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Customising the Grazing Land Management Education Workshop to the Mackay Whitsundays region of Queensland

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Abstract

This project supports the continued customisation of the Grazing Land Management (GLM) education package. Meat and Livestock Australia (MLA) supported the initial GLM education package development, and in conjunction with Mackay Whitsunday Natural Resource Management Group (MWNRM) and the Queensland Wetlands Program under NHT2, a new regional version has been customised to the Mackay-Whitsunday region with local information and locally-calibrated decision tools. This version includes suitable case-study property examples and land type frameworks that are directly applicable to the region. However, GLM customisation for the Mackay Whitsunday Wet Coast region has proved challenging as there were limited research data and published studies from the region to help illustrate and reinforce key principles and practices of grazing management. A significant amount of locally-derived information on establishing and managing sown pastures has been incorporated. PowerPoint presentations and participant workbooks have also been customised and published for this new version of the workshop.

Executive summary

The Grazing Land Management (GLM) education package aims to increase awareness, understanding and uptake of grazing land management strategies and practices that are both profitable and sustainable. The initial development of the package highlighted the need for regionally specific information on which graziers could base their decisions. Accordingly, this project supported the customisation of the GLM package to the Mackay-Whitsunday region.

Customisation of the regionally specific GLM packages involved the following steps:

1. Collating locally-relevant publications, information, photos and data sets.
2. Developing a land type framework derived from producer surveys, reference material and discussions with agency staff.
3. Developing a local case study property which is used to demonstrate the financial and natural resource management implications of changed grazing management practices on land condition.
4. Reviewing materials at a technical review and pilot workshop, which includes local producers, who provide critical feedback to the development team.
5. Publication, which includes formatting by desktop publishers and editing to ensure consistency of style and appropriate language in accordance with the MLA EDGE*network* style guide.

A pilot workshop was held in May 2007 and the following recommendations were made:

- Amend utilisation rates – place a ceiling of 50 percent utilisation for improved pastures.
- Broader description of establishment of sown pastures.
- Case study changes to reflect more practical application.
- Inclusion of spreadsheet highlighting associated costs in moving from cane to cattle – to include in the toolkit of handy tools.
- Provide research examples of Giant Rats Tail grass control.

As the workshop is rolled out, additional locally-relevant case studies, photo standards and pasture growth measurements will be accumulated and integrated into the workshop materials. . Information on the impact of grazing management on wetland condition was also included in relevant wetlands, sourced from the EPA wetland profiles (http://www.environment.gov.au/water/wetlands/qwp/), and from the GLM wetland module materials (Chilcott and McGrath, in press).

Contents

1 Background

The Grazing Land Management (GLM) education package was developed in response to an industry need for a product that would help producers improve the productivity and sustainability of their grazing lands. This has been driven by both:

- an increased recognition of the potential to enhance grazing management to meet the goal of sustainable beef production; and
- an increased recognition of the link between poor land condition and negative off-site environmental impacts, such as soil erosion.

The GLM package aims to contribute to increased awareness, understanding and uptake of grazing management strategies and practices that are both profitable and sustain the natural resource base of the grazing enterprises.

The initial GLM development took place in four regions (NAP 3.325 Development of a Grazing Land Management Education Program for Northern Australia):

- Burdekin Catchment, Queensland
- Burnett Catchment, Queensland
- Victoria River District, Northern Territory
- Mitchell Grasslands, Queensland.

Emphasised during this initial development phase was the need to provide regionally specific information, such that further customisation should be done on a region by region basis. Since that initial development, new regional versions have been customised for the Fitzroy, Northern Gulf, Maranoa-Balonne and Mulga Lands of the Western Murray Darling Basin (supported by NBP.221). As of March 2007 there have been 37 workshops in Queensland with 500 participants representing 288 businesses.

2 Project objectives

This project supported the customisation of the GLM package to the Mackay-Whitsunday region, with most of the sourcing of materials and preparation of materials being supported by NHT2 funding. MLA funds supported the editing and desk-topping process.

The MLA project funding had the following objective:
By 24 August 2007:

- Produce the revised workbook, PowerPoint slides and facilitation manual and deliver them to MLA as desk-top published documents ready for use in workshop.

3 Methodology

The customisation of the GLM package was based on the existing workshop materials, modified and updated to meet local land types and production systems. The customisation of the GLM package involved the following steps:

1. The collation of locally relevant publications, information, photos and data sets. This involved a technical meeting with local grazing experts and agency staff to provide assistance and feedback.
2. Development of a land type framework for the region. The land types were chosen based on vegetation and soil characteristics, and defined in terms that landholders use referring to their units of management (eg. Alluvial flats and plains). Nine land types were identified. The collation of the land types for the catchment was derived from producer surveys, reference material and discussions with agency staff. Given the variety of schemes used to describe land types for different purposes (eg: regional ecosystems, Australian soil classifications, land

units), a major task is to combine those schemas, which have been added to the land type sheets. The land types formed the basis of the pasture growth simulation modelling, with a number of climate locations modelled. These pasture growth output tables are the basis of the long and short term carrying capacity, and forage budget calculations. The output of the pasture growth tables were calibrated against producer expectations of long term safe carrying capacity, with the utilisation rates derived from published research in combination with local observations.

3. Development of local case study properties, that are used to demonstrate the financial and natural resource management implications of changed grazing management practices on land condition. The case study properties are based on local land types, and include a range of topical management issues relevant to the regions, including overgrazing, sown pastures, and weeds. Each case study scenario was analysed using the Breedcow, Dynama and Investan steady state herd modelling and financial analysis programs.
4. Review of the PowerPoint slides and participants workbook in each of the seven theory modules and including local material that enhances the relevance of the package to the region. The majority of the local material came from local research, for example in the Mackay Whitsunday region Bishop (2007) and Walker (1980) had undertaken several investigations into sown pasture production on a commercial property south of Mackay, including assessments of the impact of fertiliser and sown legumes on pasture production. The findings of these studies and the data were integrated into the pasture production modelling and the Sown Pastures module in this version. A challenge has been to gather information and data that is in a useable format and that has clear and succinct messages. Some of the locally researched information could not be incorporated as it did not provide a succinct message (which is important given the time limitations associated with the delivery of the workshop) or it did not meet the relevant learning outcome required in the module.
5. All materials were tested in a technical review pilot within the region, with the outcomes used to adjust the materials prior to finalisation. The outcomes and feedback of the regional pilot workshops are provided in the following section.
6. All materials are finalised, formatted by desktop publishers and edited for style and consistency in accordance with the publishing standards of MLA EDGE*network*.

4 Results and discussion

As part of the customisation of the regional GLM educational materials a technical review and pilot workshop was undertaken in each region. The outcomes of each region are summarised below:

4.1 Mackay Whitsunday

The pilot workshop was held in Mackay on 22-24 May 2007. Seven producers from across the catchment attended along with one representative from the MWNRM and one local agency staff member.

What they liked:

- Use of iconic models, “Minties exercise” to explain the energy flow and the “sponges exercise” to demonstrate plant available water content.
- Specific information relating to sown pasture and establishment
- Planning exercise – an opportunity to develop their property management plans that are a requirement of MWNRM group’s incentive funding
- The long term carrying capacity exercise

What could be improved?

- Case study development - refined
- Local research examples of introduced weed problems, such as GRT and lantana.

The recommendations from the pilot were included in the final materials. Additional pasture growth estimates were required for some of the land types, particularly improved sown pastures.

Additional changes were made following a review by MLA. Changes made are included in Appendix 9.1.

5 Success in achieving objectives

Locally relevant information has been accumulated in all regions and the customisation of the Mackay Whitsunday version of the GLM workshop is completed. All workshop materials have been edited and formatted in accordance with the publishing standards of MLA EDGE*network*, and have been sent to MLA on a compact disc.

Pilot workshops have been held as part of the customisation process in each region. The Mackay Whitsunday version has been presented as a completed commercial workshop with an additional workshop scheduled for October. Materials for all workshops have been published and are ready for use.

The Mackay Whitsunday Natural Resource Management (MWNRM) group have encouraged graziers who receive funding under their Sustainable Landscape Program to attend a GLM workshop. All graziers who receive funding are required to complete a grazing management plan and it is viewed that the easiest way to achieve this is to attend a GLM workshop. It is anticipated that at least 40 graziers will attend the GLM workshop under this scheme.

6 Impact on meat and livestock industry - now & in five years time

The initial development of the GLM workshops and subsequent customisation supported by this project will aid in the transfer of research results and best practices recommendations to land managers throughout Northern Australia. There are now eleven GLM customised regions in Queensland:

- Northern Gulf
- Burdekin
- Mitchell Grass Downs
- South East Queensland (formally Burnett)
- Mulga Lands
- Maranoa Balonne
- Fitzroy
- Southern Gulf
- Desert Uplands
- Channel Country
- Mackay Whitsunday

The impact of the workshops on achieving change and improved profitability and sustainability will be difficult to isolate from other natural resource management initiatives currently underway, e.g.: NRM regional bodies funded through the National Action Plan for Water Quality and Salinity and the National Heritage Trust 2.

The Department of Primary Industries and Fisheries will continue to use the GLM workshops as part of an engagement process to improve grazing land management and profitability. Ongoing evaluation of the effectiveness of the workshop will establish the impact of the package on the Meat and Livestock industry in the future.

7 Conclusions and recommendations

Through this project a number of recommendations for the GLM workshop delivery arose:

- Continual development of locally relevant photo standards for forage condition and land condition based on the land type framework used within the workshop
- Finalise customisation in regions across Queensland where a package is not currently available (Border Rivers, Traprock and Northern Tablelands, Condamine, Eastern Downs).
- A review of the technical manual once all regions within Queensland have a customised version of the GLM workshop. This would involve an update of recent project findings and new publication, cross-referencing to the participants workbook, and inclusion of supplementary issues in grazing land management (wetlands, nature conservation and biodiversity, “StockTake” Monitoring Package).

8 Bibliography

Bishop HG (2007) Pastures: Mackay Whitsunday region – a guide fore developing productive and sustainable pasture-fed grazing systems

Hardy, S. (2003) Soils and land suitability of the Whitsunday Coast area – Central Queensland, Whitsunday Shire Council, Prosperpine

Rohde, K., Masters B., Brodie, J., Faithful, J., Noble, R., Carroll, C. (2005) Fresh and Marine Water Quality in the Mackay Whitsunday region – Volume 1 Main Report, Queensland Natural Resources and Mines

Walker, B (1980) Effects of Stocking Rate on Perennial Tropical Legume Grass Pastures, pHD Agriculture Thesis, University of Queensland

http://www.environment.gov.au/water/wetlands/gwp/

9 Appendices

9.1 Appendix 1: Changes made to MW workbook

Module 1: Welcome to the GLM workshop	
1 8 “To produce beef cattle to market requirements while maintaining the condition of the native vegetation, grass and soils for future production.” Perhaps this should read ““To produce beef cattle to market requirements while maintaining the condition of pastures, soils and remaining native vegetation for future production.” This would better reflect the general reliance on improved or naturalised pasture in the region.	Change made
Module 2: Understanding the grazing ecosystem	
2 8 ‘declines’?? Should this not be ‘probability’?	Changed to probability
2 11 rainfall ranges for high, medium and low years, relative to SOI, seem far too low to be Mackay figures	Independently reviewed and existing SOI deemed suitable. Please note that SOI data is generated for each workshop and provided as an additional handout
2 15 SOI by rainfall by pasture growth table: no increased probability of higher median growth in positive SOI years? Seems a bit out of kilter. How valuable/reliable are these analyses?	Independently reviewed and existing data deemed suitable
2 25 C condition photo not an appropriate or representative example. Better examples could come from Jeff Bahnish’s photos from his Downs pastures project.	Photo replaced
2 27 wildfire, overgrazing	Change made
2 40 are burrowing bettongs a good example of biodiversity concerns on the M-W region?	Replaced with photo of squirrel glider
2 43 identifying key plant species listed as a learning outcome but seems to be no mention of the desirable and undesirable species in the region	List of desirable and undesirable plant species are in the power point slides and in the publication titled “Pastures: Mackay Whitsunday region – a guide for developing productive and sustainable pasture-fed grazing systems” which is handed out as part of the toolkit
Module 3: Managing Grazing	
3 1 unnecessary gap in line ‘They are also worried about….	Change made
3 10 with less frequent resting, ‘an upper utilisation level of 35-40% may be possible’	Change made
3 10 utilisation rates for M-W: 15-50% why the range and for what land types are they applicable to; all the previous text was about 30% and the logic for the range presented is not made clear.	The range came from producers themselves and is based on native pastures (low utilisation) and improved pastures (higher utilisation). Land Types are provided in a separate booklet. It was decided to keep the 30%

	in other parts of the text until further information from the 2 swiftSYND sites in the region become available.
3 14 In summary, we manage utilisation by: • assessing and managing long-term carrying capacity • assessing and managing the short-term carrying capacity • timing of pasture spelling • improving the evenness of grazing This part presumably is meant to link the earlier discussion with the next, but comes out of nowhere with no context. In addition, the subsequent section does not follow on from the indicated order of the dot points.	In the workbook it is now in a box to indicate that it is a summary for that whole section
3 21 'improved' in first column is meant to be there?	Yes, it applied to improved pasture
3 22 gap in line: 'Thankfully it has the same land types……..'	Change made
3 21-23 For Roly's block in activity 8 to be comparable to the Kitchener paddock in activity 9 (in terms of the impact of C versus A condition), it must not only have the same land types but the same areas of each land type! As an example, it seems contrived and potentially confusing; would be better to do a different paddock with say 2 land types and do it for both A and C condition.	The activity has the same land types and the same areas of each land type
3 24 the first line, 'Short-term carrying capacity refers to:; is redundant.	Change made
3 24 Option 3, the trading approach, would require significant adjustments in cattle numbers at least 2-3 times each year, not just once.	Change made
Module 4: Sown pasture	
4 13 "About 30% of the paddock is made up of good 3P grasses and the remaining 70% is made up of weedy pasture species due to previous overgrazing. It has low soil fertility but good sown pastures and is mostly made up of Callide Rhodes grass." This is contradictory; the paddock can't be mainly in weedy condition and have good sown pastures!	A complete review of this economic scenario was undertaken. It was decided to limit the number of options so as to simplify it. It was also decided that there are too many variables to do a rigid economic scenario so a live excel sheet will be worked through with the group to discuss the cost of sown pastures and the potential return it may or may not offer. This was tested in the Sarina workshop and it proved very poplar.
4 13 ……Presently the LWG and calving % are low.	
4 14 "Benefits of urea (N) only applied in high rainfall areas or when rain highly likely is only available for the short-term (2–3 months)." This	

sentence does not make any sense, either grammatically or biologically.	
4 15 The return on investment for production outcome 2, 41.73%, seems high. Have the assumptions been checked against local knowledge?	
4 16 Is use of fire as a management tool more likely in the drier areas rather than with higher-rainfall fertilised pastures?	Change made
4 18 There is no list of suitable grass and legume species for different areas of the region, but this may be within the PowerPoint presentation and/or booklets distributed at the workshop.	List of desirable and undesirable plant species are in the power point slides and in the publication titled "Pastures: Mackay Whitsunday region – a guide for developing productive and sustainable pasture-fed grazing systems" which is handed out as part of the toolkit
Module 5: Managing with Fire	
5 3 "Promoting new growth and controlling regrowth, land condition and rainfall use can enhance efficiency" should read: "Promoting new growth and controlling regrowth can improve land condition and rainfall use efficiency"	Change made
5 4 line gaps in "Thinking back, how much have fire regimes changed on your place or in the region? Has the frequency, timing and intensity of fires changed in the last 5–20 years? What factors now influence the way you manage fire on your property?	Change made
5 5 "Burning removes rank (phase 4) grass promoting new growth (phase 1) and improving diet quality." Should probably read "Spring burning……."	Change made
5 12 "The graph above demonstrates that as stocking rate increases, the chances of having enough fuel to burn reduces." There is no such graph in the manual.	Paragraph removed
Module 6: Managing tree-grass balance	
6 4 "The way we manage the balance between trees and grasses can affect land condition in a positive way by improving nutrient and water cycles or, in a negative way, by competing for ~~available~~ moisture and nutrients ~~for pasture growth~~. Trees may also affect the diet quality gateway ~~with~~ via browse species"	Change made
6 5 "Woody plants compete with grasses for soil moisture and nutrients ~~with grasses~~,	Change made

so thinning and clearing to increase grass production has been common ~~and continues to occur~~."	
6 8 "If you kill trees, then grass growth will be higher as the grasses are able to capture released nutrients (from decomposing tree roots) and water competition is removed. The increase in production from removing trees will be short-term." **This should read**: "If you kill trees, then grass growth will increase due to removal of competition. Also, for a short time at least, growth of pasture near dead trees will be even higher than that of pasture in the inter-tree zone as the former pasture benefits from the improved soil structure and higher nutrient levels accumulated under trees."	Change made
6 10 The y-axis of the graph should read "Distance (m) from tree strip" and the column labelled 'bush' should be labelled as 0.	Change made
6 11 "has reached a tree basal area (TBA) in some areas of 6m2 per hectare and in other areas 11m2 per hectare." Is there not a superscript font available for the m^2 ?	Change made
6 13 This section should indicate that clearing of remnant is no longer permitted and that, even for regrowth, producers should first check with the DNRM before doing any form of clearing or thinning. In addition, one assumes that the main issue for producers will be when and how to control and manage regrowth in areas mapped as 'white' on their PMAVs. Therefore this section should be more targeted at these challenges rather than on clearing per se.	A review of the section was undertaken and rewritten to reflect current legislation in regards to tree management
6 14 "The graph below shows us data from a grazing trial at Wambiana near Charters Towers. It shows how good fire and grazing management gives us the options to burn to control invasive plants, like currant bush. Every time there was a fire (the arrows), the canopy area of currant bush was greatly reduced, thus increasing the capacity to grow grass." The graph does not have arrows indicating the time of fire, as it simply shows the effects of one fire across a number of paddocks at the Wambiana grazing trial. Perhaps the graph was meant to be one representing the work on burning of currant bush by Paul Back near Mount Coolon??	It was decided to remove the graph and the paragraph as currant bush is not an issue in the region

6 15-18 Following on from above, the sections on 'Risk factors' and 'Conserving native plants and animals' should relate to how best to manage, retain and control regrowth. These sections are written as if clearing of remnants is the major issue at hand, whereas this is no longer an option!	A review of the section was undertaken and rewritten to reflect current legislation in regards to tree management
6 20 Again this section on planning woodland mgt appears to focus on mgt of intact woodland rather than regrowth. In note the case study issue deals with regrowth, thankfully, but the text of this module should be consistent with the fact that regrowth mgt is now the real issue, not mgt of woodlands as a whole.	A review of the section was undertaken and rewritten to reflect current legislation in regards to tree management
Module 7: Managing Weeds	
7 1 "Their main concerns are: • the spread of giant rats tail grass (GRT) throughout the whole of Roly's Block" I suggest thus should read, "…the likely spread of giant rats tail grass…..' as it appears to be only in one part of the property at this stage.	Change made

9.2 Appendix 2: Media Press Releases

Bush TELEGRAPH

p6

Tuesday, Feb 20 2007

Role helps graziers fine tune pastures

By SONIA BALL
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GRASS isn't just grass.

For graziers it's pastures, and how they manage it determines the effect it will have on their hip pockets.

And in a newly created DPI&F role to help producers fine tune and work it out is DPI&F extension officer Grazing Lands, Caroline Sandral.

Ms Sandral's role involves collating previous research and information, aimed at increasing producer profit and sustainability, and putting it into a practical workshop format that will be easy for producers to implement.

Ms Sandral moved to Mackay early in the new year from Emerald where she spent two-and-a-half years with DPI&F. Before Emerald she spent some time in Bourke, NSW working with Infrastructure, Planning and Natural Resources.

"I'm very excited about the new role — with all of the research that has been undertaken, including a lot of Harry Bishop's work, it hasn't been getting to the producer in a very useable format and that's the idea behind Grazing Land Management's (GLM) workshops," Ms Sandral said.

"My role is to customise these workshops to suit the Mackay Whitsunday region and Far North Queensland."

And because all grazing land and land management styles were different, the workshops were designed with the flexibility to be tailored to suit all types of circumstances, she said.

The aim of GLM's workshops is to provide key management tools for the more even use of grazing land — not just for sustainability but also production.

"Everyone who attends one of the three-day workshops will go away with a grazing management plan, a small project to implement straight away.

"One of the very important parts of the three-day workshop is the follow-up."

"Each workshop presenter has substantial practical experience in grazing land management, including knowledge of on-farm issues and close involvement with relevant research. As a participant you have ongoing access to the presenters, even after the workshop ends."

Workshop topics include: understanding the grazing ecosystem, managing grazing, managing with fire, balancing trees and grass, pasture improvement, managing weeds, and developing a grazing management plan.

The first GLM workshop is expected to be held in early May.

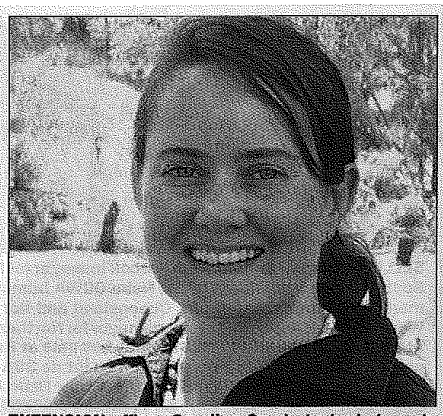
Central region graziers interested in attending a workshop can contact Caroline Sandral at Mackay DPI&F.

RIGHT: Caroline Sandral, extension officer, Grazing Lands, with DPI&F, with a grass sample ready for separation in the laboratory to test the pasture's growth and nitrogen levels.

Picture: SONIA BALL 150207/805

Wild sorghums tapped

"THE DAILY MERCURY", MACKAY **DATE:** 11-9-07.



EXTENSION officer Caroline Sandral who is launching the grazing land management package with workshops at Sarina and Pioneer Valley.
Picture: Contributed

Better grazing forum's focus

CUSTOMISING grazing land management, aimed at Mackay-Whitsunday cattle producers, will be the focus of a series of workshops at Sarina and the Pioneer Valley this month.

Department of Primary Industries and Fisheries grazing lands extension officer Caroline Sandral said the Mackay-Whitsunday Grazing Land Management (MWGLM) workshop content was based on valuable feedback from regional landholders.

Ms Sandral, who packaged the widely-accepted Fitzroy GLM course, convened a Mackay-Whitsunday pilot workshop involving livestock and industry stakeholders to identify relevant pasture and natural resource management issues.

DPI&F's experienced extension team is now set to present the three-day workshop course at Sarina from September 25 to 27 at the Sarina Bowls Club and at Pioneer Valley at the Mirani Golf Club from October 30 to November 1.

"These workshops help producers develop action plans that weigh up property improvement options backed by an understanding of the grazing ecosystem to ensure the enterprise remains sustainable and profitable," Ms Sandral said.

"Our pilot workshop series conducted in May identified cattle breeding as the core business pursuit of the majority of Mackay-Whitsunday coastal grazing properties.

"Unlike their producer counterparts operating more extensive grazing holdings across the Fitzroy Basin, the Mackay-Whitsunday regional producers are engaged in more intensive grazing systems.

"They are able to utilise reliable summer rainfall in combination with fertiliser to develop highly productive improved tropical pastures."

The workshops were also designed to provide the information and tools to help manage climate variability, maintain native and improved pasture , manage coastal wetlands and understand relationships between water, soils, woodlands, biodiversity, use of fire and weed control.