Message from the Editor

This wet season's weather has been all about the rain, or rather the lack of it, as reported in the seasonal outlook in this newsletter. While most areas of the Top End have received enough rain to grow some grass, a significant amount of rain is still needed between now and the end of the wet season.

More rain is needed to grow more pasture, to fill dams and to replenish aquifers. Low rainfall will depress hay yields, lead to shortages of drinking water for stock in both upland and floodplain areas; and may impact the amount of water available to irrigate dry season perennial and annual horticultural crops. Low water levels in rivers and on the floodplains may also severely impact the quality of fishing this year, which will be a problem for locals and visitors.

The department welcomes Dr Michelle Rodan as our new Director of Biosecurity and Animal Welfare. Michelle previously worked in the WA Department of Agriculture and brings to the Territory an extensive background and experience in the national and state agriculture sector involving management, policy and operational levels across biosecurity and industry programs. We also welcome Dr Kevin de Witte back to the Northern Territory as Chief Veterinary Officer. Many producers will remember Kevin from his time with the Department in Katherine during the 1980s and 1990s.

Cheers,

Arthur
Land Assessments Conducted at Larrimah

The Northern Territory Government has recently released information on land assessments conducted in the Larrimah region, about 450km south of Darwin. It has been collected as part of a four year project that identifies land suitable for agriculture in the Northern Territory.

NT Farmers and other peak industry bodies have welcomed the release of the report. It will help investors make informed decisions when looking to diversify and promote the development of agriculture in the north.

The Department of Land Resource Management (DLRM) has mapped the soil across the 42 000ha assessment area. Opportunities for agricultural development have been identified with about 22 000ha of suitable soil on pastoral and indigenous land. With new diversification frameworks in place for pastoralists, this information will help reduce the risk of diversifying.

Water assessments have also been conducted, identifying about 40 gigalitres of water that could potentially be allocated for farming in the area. The water resource mapping has been done over a larger area of land, from north of Mataranka and down to Daly Waters.

Assessments have highlighted potential crops that could be grown in the area, including Asian vegetables, melons, nuts, root vegetables and forestry.

Member for Daly Gary Higgins said the government has worked closely with the community throughout the assessment process, working together with Aboriginal Land Councils, NT Farmers and pastoralists. Further assessments are currently underway in other regions, including Wildman River, Barkly Tableland, Ali Curung, Ti Tree and Tennant Creek.

The 'Soil and Land Suitability Assessment for Irrigated Agriculture in the Larrimah Area, Sturt Plateau’ report and the ‘Daly Basin Groundwater Resource Assessment – North Mataranka to Daly Waters’ report is available on the DLRM website at:


Land Suitability Map for Irrigated Sub-Tropical Grass Hay/Forage Crops
The devastating Cucumber Green Mottle Mosaic Virus (CGMMV) that has imposed quarantine restrictions to melon farms in the Katherine and Darwin regions has been detected at Berrimah Research Farm. Quarantine procedures were immediately imposed at two sites on the farm after the discovery of suspect plants prior to Christmas. Testing in January has confirmed both sites are infected with the virus and all diseased plant material has since been destroyed.

This confirmed detection will not change the management of CGMMV in the Territory. Quarantine restrictions for commercial cucurbit growers were lifted in February 2016, and the outbreak of the virus at Berrimah Farm has not impacted this. The farm is now being treated with the same controls as industry sites that have been infected by the virus.

An investigation is taking place to determine how the virus entered Berrimah Farm. Seedlings used in a trial in October 2015 had tested negative for the virus causing the investigation to focus on the last quarter of 2015. Sentinel plants around the farm have also tested negative suggesting the source of the virus has come from outside the farm.

Some weed species in the Katherine region have been discovered as hosts for the virus, but weeds around the quarantine areas at Berrimah Farm have tested negative.

An independent investigation is also looking at DPIF’s biosecurity policies and procedures following this outbreak. Any findings and recommendations that may assist NT growers in managing the disease will be shared with industry.

Following this detection, DPIF now has the opportunity to study the virus more closely. Further trials in the future have the potential to be conducted at Berrimah Research Farm without the need to use commercial sites.

Furthermore, the quick biosecurity response to the virus’ first detection at commercial properties in Katherine in September 2014 and the ongoing procedures and research since have gained recognition through a funding grant of $1.2mill by Horticulture Innovation Australia. This will allow scientists at Berrimah Farm to continue discovering more about the virus.
Exports of Mangoes to the US - Second Year a Great Success

Michael Daysh, Market Development Officer, Darwin

The second year for Australian mangoes in the US market was a great success, with the volume growing from 5 tonnes to around 75 tonnes. Thirteen shipments were made in the 2015/16 season, up from two in 2014/15.

Four Australian mango varieties; Calypso, Keitt, Honey Gold and Kensington Pride were exported to the US in the 2015/16, and distributed to US supermarkets in Texas, Arizona, the North East and the North West.

Large display of R2E2, Calypso and Honey Gold in Central Market grocery store, Lovers Lane, Dallas, Texas

No compliance issues were reported by US authorities. Unfortunately Australian authorities found some problems during export inspections. Mango seed weevil prevented two shipments from being exported. Another two shipments had to be relabelled prior to export due to non-compliant box labels. Programs from two exporters came to an early end when they found the intended growers were not approved for export to the US.

Two shipments arrived in the US either overheated or over-ripe and were unsaleable. Growers and exporters will need to invest more effort in their cool chain management in 2016/17 to ensure fruit arrives consistently at the ripeness stage required by the US market. The opportunity for Australian mangoes in the US, where they land for typically four times the cost of mangoes from other sources, is to market them as better flavoured, better coloured, more attractive fruit from Australia. The better flavour and colour requires ripe fruit which brings cool chain management challenges.
DPIF staff supported the mango industry’s 2015/16 US program with a number of activities; assisting the crop monitor training at the beginning of the season, supporting the weekly exporter working group teleconferences organised by the Australian Mango Industry Association (AMIA), developing a more convenient packaging option for growers, and undertaking and reporting back on in-market observations and facilitating an end of season debrief for growers, exporters and service providers.

I made two visits to the US to monitor fruit quality at arrival and at retail outlets across six shipments. This travel was funded by Horticulture Innovation Australia using the mango industry levy and funds from the Australian Government.

Preparations are already underway for the 2016/17 US mango program. A 'guide for mango growers considering the US market' has been prepared. My Plant Industry Development colleagues and I are engaging NT mango growers on the opportunities and requirements for the US market.
DPIF Scientists helping Farmers make the most of Valentine’s Day

Doris Marcsik, Research Horticulturist and Paige Richter, Technical Officer, Darwin

Following on from Valentine’s Day, the Curcuma, a striking ornamental ginger flower, continues to be the focus of a series of trials conducted at Berrimah Research Farm. The aim is to expand the floriculture industry by developing the Curcuma for both cut flower and potted plant production in northern tropical Australia.

The Department of Primary Industry and Fisheries (DPIF) has developed a number of Curcuma hybrids that have been released for production in recent years. These hybrids have been identified as promising types both for the cut flower industry and as potted plants, and have attracted strong commercial interest from the local nursery industry. However, there is little information available on the commercial production of these varieties in the tropics and until recent years there has been no extensive research conducted in this area.

In a project funded by the Rural Industries Research and Development Corporation (RIRDC) and industry co-operator and local wholesale nursery owner Simon Smith, DPIF has been working to determine the optimal conditions and regimes needed for container production of these flowers as potted plants.

A series of pot trials have been conducted using both rhizome and tissue cultured (TC) derived plant material to test a number of promising Curcuma varieties. The tissue cultured plantlets being tested have been produced in Berrimah Farm’s Tissue Culture Laboratory that was officially opened by the department last year.

Growing Curcumas that have been cloned through tissue culture is uncharted territory for DPIF, with a lack of research in this area. Tissue culture has benefits of being able to propagate large numbers of identical plants quickly and at any time of the year, which helps overcome the natural dormancy period of these flowers during the dry season. This also allows growers to increase availability and target specific occasions such as Valentine’s Day and Mother’s Day.

The trials focus on determining baseline nutritional requirements and growing conditions for producing quality potted plants of specific Curcuma varieties derived from both rhizome and TC plant material. Different types of growing media, rates of controlled-release fertilisers (CRFs) and fertiliser drenches, along with the use of different light levels to compare plant growth and flowering to full sun conditions were looked at. An assessment of the growing media and monitoring of nutrient concentrations available to container-grown Curcuma plants at different stages of growth was recorded, together with main growth parameters such as numbers of days to first shoot, number of shoots and number of days to first flower.
Some of the key findings from the trials have been:

- Type of CRF formulation is important to provide available nutrients to plants over the critical production phase.
- Nutrition and irrigation need to be managed together in container-grown plants to optimise the efficiency of the CRFs being released in the growing media.
- High soil electrical conductivity (> 800 μS/cm) will impair growth, particularly for TC plantlets.
- Growth and plant height can be regulated by light levels.
- A selection of Curcuma varieties successfully derived from tissue culture have been identified to be feasible for containerised production.

The results from these trials have significantly increased our knowledge of the cultural requirements and suitability of specific Curcuma varieties for container production in tropical northern Australia. The project will continue in future to further develop and refine the growing protocols of container-grown Curcuma flowers for commercial nursery production.

Tray of TC curcuma plantlets in plugs 21 days after deflasking
Inset: Close-up of the TC plantlet growing in plug, showing good root development
Cool Season Production of Tropical Grasses

Arthur Cameron, Principal Pastures Agronomist, Darwin

There is interest in growing fodder under irrigation during the Top End dry season to supply live cattle export yards and cubing/pelleting plants with hay.

Tropical grasses generally do not grow well under irrigation during the cooler months of the year in the Top End of the Northern Territory. Sugargraze Forage sorghum (Sorghum sp) and Finecut Rhodes grass (Chloris gayana) have been shown to produce commercial yields of 25 to 35 tonnes per hectare per year at Douglas Daly Research Farm (DDRF). Both of these options for fodder production under irrigation have limitations. The Forage sorghum generally needs to be resown every year to maintain a productive stand. In the Top End, the Finecut Rhodes grass is not liked by cattle as a fodder, and it has a high tensile strength, which makes it difficult to grind and make into fodder cubes and pellets.

There are a number of other tropical grasses which have cold tolerance, and may be suitable as alternatives to Forage sorghum and Finecut Rhodes. The cool season growth of seven tropical grasses is being compared with that of Finecut Rhodes at Coastal Plains Research Farm to select one or more cultivars which have equivalent or better cool season growth and/or better acceptance by cattle and better grinding characteristics.

Seven of the grasses were sown by seed in December 2014. The eighth grass, Strickland Finger grass, was planted by runners in February 2015. The grasses planted and the first year’s yield results are presented in Table 1 (right). The establishment was good except for the Premier Digit grass which was attacked by Crab grass leaf beetle larvae. While Strickland finger grass and Premier digit yields were lower overall, the yields were similar for all of the grasses at the final harvest.

The trial will continue this year to get a full dry season’s results. Samples from each harvest will be submitted for nutrient and quality analysis.

<table>
<thead>
<tr>
<th>Grass</th>
<th>6 May</th>
<th>25 Jun</th>
<th>11 Aug</th>
<th>29 Sep</th>
<th>17 Nov</th>
<th>Total DM Kg/ha</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finecut Rhodes</td>
<td>5980</td>
<td>5500</td>
<td>3000</td>
<td>6900</td>
<td>7080</td>
<td>28450</td>
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<td>Gulfcut Rhodes</td>
<td>6980</td>
<td>4720</td>
<td>2690</td>
<td>7350</td>
<td>6990</td>
<td>28720</td>
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<td>2850</td>
<td>6570</td>
<td>7500</td>
<td>29640</td>
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<tr>
<td>Premier Digit</td>
<td>940</td>
<td>1540</td>
<td>2110</td>
<td>4940</td>
<td>7120</td>
<td>16640</td>
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<tr>
<td>Strickland Finger grass</td>
<td>4690</td>
<td>4360</td>
<td>2450*</td>
<td>6030</td>
<td>6770</td>
<td>24370</td>
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<tr>
<td>Gatton Panic</td>
<td>7340</td>
<td>6510</td>
<td>2230</td>
<td>4930</td>
<td>6340</td>
<td>27350</td>
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<tr>
<td>Nucal Panic</td>
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<td>4630</td>
<td>3590</td>
<td>6538</td>
<td>7880</td>
<td>31320</td>
</tr>
<tr>
<td>Splenda Setaria</td>
<td>9280</td>
<td>5870</td>
<td>2290</td>
<td>6210</td>
<td>6320</td>
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<td>4760</td>
<td>2660</td>
<td>6180</td>
<td>7000</td>
<td>27100</td>
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</table>

*Strickland Finger grass yield was decreased by selective grazing by wallabies prior to the 11 August harvest.

Table 1. First year yield results for the cool season growth of eight tropical grasses.

Cutting off the cool season grass trial at Coastal Plains Research Farm, June 2015
Science Exchange in Plant Pathology

Cassie McMaster, Senior Plant Pathologist, Darwin

NT DPIF Plant Pathology group hosted a ‘Science Exchange Day’ with Northern Australian Quarantine Service (NAQS) on 30 November 2015.

The event was attended by 18 participants from the Qld and NT NAQS offices and NT DPIF, including plant pathologists, molecular scientists, surveillance officers and technical staff working in disease diagnostics, research and surveillance across the Top End of Australia. The event was funded by the Australasian Plant Pathology Society NT chapter.

Activities included collecting plant specimens from Darwin Botanical Gardens for disease diagnosis, followed by a tour of the Berrimah Farm laboratories and glasshouses. The afternoon at Berrimah Farm included interesting presentations on a range of topics from current disease incursions in the NT to the latest molecular approaches in disease diagnostics.

NT DPIF staff presented results on current research projects and disease incursions in the NT. Molecular biologist, Dr David Lovelock, presented research from a CGMMV soil project which is investigating the longevity of the virus in and from infected fields.

Research Entomologist, Dr Mary Finlay-Doney, presented on how honey bees may interact with CGMMV and their potential to move the virus in the environment.

I presented on the banana freckle disease outbreak in the NT and the banana freckle eradication program.

Plant pathologist colleague Barry Condé and I discussed the trials being conducted for a project on management of Fusarium wilt of watermelon in the NT.
Testing the Longevity of CGMMV in NT Soils

David Lovelock, Molecular Scientist, Darwin

In September 2014 Cucumber Green Mottle Mosaic Virus (CGMMV), a virus of cucurbits (including melons), was first detected in watermelon crops in the Venn near Katherine and subsequently found on other properties near Katherine, Ti Tree and Darwin. The response to these detections was a two year quarantine period on all 25 Infected Premises (IP) on the growing of melons and other cucurbits.

The virus was mainly detected in host crops, but it was also found in a range of other plants, mostly weeds, on infected and adjacent properties. The virus can remain viable in soils for a number of months.

Department of Primary Industry and Fisheries (DPIF) is conducting research to determine the longevity of CGMMV in soils where host plants have been removed. Research conducted overseas has suggested the virus may remain viable in host free soils for a period of 6-8 months.

A research project using glasshouse trials at Berrimah Farm and field trials on four IPs commenced in August 2015. The four IPs include one property in Darwin, 2 properties in Katherine and one property near Ti-Tree.
These sites were selected based on geographic location and differences in soils, temperatures and daylight period. At each site, eighty soil samples were collected from a GPS location where a host plant had tested positive to CGMMV.

The samples were taken to Berrimah Farm for pot trials where susceptible watermelon/cucumber plants were planted into the contaminated soil.

Using normal crop practices, eighty susceptible watermelon/cucumber plants were also planted at each site, within 10-15cm of where the soil samples were taken.

Plants from both trials were left for a period of 5-6 weeks, after which point they were bulk sampled and tested for CGMMV. Results suggest that the virus is still present in 3 of the tested properties, but its viability is not yet determined. This will be explored further in pot trials to be conducted later this year.

The DPIF plant pathology team would like to thank the farmers for allowing us to use land to conduct field trials and to Greg Owens (NT Farmers Association), Northern Territory Quarantine and DPIF staff for their support and help throughout these trials.

Plant pathologists (from left) Nadine Kurz, Sharl Mintoff and David Lovelock visit one of their field trials
Fusarium Wilt in Watermelons in the Top End

Cassie McMaster, Senior Plant Pathologist, and Lucy Tran-Nguyen, Senior Molecular Scientist, Darwin

Fusarium wilt of watermelons, caused by *Fusarium oxysporum* f. sp. *niveum* (Fon), is a serious disease of watermelons. The disease was first detected in the NT in May 2011. It causes leaf necrosis (death), necrotic blotching and seedling death in triploid watermelons.

The NT DPIF Plant Pathology group has been involved in a three year project funded by Horticulture Innovation Australia Limited with co-investment from NT DPIF, Monsanto Australia and Rijk Zwaan and funds from the Australian Government on the identification and management of Fusarium wilt in watermelons. Project leader Dr Lucy Tran-Nguyen, research plant pathologists Barry Condè and Cassie McMaster and Victor Puno (The University of Sydney, PhD student) have been investigating several key research areas for the management of Fon.

The first aim of the project was to determine which race of Fon is present in the NT and nationally in other states where Fusarium wilt of watermelon is found. There are four known races of Fon worldwide (0, 1, 2, and 3). Race can only be determined by conducting glasshouse trials involving inoculating different specific watermelon varieties with known susceptibility to the Fon races and assessing the susceptibility of each variety to two samples of Fon isolated from watermelons in the NT.

Lucy is investigating ways to improve the current diagnostic test using Fon isolates from the US which were provided by Dr Kate Everts from University of Maryland. Kate visited Berrimah Farm in August 2015 as part of the collaboration on Fon research. Hopefully this will mean that molecular methods could be used to determine race in the future.

Other key research areas which have been investigated in the NT trials include the effect of temperature on disease symptom expression and the use of resistant grafted rootstocks as a disease management tool for growers.

Research trials for the project are now completed and results are being compiled for the final report. Dr Tran-Nguyen will present these latest research findings to industry when she attends the Australian Melon Industry Conference and Field Days to be held in Mildura, Victoria on 16 - 18 March 2016.
Seasonal Outlook

Caroline Pettit, Acting Rangeland Program Coordinator, Darwin

Many parts of the Top End received good rainfall during December associated with a tropical low. Some areas around the Katherine, Daly, Northern Barkly and northern VRD catchments had record-breaking highest December rainfall totals (362mm at Kidman Springs, 789mm at Mango Farm).

Many locations, especially within the Arnhem, Roper and Gulf regions have broken lowest monthly rainfall records in January, with 47mm being recorded at Middle Point (January average is 274mm). Expected pasture growth is mostly in the 0-10th percentile range for these regions.

The VRD, Katherine, Darwin and Sturt Plateau pasture growth is mostly average to above average for the period of November to January.

The Barkly pasture growth is mostly well above average for the November-January quarter.

The 3 month rainfall anomalies map (included below) show most of the northern Top End and parts of the Roper and Eastern Gulf regions are 50mm-400mm below average as of the 1 March.

Many parts of the northern Top End need significant rainfall in the coming months to avoid being the worst rainfall season on record. This could have serious impacts on the health of the floodplains and their viability for pastoral production for the coming dry season. After two relatively dry months for most of the Top End some decent falls in the coming months will be welcome across all regions before heading into the 2016 dry season.
NT Pastoral Feed Outlook - March 2016

The purpose of this quarterly outlook is to summarise information relevant to the pastoral industry such as current feed supplies, seasonal conditions, the development of drought conditions in central Australia and fire risk.

You can see the entire document and all districts at:


Summary of current situation & trends - all districts – March 2016

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Darwin</th>
<th>Katherine</th>
<th>VRD</th>
<th>Sturt Plateau</th>
<th>Roper</th>
<th>Gulf</th>
<th>Barkly</th>
<th>Tennant Creek</th>
<th>Northern Alice Springs</th>
<th>Plenty</th>
<th>Southern Alice Springs</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>2015/16 total pasture growth</td>
<td>↔</td>
<td>↔</td>
<td>↓</td>
<td>↔</td>
<td>↓</td>
<td>↓</td>
<td>↑</td>
<td>↑</td>
<td>↔</td>
<td>↓</td>
<td>↔</td>
<td>Arrows indicate trend compared to the long-term median.</td>
</tr>
<tr>
<td>Current estimated standing biomass</td>
<td>↑</td>
<td>↑</td>
<td>↑</td>
<td>↑</td>
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<td>↑</td>
<td>↑</td>
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<td>↑</td>
<td>↔</td>
<td>Arrows indicate trend since previous quarter.</td>
</tr>
<tr>
<td>Current seasonal outlook</td>
<td>↓</td>
<td>↓</td>
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<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↑</td>
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<td>↑</td>
<td>↑</td>
<td>Arrows indicate the trend since previous quarter and taking into account the forecasted model predictions.</td>
</tr>
<tr>
<td>Current fire risk</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↓</td>
<td>↑</td>
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<td>↑</td>
<td>↑</td>
<td>↑</td>
<td>Arrows indicate the trend since previous quarter.</td>
</tr>
</tbody>
</table>
Darwin District

Risks:
- The current BoM outlooks suggest the northern wet season is likely to end much drier than average.

2015/16 Wet Season (as at 1 March 2016)

<table>
<thead>
<tr>
<th>Pasture Growth* (% of district)</th>
<th>Below Average 37%</th>
<th>Average 50%</th>
<th>Above Average 13%</th>
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<tbody>
<tr>
<td>&lt;1,000kg/ha 0%</td>
<td>&gt;1,000 &amp; &lt;2,000kg/ha 66%</td>
<td>&gt;2,000kg/ha 34%</td>
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</table>

Currently

<table>
<thead>
<tr>
<th>Total Standing Dry Matter (% of district)</th>
<th>Below Average 85%</th>
<th>Average 14%</th>
<th>Above Average 1%</th>
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<tbody>
<tr>
<td>&lt;1,000kg/ha 0%</td>
<td>&gt;1,000 &amp; &lt;3,000kg/ha 91%</td>
<td>&gt;3,000kg/ha 9%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Fire Risk (% of district)</th>
<th>High 0%</th>
<th>Moderate 31%</th>
<th>Low 69%</th>
</tr>
</thead>
</table>

| Area Burnt (% of district) | 20% (2015/16 Total Area Burnt) | <1% (since 1st January 2016) |

* In the Top End, pasture growth tends to be similar year to year regardless of rainfall. This is because pasture growth in the Top End is typically not water-limited and keeps growing until available soil nitrogen is exhausted. For this reason, any interpretation of growth being above or below the median should be treated cautiously because the actual difference between years is relatively small.

Median Pasture Growth (kg/ha) (Running Total)

Choice of exceeding Median Pasture Growth (March – May 2016)

Legend
- Extremely low (0-10%)
- Well below average (10-20%)
- Below average (20-30%)
- Average (30-70%)
- Above average (70-80%)
- Well above average (80-90%)
- Extremely high (90-100%)

Current Estimated Total Standing Dry Matter

Legend (kg/ha)
- < 100
- 100 - 200
- 200 - 500
- 500 - 1000
- 1000 - 2000
- 2000 - 3000
- 3000 - 4000
- > 4000
Live Cattle Exports via Darwin Port – February 2016

Please note: figures are for cattle exported through the Port of Darwin only; some NT cattle are exported through interstate ports.

### Export of ALL CATTLE (including interstate) from Darwin Port

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<thead>
<tr>
<th>Destination</th>
<th>2014</th>
<th>2015</th>
<th>Last year to 28/02/15</th>
<th>YTD to 29/02/16</th>
<th>YTD February</th>
<th>Last month</th>
<th>Difference</th>
<th>2014</th>
<th>2015</th>
<th>Last year to 28/02/15</th>
<th>YTD to 29/02/16</th>
<th>YTD February</th>
<th>Last month</th>
<th>Difference</th>
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<tr>
<td>Brunei</td>
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<td>4,122</td>
<td>1,029</td>
<td>0</td>
<td>0</td>
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<td>4,925</td>
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<td>Indonesia</td>
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<td>493,958</td>
<td>487,568</td>
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<td>20,915</td>
<td>19,630</td>
<td>1,285</td>
<td>324,477</td>
<td>287,892</td>
<td>28,755</td>
<td>21,894</td>
<td>11,294</td>
<td>10,600</td>
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February at a glance

- 20,915 cattle through the Darwin Port during February; 1,285 more than last month and 9,444 less than during February last year.
- 11,294 NT cattle through the Darwin Port during February; 694 more than last month and 5,690 less than during February last year.

### OTHER LIVESTOCK EXPORTS VIA DARWIN PORT

Includes NT and interstate stock.

<table>
<thead>
<tr>
<th>Destination</th>
<th>Buffalo (YTD February)</th>
<th>Goat (YTD February)</th>
<th>Camel (YTD February)</th>
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<td>Brunei</td>
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<tr>
<td>TOTAL</td>
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### NT CATTLE MOVED INTERSTATE

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<tr>
<td>NSW</td>
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<tr>
<td>QLD</td>
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<td>SA</td>
<td>562</td>
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<td>VIC</td>
<td>164</td>
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<td>WA</td>
<td>9</td>
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<tr>
<td>Total</td>
<td>5,825</td>
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</table>

NATIONAL CATTLE PRICES

[www.mla.com/prices-and-markets](http://www.mla.com/prices-and-markets)

CURRENCY EXCHANGE RATES

[www.oanda.com/currency/converter](http://www.oanda.com/currency/converter)

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Subscribe or unsubscribe to the monthly Pastoral Market Update.

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[www.nt.gov.au](http://www.nt.gov.au)
New Chief Veterinary Officer for the NT

Dr Kevin de Witte returned to the Territory in February following 10 years with Animal Health Australia (AHA) to fill the role of NT Chief Veterinary Officer (CVO) and will lead and manage the Animal Biosecurity Program within the department.

Many NT pastoralists will remember Kevin from his time with the department in the 80’s and 90’s when he was based in Katherine. Kevin has significant experience in disease control and management working with the NT cattle industry during the eradication of Bovine Tuberculosis and Brucellosis, the investigation and management of various disease syndromes and the extension of optimum herd management including spaying.

Kevin has spent the last 10 years at AHA as the Executive Manager Market Access Support and overseen the management of several key national programs relevant to the cattle industry.

Kevin looks forward to rousing old and new friendships and working with the NT cattle and other livestock industry again to manage biosecurity risks, maximise market access and optimise productivity.

Swill Feeding: What is it and why is it illegal?

Swill is the name given to food products that contain, or have been exposed to meat products. Examples of such products include:

- Kitchen/restaurant scraps
- Bakery waste
- Untreated used cooking oils and fats

Swill is considered to be a prohibited pig feed, meaning that it is illegal to feed to pigs and strong penalties apply if you are caught.

Such strict regulations are in place in every state and territory in Australia. This is because Australia is fortunate enough to be relatively disease free and imported meat products from other countries may contain viruses that are not found in Australia. Diseases that are associated with swill feeding are: Foot and Mouth Disease (FMD), Classical and African swine fever and Transmissible Gastroenteritis. It is believed that feeding swill to pigs was the cause of the FMD disease outbreak in the UK in 2001.

These restrictions apply to everyone, regardless of whether the pigs are bred commercially, or used as pets.
Tetanus – Are you and your staff prepared?

What is it?

Tetanus is an acute disease of mammals characterised by muscular spasms and increased sensitivity to stimuli. Tetanus occurs in humans; it has also been reported in all domestic animals except the cat. In the Northern Territory, the disease has been recorded in horses, cattle, sheep, pigs and dogs. Horses are reported to be the most susceptible to the disease. Tetanus can be a common cause of death in weaners after castration and dehorning.

How is it caused?

Tetanus is caused by the bacterium Clostridium “tetani” when it enters the animal’s body through traumatic wounds, or during parturition (e.g. calving) or management procedures. Procedures such as castration and dehorning can provide suitable anaerobic sites for the bacterium. After entering the body, the bacterium begins to multiply and produce a toxin, which causes the clinical signs of tetanus. Spores of this organism commonly occur in soil and in the faeces of most animals and can survive for many years in the environment. It is for this reason that people who have contact with soil and animal faeces are at greater risk of contracting this disease.

What are the signs?

Signs of tetanus for cattle and horses are as follows:

- Body stiffness
- Reluctance to move
- Muscular spasms
- ‘Locking’ of the jaw
- Difficulty opening mouth, unable to eat and drink
- Rigid extended limbs (‘saw horse stance’)
- Difficulty in breathing and swallowing
- High sensitivity to noise or touch
- Protrusion of the third eyelid
- Drooling saliva
- Convulsions or fits
- Immediately before death: convulsions occur, respiration is laboured and body temperature rises.

**Note:** In affected dogs, there is a characteristic elevation of the ears, wrinkling of the forehead and protrusion of the third eyelid.

What can we do to prevent / reduce risk?

Prevention and a reduced risk can be helped by a few quick management steps:

- Wet down the yards prior to ‘marking’ and move weaners out of the yards as soon as possible
- Procedures requiring the skin to be broken, such as injections and castration are carried out as hygienically as possible.
- Reduce contamination of surgical instruments by placing them in antiseptic whilst not in use.
- Prevent wounds from becoming infected by applying an antiseptic to the wound.
- Weaners and calves should be castrated and dehorned just before leaving the yards and not before trucking.
- Vaccinating weaners with a ‘5 in 1’ or ‘7 in 1’ followed by a booster shot four to six weeks later, (where possible) especially on properties with a history of tetanus.
Adopt best practices for branding, castration and dehorning as per the MLA manual, ‘A Guide to Best Practice Husbandry in Beef Cattle: Branding, Castrating and Dehorning’ (MLA 2007) and start a ‘5 in 1’ vaccination program at branding, followed by a booster four to six weeks later or at the next weaning muster.

Notifiable Diseases in the NT

Did you know that some diseases are listed as notifiable under the Northern Territory’s Livestock Act? This means that if owners, managers and/or veterinarians suspect or have confirmed cases of these diseases in their animals, they must be reported to the Chief Veterinary Officer of the NT.

By reporting notifiable diseases as quickly as possible, you are ensuring a quick response to the disease, which not only potentially saves a large number of your stock, but could also prevent the spread onto other properties, assisting the livestock industry as a whole.

Notifiable diseases in the Territory are listed in three categories; endemic, exotic and emergency. Endemic refers to those diseases that exist within Australia, but are either not found in the NT, or found only in certain parts of the NT. For example, cattle tick found in the tick free area is an endemic disease.

Exotic diseases are those that have not occurred in Australia before. Emergency diseases are based upon the national Emergency Animal Disease Response Agreement (EADRA) between Industry, Commonwealth and State and Territory Governments. This list includes mostly exotic diseases that would have a significant impact upon Australia, on not only livestock industries, but also trade agreements for Australia as a whole, public health and the environment. Emergency Animal Diseases (EADs) must be reported to the Australian Chief Veterinary Officer within 24 hours of notification to ensure that compensation is available in the event of a large-scale outbreak under the EADRA.

Who to report to

If you suspect any animals to have any of the diseases listed below, you should do one of the following:

- Phone your DPI&F Field Veterinary Officer or Livestock Biosecurity Staff Regional Field Veterinary Officers:
  - Darwin (08) 8999 2035
  - Katherine (08) 8973 9716
  - Alice Springs (08) 8951 8181
- Call the Emergency Animal Disease hotline – 1800 675 888 – which is monitored 24 hours a day.

Further Animal Health Information

Want information on a particular animal health topic? Requests for articles on topics of interest are invited. Please send requests to:

Renae McLean
Ph: 08 8973 9765
E: renae.mclean@nt.gov.au