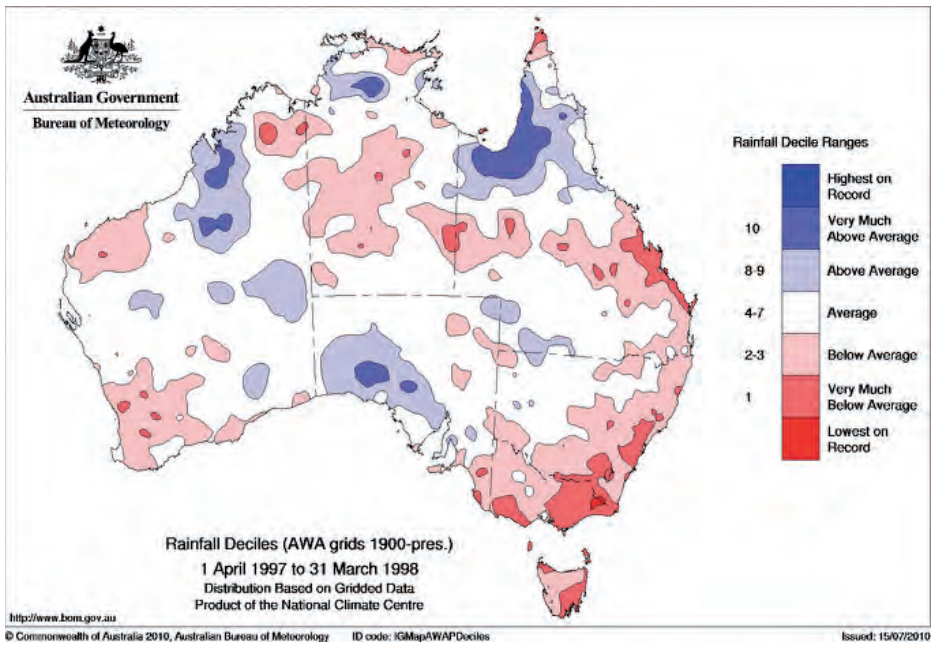


Figure 4a. Australian rainfall deciles for two 'very strong' El Niño's for a) 1997-98 and b) 1982-83.

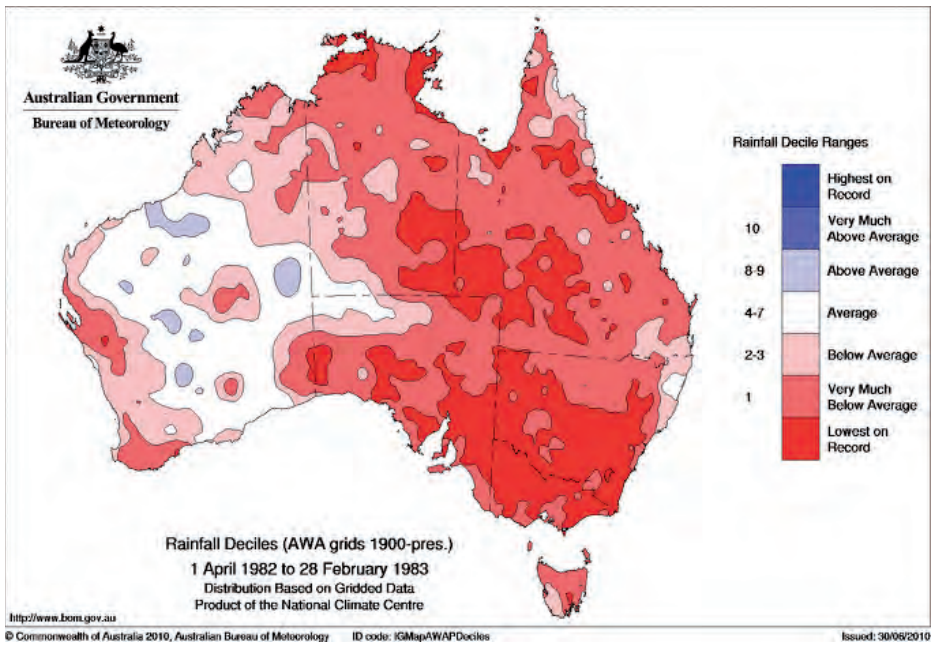


Figure 4b

What's been the impact of El Niño conditions on Queensland locations in the past?

across eastern Australia (Figure 4b). Therefore some, but not all 'strong' El Niño's have a 'strong' impact on Queensland rainfall.

WHAT'S BEEN THE IMPACT OF EL NIÑO CONDITIONS ON QUEENSLAND LOCATIONS IN THE PAST?

For the locations in Queensland surveyed the chance of receiving median rainfall in spring ranged between 18-33 per cent during El Niño like conditions (SOI less than -5) (Table), and the chance of receiving median rainfall in summer ranged between 26-44pc.

For example, the historical data for Taroom (1885-2012) shows that during periods when the SOI during spring and summer was less than -5 (El Niño conditions) Taroom only received median rainfall in approximately one out of four years.

WHAT CAN YOU DO?

Continue to monitor the situation on the BoM website www.bom.gov.au/climate/ahead/model-summary.shtml and be prepared for drier than normal conditions in spring and summer if El Niño conditions develop.

● *More information on the seasonal outlook can be found on the LongPaddock website (www.longpaddock.qld.gov.au).*

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Percentage chance of median rainfall for spring and summer in some Queensland locations Source: Australian Rainman www.daff.qld.gov.au/plants/field-crops-and-pastures/broadacre-field-crops/cropping-efficiency/rainman

Location	Spring (Sep-Nov)			
	Median rainfall	SOI below -5	SOI -5 to +5	SOI above +5
Longreach	44 mm	28	56	63
Charleville	82 mm	31	50	68
Gracemere	132 mm	22	60	61
Roma	107 mm	28	58	60
Stanthorpe	183 mm	28	45	68
Taroom	151 mm	26	57	63
Pentland	65 mm	18	59	68
Richmond	38 mm	22	54	67
Camooweal	43 mm	33	57	57
Location	**Summer (Dec-Feb)**			
	Median rainfall	SOI below -5	SOI -5 to +5	SOI above +5
Longreach	191 mm	39	48	61
Charleville	176 mm	26	46	73
Gracemere	338 mm	39	46	65
Roma	208 mm	42	45	59
Stanthorpe	273 mm	44	58	41
Taroom	264 mm	22	50	72
Pentland	368 mm	31	50	64
Richmond	273 mm	32	43	76
Camooweal	229 mm	42	44	65

SURVIVING THE DRY: WORKSHOPS TO GIVE GRAZIERS THE NUTRITION EDGE

CENTRAL Queensland graziers are being urged to arm themselves with the latest information and strategies in beef nutrition as dry conditions persist.

The Department of Agriculture, Fisheries and Forestry's (DAFF) FutureBeef team has organised a three-day Nutrition Edge Workshop in Emerald on 19-21 August, presented by leading nutrition, reproduction and livestock management specialist Désirée Jackson.

The workshop is an approved training activity under the Fitzroy Basin Association's Training Reimbursement Program. Under this program property owners and managers can be reimbursed up to 70 per cent of the cost of approved training courses, capped at $700 per financial year per business.

"Forecasts for an El Niño summer season are firming, and cow body condition and fertility have already suffered from late breaks in the last couple of years. If we are looking at a similar situation this year, the learnings from the Nutrition EDGE course will be invaluable," FutureBeef extension officer Byrony Daniels said.

"It's a fact that this year's cow body condition will determine next year's fertility. Now is the time to take steps to ensure the best use of available pastures, make sure your supplementary feeding plans provide value for money and seek advice from the experts."

Topics to be covered throughout the three days include better understanding the nutritional requirements of cattle, estimating the feed value of pasture and related animal production, and identifying and managing nutritional deficiencies. The development and implementation of cost effective supplementary feeding and drought management strategies will also be covered.

The cost of the workshop is $1760, and there are discounts for additional business attendees. Follow DAFF on Facebook Queensland Agriculture and Twitter @QldAgriculture

● *To register for the workshop, or for more information, visit www.futurebeef.com.au, FutureBeef's Facebook page or call DAFF's Customer Service Centre on 13 25 23.*

NLIS refresher: Transfers - when and how?

WHEN?

ALL cattle movements must be recorded on the NLIS database with the exception of cattle moving between properties with the same property identification code (PIC). These transfers must occur within 48 hours of the cattle movement.

The type of movement determines who is responsible for recording the movement on the NLIS database. The following table outlines the type of movement and who is responsible for the transaction.

HOW?

With internet access: The NLIS database is managed by NLIS Ltd on behalf of the industry/government organisation called SAFEMEAT. To access the database and carry out livestock transactions you need a PIC, email and you need to open an internet account with the database. If you only trade via the saleyards or sell direct to the meatworks and sell directly to abattoirs, you do not need to open an account. The saleyards and abattoirs will do all the transactions for you.

When updating the database for each animal, you will need the:

- NLIS ID or RFID number of each animal
- 'from' PIC or place of departure
- 'to' PIC or place of destination
- serial number of the waybill or combined NVD/waybill
- date of movement.

As noted, you don't need to report movements for saleyard purchases, as the saleyard operators carry out this task for people buying cattle from a saleyard. However, if you're a purchaser, you may wish to check your database account to ensure they've done this correctly.

Once movement details have been uploaded, the NLIS database emails the transfer details to both the property the animal is moving from and moving to (if these parties have an account with the database). Agents acting as a third party for a client will also receive an email.

Without internet access: Producers without internet access may utilise third party providers who assist by doing NLIS transfers. Some Livestock agents also provide this service to their clients.

If you intend to use a service provider, you need to complete a database transfer authority form to enable them to carry out transfers on your behalf. Allow at least one day (six working hours) for the authority to be processed.

Access authority forms to appoint a third party are available from the NLIS Helpdesk.

Some third party providers and livestock agents have non-written authority to carry out transfers, in which case you don't have to provide a written authorisation.

Before making any arrangements with a service provider, discuss their services to ensure they will meet all legal and commercial obligations.

Once a transfer is complete, get a written confirmation from your service provider or livestock agent that the transfer has been completed correctly.

Note to transfer service providers: Third party service providers should also check that PICs of cattle bought and sold through saleyards, and taken to abattoirs, have been correctly transferred.

WHAT IF I DON'T UPDATE A TRANSFER?

If you move an animal to a property with a different PIC and the movement is not updated on the database, the warning will be identified at a later reading or report from the database. The system will detect any animals not correctly registered against the PIC they are consigned to.

When the animal's movement records are later uploaded, the database will automatically reassign it to the consigning PIC on the national vendor declaration.

However, the animal's lifetime traceability status will be lost because its movements have not been fully recorded. Animals that do not have lifetime traceability status may not be eligible for some markets such as the European Union.

FOR ASSISTANCE

Call the NLIS Helpdesk on 1800 654 743, email support@nlis.com.au or visit the NLIS website www.nlis.mla.com.au.

Contact your local Biosecurity or Stock Inspector.

Doug McNaught
Phone: (07) 3276 6134 or 0427 582 113
Email: douglas.mcnaught@daff.qld.gov.au

Protecting your greatest asset - YOU

Workshops offer information on getting through tough times

Lifeline	13 11 14	www.lifeline.org.au
Lifeline Darling Downs & SW Qld Ltd	1300 991 443	
Kids Helpline	1800 551 800	www.kidshelpline.com.au
Mensline	1300 789 978	www.menslineaus.org.au
Rural financial counselling service	1800 686 175	
Murray–Darling Basin Assistance and Referral Line	1800 050 015	
Relationships Australia	1300 364 277	www.relationships.com.au
Beyondblue information line	1300 224 636	www.beyondblue.org.au
SANE Australia helpline	1800 688 382	www.sane.org
National Association for Loss & Grief		www.nalag.org.au
Suicide Call Back Service	1300 659 467	www.suicidecallbackservice.org.au
Emergency (Police, Fire, Ambulance)	000	

RECENTLY Lifeline counselling staff have been meeting with local farmers through the drought assistance workshops organised by the Department of Agriculture, Fisheries and Forestry.

At these workshops, Lifeline presented some brief information on "getting through" these tough times. The current drought is affecting three quarters of Queensland and is making times tough.

The government is creating several avenues for support. However, at Lifeline we recognize that you, not your land or stock, are your greatest asset and resource. So we developed some tips for how to protect your greatest asset during the drought.

TIPS FOR LOOKING AFTER YOURSELF:

Talk to others. Don't bottle your feelings up inside.

Get help, if you need it. Don't wait until things have gone too far. This can include help with finances and loans, food, medical needs etc. Don't let things reach crisis point. If it feels like things are spiraling out of control, now is the time to seek help.

Do things you enjoy. Watch a movie, go camping, fishing, motorbike ride, walk, sport, craft etc. Schedule these activities in.

When things are tough, we tend to let go of things that we enjoy. We don't look after ourselves as well as we should. This is really the time to prioritise those activities. Even if you don't feel like it, do it anyway. Most likely you will feel a lot better afterwards.

Connect with others, catch up with friends and family, have a BBQ, meet for drinks etc. Again, you may not feel like it, but you will most likely feel better afterwards. Help each other out. We are all in this together, so support each other.

Get enough sleep. Sleep is really important as it gives our body and mind a chance to rejuvenate. Prioritise an early night, if you are feeling tired. If thoughts and ruminations are keeping you awake at night, put some strategies in place to maximize relaxation.

A hot bath or shower, and relaxing music can help to maximize sleep. Turn off mobile phones and emails at night. Exercise during the day can help you to feel tired at night. Read a book or magazine before sleeping.

Diet. Stressful times can affect our diet by not eating enough, or eating too much. Or we may be increasing sugary or fatty snacks. Try to maintain a balanced diet. And drink more water, about two litres per day is recommended by some, or more if you are physically active.

Exercise. Regular exercise is one of the best methods for stress management. It gives you a chance to take time out, releases endorphins (so your mood is boosted naturally), it's a chance to connect with others, improve your health and just have fun. Join a sports club, or just go for a walk.

> Don't bottle your feelings up inside. Get help, if you need it. Don't wait until things have gone too far.

WARNING SIGNS THAT YOU OR YOUR FAMILY MEMBER/FRIEND MIGHT NEED SOME HELP:

Suicidal words: "It's not worth it", "I can't go on", "I can't handle this any longer", "You would be better off without me". When people make these sort of statements, it is a sign that more help is needed. It is an invitation for help. Don't ignore these statements, ask the person more about how they are feeling. Let them know you care, and help them to seek further support (i.e. telephone counselling service, GP, local counsellor).

FAMILY MEMBERS CONCERNED ABOUT SUICIDE:

Sometimes people tell us they hear a gun shot on the farm, and they worry whether the gun has shot the animals, or been used for suicide. The fact that you are wondering if someone is suicidal is an indicator that more help and support is needed for that person.

If you're wondering "am I overreacting?" it is still useful to get more help. Don't dismiss or ignore warning signs that a person may need more help.

If you notice yourself or someone else behaving out of character: They may be more angry (uncontrolled, more reactive, "on edge"), or the opposite, if the person is more withdrawn than normal. These both can be signs that you or they may need some help.

Increased alcohol or drugs consumption can also be a warning sign.

WHAT TO DO AND WHERE TO GO FOR HELP:

Talk to friends, family, health professionals, counsellors, telephone counselling services.

Often people worry that if you ask questions (especially about suicide), your loved one may be more likely to hurt themselves. This is not the case. Generally speaking, it is a relief for the person to talk about it. Asking questions will not make things worse. It gives opportunity to get help for the person.

Another barrier to getting help can be a belief such as "someone else is more deserving of help", or "other people are worse off than me".

It is really important to look after yourself first so you can be there for your own family, friends, employees and your community. Accepting help is not a sign of weakness. Hard working, competent people can find it difficult to accept help.

We encourage you to remember that by looking after yourself, you are better able to look after your family, employees, and others depending on you.

GP – Contact your GP to talk about how you are coping. Highly stressful situations over periods of time can lead to depression or anxiety. GPs are in the best position to assist you.

COUNSELLING AVAILABLE IN YOUR AREA:

Please contact your local GP or Lifeline's telephone counselling line (13 11 14) for local contacts.

If you feel you are not getting the support you need from a provider, it is OK to seek another opinion or try another counsellor/service provider. Don't give up until you get the help you need. Sometimes you might need to talk to a few people.

Lifeline Darling Downs & SW Qld Ltd has local counselling services across the south west of Queensland.

An audio copy of this short talk is on the DAFF website. Please visit www.futurebeef.com.au/topics/business-management to listen to this recording.

Megan Halliday, Senior Practitioner
Lifeline Darling Downs & SW Q Ltd.

On farm biosecurity planning essential

BIOSECURITY Queensland coordinates the government's efforts to prevent, respond to, and recover, from pests and diseases that threaten the economy and environment.

As a rural landholder, regardless of the size of your enterprise, you play a vital role in minimising biosecurity risks and protecting your property and animals, our industries and communities from the negative impacts of pests, diseases and contaminants.

On farm biosecurity involves protecting the health of your animals and their environment by reducing the risk of disease, chemical residues and weeds and pest animals on your property.

Assessing the risks and planning to control them can improve the profitability of your business and contribute to good biosecurity in your community. Some of the major risks include:

- Visitors
- Introducing new animals
- Contaminated fodder
- Machinery hygiene.

> On-farm biosecurity involves protecting the health of your animals and their environment.

Visitors, including neighbours, agents, sales people, advisors, shooters, fishers and vets can unintentionally bring disease and other pests on to your property.

Ensure that visitors wash their hands, and have clean clothing and boots, wear protective clothing, footwear and provide disinfectant for visitors inspecting your animals. It is also important to keep a register including names and dates of all visitors to your property.

New animals are the most common way to introduce disease into your stock. This includes bought-in replacement stock and stray, feral or wild animals. A priority is to ensure that boundary fences are stock-proof to prevent stray animals entering and property stock leaving. Before introducing new animals, request the history of livestock and minimise the risk of introducing disease. Obtain supporting paperwork, such as animal health statements, and ensure movement requirements are met. Keep a record of the property of origin of livestock and notify the NLIS database of relevant movements.

Releasing domestic animals is not only an offence under animal welfare legislation, it is also the source of new populations of feral animals. The release of domestic deer in the past has resulted in numerous wild populations. Responsible animal ownership, including desexing, ensures that domestic dogs and cats as well as guardian animals, do not add to existing feral populations.

Contaminated fodder and machinery can bring disease-causing agents, weeds, pest animals such as tramp ants and chemicals on to a property. Landholders may assess feedstuffs for contamination with weeds, seeds and chemical residues. It is important to know where hay, straw and grain is from and obtain a vendor declaration.

Avoid sharing equipment between properties. If equipment is borrowed or lent, clean and disinfect it thoroughly. Ensure machinery is cleaned and disinfected with high-pressure water and air to remove soil, faeces and weed seeds before entering the property.

If you own animals, work out the risks of diseases, pests and weeds to your property. Develop a biosecurity property plan to minimise their potential for entry and impact.

You may visit your local biosecurity officer for advice or go to the Biosecurity Queensland website (www.daff.qld.gov.au/biosecurity) which has a number of easy to use resources to assist landholders develop a biosecurity plan.

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Write down your drought strategies

Plan to minimise losses and maintain productivity

WITH much of Queensland in drought many producers are implementing drought strategies aimed at minimising losses and maintaining productivity.

There are many factors which influence the relief measures used to cope with drought conditions. These include: the expected duration of the drought, the current water and feed supplies, herd composition and condition, time and labour, present and future markets, financial resources and attitude to risk.

Having a written drought plan with strategies which are consistent with the goals of the grazing business is important. Producers who experienced the 2003 drought said that the key to staying in control was "forward planning – knowing what you are going to do and when". They said that their best decision was "destocking to critical dates" and their worst decision was "not acting early enough".

The following drought management strategies are important:

Adjust stock numbers according to currently available pasture and water supplies in order to last well into the next expected wet season. Good ground cover before the summer rains is important to improve infiltration and hold valuable soil nutrients in place for better pasture growth.

While some may get early storms, it will be safer to cater for a later break to the dry season, especially in El Niño years. Four dry-season forage budgeting videos can be viewed on the FutureBeef website www.futurebeef.com.au/resources/multimedia/#GLM.

Sell least productive, highest-risk stock such as pregnancy tested empty and late calving cows, cull heifers, old cows, poor temperament and poor doers.

Wean calves, as young as three months, to help cows maintain condition and fertility. Calves will need good nutrition.

Pay attention to water quality and supply to make better use of paddock feed and prevent cattle bogging and polluting water.

Plan supplements ahead, establish contracts or purchase when there is greater availability and lower prices. Consider the cost of nutrients, moisture content, risks and chemical and weed vendor declarations.

Supplements are used to value add pasture. Feeding is buying food as a substitute for pasture. Most people agree feeding is best kept to short periods or preferably avoided using appropriate stocking rates.

Segregate herds for more efficient supplementing of stock according to their needs.

Maintain good herd health to control risks such as botulism and parasites. Lice and worms can become problems in drought when cattle's immune systems are challenged.

Beware the break in particular weak cattle chasing green pick which is mostly water. Wet-season spell some paddocks each year for more productive pastures.

> There are many factors which influence the relief measures used to cope with drought conditions.

When stock numbers exceed or are anticipated to exceed, feed supply options include selling, agistment, feeding (production, feedlot, survival), drove, lease or buy more land. It is important to do the sums. Tools to help assess the cost of selling versus feeding, production feeding, custom feed lotting and costing nutrients are available at www.futurebeef.com.au/topics/business-management/beef-business-tools.

Selling: Past droughts have found many producers retrospectively regarding selling early to reduce stock numbers as one of their better options. Sales of normal sale stock and vulnerable breeding stock has the attraction of converting cattle into cash, preserving more paddock feed for remaining stock and tightening up calving.

As one cattle producer put it, "every beast on the property represents dollars, and dollars aren't subject to drought". Selling takes some of the stress off you, the paddocks and the remaining stock.

It controls downside risk of escalating costs and losses over an unknown period, and leaves you more time and opportunity for other work. It may rain the next week, but the philosophy adopted by many is that it was the right decision under the circumstances at the time.

Pastures will also recover more readily. Moving early provides a bigger pasture sparing effect and often has the advantage of stock having better condition and sale prices.

Difficulties in selling revolve around losing known stock and genetics bred up over time, uncertainties of low sale prices, buy back price and quality and hoping for rain. Forecasting the outcomes if it does not rain and remembering that productive pastures are the foundation of the business, can help decision making.

Agistment can work well to avoid feeding and spell home pastures, or it can be a very costly problem. Sending steers on a one way trip can work well. Contracts are important for both parties. Some problems include finding it, time and distance from home property, management, communication, fence maintenance, yards, feed running out and having to find more agistment or return home, poor performance, losses, bogging, diseases, parasites and plant poisoning.

Production feeding can work well if stock have nearly reached a price premium but won't quite get there without some better feed. The economics are better with lower feed costs, shorter feed periods, good performance and higher sale price. Cull cows can be an opportunity where there can be very significant increases in sale price by lifting carcase weight and fat above a critical threshold.

Custom feedlotting: ask for and do the budgets to check the likelihood of profit. Ensure sums are done consistently using 'as fed' or 'dry matter' figures. Understand charges, risks and marketing options. Check entry specifications and requirements and avoid putting poor temperament and poor performers into high cost feeding. Having a full pen load can reduce mixing stress and disease issues.

Survival feeding can work well if you're well prepared and it's not too long and expensive. Otherwise feeding can be very expensive, time consuming and stressful for you, stock, pastures, equipment and finances. Problems include not knowing how long it can go for, reducing feed availability, rising feed costs, less time and opportunity, stock becoming unsaleable, stock losses, pasture damage, soil erosion risk and its impact on future productivity.

● *For more information www.futurebeef.com.au/topics/drought*

Lead poisoning in livestock

LEAD poisoning is common in domestic animals throughout the world and can affect animal health and food safety. Biosecurity Queensland diagnoses about 10 cases of lead poisoning each year across the state.

Cattle are the most susceptible livestock, with calves the most likely casualty. Lead poisoning can occur in all domestic animals, including horses, birds/poultry and dogs. Pigs are the least susceptible species.

Animal exposure can occur through:

- Access to lead batteries
- Discarded sump oil
- Lead-based paint or old paint tins
- Linoleum, grease, putty, oil filters, metallic lead and other sources.

Livestock often find batteries, sump oil and other lead sources attractive because lead compounds can have a sweet taste. It is important that materials containing lead, such as batteries and used sump oil are securely stored so stock cannot access them or are properly disposed of.

> It is important that materials containing lead are securely stored.

Batteries have been a particular problem as a source of lead with battery cases regularly being found in paddocks, either whole or slashed into small pieces.

Producers should check that there are no sources of lead in rubbish dumps or around farm buildings and machinery which stock can access. Stock have died from silage contaminated by lead shot, automotive grease, oil filters, putty and even leadlight windows.

CLINICAL SIGNS OF LEAD POISONING

A combination of gastro-intestinal (either constipation or diarrhoea) and nervous signs may occur. Acute poisoning can include stock found dead or displaying combinations of several signs for a few hours before death, including:

- colic
- staggering gait
- rolling eyes
- slobbering
- muscle spasms
- blindness
- uncoordinated attempts to climb obstacles
- excessive response to external stimuli
- head pressing
- convulsions.

Sub-acute poisoning signs can include dullness, loss of appetite, abdominal pain and diarrhoea.

Chronic poisoning signs include wasting, loss of appetite, anaemia, constipation, recumbency and breathing difficulty. Sometimes acute attacks may occur during the course of chronic poisoning. Paralysis and death may also occur.

● *Continued on page 109*

National Livestock ID Scheme: the basics

Lifetime traceability a benefit to the livestock industry

THE National Livestock Identification System (NLIS) is the identification and traceability system for livestock.

Lifetime traceability improves product integrity and market access and assists with the management of disease and chemical residue issues.

NLIS is based on the property registration system. Registration provides properties with a property identification code, which is the key to tracking movements between places.

NATIONAL LIVESTOCK IDENTIFICATION SYSTEM (NLIS) DEVICES – STOCK IDENTIFICATION REGULATIONS 2005

Prior to movement from a property of consignment or origin the following livestock must bear an approved NLIS tag:

All cattle, goats, sheep and pigs (all pigs under 30kg liveweight and all unbranded pigs of 30kg or more liveweight).

Take the NLIS device order form issued by your Biosecurity Queensland office to a farm supply store and order to your specifications.

NLIS tag your stock correctly – always refer to the manufacturer's instructions (see cattle tagging examples pictured on this page).

REMINDER:

Only fit one NLIS device per animal – if the animal is already NLIS tagged do not retag. Once applied, an NLIS tag remains on the animal for life, unless replaced by a new device due to loss or malfunction.

NLIS devices for cattle must be attached to the offside ear and attached to either ear of sheep, goats or pigs.

For animals leaving the property of birth use a white NLIS device (an ear tag or a rumen bolus/ear tag combination).

Use an orange NLIS device (an ear tag or a rumen bolus/ear tag combination) for animals not bred on the property.

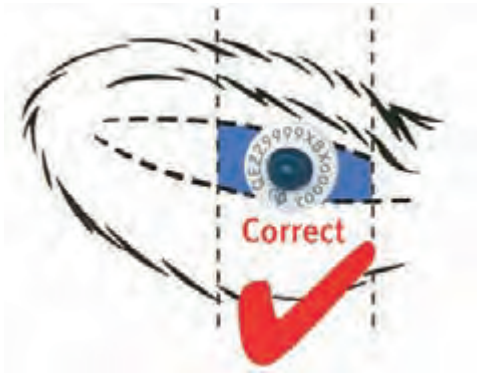
Read more about NLIS at www.business.qld.gov.au/agriculture/animal-management/legal-requirements-transporting-animals/nlis.html.

NLIS DATABASE

The NLIS database is managed by NLIS Ltd on behalf of industry and government (Stock Identification Regulation 2005).

NLIS - A guide for producers (Quick start guides and references) is available for download from the website.

> Once applied, an NLIS tag remains on the animal for life, unless replaced by a new device due to loss or malfunction.



USING THE NLIS DATABASE

Establish a free user account to register livestock movements, check and download carcase feedback data and view reports (e.g. transaction history, devices on property, audit property).

Livestock movement notification – to be completed within 48 hours of stock arrival on property of destination.

- Online: Electronic notification is preferred through either an account or email (notebook or Excel file).
- Third party: Access authority form allows a third party (agent) to access the database on a producer's behalf.
- Movements to abattoirs and/or saleyards – the abattoir/saleyard is responsible for registering the movement.
- Movements on or off property – the receiver (e.g. manager, owner) is responsible for registering the movement.

USING NLIS IN MANAGEMENT

NLIS technology offers producers many options to increase efficiencies in data management within their business. These can include:

- Production performance e.g. weight gains, carcase feedback etc.
- Reproductive performance
- Health management e.g. vaccination, HGPs, sickness, chemical application, etc. This is useful information for LPA.

FOR ASSISTANCE

Call the NLIS Helpdesk on 1800 654 743, visit the NLIS website or email support@nlis.com.au.

Do you know the code of practice for transport of stock?

HOW long can a pregnant cow be transported without water? Not sure? Find out in the code of practice for transport of livestock

The code of practice for transport of livestock (the code) is the result of discussions nationally between the livestock industries, scientists, welfare agencies and government. It aims to safeguard the welfare of livestock being transported.

The code covers the transport of both commercial and non-commercial livestock and applies once livestock are assembled prior to loading and continues until the livestock are unloaded at the final destination.

The code aligns Queensland with other states and territories to achieve a nationally consistent approach to livestock transport.

> It is recommended that producers, drivers and receivers of livestock familiarise themselves with the laws.

Compliance with the code became compulsory under the Animal Care and Protection Act 2001 on January 31, 2014. However there is a qualified six-month grace period for enforcement ending August 1, 2014.

It is recommended that producers, drivers and receivers of livestock familiarise themselves with the laws and ensure they are compliant.

The code includes the responsibilities of those involved in the transport, maximum times off water, ensuring that livestock are fit for the intended journey, handling rules and special considerations.

Under the code, animals that are not fit for the intended journey must not be transported.

It is the responsibility of the consignor and the transporter to ensure the animals are fit for the intended journey.

The code applies to the following animals being transported by road, rail or by container or vehicle aboard a ship:

Alpaca, buffalo, camel, cattle, sheep, goats, horses, pigs, poultry, ostriches, emus and deer.

Biosecurity Queensland has held the first in a series of webinars to help answer any questions around the changes to the compulsory requirements for transporting livestock.

- *For further information and details of future webinars, producers can contact Biosecurity Queensland on 13 25 23 or visit www.business.qld.gov.au.*

Timely tips for winter: a must for producers

Look after your breeders, bulls, pastures and yourselves

BREEDERS

- Pregnancy test 6 to 8 weeks after bull removal and do your annual vaccinations of breeders at same time.
- Cull breeders from main mob (pregnancy tested empty, temperament, age and defects). Truck to saleyards or fattening paddock.
- Assess mating program and plan changes if necessary. Consider options for breeding programs, e.g. crossbreeding.
- Check on and maintain condition of pregnant breeders especially maiden heifers and first calf cows.
- Order NLIS tags.
- Assess your maiden heifers. Are they going to be heavy enough to mate?
- Assess your first calf cows. Are they in good enough condition to get back in calf?
- Check calving heifers for calving difficulties and identify those you have to assist so you can sell them. Checking the first calf cows is not only good animal husbandry but also gets them used to having you moving around their paddock and they keep that quietness.

BULLS

- Check bulls for soundness, most importantly have a semen test conducted on each breeding bull, and determine numbers needed for next breeding season.
- Consider type/breed of bull that will produce the type of calves best suited for your potential markets.
- Source and evaluate potential bull suppliers.
- Check young home grown bulls as potential sires.
- Annual vibriosis and 3-Day booster for bulls at least 4 weeks prior to joining.
- Obtain advice on breeder vaccination programs e.g. pestivirus vaccination program.

NUTRITION - DRY SEASON MANAGEMENT

- Re-assess pasture quantity and quality.
- If quantity and quality will not sustain desired animal performance consider why it won't.
- If quantity is below requirements implement your selling strategy.
- If quality will not sustain desired animal performance, explore how you can improve your pasture quality.
- Re-evaluate dry season management plan.
- If season has not broken, check breeder and weaner condition. Sell, agist or drought feed.
- Draft cattle according to nutritional requirements.

> It is not just the animals and property that need maintenance. You and your family are the most important assets on your property. Make sure you go for your annual health checks and ensure that you have quality family time together.

PASTURES

- Consider burning native pastures every 2 to 3 years in late winter or early spring after 50mm of rain to maintain good pasture condition and control woody weed growth.
- If pasture condition needs to improve, remove stock from paddocks that have been burnt until pasture is at least 15cm high.
- Watch SOI and other long range forecasts for suitable time to plant pasture.
- To maintain or improve pasture composition, ensure paddocks get at least one late spring or summer spell every fourth year.

PARASITES AND DISEASES

- Plan tick control for summer. Check for resistance if control a problem.
- Order buffalo fly tags if using them or maintain rubbers or whatever else you use for buffalo fly control.

PROPERTY MAINTENANCE

- Check fences and water facilities in breeding paddocks.
- Check river and creek crossings before next wet season.
- Make sure you have adequate amounts of wire, steel posts, etc on hand for maintenance. If you get a flood/fire and have wrecked fences chances are the supplies you want will be in short supply.
- Maintain fire fighting equipment, extinguishers, etc and ensure that fire breaks are maintained and serviceable. Slash or mow around buildings and wooden cattle yards as well as inside paddocks that adjoin roads where most fires start.
- Clean around buildings and check that gutters are free of leaves.
- Ensure all staff know what to do in case of fire. Do they know who to call in case of fire? Have a property evacuation plan.
- Join your rural fire brigade for useful training and equipment advice.
- Do workplace health and safety audit of property.
- Has everybody been trained to use and maintain the farm equipment in a safe correct and competent manner? Legal liability.
- Do your annual electrical safety check on all household and farm equipment.

PERSONAL

- It is not just the animals and property that need maintenance. You and your family are the most important assets on your property. Make sure you go for your annual health checks and ensure that you have quality family time together.

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Lead poisoning in livestock - impacts on food safety

From p107

DIFFERENTIAL DIAGNOSES

Similar nervous system effects can be induced by various diseases affecting the brain, including:

- cerebral babesiosis - tick fever
- nutritional and metabolic deficiencies, e.g. hypomagnesaemia, ketosis, thiamine deficiency, vitamin A deficiency
- other poisons, e.g. mercury, organophosphates
- plant poisoning, e.g. Noogoora burr, pyrrolizidine alkaloid poisoning
- enterotoxaemia, e.g. Clostridium perfringens type D
- viral infections, e.g. infectious bovine rhinotracheitis (IBR), sporadic bovine encephalomyelitis (SBE), and bovine malignant catarrh (BMC)
- bacterial infections e.g. listeriosis.

Clinical lead poisoning in adult ruminant stock is associated with liver or kidney levels exceeding 10 mg/kg but fatal poisoning can occur with lower tissue levels.

FOOD SAFETY

Livestock that accesses a source of lead may have residues in the meat or offal, while not exhibiting any signs of lead poisoning.

Blood lead levels in ruminant livestock may remain elevated for several months after abnormal lead intake.

A normal blood level of less than 0.24 umol/l (<0.05 mg/kg) is adopted for lead residue management purposes in exposed animals.

Exposed stock may be restricted from sale or movement to manage any food safety or trade risks form residue which could be above maximum Lead levels set in the Food Standards Code.

The presence of Lead above maximum limits is a notifiable residue disease under the Stock Act 1915.

Livestock owners, veterinary surgeons and other scientists who suspect that livestock are affected by exposure to lead are obliged to notify a biosecurity inspector or government veterinary officer.

More information contact Biosecurity Queensland on 13 25 23 or visit www.daff.qld.gov.au

Using dung samples to estimate diet quality

NIRS dung samples gauge the quality of pasture diet

DUNG sample tests are a relatively easy way to get estimates of diet quality for cattle on tropical pastures. Near infrared reflectance spectroscopy (NIRS) is used to estimate cattle's diet quality, in particular:

- crude protein (CP per cent)
- dry matter digestibility (DMDpc) - a reflection of available energy
- non-grass proportion of diet (for example, browse, legumes, herbage).

People often ask if you can just test the plants directly to measure pasture quality. The problem here is that cattle select plants and parts of plants very differently to people. A dung sample gives a much better indication of what stock have eaten. One of the main benefits of NIRS dung samples is to gauge if and when protein is becoming a primary limiting nutrient.

The table shows dung sample results over a year on tropical sown grass pasture in south Queensland.

Crude protein and dry matter digestibility: As expected diet quality was high with a wet spring/summer and lower in the drier autumn and winter, hitting a low in June of 5.5 per cent crude protein and 54.3pc digestibility.

Steers (400-500kg) averaged close to 1kg daily liveweight gains during summer, around 0.4kg in autumn, losing 0.26kg during winter and then gaining 0.9kg in spring. As a rough guide, energy and protein will become limiting for breeders below around 55pc DMD and 7pc CP while for dry stock around 50-51pc DMD and 5-6pc CP, the lower range being for *Bos indicus*.

Non-grass intake was high in spring 2011 following good October rain and increased in the diet again in winter 2012, when pasture grass had hayed off and cattle were seeking higher protein material with herbage and browse.

DMD/CP ratio looks at the balance of protein relative to energy. If energy is high and protein low, then protein may become a limiting nutrient. Conversely if protein is high relative to energy then energy is limiting and adding extra protein costs money for nothing.

When the DMD/CP ratio is between 8:1 and 10:1 there is increasing likelihood of a response to urea, and even more likely above 10:1. For example, if DMD is 50pc and CP is 5pc this is a DMD/CP ratio of 10:1 and nitrogen is a limiting nutrient. In the table ratios above 8:1 are seen in late autumn and winter. This can be expected especially in dry conditions and with frosts, when pasture protein levels tend to drop faster than energy levels. Interestingly it also occurred in summer and spring on green feed, which suggests that soil nitrogen is limiting. If possible, legumes would be the best long-term fix.

Sown grass pasture including some herbage and browse (South Queensland)

	Nov11	Dec11	Jan12	Feb12	Mar12	May12	Jun12	Jul12	Aug12	Oct12
CP%	12.5	10.1	6.9	8.7	9.0	6.0	5.5	8.1	7.1	6.1
DMD%	62.2	60.8	58.9	58.7	57.9	57.9	54.3	57.3	57.3	58.4
Non-grass%	32	15	19	10	15	16	16	26	25	12
DMD/CP ratio	5.0	6.0	8.6	6.7	6.4	9.7	9.9	7.1	8.1	9.6

Dec 2011, CP 10.1pc, DMD 60.8pc

June 2012, CP 5.5pc, DMD 54.3pc

> The data can help decisions in matching stock to paddocks, timing of weaning to reduce nutritional stress on cows and stock movements or sales.

HOW WELL IS NIRS WORKING?

NIRS has been developed for cattle on tropical pastures. Results are less reliable when confounding variables occur such as:

- high proportion of browse in the diet – some browse species such as mulga contain high tannin levels, which binds the protein. Although the CP prediction may be accurate, the amount of protein actually available to the animal can be significantly less than the predicted level. CP predictions tend to be overestimated:
- on mulga and spinifex country
- in very diverse land systems within a paddock
- with high proportion of herbage in the diet
- with sampling from a number of classes of stock in the paddock
- with stock eating a reasonable amount of energy and protein supplements such as whole cottonseed, protein meal, grain and molasses
- when soil contamination in samples cause errors. It is important to sample fresh pats and avoid soil contamination. Don't collect from pats with dung beetles in them.

NIRS results are more meaningful when combined with other records such as rainfall, frosts, pasture records, photographs and stock records (class, condition, liveweight).

BENEFITS OF KNOWING DIET QUALITY

Dung samples can be used to measure and understand the relative feed value of different paddocks and how this changes over time with seasonal conditions and management such as introduction of legumes and wet season spelling.

Diet quality data can help identify if and when to supplement protein or energy. Savings can be made by avoiding unnecessary supplementation. The data can also help decisions in matching stock to paddocks, timing of weaning to reduce nutritional stress on cows and stock movements or sales.

GETTING DUNG SAMPLES ANALYSED

Symbio Alliance has been licensed by Meat & Livestock Australia to do the NIRS analysis, which currently costs $60.50 per sample. Contact Elizabeth Owens on 07 3340 5702, or visit www.symbioalliance.com.au.

Fireweed - serious weed in SEQ

FIREWEED is a serious weed in south-east Queensland where it can reduce pasture production and potentially poison cattle and horses.

Fireweed (*Senecio madagascariensis*) is a pasture weed native to South Africa. It was accidently introduced to Australia around 1910 and has spread via wind-blown seed throughout the north coast of NSW and into Queensland.

It is easily confused with some of the 67 other *Senecio* species found in Australia, especially its closest relative, the native *S. lautus*. Googling 'Have I got fireweed (*Senecio madagascariensis*)' locates a fact sheet with a simple key for identification. Ask your local weeds officer if you are still unsure.

Dense infestations of fireweed are present in the Warwick, Boonah, Beaudesert, Gold Coast, Logan and Redland local government areas, and isolated infestations range from Stanthorpe to Hervey Bay. The species has the potential to spread along the coast as far north as Rockhampton.

Fireweed seed can spread as a contaminant of equipment, produce (such as commercial seed and hay), turf, soil, and livestock. The prolific growth of fireweed reduces pasture production, and increases the likelihood of consumption by livestock.

Fireweed poisoning causes chronic liver damage and death in grazing livestock, such as cattle and horses. It remains toxic when cut, so contaminated silage and hay also pose a risk to stock.

Fireweed is a class 2 declared pest plant under Queensland legislation. Landowners must take reasonable steps to keep land free of class 2 pests and is a serious offence to introduce, keep or supply these plans without a permit. Description:

- Annual or short-lived perennial.
- Varies greatly in size and shape depending on conditions.

In dry harsh conditions may be less than 20cm tall with narrow leaves, no branching and few flowers.

In ideal conditions, grows up to 50cm tall with multiple branches, long wide leaves (6 x 2cm) and about 100 flowers.

- Leaves 2-6cm long, alternate, dark green, with serrated margins.
- Flowers bright yellow, daisy-like with a diameter of about 2cm, producing up to 100 seeds each.
- Each seed 2-3mm long and cylindrical in shape with rows of very fine short hairs and a silky pappus (parachute).
- Shallow-branched tap root with many fibrous roots.
- *For more details including control measures see the fact sheet 'Fireweed Senecio madagascariensis' available at www.daff.qld.gov.au/plants/weeds-pest-animals-ants/weeds/a-z-listing-of-weeds/photo-guide-to-weeds/fireweed.*

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Planning supplementation for cattle on winter pastures

As grass quality deteriorates stock may require nutritional supplements

COMING into winter and as the year progresses, grasses will begin to deteriorate in quality. This means stock may require supplements to ensure they still receive the nutrients they need. To achieve a cost-effective supplementation strategy, things to consider include:

- limiting nutrients
- nutritional requirements of different classes of stock
- nutrients provided by grazing pasture
- whether the supplement can meet the animal's nutritional requirements
- cost of available supplements
- other management strategies that could minimise animal requirements or optimise the supplementation program.

In the dry season protein is typically the first nutrient that is limiting in the feed. This will be followed by energy as pasture quality deteriorates and digestibility and intake decrease. Generally macro nutrients, such as phosphorus (P), are not limiting in the dry season as protein and energy will be the primary limiting nutrients. However, for late pregnant, lactating and some growing stock, a source of P in the supplement will assist to meet their higher P requirements. On P-deficient country supplementing P during the wet season will improve feed intakes and animal performance. Table 1 shows the nutritional requirements for different classes of stock and some potential supplement options.

Urea is the cheapest form of protein supplementation. Urea is a non-protein nitrogen supplement and so should not be given to very young, non-ruminating stock that require true protein, e.g. protein meals. Urea is commonly given in the form of dry licks or in lick blocks at varying rates of 10 to 30 per cent by weight. The amount of urea you include in your lick will depend on the chance of winter rainfall, whether you have covered troughs and the palatability of the lick. Generally, the lower the urea percentage in the lick, the higher the palatability and the more likely cattle are to gorge and suffer urea poisoning. High levels of urea in uncovered troughs, coupled with winter rainfall, can also create a toxicity problem. Therefore, you must assess your current situation and infrastructure and decide on a urea content that you are comfortable with. If you do feed 30pc urea in a lick, first feed cattle straight salt for two weeks, or until their dietary cravings are satisfied.

Depending on the weight and class of cattle their nutrient requirements may be able to be met using urea supplementation, but in some cases it won't.

For example: 450kg dry heifers grazing a typical early dry season pasture of 6pc protein would meet their nutritional needs for maintenance (approx. 400g/day) through pasture intake alone.

However, 450kg lactating heifers grazing the same pasture would have a protein shortfall of approximately 450g of protein. If these heifers were fed a 30pc urea lick, and they ate 200g per day, they would get 172g of protein.

This protein shortfall cannot be fully met through urea supplementation. This is where alternate management strategies could be used, such as weaning to reduce the nutritional requirements of the breeder or more targeted supplementation of lactating females with true protein sources. If feed quality deteriorates too far, or there is too little feed left, energy supplementation will be needed. This is expensive and best kept to short periods, or where possible, avoided.

It is best to compare the feeds on their nutrient value and the cost per nutrient you are aiming to supplement. For example: dollars per kilogram of protein, or for energy, cents per megajoule (MJ) of metabolisable energy (ME). The process for doing this, as well as a spreadsheet tool, is described in Beeftalk 38, available on the FutureBeef website. It may also be useful to compare the cost of a supplement that provides both energy and protein, with one that only provides protein as sometimes these are available at the same cost. This means you could better meet the animal's nutritional requirements, for the same cost.

As stated previously, there are a number of factors to consider when planning a supplementary feeding program. Table 2 shows a breakdown of comparing the requirements of your stock with what they may be receiving from their pasture and what their surplus or deficit may be.

You can use this to determine what supplement may be most suitable.

These figures also show that weaning significantly reduces cow nutritional requirements and supplementation needs.

For more information on selecting supplements and designing a supplementary feeding program, contact your local FutureBeef officer, or visit www.futurebeef.com.au/topics/nutrition.

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Table 1: Nutritional requirements and supplement options for various classes of stock

Class	Weight (kg)	Daily gain (kg/day)	Energy (MJ ME/day)	Crude protein (g CP/day)	Concentration in diet		Example supplement options
					Energy (MJ ME)	Crude protein (CP%)	
Weaners	<60	0.6	18	217	14	20–27	Milk replacement powder – teat
Weaners	60–100	0.5	18–25	217–250	12	18–20	Clean water, good hay, weaner pellets or mash or grain mix, protein meals, fortified molasses
Weaners	100–150	0.5	25–35	250–290	10–12	14–16	As above
Weaners	200	0.5	47	365	6–12	8–13	Good paddock, correct stock rates. Dry lick with high protein meal, protein meals, fortified molasses, whole cotton seed
Steers	450	0	50	390	6–12	6–12	**Protein** Dry licks, protein meals , whole cotton seed, pulses, fortified molasses, blocks, water medication **Energy** Grain, whole cotton seed, pulses, palm kernel meal, fortified molasses, hay, silage, straw **Phosphorus** Licks, blocks, water medication
Late pregnant heifers	350–450	0.4	62–72	600–710			
Dry late pregnant cows	450–550	0	60–82	570–790			
Lactating heifers	350–450	0.2	76–88	866–963			
Lactating cows	450–550	0	80–90	911–1000			
Bulls	500	0.4	86	780			
Bulls	800	0	95	880			

Table 2: Example, comparing cow nutritional requirements with intake on dry winter feed, at 6% CP and 7 MJ ME/kg dry matter (DM).

	500kg dry cow	500kg lactating cow
Average daily intake of pasture (kg DM)	1.7% liveweight 8.5kg	1.8% liveweight 9kg
Daily energy requirement (MJ ME)	54	85
Energy supplied by pasture intake (MJ ME)	60	63
Energy surplus/deficit	**+6**	**–22**
Daily protein requirement (g CP)	420	957
Protein supplied by pasture intake (g CP)	510	540
Protein surplus/deficit (g)	**+90**	**–417**

The economics of sown pastures

PASTURE development is appealing as it enhances productivity, but how do you estimate its profitability?

A proper estimate requires budgeting of costs and benefits over many years. Consequently there can be reluctance to do the sums and more reliance on 'gut feeling' for decision making.

There's a simple budgeting procedure to help estimate sown pasture profitability, assuming everything is up and running. Proposals failing this test can be ignored while detailed analysis should be done for proposals that look promising. The process compares the annual income and costs of the present grazing situation without sown pasture, with the annual income and costs assuming sown pasture is fully established. After allowing for development costs and any extra capital required, the profitability of developing sown pastures can be estimated. An example is given for introducing leucaena with sown pastures.

DEVELOPMENT PLAN OUTLINE

Two hundred hectares of native pasture will be planted to leucaena and sown pastures. A contractor will do all the planting. The improved pasture quality and quantity will increase carrying capacity and weight gains. The stocking rate is expected to improve from 3ha to 2ha per adult equivalent, thus allowing an additional 31 head at a 250kg start weight. Daily liveweight gain is expected to improve from 400 to 650 grams per head, providing annual weight gains of 146 to 237kg/head.

Income and costs with and without pasture development

	Current pasture – no legume	Sown pasture with leucaena at full production
Gross income	hd $ kg 85 x $1.85 x 396 = $62,271	hd $ kg 116 x $1.85 x 487 = $104,564
Variable costs	hd $ kg	hd $ kg
Buy stores	85 x $2 x 250 = $42,500	116 x $2 x 250 = $58,000
Freight – in/out	85 x $30 = $2,550	116 x $45 = $5,220
Health, tags, supplements	85 x $20 = $1,700	116 x $20 = $2,320
Sale commission 5%	$3,114	$5,228
Total variable costs	$49,864	$70,768
Extra annual fixed costs		
1. Annuity: pasture development. 20 yrs @ 5%		ha $/ha 200 x 462 = $92,407 $7,415*
2. Extra capital – extra 31hd		31hd x $500 x 5% = $775
		$8,190
Gross margin	$12,407	$25,606
$/head	$146	$221
$/ha	$62	$128

*'Google 'annuity calculator', insert lump sum invested, interest rate and number of years.

EXTRA ANNUAL FIXED COSTS – PASTURE DEVELOPMENT AND EXTRA CAPITAL

Extra fixed costs include pasture development costs and any extra capital required, such as livestock, machinery and improvements.

Pasture establishment costs were estimated as 200ha x $462/ha including contracting, seed, herbicide and income foregone during establishment.

This lump sum of $92,407 was spread as an annuity across a 20-year pasture life assuming a 5 percent interest rate.

Extra capital was required for extra livestock and was valued at 31 head x $500 x 5pc interest ($775 per year). Provided the estimates in the calculation are realistic, the extra benefits of sown pasture with leucaena ($42,293) outweigh the extra costs ($29,095), and the development is worthwhile (additional $13,198).

Other factors to consider that will influence the decision are:

- What is the risk of failure? How can this be minimised?
- How many years will it take to achieve full production?
- Costs will be incurred before benefits are gained. What is the profit level in establishment years?
- How many years will full production last for? What will production be after this time?
- What are the financial risks if there is a drought or market collapse soon after development?
- Are there benefits or costs to the rest of your property that have not been included?

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Weaning, educating calves

Correct training of calves at weaning means easier animals to work with

WEANING is far more than separating the calf from the cow until they both stop bellowing. Correct management and training of calves at weaning sets their pattern of behaviour for the rest of their lives.

BEFORE WEANING

For the first few days after weaning, calves try to get back to their mothers and can manage to do the seemingly impossible. To avoid injuries and escapes, check all equipment ahead of time that will be used at weaning, including yards, hay feeders and water troughs.

It is best to assume a 'belt and braces' approach. Calves get bored and will often manage to open a catch by playing with it, so put another chain or wire around gate catches. Broken weldmesh in round bale feeders can catch calves' hooves.

AT WEANING

Muster your cows and calves. After doing whatever is needed to the cows, such as pregnancy testing and vaccinating, let them out into a paddock close to the yards with access to a larger grass paddock. Cows find weaning very stressful too. Many cows will break fences and jump grids to get back to their calves if they are moved too far apart on the first day of weaning.

After three to five days the cows will have forgotten about their calves and will be much easier to move further out. Make sure the water troughs are clean and the hay feeders full before putting the first of the calves into the weaning yard. Then leave them overnight. There will be a lot of bellowing from both the cows and the calves, but this is quite normal.

TRAINING BEGINS

For the first two days, spend time walking quietly through the calves. Move them slowly and calmly into another yard while you fill the hay racks. This teaches the calves to walk through gateways and move at your direction. On the third day, run the calves into the working yards and teach them to draft and walk up the race. Do this by letting 10 or so go past and stopping the rest. Work the first group of ten through the race and crush without stopping them. Then go back and get another group. By doing this, even the most nervous calves will learn what is required of them. Do this every day as you fill the hay racks.

Weaning is a good time to teach weaners to eat from a trough. While they are locked in the yard and bored, they will try new things they wouldn't touch in the paddock. Once the calves work well through the yards it is time to take them out and introduce them to whatever you use on your property, such as dogs, horses and bikes. Open the gates from the yards and stand by to slow them up if they start to run. Work them around the paddock, letting them graze as you do this. A laneway is ideal for this work but any small well-fenced paddock will do.

Once happy with the way they are working while handling them, let them have the full day out in the paddock and just yard them at night. Weaners will often rush at night when they can be frightened by stray dogs or dingoes. Yard the weaners for three or four days until they just walk along in front of the bike or horse. Then they can go out into another paddock to grow up. Running some older steers with weaners in the paddock will help settle the weaners down and also help protect them from dog attacks. While working the weaners, make a note of any calves that do not settle down. If a calf does not respond to the constant handling at weaning, it will always be difficult to handle and should be identified for culling.

HEALTH

All calves in ticky country should be vaccinated against tick fever at weaning. Once you know how many weaners you have, order the 3-germ blood. Give the weaners their second 5-in-1 (or 7-in-1) vaccination. If they haven't had any 5-in-1 vaccinations, give them their first injection and the second four to six weeks later. The stress of weaning tends to lower the calves' defences, making them more susceptible to internal parasites. If you suspect internal parasites are a problem, test for worm burdens in the calves and drench if appropriate.

Coccidiosis is caused by organisms that live in the calves' gut and on the ground. The stress of weaning often allows these parasites to multiply and cause problems. The most common symptom is scouring and general ill health. In severe cases the calf can die.

BENEFITS

The time and cost put into training weaners is recouped many times over as the animals grow and enter the adult herd. Well-trained weaners are a pleasure to work with, whereas cattle that have not been trained well at weaning cause many problems. If you buy in cattle, particularly cattle that you don't know, try giving them a few days 'weaner training' before you let them out. Steers going into the finishing paddock and replacement heifers that are to go into the breeder herd will all benefit from a few days of re-education.

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Feeding licks to cattle - how to decide what's best

THERE are many different options for feeding lick to stock and it can be difficult to decide which supplement and delivery method suits your operation best.

There are also decisions on the recipe you use and how to optimise intakes, which can save money in the long term. At right is a handy table to help you weigh up the benefits and problems associated with some commonly used supplements.

The following points may help you to get the most economic and nutritional benefits out of your supplementary feeding program:

- Adjust stock numbers in paddocks as feed quality and quantity reduces. This will ensure that available pasture is the main source of feed, with supplements being used to value add the pasture.
- Assess the quality of the pasture and decide if supplements are needed or likely to be cost effective. NIRS testing can assist with identifying protein content and digestibility of the pasture.
- Determine cattle needs and the primary limiting nutrient. In the early dry season this is usually protein. As feed quality continues to decline and especially in the late dry season, if females are heavily pregnant or lactating it may be energy.

Targeted supplementation to these animals during appropriate times will ensure the most cost effective strategy. When grasses are actively growing on phosphorus deficient soils, then phosphorus can be the primary limiting nutrient during the wet season. Nutrient deficits may also be corrected through management practices, for example, when weaning to reduce nutritional stress on lactating females.

Monitor intakes to avoid excessive and costly intakes or situations where intakes are too low to supply enough nutrients. Change the palatability of the lick to change animal intakes. This takes trial and error and can be done a number of ways, such as adding or removing salt, Gran-am®, protein meals and urea. Avoid buying large quantities of a lick or block until you know they will eat it.

Ensure ratios of nutrients are in balance. Calcium and phosphorus are recommended at a ratio of 2:1 (calcium:phosphorus) and nitrogen and sulphur should be at 10:1 (nitrogen: sulphur). Unbalanced nutrients can negatively impact the nutritional benefits of the supplement.

To achieve the desired nitrogen: sulphur ratio, sulphur sources should be included at the following rates:

- one part Gran-am to five parts urea (by weight)
- one part elemental sulphur to 20 parts urea (by weight).

Nitrogen, sulphur and phosphorus can also be delivered to stock through water. The publication 'Water medication - a guide for beef producers' is available free from Meat & Livestock Australia on 1800 675 717 or download from www.mla.com.au/News-and-resources/Publication-details?pubid=4977.

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Common protein and phosphorus supplements

Feed	Attributes	Problems
Loose licks *CP%: 20–80 **P%: 0–15	• Can mix your own • Recipes can be changed easily • Can increase nutrient percent to reduce freight and cost/kg nutrient • Easily put out by unskilled labour • Bulk bag phosphorus lick efficient wet season delivery in extensive situations	• Potential urea toxicity • Storms can spoil or create toxicity • May need covered troughs / sheds • Will need mixer if blending own • Labour intensive to distribute • Prolonged heavy rain can spoil phosphorus lick (even with added limestone)
Blocks CP%: 20–80 P%: 0–15	• Convenient, no troughs needed • Less labour intensive, easy to put out • Weather resistant in most cases helps reduce toxicity risks	• Higher cost/kg nutrient • Set recipe – controlling intakes (enough, too much), even intakes • Potential urea toxicity
Protein meals CP%: 15–40 ***MJ: 8–12 P%: 0.4–1.2	• High in protein and energy • Can also provide bypass protein • Usually safe • WCS can be stored in the paddock and if necessary fed without troughs	• Minimising gorging, even intakes • Costs can be high • Some (e.g. WCS) don't flow too well, needs bulk handling • Storage and potential for spoilage
Molasses mixes and rollers CP%: 4–32 MJ: 5–8.5 P%: 0.02–1.5	• Readily accepted by stock • Can change mixes and mix your own for use as protein or energy supplements • Some companies provide full service – troughs and delivery	• Controlling excess intakes, cost • Need troughs, storage tanks, labour intensive to mix and distribute (unless buying full service delivery) • Need mixer if mixing own with urea (urea must be 100% dissolved) • Various water contents – doing sums

*CP% is crude protein percentage as fed. **P% is phosphorus percentage as fed. ***MJ refers to energy in megajoules of metabolisable energy per kilogram as fed.