Planning to Tackle Pests this Growing Season

Megan Hoskins, Entomology Technician, DBIRD Katherine, 8973 9762

Another growing season is about to start but something seems to have gone astray? Yes, the rain! Experience demonstrates that with extreme weather (wet or dry) unusual cases of pests and diseases may occur. Have you, as a grower planned for such extreme conditions and have you taken the time to reflect on last season’s activities? Outlined here is a simple tool that may help you reflect on what happened last season, what you’ve learnt and, perhaps help you plan for a better crop, despite the lack of rain.

We are told that to learn from our experiences we must take the time to reflect upon them. This is important, because as adults we tend to resist changing our habits even when our actions are not producing the results we expect. For example, the once widely practiced method of spraying highly toxic chemicals to ‘clean up’ an orchard with the expectation of eliminating pests, no longer works!

Effective learning experiences involve four steps in a ‘learning cycle’. These steps are, planning, acting, reflecting and concluding. You can start the cycle of learning anywhere you like. Let’s apply this cycle to a specific crop management situation - such as - insect pest control.

Here is a diagram illustrating the LEARNING CYCLE with examples of the sorts of questions you might ask yourself:

START

What did I do last season?
Check your records on pest occurrences, crop spraying, yield losses caused by pests, etc.

ACT

What worked for me and what went wrong?
Did all my chemical sprays work?
Am I using more sprays than last year?
What was the main pest and when did it cause the most trouble?

PLAN

Make a plan for this season based on your conclusions.
Anticipate what chemicals I will need and order softer chemicals well in advance. Service all my spray equipment so my sprays have the best possible chance of working, without waste. Start recording what I see on my crop every week and how much damage there is.

REFLECT or REVIEW

What worked for me and what went wrong?
Did all my chemical sprays work?
Am I using more sprays than last year?
What was the main pest and when did it cause the most trouble?

CONCLUDE

What will I do differently this season?
Change the type of chemicals I am using to preserve beneficial insects. Keep better records so I know when major pests might occur. Order some books on insects so I can identify all my good insects.

Have fun with it and here is something else to reflect upon:

“Everyone needs to be corrected sometime, even when they’re right” - Maori Elder

The presentation ceremony for the 2005 RIRDC (Rural Industries Research and Development Corporation) Rural Women’s Award was held on 14 February at Parliament House. The ceremony was hosted by the Minister for Primary Industries and Fisheries, Kon Vatskalis. Women from a range of industries attended – the boots, jeans, heat and mud exchanged for high heels, dresses, plush carpet and air-conditioning – at least for an afternoon! Being non-discriminatory, there was a sprinkling of males within the audience, also enjoying the occasion!

The Rural Women’s Award aims to recognise and encourage the vital contribution that women make to rural Australia. Applicants from each state or territory are required to submit a proposal that outlines a vision they have for their industry, and how they are going to achieve this.

Ann Palmer, a manager at Crocodile Farms NT, was announced the winner and, as I write this, she is heading to Canberra! Her proposal outlined how she would use the bursary to investigate market opportunities for products currently classed as ‘by-products’ of crocodile production, and to advance on-farm techniques for increased productivity. Ann said she was particularly looking forward to her time in Canberra, a week out of the King Gees and work boots, and the challenge of the Directors’ Course!

I’m not sure how she responded to the nickname of ‘Crocodile Dundette’, which seemed to stick after the presentation ceremony!

Sarah Fea, an agricultural extension officer in Katherine, was the runner-up. She aims to use the $5000 to attend interstate training courses which will increase her knowledge and skills. She hopes to use these skills to assist the agricultural and horticultural industries to adopt sustainable management practices through Biological Farming principles.

Both these women exemplify what the Rural Women’s Award represents - they are motivated, dynamic and passionate, with a strong positive vision for the future of their respective industry – from crocodiles to cropping!

I encourage you to think about women who are dynamic contributors to your industry, who may be worthwhile nominees for next year. If you want to get in early to prepare your proposals - or nominate someone in your industry, you can go to the website: www.ruralwomensaward.gov.au for more information.

I look forward to a flood of nominations for the 2006 RIRDC Rural Women’s Award!

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Rowena Eastick, NT Coordinator Rural Women’s Award, DBIRD Darwin, 8999 2252.

The Katherine area is about to lose a couple of its most active contributors to the community. There wouldn’t be too many people in the area who don’t know Tony and Jenny Maddern.

Tony works at Katherine Research Station with the Horticulture group and unfortunately, has decided to make the move to Western Australia and will be leaving us at the end of the month. Tony and Jenny have three sons who all live in WA and it is for this reason that they are moving there.

It will be a bit of a change for them, having lived in the tropics for thirty five years. Tony started out as a Patrol Officer in Papua New Guinea and also managed a sawmill there. He moved to Katherine in August 1986 where he commenced work with the old Aboriginal Development Corporation and then ATSIC. He has been with us for about 9 years since leaving ATSIC and has made a significant contribution to the operations of the Horticulture Division during that time.

Tony is a very active member of the Katherine Fire Brigade and both he and Jenny are Life Members with the Katherine Show Society. I’m sure the Society will feel their absence this year as they have both been tireless workers for the annual show. The Country Music Muster will also miss their contribution.

As well as these community contributions, Tony involved himself in the School Councils of both Clyde Fenton and Katherine High School.

So, the boys have all moved to Western Australia and the parents are about to follow them. Tony has secured a job with a fruit growing company and will be managing orchards at Gin Gin, just north of Perth.

It’s a bit of a cliche to say he will be missed by all at Katherine Research Station but in this case, it’s true. He has made a wonderful contribution to the running of the place and has always been happy to volunteer for activities outside his area. His recent involvement in the School Plots Project is a good example of this.

On behalf of everyone at KRS, I wish Tony and Jenny the very best for the future.

Jack Peart
It appears that the season is shaping up as being a long dry one, so dry that many people will be starting to wonder if they have enough grass to carry all their stock until the next wet.

It’s a common practise for people to watch cattle condition to determine when they may need to start shifting or selling. But to get a few steps ahead of that, there are ways of looking at the pasture to determine whether there is sufficient feed to carry you through until you might reliably expect rain again.

DBIRD has been carrying out intensive work on carrying capacity calculation methods in conjunction with experienced producers over the past few years. This has resulted in a number of tools available to help managers decide on a year to year basis just how many mouths they might be able to feed, without ending up with a dust bowl and starving cows come October/November, as well as more long term benchmark type estimates of carrying capacity.

It is basically the same system as doing your cash flow budget. How much money (feed) do we need in the bank to cover all our expenses (feed requirements, wastage through trampling, and for the pasture to carry out its business which includes dropping off large amounts of leaves) of the stock and pasture throughout the year, leaving enough to cover you for the rainy days at the end (to prevent erosion). Ensuring that you leave a reasonable amount of feed for cover at the end of the dry season, in a continuously grazed system, also helps to improve the diet quality of the cattle (and therefore the production), and helps take into account the fact that cattle don’t really find all of the available feed particularly appetising!

It is suprisingly easy to learn to estimate how much standing feed you have, it just requires a few goes at cutting and weighing grass to learn what different amounts actually look like. Photo standards are another way some people use to estimate how much available feed they have.

A rough carrying capacity calculation might look like this:
- Back paddock is 100 sq km (10,000 ha)
- You have assessed the available feed and decided it averages 1900 kg/ha (Money in the bank).
- You know you would like to leave 1000kg/ha for cover. (Savings for the rainy day)
- You know your breeders will need 10kg/head/day until the next rain that will cause new pasture growth. (Read Planning for an Ordinary Season on page 4 to learn how to estimate when this rain will occur.) You have worked out that for your location this rain is estimated to occur in 200 days, so 2000kg/head is required. (Expenses you will incur)
  - You know that wastage caused by trampling and plants detaching their leaves will take out another 450 kgs or so by the season’s end. (More bloody expenses)

So, the equation goes something like this:

1900kg/ha less 1000kg/ha to be left and 450 kg/ha for wastage = 450 kg/ha available feed.

450kg/ha multiplied by paddock area 10,000ha = 4,500,000 kg feed available

4,500,000 kg feed divided by 2000 kg/breeder = 2250 breeders that the paddock could carry until the next rain (assuming it is fully watered).

Obviously, it’s not always a simple equation. No doubt you will have to take into account water availability, land type, pasture growth, species differences and of course cows just acting like cows in general when they decide where they want to live. This is why we have developed computer based programs to take into account many of the complexities of the grazing system without having to spend days on the calculator (also good for people with dubious mathematic skills like my own). These programs also help take into account the fact that most NT properties are huge, with a lot of variability, and it is very hard to be able to account for these large areas with back of the envelope calculations.

The best way to get hold of these tools and skills is to undertake a Grazing Land Management course, next course date to be confirmed. If you are interested in what is available in the meantime for helping to calculate stocking rates or deciding when your first significant rainfall for the season might be, you can call Trudi Oxley on 89 739 763.

<table>
<thead>
<tr>
<th>Check Your Dates...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>8 April:</strong></td>
</tr>
<tr>
<td><strong>16 April:</strong></td>
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<tr>
<td><strong>19-20 April:</strong></td>
</tr>
<tr>
<td><strong>13 July:</strong></td>
</tr>
</tbody>
</table>
Planning For an Ordinary Season

Robyn Cowley, Rangelands Officer, Pastoral Production, DBIRD Katherine, 8973 9750

Most of the NT has experienced average to below average rainfall this wet. So what does an average season mean for cattle production? In high rainfall areas (above 700mm), an average season may be better nutritionally for cattle, and forage quantity is less likely to be limiting. For median and low rainfall areas, an average season may be pretty ordinary. Pasture growth will be reduced. If stock numbers have built up with the good seasons, forage may run out before the next wet if numbers are not reduced.

Trudi took you through some of the steps to forage budget for the remainder of this dry year. Part of the process was to work out the number of days until the next substantial rain. But how do you know when it will next rain? Rainman Streamflow is software developed by Qld DPI that can tell you a lot about the probability of rainfall by looking at the historical rainfall records.

Using Rainman Streamflow I did an analysis of when a significant rainfall event (25mm within 3 days) will occur for different locations. See table.

<table>
<thead>
<tr>
<th>Station</th>
<th>Median Rainfall (mm)</th>
<th>% of years that 1st significant rainfall event occurs by 1 November</th>
<th>% of years that 1st significant rainfall event occurs by 1 December</th>
<th>% of years that 1st significant rainfall event occurs by 1 January</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katherine</td>
<td>973</td>
<td>37%</td>
<td>83%</td>
<td>99%</td>
</tr>
<tr>
<td>Roper Bar</td>
<td>718</td>
<td>12%</td>
<td>60%</td>
<td>89%</td>
</tr>
<tr>
<td>Victoria River Downs</td>
<td>635</td>
<td>20%</td>
<td>62%</td>
<td>93%</td>
</tr>
<tr>
<td>Rosewood Station</td>
<td>623</td>
<td>19%</td>
<td>67%</td>
<td>94%</td>
</tr>
<tr>
<td>Newcastle Waters Station</td>
<td>480</td>
<td>19%</td>
<td>52%</td>
<td>76%</td>
</tr>
</tbody>
</table>

If you were a betting person, there is more than 50% chance that the first significant rain will have arrived by December 1. However if you want to be more certain that rain will have arrived before you run out of feed, you would probably assume that the dry will continue til the end of December. This has important implications for forage budgeting. If you are looking to budget your forage from April until the next wet, the number of grazing days will be 210 or 240 depending on whether you budget until November or December.

So what will happen next year? Will it return to the above average seasons we have experienced over the last decade? At VRD and Rosewood, 11 and 10 out of the last 12 years respectively have been above average rainfall (see figure 1 for VRD rainfall). At Katherine and Roper Bar, 6 out of 7 of the last years have been above average (figure 2 for Katherine rainfall), while at Newcastle Waters, 5 out of the last 6 years have been above average. Looking at the pattern in rainfall over the last 100 years at these locations, it is clear that such good seasons eventually end. More to the point, they rarely last for longer than the run we have just experienced. So while you could hope that global climate change means that this region will return to above average seasons, history tells us differently.

Because there is every chance that above average rainfall years will not return for a few years, plan now for the coming average season/s or below.
Carrying Capacity Project News

Caroline Smith, Technical Officer, Pastoral Production, DBIRD Katherine, 8973 9751.

The first year of the Sturt Plateau Carrying Capacity project is in full swing, and not without its dramas!

Of the seven sites located on the Sturt Plateau, two have been hit by wildfires. It could have been much worse if it wasn’t for the heroic efforts of Tom Stockwell who battled a blaze threatening a site on Sunday Creek Station. The fire was put out only meters from the perimeter and project members have praised his actions.

For those not familiar with the project, each “site” consists of a 30m x 30m fenced exclosure. Inside the exclosure, pasture and soil data is collected four times per year, for two years running. The data is then used to calibrate the GRASP grass growth model for grazing enterprises in the Sturt Plateau area.

The information produced by the GRASP model can be used to predict seasonal pasture growth and better still, understand the long-term probabilities of pasture growth by incorporating historical rainfall information. This will enable land managers to estimate suitable carrying capacities for sustainable land management as well as maximising the profitability of their properties.

The results from the first two harvests show the difference in pasture growth and yield between different landsystems. It must be noted that this data is from one site within each landsystem and these areas have been subjected to varying seasonal conditions. Therefore this data is only a general representation of the expected yields. To see if you have these land types in your area, please see the inserted map Land Systems of the Sturt Plateau.

In the coming months, members of the pastoral production team will again be visiting properties around the Sturt Plateau looking for potential project sites. If you are interested in taking part in this project or just want more information about it, please contact Caroline Smith or Robyn Cowley at the Katherine Research Station on 8973 9751 or 8973 9750.

Figure 1: Total Standing Dry Matter (TSDM) (kg/ha) for the Sturt Plateau Region, Dec 04 - Feb 05 on Different Landsystems

Katherine Horticulture Plans for its Future

Julie Bird, Principal Horticulturist, DBIRD Katherine 8973 9738

The Katherine horticulture industry recently updated its strategic plan with the help of the DBIRD horticulture team and facilitator Peter Sheppard. The original strategic plan was formed in 2002, and growers were amazed at how their priorities had changed in such a short time. New goals were decided upon, along with strategies in order to achieve these goals. The goals in order of priority are:-

1. To achieve security of water entitlement and sustainability of resource.
2. To develop a prosperous industry through a holistic farming system in the Katherine region.
3. To improve infrastructure to a level equal to the rest of Australia.
4. To establish government/industry partnerships to develop opportunities.
5. To improve the supply of labour.
6. To develop an intrastate Quarantine management plan.
7. To attract investment to the region in product consolidation, market development and increased production.

Do you understand how to use MAPS and a GPS?

A one day course is being offered in Katherine on this very subject. The objectives of the course are to:

• provide an understanding of the datums and coordinate systems used in Australia for mapping, surveying and GIS
• provide practical skills to navigate and collect data in the field using satellite GPS

GPS receivers are supplied by the course presenter for use on the day, but you are welcome to bring along your own receiver.

Course Details

Dates: Tuesday 3 May or Wednesday 4 May 2005
Venue: Katherine Training Centre Second St
Cost: $120 (inc. GST) and includes lunch and smokos.
Presenter: Adjunct Associate Professor Trevor Menzies (Charles Darwin University)

Numbers are limited to 18 people per day. so please advise sooner rather than later if you are interested in attending.

For more information, and to confirm your attendance, please contact Claire Hill on tel: 8973 8120 or e-mail: claire.hill@nt.gov.au
# Live Cattle Exports via Darwin Port – FEBRUARY 2005

*Please note that the “NT CATTLE” figures are NT cattle exported through the Port of Darwin only, some NT cattle are exported through interstate ports.*

<table>
<thead>
<tr>
<th>Destination</th>
<th>TOTAL CATTLE (including interstate)</th>
<th># NT CATTLE</th>
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<tbody>
<tr>
<td></td>
<td>2003</td>
<td>2004</td>
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<tr>
<td></td>
<td>2003</td>
<td>2004</td>
</tr>
<tr>
<td>BRUNEI</td>
<td>16,572</td>
<td>14,101</td>
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<tr>
<td>INDONESIA</td>
<td>182,624</td>
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<tr>
<td>PHILIPPINES</td>
<td>51,792</td>
<td>31,623</td>
</tr>
<tr>
<td>SABAH</td>
<td>224</td>
<td>304</td>
</tr>
<tr>
<td>SARAWAK</td>
<td>320</td>
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</tr>
<tr>
<td>W-MALAYSIA</td>
<td>9,028</td>
<td>6,379</td>
</tr>
<tr>
<td>EAST TIMOR</td>
<td>58</td>
<td>35</td>
</tr>
<tr>
<td>TOTAL</td>
<td>260,618</td>
<td>211,042</td>
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"February at a glance"

- 10,745 head of cattle through the Port of Darwin during February, 3,009 head less than January and 969 less than February last year.

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**Total Live Cattle Exports thru Port of Darwin**

2004 v 2005

**NT Live Cattle Exports thru Port of Darwin**

2004 v 2005
OTHER LIVESTOCK EXPORTS VIA DARWIN PORT (includes NT and Interstate Stock)

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<td>115</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>115</td>
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<td>4,722</td>
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<td>0</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>640</td>
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Total Live Cattle Exports (Australia Wide) 2004

Australian live cattle shipments for 2004 totalled 637,152 head, a fall of 18% on the previous years total of 774,248 head. Shipments fell to all major export markets, except China and Jordan.

Indonesia was again the largest market for Australian cattle in 2004, taking 358,638 head, or 56% of total exports for the year. Indonesia was also the most resilient of the South-East Asian markets during 2004, with a drop of only 7% on 2003 levels, compared to decreases of 46% and 51% to Malaysia and the Philippines respectively.

Cattle shipments to China continued to increase in 2004, jumping a further 68% on 2003 levels to 73,911 head. This figure established China as Australia’s second largest market for the calendar year.

The export value of Australian live cattle shipments during 2004 was A$477 million FOB, only 2% below 2003 levels (A$486 million FOB).

Given the 18% decline in volume, the 2% decline in the value of exports for the year was primarily due to increased numbers of high value dairy cattle exported (78,446 head – 56% more than 2003), as well as higher prices for non-breeding animals (feeder cattle).

The average value of feeder cattle exported in 2004, at A$594/head, was 8% higher than the average in 2003.

Australian live cattle exports during 2004 were negatively affected by record cattle prices, the strong Australian dollar, increased shipping costs, high demand for feeder cattle for the meat trade and strong competition from competitively priced frozen beef, particularly in Malaysia, the Philippines and Indonesia.

Total Live Cattle Exports (Australia Wide) by Destination 2004

<table>
<thead>
<tr>
<th>DESTINATION</th>
<th>2003</th>
<th>2004</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>19,796</td>
<td>17,975</td>
<td>-9.2</td>
</tr>
<tr>
<td>China</td>
<td>44,138</td>
<td>73,911</td>
<td>67.5</td>
</tr>
<tr>
<td>India</td>
<td>387,160</td>
<td>358,638</td>
<td>-7.4</td>
</tr>
<tr>
<td>Israel</td>
<td>43,213</td>
<td>20,947</td>
<td>-51.5</td>
</tr>
<tr>
<td>Japan</td>
<td>22,034</td>
<td>18,098</td>
<td>-17.9</td>
</tr>
<tr>
<td>Jordan</td>
<td>23,065</td>
<td>34,154</td>
<td>48.1</td>
</tr>
<tr>
<td>Kuwait</td>
<td>4,081</td>
<td>4,668</td>
<td>14.4</td>
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<tr>
<td>Malaysia</td>
<td>87,955</td>
<td>47,541</td>
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<tr>
<td>Mexico</td>
<td>2,552</td>
<td>5,911</td>
<td>131.6</td>
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<tr>
<td>Philippines</td>
<td>96,016</td>
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<td>Saudi Arabia</td>
<td>15,969</td>
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<td>-</td>
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<tr>
<td>UAE</td>
<td>4,687</td>
<td>1,589</td>
<td>-66.1</td>
</tr>
<tr>
<td>Others</td>
<td>23,582</td>
<td>6,802</td>
<td>-71.2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>774,248</td>
<td>637,152</td>
<td>-17.7</td>
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Reproduction of Rural Review Articles
The Department of Business, Industry and Resource Development (DBIRD) welcomes the reproduction of articles appearing in this newsletter, but request that the technical information be confirmed with the editor or Author, prior to publication. The department also requests that acknowledgement be made for any original work sourced from the Katherine Rural Review.
Aussie GRASS is a spatial modelling framework which estimates pasture growth, total standing dry matter and fire risk and how it rates on an historical basis.

The average to above average March rainfall for most of the Top End was reflected in the average to above average pasture growth over much of the Top End pastoral region (Figures 1&2). Despite the recent growth however, the total wet season’s growth is still mostly average to below average (October to March 05) (Figure 3). As a result of this, standing dry matter in March was still below average over much of the Top End (Figure 4). Standing dry matter takes into account this seasons pasture growth, plus what is left over from last years pasture growth after grazing, fires and detachment. So despite the recent rain this year’s forage levels are still likely to be average to below average over much of the region. Fire risk is moderate over much of the region (Figures 5&6).

For more information about seasonal forecasts and Aussie GRASS see www.LongPaddock.qld.gov.au.

How does the model compare with the real world?
This is something we are looking at for the NT. We are hoping you can tell us! Have a look at figure 3 and compare the relative pasture growth on the map for your area to what you have experienced on the ground. Does it seem about right? For example if the map says the pasture growth from December to February was below average, is this what you have found? We would love to hear from you. Please contact the Aussie GRASS representatives at Katherine Research Station. Robyn Cowley 89739750 robyn.cowley@nt.gov.au, or Trudi Oxley 89739763 trudi.oxley@nt.gov.au.

Maps formatted by Diana Bryce, DBIRD, Katherine.