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The 22nd International Grassland Congress (Revitalising Grasslands to Sustain Our Communities) took place in Sydney, Australia from September 15 through September 19, 2013.

Proceedings Editors: David L. Michalk, Geoffrey D. Millar, Warwick B. Badgery, and Kim M.

Broadfoot

Publisher: New South Wales Department of Primary Industry, Kite St., Orange New South Wales, Australia

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Grassland management – The PROGRAZE™ approach

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Abstract. Three courses PROGRAZE™, PROGRAZE™ Plus and STOCKPLAN® have been developed to provide a complete package to assist farmers manage their variable grassland grazing systems. As each package is separate the farmer can use the relevant tool to help them work through major issues they are dealing with at any point in time. All courses are based on the same principle, they do not give answers but rather provide training in skills development, provide key background knowledge and a framework to assist farmers plan and if needed to work through their problems to reach a solution they are comfortable with.

Keywords: Grassland management, decision making, livestock production targets.

Introduction

Sustainable management of productive grasslands is a compromise between matching the requirements of the plants and the grazing livestock to meet profitable production targets. Additionally, variable weather, within and between years, makes grazing management more complex. Grassland managers require a flexible management system because fixed management options do not work due to the high variability within and between years with these systems.

Managers need to understand and be able to assess the key requirements for:

- Individual species that make up the grassland;
- The long term survival of the individual grass-land species;
- The importance of groundcover to reduce wind, soil erosion and clean water runoff;
- The impacts of grazing and rest on the mixed grassland;
- Animal production from grassland. (*i.e.* herbage quantity and quality);
- Animal production as influenced by age, sex, weight, pregnancy, lactation or growth; and
- Matching the variable grassland quantity and quality to changing livestock requirements and production targets.

With these skills managers are then able to make a series of short term decisions to manage their grassland system to achieve their required livestock production targets. A set of these decisions will be common between years, (*e.g.* the reproduction cycle timing) but others will vary due to the changing feed supply, market requirements and drought. A producer's understanding of their system needs to allow them to be flexible to meet the forever changing challenges.

PROGRAZE™ Workshop

In the early 1990's NSW Agriculture decided that to improve the management of the grazing system and to take advantage of new technology, for example GrazFeed (Freer *et al.* 1997) that a course was required which would enable farmers to develop their skills and understand the key issues listed above. GrazFeed was released in 1990 and extension staff had become comfortable with the output of the program. A small group of experienced extension staff developed the course making extensive use of the relationships derived from GrazFeed. The relationships between herbage mass/quality and livestock growth were turned into grassland benchmarks which farmers could use in daily paddock decisions. The skill to assess the grasslands for herbage mass and quality is the foundation for the majority of grazing management decisions.

PROGRAZE™ develops meat and wool producers' skills in grassland and livestock assessment, plant species recognition and enhances their knowledge and understanding of the grazing system. PROGRAZE™ assists participants identify ways these skills and knowledge can be used to improve grazing management decisions. The course is delivered in 8 segments to cover the annual pasture/livestock production cycle.. Groups consist of participants from about 15 farms, with all those involved in grazing management decisions on each farm encouraged to participate. The cost to participants is on a per farm basis to encourage broad participation. Delivery of PROGRAZE™ encompasses the principles of adult learning. While there is a structured component to each segment, an open approach is encouraged to recognise producer expertise and facilitate learning through peer interaction and interdependency between deliverers and participants (Bell and Allen 2000).

Other key aspects of the course include participants developing grassland and animal assessment skills using action learning principles as well as learning from peers. Grassland assessment exercises are conducted in all segments as repetition is required for the skills to be

developed. This allows current problems and solutions to be discussed. Theory is embedded into the actions farmers can take on their own properties. These on farm examples are a powerful opportunity to train producer to use problem solving techniques and show how the skills learnt can be used to come to a solution. A manual was developed to provide a reference to the practical farm sessions. The current edition is the 8th version. Issues raised by participants are discussed when they are raised to ensure relevance for participants. This often results in issues which are covered later in the manual being covered in earlier sessions.

The eight segments appear in the manual under the following headings:

- Production, Profit and sustainability and an introduction to grassland assessment;
- Livestock production from grassland ;
- Introduction to GrazFeed®/Production targeting;
- Sheep breeding package;
- Cattle Breeding Package;
- Grasslands and grazing;
- Fodder budgeting and grazing for worm control; and
- Putting it all together.

During development of the course it became apparent that there had to be a limit to the number of topics that could be covered to maintain a focus on the key issues. This was done to ensure that the course did not become too long and to ensure that it achieve the desired impacts.

There is not one right answer for managing properties regardless of the season. Farmers need to analyse their own situation (enterprise, infrastructure, debt, personal goals, labour, age.), which will vary from their neighbours, to be confident that their action will take them in a direction they want.

The first PROGRAZE™ course was run in NSW in 1994 and it has been run in every year since, completing 472 groups involving 8022 farmers covering all of NSW except for the western pastoral division where a sister program called tactical grazing has been conducted. This is the longest running training package in NSW DPI's 120 year history. PROGRAZE™ delivery started in Victoria, South Australia and Tasmania in 1995 and in Western Australia in 1996. The authors are not aware of the details for those states.

The impact of PROGRAZE™ has been wider than the numbers listed. The grassland benchmarks have been used in many other industry programs and references in publications to the PROGRAZE™ manual are common. Farmers who have not attended a course have picked up ideas from their neighbours. Another group to benefit were the staff trained to deliver the course, as these staff have developed a better understanding of whole farm grazing systems in their location and this has had a positive impact on advice given to all farmers. This benefit could be as large as the benefit directly from the courses.

Surveys were implemented to measure the impact of PROGRAZE™ on the attitudes and practice change of participants. The surveys were conducted at the start and at the end of each course with the two surveys being similar

to measure the skill and knowledge change by participants. In addition a mail survey was also conducted about 12 months after participants completed the course to assess the extent to which the skills and knowledge were being implemented on-farm. There was strong evidence in the surveys that PROGRAZE™ was successful in improving skills, knowledge and understanding of grassland and livestock management.

In addition there was also evidence of practice change by participants. Participants expressed strong support for the program with most indicating that PROGRAZE™ had met or exceeded their expectations. Ninety-nine per cent indicated they would be prepared to recommend PROGRAZE™ to other farmers (Bell and Allen 2000).

In 1996 an independent review of PROGRAZE™ by the Rural Extension Centre, University of Queensland was conducted (Coutts and Daniels 1996). Some of the key findings from the review were;

- “There was strong evidence that PROGRAZE™ is successful in improving knowledge and understanding of improved grassland and animal management amongst participants, resulting in changes in attitudes. Changes in farm practice appeared to result from a change in attitude to decision making rather than the adoption of specific technologies or techniques.”
- “There was a significant shift in the level of confidence that farmers reported in their decision making ability and a high level of certainty that the changes they were making would increase their farm profitability.”
- “PROGRAZE™ appears to be an effective framework for extension delivery with co-learning principles. Workshops were viewed as flexible and locally relevant with its strength lying in peer interaction.”

The 12 month post course surveys conducted by NSW Agriculture from 1998 to 2001 contained similar results to the Coutts report as did an ABARE report commissioned by MLA in 2001. The NSW Agriculture survey data had a 52% return rate and there were 442 returns, 89% indicated their participation had resulted in improved financial returns to their farm and 96% considered they had more productive and sustainable pastures through the use and adoption of skills and knowledge gained in PROGRAZE™.

In 2007 an internal economic review by L. Davies, based on data from farmers who had completed the course in the mid 90's, showed a 23% return on capital invested, as a result of actions taken on farm post the course. There was a list of other factors which had resulted in production improvements but these were too difficult to include in the calculation, so the 23% is a conservative figure.

One of the factors identified was improved communication on large properties once all staff had completed the course. It was stated that this saved time and had resulted in less mistakes due to the fact a common language was being used by all staff to describe grassland and livestock resulting in better decision making. This comment is also applicable broadly to the whole industry.

Bell and Allen (2000) identified four factors as important contributors to the success of PROGRAZE™:

- PROGRAZE™ addresses issues and needs that farmers readily recognise as being important to

improving the efficiency and stability of their grazing systems;

- PROGRAZE™ takes a holistic approach, integrating issues such as the influence of grassland characteristics on livestock production; the influence of grazing on grassland production and composition; managing the complexity of this system to achieve production and market targets for livestock, while aiming for efficient utilisation and stability of grasslands;
- PROGRAZE™ uses adult learning principles as a component of course delivery. The overall course and meeting structure assists farmers' understand the underlying principles of grazing systems;
- The high standard of technical expertise and presentation skills of deliverers. Participants identified the presence of deliverers from different technical disciplines at each segment of the course as being important. This allowed the group flexibility to pursue technical issues broader than those contained within the PROGRAZE™ manual.

PROGRAZE™ Plus

In 1996 six groups who had completed PROGRAZE™ were asked if additional material was needed. A common request was for “something to help us plan the whole farm grazing decisions”. Participants stated that ‘it was easy to apply the principles at a paddock level but it became more difficult as the number of paddocks and grassland types increased’.

In response to this participant feedback a national committee was formed by Meat and Livestock Australia which led to the development of the PROGRAZE™ Plus course. This course is based on a computerised fodder budgeting program, PROPlus (McPhee 1998) developed by NSW Agriculture. This course assumes the producer has completed PROGRAZE™ and in 5 sessions teaches the farmers to set up PROPlus on their property. The program allows participants to examine issues over a known time scale and intensity. PROPlus can handle up to 100 paddocks but participants usually model the grassland for the growing season and group similar paddocks together. This may reduce the number of paddocks modelled from 45 to perhaps 5 to 8 groups. This allows participants to identify the major problems or advantages but with less time involved. The major use of PROPlus has been to model winter growth to predict whether the grassland will meet the benchmarks for lambing or calving. The program predicts the size and timing of the feed gap which allows proactive decisions to be made much earlier. This allows management decisions to be made before other farmers. In a feed deficit year this allows the producer to destock earlier at higher prices or purchase fodder prior to price rises. When a feed surplus has been identified PROPlus can be used to examine how much livestock trading can be carried out while maintaining groundcover and grassland health. The program quickly allows “what ifs” to be examined.

It was assumed that only the participants who were trying to increase their pasture utilisation rates close to the sustainable limits would be interested in this course. Our original estimate was 10 % of participants completing

PROGRAZE™. To plan the whole farm's grazing at a paddock level for the growing season (e.g. 6 months), requires a considerable commitment of time and effort so farmer's need a reason to make the effort worthwhile. Just fewer than 500 farmers have completed this course, an uptake rate of about 6 %.

STOCKPLAN®

The grazing system and farmers are placed under extreme pressure during droughts or dry spells and decisions made during these periods can have long term impacts on groundcover, grasslands, business cash flow and stock numbers. PROGRAZE™ was never designed to cover drought management in detail, although most of the skills and knowledge learnt in PROGRAZE™ are important tools which can be used during a drought. It was always accepted that an additional course would be required to help farmers work through the different set of questions that need to be answered to develop and implement an on-farm drought policy. The course which was developed for this task is called STOCKPLAN® (McPhee 2007).

The STOCKPLAN® course development was completed in 2002 and consists of three computer decision support tools (DST) which help farmers complete a drought planning template. The first DST is Drought Pack which takes the participant through a feeding strategy to determine the cost of feeding and the levels per day to meet the producer's production goals. The second DST is Feed, Sell, Agist which allows participants to examine these three options to assist them make a decision on which strategy to adopt. The third DST is called ImPack which is a ten year herd flock model which allows you to examine possible strategies and the resultant changes in flock or herd structure and the impact on the cash flow over a ten year period. The Plan Pack template in STOCKPLAN® allows farmers to develop their individual drought action plan.

The extended dry conditions in NSW from 2000-2008, resulted in 1350 farmers being trained to use the package in 1 day workshops. The STOCKPLAN® package was also used in South Australia, Western Australia, Tasmania and Queensland.

In 2006 a joint project with the Lachlan Catchment Management Authority (CMA) was conducted where the CMA offered incentive money to farmers to establish drought lots for sheep or cattle to protect groundcover on the majority of the farm during a severe drought. The training provided was through a 1 day workshop where the three DST's were demonstrated and farmers had the opportunity to use the programs. They were given a copy of the program and a manual to take home which stepped them through using the programs. This project was independently evaluated for the CMA and the following quote comes from the summary of the report;

“The survey respondents reported that on average they are more confident in their approach to drought management due to the training. This was the same whether participants took up incentives or not. There was general agreement that the content of the course was very useful in terms of developing drought management strategies – although some felt there was an information overload. The effectiveness and ease of use of the tools were rated highly

by most participants (7+/10) – a small number were not computer literate and had some difficulties in using computer-based tools. Benefits were seen in terms of productivity and environmental (groundcover) gains. Half of the survey participants reported productivity gains”

Conclusion

The 3 courses PROGRAZE™, PROGRAZE™ Plus and STOCKPLAN® provide a complete package to assist farmers manage their variable grassland grazing systems and are complementary to each other.

- PROGRAZE™ provides the skills and knowledge required to sustainably manage the grasslands and grazing system
- PROGRAZE™ Plus provides a framework to assess the risks and opportunities that exist in the majority of years. Most farmers use a conservative stocking rate as the way to manage variable seasons. PROPlus allows the stocking rate to be pushed to a risk level that the farmer is comfortable with.
- STOCKPLAN® provides the framework to enable farmers to plan a course of action for ongoing and post droughts. This is critical due to the lagged effects that droughts have on the cash flow and herd structure of a grazing business.

Because each package is separate the farmer can use the relevant tool to help them work through major issues they are dealing with at any point in time.

All courses are based on the same principle, they do not give answers but rather provide training in skills development, provide key background knowledge and a framework to assist farmers plan and if needed to work through their problems to reach a solution they are comfortable with. This is backed up by the comments quoted from the Coutts review, “a significant shift in the level of

confidence that farmers reported in their decision making”.

The economic review in 2007 showed increased net income which could be attributed to PROGRAZE™ was \$26,000 per farm (Davies and Graham 2007). Using the long term survey data where 53% of farmers responded to the survey and 88% of these indicated that they had an improved financial outcome this equates to 2993 farms with improved farm income. Using the extra income from this review and the 2993 farms it can be conservatively estimated that a total of \$77 million extra dollars of on-farm income per year within NSW can be attributed to PROGRAZE™.

The current development has moved into the e – learning area. STOCKPLAN® and PROGRAZE™ Plus have been developed and launch through Tocal College, www.tocal.nsw.edu.au. Prograze is still under development and will be available at the same site.

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