

# Reading the land: influences of property management planning courses on landholders' soil management activities in border rivers-Gwydir catchment management authority

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## Abstract

Property management planning (PMP) training for farmers is an opportunity to improve land management practices. An evaluation of the impacts of PMP training (Farming Management Systems, FMS) funded by the Border Rivers-Gwydir Catchment Management Authority (BR-G CMA) in NSW was undertaken. The analysis reported here focuses on interviews with farmer participants who had completed PMP training. The physical property plan was considered useful by farmers and continued to be used well beyond the training period. Interviewees generally recalled the need to maintain in excess of 70% groundcover for soil protection and to increase rainfall infiltration, and claimed to be using this threshold in their grazing management decision making. However, two issues emerged that require attention in designing subsequent training courses. One, the low level of natural resource condition monitoring by farmers even though this was strongly emphasised during the course, and two, the need to develop a stronger link in physical property planning between land capability assessments and farm management decision making.

## Key Words

Property management planning, land capability, physical farm monitoring, soil testing, ground cover.

## Introduction

Property management planning (PMP) has been an evolutionary process. In its original form the emphasis was on the completion of a physical farm plan based on soil type and land capability, with later iterations of PMP including: financial, enterprise, human resources, and biodiversity management into a strategic planning process. The incorporation of financial and human resource elements into the PMP process arose out of a number of reviews of pilot programs for PMP, where it became clear that only after the financial position and succession planning issues for family-operated properties had been addressed, could effective consideration and adoption of sustainable land practices take place (Chudleigh *et al.* 2003).

Legislative approaches to soil conservation issues have not been overly effective in bringing about large scale adoption of more sustainable land management practices. The PMP approach is viewed as a voluntary approach to drive change in attitude and increase adoption rates of best management practices (BMPs), by capacity building through training, and altering ways of thinking. In Australia, it has been reported in the National Land and Water Resources Audit, that formal monitoring of pasture and vegetation (25% of farms), regular monitoring of water tables (21 % of farms), and soil and plant tissue testing (59% of farms), are all examples of rural landholders adopting sustainable management practices (NLWRA 2002). However, monitoring alone will not lead to sustainable land management but is a necessary precursor for its achievement. For instance, the practice of soil testing is most likely used for determining fertilizer requirements (Nelson *et al.* 2004) - which in itself could be masking a loss of soil condition - and not often as a basis for monitoring soil condition.

In NSW, PMP Courses have included Farming for the Future (FFF, 1993-2001) (Chudleigh *et al.* 2003) and the Property Management Pilot Program (PMP Pilot) (Prior 2005), Farm Management Planning (FMP) and the current iteration of PMP referred to as Farm Management Systems (FMS, 2002 onwards). The area under investigation was the Border Rivers-Gwydir CMA (BR-G CMA). The BR-G CMA wanted to identify the influence of past and current PMP courses on:

- landholders' awareness of land management practices, and any associated changes in related activities.
- farm practices by course participants that demonstrate the principles espoused in the PMP course.

Specifically, a set of 'key land management criteria' as the minimum level of land management practice required for long term sustainability of the natural resource base of agricultural land (BR-G CMA 2008, p53). These criteria are at all times maintain: a minimum of 70% ground cover; a minimum of 1500 kg GDM/ha of pasture mass; a diverse range of annual and perennial grasses, shrubs and trees that enable rain to be used where it falls; continuous large surpluses of organic matter (litter) to improve soil structure and limit evaporation (minimum 2 t/ha); wind protection; and nutrient balance in soils.

## Methods

### *Location of and background to study area*

The BR-G CMA services the entire Gwydir Catchment (approx 26,500 km<sup>2</sup>) and the NSW portion of the Border Rivers Catchment (approx 24,000 km<sup>2</sup>). Both of these catchments are located within the Murray-Darling Basin. They are bounded by the Queensland border in the north and west, the Great Dividing Range in the east, and the Namoi Catchment in the south. The most recent versions of the BR-G CMA PMP courses are currently referred to as FMS. During 2007-08, the property management planning team worked with 207 landholders, and made approximately 100, one-on-one property visits. In total, over the last three years almost 550 landholders have completed property management planning with the Border Rivers-Gwydir CMA (BR-G CMA 2008).

The research was divided into 4 stages. This paper will focus on the results from stage 4. Stage 1 evaluated the course materials delivered in PMP courses over the last 15 years. This analysis was achieved by comparing the content and presentation of learning materials in the FFF and the FMS manuals. Stage 2 collated all course participant responses to course exit surveys. Exit surveys for 12 different PMP course cohorts were analysed in accordance with the study's objectives. Stage 3 assessed the quality of 62 applications (about 12 percent of the current FMS participants) for BR-G CMA incentive funds for on-farm projects and 4 on-ground works applications to gauge producer knowledge of sustainable land management practices. Incentive funds are only available to farmers who had undertaken PMP course and have an approved property management plan (BR-G CMA 2008). Applications were compared from participants who had undertaken training with both external and internal PMP course providers to determine if there were differences in their applications. Stage 4 conducted telephone interviews with PMP course participants over a range of PMP experiences, and time since completion. All interviewees had experienced FMS PMP course, and the majority (79%) had experienced the course recently (say in the last 3 years), with only two people having attended previous iterations of PMP before FMS PMP.

### *Stage 4: Telephone interviews with PMP course participants*

The focus of the interviews with course participant (n = 19) was on several themes which included: social profile of participants, FMS PMP course experience, comparison to other courses attended by participants, the construction of the farm map and assessment of the natural resource base, assessments of the quality of the PMP course learning materials, and financial and physical monitoring of the farm business. This paper will concentrate on the results from interviews with course participants on the farm mapping exercise (1 day of a 6-8 day course) and farm-level monitoring of physical aspects such as soil, pasture and ground cover.

### *Current land management surveys*

At the time this PMP course evaluation was conducted, there were also two larger land management surveys being undertaken. One, by the Bureau of Rural Sciences (BRS) of 1441 people in the BR-G CMA and had a 64.1% response rate (Hanslip *et al.* 2008). The other, conducted by the Australian Bureau of Statistics for 2007-08 over all 56 regional organisations in Australia, and sampled 33 000 agricultural businesses and had an 87.4% response rate (ABS 2009). These two surveys serve as reference points for corroboration of qualitative data collected from interviews.

## Results and Discussion

### *Farm mapping exercise and land capability*

17 of the 19 people interviewed had completed the farm mapping exercise, and only two were still not satisfied with the more recent version of the aerial photograph of their farm due to poor resolution. As well as mapping infrastructure, the majority had also mapped soil types and problem areas (74%). There needs to be additional training and support in the understanding of land management within capability, and how to assess land capability and its relationship to land management practices. Few interviewees had considered a remnant vegetation management plan or assessed the need for revegetation (13% of interviewees). Concerns regarding the extent to which PMP programs were achieving native vegetation and biodiversity conservation outcomes have been raised previously (Chudleigh *et al.* 2003). Sixty three percent of people interviewed still used or consulted the aerial photograph of their property post-training, some occasionally (25%), and others more frequently (75%). The majority of the course participants interviewed (68%) had completed the 'blue sky' mapping exercise where they were asked to plan for their property in an imaginative fashion, putting aside for the moment current infrastructure, and resource constraints on future developments. While many interviewees understood the concept of considering their property a 'blank canvas' for this exercise, most

only considered making ‘realistic’ modifications of their current infrastructure. To render this exercise more effective will require better preparation of participants so that they are not constrained by ‘what is’ but are open to ‘what could be’.

### *Physical farm monitoring*

15 of the 19 people interviewed could recall at least four of the key land management criteria, but not necessarily all of the specific values related to the criteria, except for those who attended in the last 12 months. The message that strongly resonates with PMP participants is the necessity to maintain at least 70% ground cover (80% of the 15 people). Interviewees expressed the view that if ground cover was maintained at this level, then other issues such as soil protection, reduction of evaporation, increased water infiltration, and pasture recovery were automatically addressed. This finding is corroborated by the ABS survey (ABS 2009) that showed that in the BR-G CMA that 38% of farmers had set a minimum target of ground cover at 76%. Also in the BRS survey (Hanslip *et al.* 2008) 79% of the respondents agreed with the statement that maintaining greater than 70% ground cover will improve the long-term productive capacity of the land. Sixty three percent of the PMP course participants had made changes since completing the PMP course, with those changes ranging from enterprise shift, fencing to land capability, and modify grazing practices. These results are also supported by the ABS survey (2009) that showed 37% of farmers in the BR-G region had changed grazing practices to increase ground cover. Most interviewees claimed that they were made more aware of the need to provide sacrifice paddocks for drought feeding through the PMP course, but still found the implementation impractical, and resorted to using travelling stock routes for drought feeding.

Several of those interviewed, who had attended PMP courses on multiple occasions, have also attended additional grazing or land management courses such as Grazing for Profit, Beefanomics, LANDSCAN™, Principle Focus, and Holistic Management, as well as being Landcare members. Fifteen out of the 19 people interviewed continued to have contact with the BR-G CMA, with 60% of those landholders applying or receiving funding to carry on-ground works. Several of the interviewees (5 of the 19 people) had spent several years implementing on-ground works that would constitute sustainable land management practices (Nelson *et al.* 2004). These works include: establishment of tree corridors and shelter belts, engineered woodlands, erosion control, fencing of riparian zones, conservation of remnant vegetation, amelioration of degraded cropping land, and providing alternative watering points for stock away from watercourses. All interviewees reported moving towards a greater degree of rotational grazing and away from set stocking.

About 21% of the course participant interviewed had completed a written strategic business plan, even though this was one of the tasks required of course participants to complete. More of the people interviewed (68%) had completed a ‘blue sky’ mapping overlay, and one response was “I think if I went back and looked at that overlay that I would have all but completed my aims over the last ten years.” Another response was “I have completed all the improvements that I want to do, and it was now just a matter of maintenance into the future.” Most interviewees reported that they monitored ground cover (85% of the 47% that indicated they were monitoring), but they did not measure and record the information. This is also corroborated by the ABS survey (2009) that showed for the majority of BR-G CMA farmers who monitored ground cover it was by visual means (60%). A minority of interviewees conducted time or plan grazing, and kept records using specifically designed farm record-keeping software. This level of commitment also included taking multiple photographs and keeping detailed records of the cattle grazing enterprise, but such examples were in the minority. A well-respected course participant, who had contributed substantially to the promotion of sustainable land management practices, commented: “what is the purpose of keeping written records if it doesn’t actually contribute to anything in the long run”. One response was “Over what period of time would you need to keep records in order to observe a real trend and by that time what was the usefulness of the records. We don’t all want to be scientists.”

Most course participants interviewed (59%) expressed an interest in a monitoring tool kit, especially if it was custom-designed for the particular user, and took a minimal amount of time to complete. The interest in a monitoring tool kit was the creation of opportunities to have CMA staff examine their enterprise, and have more immediate feedback on their grazing management activities. Nearly all the course participants interviewed had conducted soil tests. However, it is apparent that soil testing was conducted for tactical reasons and not for information on soil condition or identifying land capability. Some people interviewed adjusted fertilizer rates on a paddock-by-paddock basis due to increasing cost of inputs forcing them to be more strategic. Those interviewees that had attended the Industry and Innovation NSW, LANDSCAN™

course commented that it was an “essential partner to PMP training.” Responses to the new exit survey for BR-G PMP course, participants interviewed claim to be monitoring indicators of financial and physical farm health, but were not able to provide formal records. This may have some relationship to the lack of completion of strategic business plans. Either the purpose of these plans and the information required to complete them does not appear to be of value to landholders, or inadequate exercises are completed during the PMP course that would enable participants in PMP to construct such a plan. One interview participant did specifically comment that if work from the workshops was not completed close to the time of presentation then the work did not get done.

## Conclusion

Property management planning and implementation of management strategies identified in those plans is a core target for the BR-G CMA under Schedule S1.4 of the BR-G CMA strategic plan (BR-G CMA 2008). Property planning is viewed as a critical component of engaging landholders in the adoption and enhancement of management practices that sustain and improve the natural resource base on which these businesses depend. Specifically, the management target states that “by 2015, 1,500 landholders will have developed property plans and at least 500 of these will have implemented improved farm management” (BR-G CMA 2008). The BR-G CMA can provide those producers who complete a PMP course with incentive and/or on-ground works funding to assist with the initial development of infrastructure that will move those businesses towards implementation of sustainable land management practices.

While many learning and behavioral outcomes linked to sustainable natural resource management were achieved through PMP training, the participants’ involvement with their own farm monitoring was generally poor. Future PMP training should clearly define the purpose, tools, and management decision choices to justify the ongoing monitoring of key land management criteria. A clear purpose and justification for continued monitoring of the key land management criteria needs to be established. Virtually all survey respondents named 70% ground cover as the primary and critical key land management criteria for sustainability. Participants are using this criterion as a critical threshold for making decisions on when to move, agist or sell stock, rather than as a long term monitoring tool. Participants are applying those land management criteria that relate to specific decision making thresholds for short term management required to maintain profit, rather than for long term monitoring for changes in overall natural resource outcomes.

The ultimate aim is that the producer will continue to build upon that initial investment to bring about changes in land management to contribute to catchment targets that reduce long-term negative impacts and produce a net improvement in resource condition. Indeed, Hanslip *et al.* (2008) re-affirm this aim with over 70% of respondents having as the two top priorities for managing their property as: financially viable business and maintain resource condition. Browne (2004) concluded that the best outcomes for sustainable natural resource use were achieved when environmental outcomes were included in a whole farm business strategic management plan. Hence PMP should be supported as a effective strategy for raising awareness and enabling adoption of sustainable land use practices because it part of a whole farm management strategic planning process.

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