

Keeping abreast of things

Dear Reader,

This newsletter is focussed on keeping NT producers abreast of new developments across a number of industries and situations. In this edition we discuss what can be done with the emerging on-farm stockpile of hay precipitated by the 2011 live-cattle export interruption. Also provided are two updates relating to agricultural pesticide usage, as well as an article aimed at furthering our understanding of what drives the weather here in northern Australia and what it means. Finally, a general interest item on research in African Mahogany forestry.



Getting the right information is the foundation for making the right agri-business decisions at a given time. This is what we try to do with the Plant Industries NT Newsletter. Please check out the useful links and our upcoming events section. I hope this information is of practical use to those engaged in NT horticulture.

Regards,

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Stacking and Storing Hay

By Melissa Fraser Katherine Research Station

The NT fodder industry has grown steadily over the past 15 years in line with the growth in the export of live cattle (Fig. 1). It has become a significant component of the NT rural economy generating around \$ 12.2m in 2009-10. However, as a consequence of the recent live export crisis, producers have reported a fall in demand for hay and fodder products in 2011. With a wet season approaching and surplus hay remaining on-farm, identifying and implementing suitable storage options will be important for those wanting to prevent serious degradation or probable total loss of their baled hay assets. DoR investigations indicate that around 22,000 t of hay valued at \$5.1m is likely to remain unsold and will be stood over to 2012. Each individual business will need to consider firstly its position on either to store or destroy standover bales, and should they choose to store - their options with respective storage methods.

Selecting the most suitable storage method will depend on the timeframe of storage, available capital, frequency of loads in and out of respective areas, and distances to existing storage. Members of the Australian Fodder Industry Association (AFIA) have reported that combining different storage strategies can work well.

Given the limited time and high capital outlay, construction of additional permanent storage is an unlikely option for NT fodder producers and processors. Tarps and hay caps may be useful tools for protecting hay left outdoors. When storing hay under temporary shelter it is important to consider the quantity of hay you intend to protect, the anticipated duration of storage, and what you are capable of handling with your existing machinery. These issues will determine the size and configuration of your haystack. It is also important to consider that moisture that can permeate bales from underneath the stack, therefore, pad preparation and stack orientation needs to be considered.

Some tips for stacking and tarping hay:

- Protect the bottom. Locate pads on gentle slopes or gravelly or sandy ridges where water drains away quickly and will not pond around the stacks. Make sure there is good drainage on both sides. This is particularly important when the stack is only one bale wide. Run the stacks down the slope, never across the slope. Consider using plastic under the stacks to protect the bottom bales.
- Where possible make stacks near all weather roads. Storage location can be the difference between selling and not selling hay during wet periods.
- Make stack sizes of approximately one semi load. Big tarps are hard to put on and keep on and blow in the wind, causing tarp damage and leakage. Stacking in 'truck loads' means you can leave much of your hay covered, and never have partially uncovered stacks.
- Simple stacks - one bale wide. Where possible, do not go any wider, it is too hard to keep the tarp down and creates shallow points for water to lay and soak through the tarp. Tarps on stacks this size are much easier and safer to handle and can be applied from ground level. If you do build stacks more than one bale wide, ensure you create a peak on top so that water can shed easily.
- More complex stacks. Figures 4, 5, 6 and 7 show a number of more complex stack configurations. The higher the stack, the less proportionate exposure of the total to spoilage from surface runoff.
- Remember, most tarps are not waterproof, only water resistant; the idea is to shed water quickly. Don't allow dips and hollows in the top where water can lay. Ideally, if it is possible, re-tension tarps on a regular basis, especially in the first few weeks to ensure the tarp stays tight with no dips.
- Protection. Feed Central recommends sheltering the top only. However, given the intensity and volume of northern Australian rainfall, full or at least partial tarping of the sides is often practiced. Note: when stack sides are tarped the hay can't breathe, so if water does get in, it can't get out. Leaving the sides open allows the stack to breathe. Haystack bales can naturally shed any water that runs down the sides, so long as the sides of the stack are straight with no edges sticking out. If you are only using a cap tarp or hay caps, spend the extra time to ensure the edges of the stack are straight up and down. Partial covering of the sides is being used successfully by several operators such as Northern Feed and Cube (Figure 5a).

Understanding the Madden-Julian Oscillation

By Joel Lisonbee Bureau of Meteorology

The Madden-Julian Oscillation (MJO) is the biggest driver in tropical weather on weekly to monthly timescales. Understanding the MJO is important to us in the NT as it most likely to be the system that will impact on our farming and grazing operations. For instance, mango producers have a very short window for generating revenue. The harvest period can sometimes be interrupted by rain. Rain has detrimental implications with regard to diseases that downgrade fruit quality and subsequent price for the producer. Anticipating the onset, intensity and duration of rain events is therefore a critical issue for mango producers in the NT. This intelligence increases producers capacity to plan their operations through the harvest season.

The MJO can be characterized as an eastward moving "pulse" of cloud and rainfall near the equator that typically recurs every 30 to 60 days. However, the signal of the MJO in the tropical atmosphere is not always present. MJO effects are strongest over the Indian Ocean and western Pacific (Figure 4). It influences the timing, development and strength of the major global monsoon patterns, including the Indian and Australian monsoons. Another influence of the MJO is enhanced easterly winds to the east of the "pulse" and enhanced westerly winds to the west. In addition to the Australian Monsoon, the MJO is associated with variations in wind, cloudiness, and rainfall over northern Australia. The MJO has its greatest effect on the tropical areas of Australia during the northern wet season (October to April). The MJO boosts, or enhances, areas of thick convection. This can lead to increased rainfall - in both the intensity of the rainfall and the duration of the rainfall.

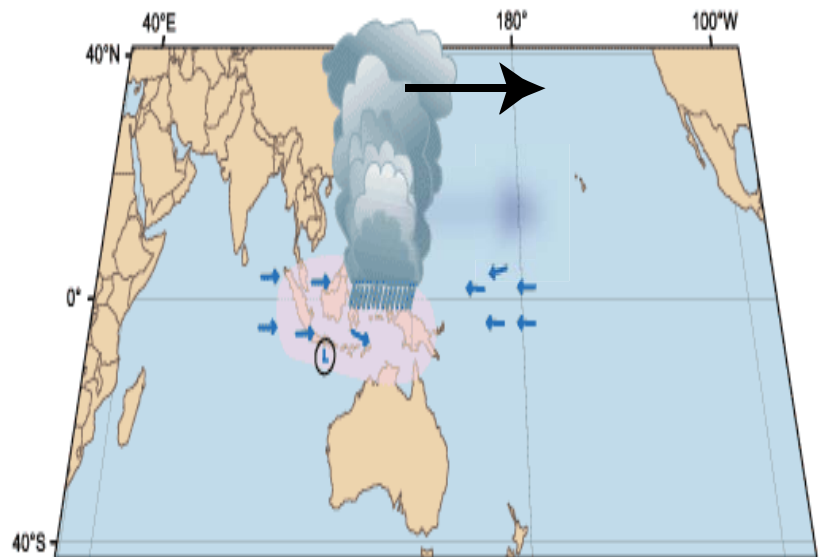


Figure 4. The MJO the biggest driver in tropical weather on weekly to monthly timescales.

The MJO is monitored using the Real-time Multivariate MJO (RMM) index. The RMM index uses mathematical methods to combine cloud cover and winds at upper and lower levels of the atmosphere to provide a measure of the strength and location of the MJO. The RMM index places the MJO within eight phases of development that generally coincide with locations around the globe (Figure 5.).

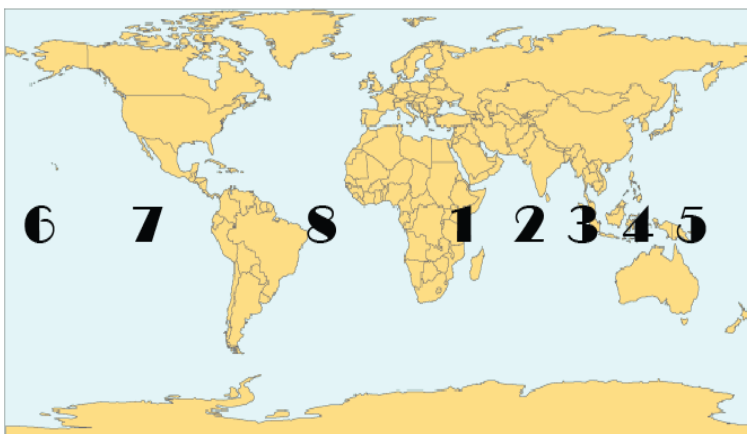


Figure 5. Where the eight phases of the MJO occur

Currently there are no strong signals from the MJO. In the coming fortnight, the MJO is expected to remain weak in the eastern Indian Ocean/western Maritime Continent latitudes. The MJO is not expected to contribute to any significant weather or additional rainfall across northern Australia during the last two weeks of September. In its current phase, the MJO is likely to cause an increase to the easterly component of the winds over northern Australia.

Over the past week dry, windy conditions have dominated northern Australia as winds turned east-southeasterly. These conditions are expected to continue over the remainder of this week, before winds turn east-northeasterly and bring an increase in humidity and warmer temperatures.

September is the last month of the dry season and can occasionally experience wet season-like weather. In Darwin one thunderstorm is observed in an average September. Table 1 shows other averages for September in Northern Australia. With the current state of the MJO along with the state of other climate drivers, we would expect near-average conditions for the next few weeks.

Table 1. Average weather for September in Northern Australia.

September Averages	Rainfall	Number of rain days	Minimum temperatures	Maximum temperatures	Number of days above 35 °C
Darwin	15.8 mm	2 days	23.1 °C	32.6 °C	2 days
Middle Point	20.0 mm	3 days	19.5 °C	36.3 °C	25 days
Katherine	6.7 mm	1 day	20.2 °C	35.9 °C	21 days
Kununurra	3.3 mm	1 day	20.4 °C	36.6 °C	24 days

To help you stay up-to-date on MJO activity, The Weekly Tropical Climate Note (<http://www.bom.gov.au/climate/tropnote/tropnote.shtml>) provides weekly updates and forecasts of the movement, intensity and impacts of the MJO. Further information on the MJO can be found at www.bom.gov.au/climate/mjo where you can find an updated RMM diagram along with recent observations and average conditions.

Update of APVMA Minor Use Permits

By Melissa Fraser Katherine Research Station

Australian law requires that all agricultural and veterinary chemical products sold in Australia be registered by the Australian Pesticides and Veterinary Medicines Authority (APVMA). Listed below are some of the current Minor Use Permits specific to NT crops. Full details of the permits and a permit search facility are available on the APVMA website: <http://www.apvma.gov.au/permits/search.php>

Before using any product for an off-label use you must first obtain a copy of the permit for conditions of use and to ensure that the permit will cover the required use.

PER12439 - Trichlorfon / Table grapes / Queensland Fruit Fly & Mediterranean Fruit Fly.
Valid 30-Aug-11 to 31-May-14

PER13042 - Sacoa Biopest (paraffinic oil) / Passionfruit / Red scale, Hemispherical scale & Passionvine mealybug. Valid 23-Aug-11 to 31-Aug-12

PER12592 - Chlorothalonil & Difenconazole / Papaya / Black spot & Brown spot.
Valid 14-Aug-11 to 30-Jun-20

PER12379 - Rattoff Zinc Phosphine Bait Sachet / Banana Plantations / Roof or Black Rat and Mice. Valid 10-Jul-11 to 30-Jun-13

PER8930 - Phorate / Eggplant, peppers, shallots and spring onions / Aphids, jassids, mites, thrips and onion maggot. Valid 14-Aug-11 to 31-Jul-16



PER12052 - Phosphorous (phosphonic) acid / Beetroot, Carrot, Parsnip & Brassica leafy vegetables / Damping off and downy mildew. Valid 29-Jun-11 to 30-Jun-13

PER12156 - Triadimenol, Triforine, Mancozeb, Azoxystrobin, Copper oxychloride, oxycarboxin and propiconazole / Nursery stock (non-food), ornamentals and cut flowers / Myrtle Rust (*Uredo rangellii*). Valid 09-Sep-10 to 30-Aug-13

PER12027 - Dupont Coragen Insecticide (chlorantraniliprole) / Nursery Stock - Non Food / Heliothis, Lightbrown apple moth, Apple looper and Soybean looper. Valid 30-Jun-11 to 31-May-15

PER12028 - Mancozeb + Metalaxyl / Nursery Stock - Non Food / Alternaria, Anthracnose, Septoria leaf spot & Phytophthora. Valid 30-Jun-11 to 31-May-15

PER12029 - Dupont Avatar Insecticide (indoxacarb) / Nursery Stock - Non Food / European earwig, Heliothis, Lightbrown apple moth & weevils. Valid 30-Jun-11 to 31-May-15

PER12659 - Admiral Insect Growth Regulator Insecticide (pyriproxyfen) / Nursery Stock / Whiteflies and Fungus gnats. Valid 29-Jun-11 to 31-May-15

More information on the APVMA's Minor Use Program can be found at:

<http://www.apvma.gov.au/>

Changes in Dimethoate Use

By Stephen West – Chief Plant Health Manager

Dimethoate is an insecticide of significant importance in the Australian horticultural industry for pest control and for biosecurity purposes as a pre or post-harvest treatment for fruit fly, allowing domestic cross-border trade and exports. In 2004, the Australian Pesticides and Veterinary Medicines Authority's (APVMA) commenced a review of dimethoate to determine if it might pose an undue hazard to public health and should be re-evaluated using contemporary data and assessment standards. The APVMA released their report on the 22 August 2011. The full report and ancillary documents are available at: http://www.apvma.gov.au/news_media/news/2011/2011-08-22_dimethoate_review.php

So what does this mean for the Territory? The report includes 31 crops where dimethoate is used for either pre or post-harvest treatments in the Territory. The report has two lists:

- List 1 is uses that will be cease as at 30 September 2011; and
- List 2 is uses that will continue to be allowed.

This breaks down into the following:

List 1. Dimethoate uses proposed for suspension.

This list has 19 crops where dimethoate is currently used either as a pre or post harvest treatment or both. Of these 19 crops they break down further into two groups as follows:

- Twelve crops where there are already alternative treatments that can be used in place of dimethoate. Their use, in most instances, will mean additional pre-harvest production costs and management inputs and/or adoption of a systems approaches or post-harvest treatments that in some instances have the potential to impact on the quality of the product and/or its shelf life, or will require an extended period of cool storage.
- Seven crops where there are no alternative treatments. Many of these commodities are minor or unusual crops. For these effected businesses they may need to seek alternative markets where post harvest treatments are not required. NT Quarantine are currently working to identify if there are any possible options for these industries.

List 2. Dimethoate uses that will continue to be allowed.

This list has 12 crops including the tropical and sub-tropical fruits with inedible peels. This includes mangoes, guava, lemons, mandarins, papaya, passionfruit, pummelos, rambutans, star apple, a number of Asian fruits and zucchini.

The information sheet from the APVMA has the entire list of 75 crop uses that will be suspended on the 30 September 2011 and the 64 crops where use will continue. To find out the exact details about a particular crop review you will need to download the full report.

To discuss your particular situation for pre and post harvest uses and alternatives for export please contact NT Quarantine on (08) 8999 2118.

Investigating the genetic diversity of *Khaya senegalensis* (African mahogany)

The natural range of *K. senegalensis* covers at least 19 sub-Saharan African countries where it is considered "endangered". Efforts to establish plantations in Africa have generally failed due to susceptibility to shoot borer attack. In northern Australia however, where this tip borer is not endemic, *K. senegalensis* has performed very well in numerous research trials and plantations and has now been identified as a species of great potential for large-scale plantation expansion.

Currently the Northern Territory / Queensland governments 'Improvement program', is based on a large number of provenance introductions, 24 in all from 11 countries within the native range of central African countries. It is the largest public domestication program for this species. Lack of DNA markers has hampered assessment of genetic diversity of *K. senegalensis* that would allow



informed selection of parental lines in future breeding programs and reduce the problems of inbreeding. Genotype information will also assist in determining priority in conservation efforts and aid incorporation of novel germplasm into the breeding program.

Recent research in a number of laboratories has realised a number of microsatellite markers, some of which could be used to distinguish our local African mahoganies from others. At our disposal is a published list of primer sequences for 25 microsatellites which are indicated to have variation in DNA sequences that are predictably inherited. A proposed research project with the Australian Genome Research Facility Ltd is anticipated to screen 20 markers and select 8-10 polymorphic markers capable of differentiating between all 288 selections of interest to the future of the African mahogany tree improvement program.

Useful Links

APVMA – Public Chemical Registration System
<http://services.apvma.gov.au/PubcrisWebClient/welcome.do>

APVMA Permits
<http://www.apvma.gov.au/permits/search.php>

APVMA – Dimethoate Review
http://www.apvma.gov.au/news_media/news/2011/2011-08-22_dimethoate_review.php



Bureau of Meteorology services

- Weekly climate note
<http://www.bom.gov.au/climate/tropnote/tropnote.shtml>
- Madden-Julian Oscillation
www.bom.gov.au/climate/mjo

Horticulture Publications – DAFWA

http://www.agric.wa.gov.au/PC_91713.html?s=505199810

Mango Information Kit

<http://era.deedi.qld.gov.au/1647/>

NT Primary Industries Agnotes and Fact sheets

http://www.nt.gov.au/d/Primary_Industry/index.cfm?Header=Agnotes%20and%20Factsheets

Primary Industries Publications – NT DoR

<http://www.nt.gov.au/d/publications/>

Upcoming Events

Mangoes:

1. Formation of Mango industry small group networks (Darwin and Katherine), February 2012.
2. Annual mango pre & post-harvest disease management workshops. Darwin & Katherine February - March 2012.
3. Annual 'Superior mango rootstocks' farm walks – April 2012.
4. Irrigation best-practice water use and nutrient efficiency workshops for NT mangoes. Darwin & Katherine – dates & venues to be advised

Bananas:

On-farm workshop – Fusarium resistant variety selection for evaluation from overseas programs. November 2011.

Papaya:

Industry developmental workshop.

November 2011

Dates & venue to be advised

Fodder industry:

Workshops at 4 x locations:

- Barkly
- Katherine
- Douglas-Daly
- Darwin

Dates to be advised in 2012

Erratum: The Newsletter wishes to acknowledge that Jose Liberato and Luct Tran-Nguyen were not authors of the Mango Malformation Disease article which appeared in the inaugural June 2011 issue of the Plant Industries NT Newsletter. The author was instead the Chief Plant Health Manger of the NT.

Disclaimer

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