

ENVIRONMENTAL MANAGEMENT SYSTEMS ON-FARM VERSUS CATCHMENT OR REGIONAL LEVEL

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SUMMARY

Catchment management planning has progressed a long way in the past decade. The question on many peoples' lips is how individual farms relate to catchment health. This is unclear in many cases and relies on logic to make the links. Many people see environmental management systems as an important tool to help farmers contribute to catchment health. Does increasing the complexity of what is looked at in a farm business, or how it is done, improve the outcome in terms of catchment health? A trial involving the dairy industry is discussed in this paper.

Keywords: Environmental Management System, catchment health, environmental performance standards

WHAT IS AN ENVIRONMENTAL MANAGEMENT SYSTEM?

A proliferation of documents define an environmental management system (EMS) (Natural Resource Management Ministerial Council 2002; National Heritage Trust 2003; Department of Primary Industries Victoria 2003). These documents come from industry, state and commonwealth agencies. What they say is that a process of 'plan, do, check, review' is the basis for continuous improvement across the whole business (Figure 1), not just for 1 issue, e.g. vegetation, water use or greenhouse.

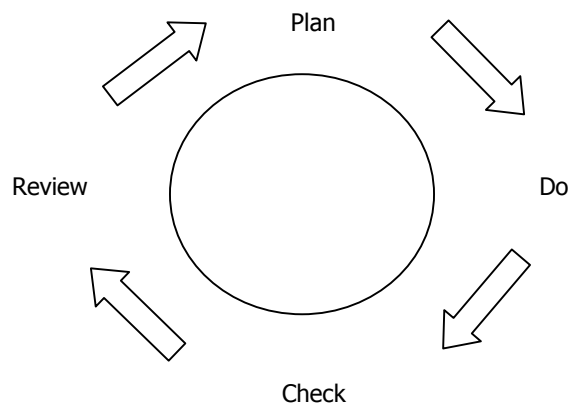


Figure 1. The continuous improvement cycle: the foundation for an environmental management system.

There is a tendency for people to drift into 1 of 2 camps:

- capital 'EMS', or
- small 'ems'.

The distinction can be viewed as 'EMS' going to the ISO 14000 level of certification (internationally recognised standard for EMS established by the International Organisation for Standardisation (2004)), with 'ems' involving the principles, but not necessarily all the formality.

WHY LOOK AT EITHER LEVEL OF EMS?

Many industries have made great progress on the 'clean' part of the 'clean and green' image. Tidying up chemical use and other factors impacting on food safety have taken the top priority. Now these industries, including the dairy industry, are looking at the 'green' parts.

Two main drivers are often cited as reasons to get involved in EMS. They both relate to projecting a green image. These drivers are to:

- receive premiums or gain/retain access to markets, or
- retain access to resources (e.g. water).

There are also benefits to individual businesses in many cases in terms of setting priorities and improving their environmental management. However, there are words of caution about the value of EMS as illustrated in the words of the Productivity Commission that said that EMS "... in agriculture may contribute to improved ...productivity and/or environmental outcomes, although evidence to date is limited on both counts" (Productivity Commission 2002).

ENVIRONMENTAL STEWARDSHIP PROGRAM

As part of the Murray Darling Basin Commission Watermark program, the Environmental Stewardship Program has been looking at whether increasing the complexity of the review process results in better environmental outcomes.

Dairy trial

In northern Victoria, the dairy industry put up its hand to be involved as 1 of the industry trials (the other 3 are cotton, rice and viticulture) as irrigation dairy farmers, and the industry in general, wanted to be able to demonstrate the good progress being made in natural resource management. Known as the Dairy Stewardship Trial, this project suggested that stewardship is:

"demonstrating good management of the resources".

The principles of EMS underpin the Dairy Stewardship Trial program that includes farm issues like:

- water (irrigation, runoff, groundwater),
- nutrients (fertiliser, effluent, manure),
- biodiversity (vegetation, fauna),
- pests (plants, animals), and
- chemicals.

Set standards

What set the Dairy Stewardship Trial apart at the start of its development was the setting of standards to be achieved. These standards served 3 purposes by:

- demonstrating how well the farm was going,
- identifying how far there was between current practice and best practice, and
- helping the farm business set priorities for environmental change.

Reviewing relevant catchment strategies (Goulburn Broken Catchment Management Authority 2003) and plans to determine what the priorities were enabled standards to be set. These were used along with legislation and related policies to determine what was an:

- outmoded outcome (illegal or unacceptable to the community and industry),
- minimum standard (where the industry wanted to see all its members), and
- best practice (what was recommended and being achieved on some farms).

Scorecard

The standards were incorporated into a scorecard, an example of which is shown in Figure 2.

<i>Irrigation Off-farm drainage</i>	A Best Practice	B	C Minimum Standard	D	E Out-moded	Score
<i>Outcome Runoff</i>	No irrigation water leaving the property		Intermittent irrigation runoff leaves the property		Irrigation runoff occurs after every irrigation	
<i>'The outcome can be achieved by a combination of some of the actions below'</i>						
<i>Action Proportion drained</i>	All irrigable area drains to reuse that is practical to do so		50% of irrigable area drains to reuse		No irrigable area drains to a reuse storage.	
<i>Action Storage</i>	Sufficient reuse storage for 0.75 ML/ha of perennial irrigated area		Sufficient storage reuse for 0.025 ML/ha of irrigated area		No storage reuse in place	
<i>Action Pump/motor</i>	Permanent pump and motor on reuse system		Portable motor and permanent pump		No portable motor and/or permanent pump	

Figure 2. Sample of the scorecard for the Dairy Stewardship Trial.

Catchment standard

What was challenging was to know where the catchment standard sat. Was best practice going to achieve the desired catchment health, or would it take more or less effort? This question is not resolved for most issues. That is, we do not know whether by everyone achieving a ‘B’ standard that the catchment waterways will achieve a healthy performance level or whether it might take an ‘A’ standard or better.

Broad adoption

While it is easy to get a handful of farmers to participate in trials like the Dairy Stewardship Trial and the myriad of EMS trials (e.g. Gippsland Beef and Lamb EMS: On-farm EMS and environmental labelling in the pastoral industries – see National Heritage Trust, EMS National Pilot Program), it is another thing to get widespread adoption.

Within the Dairy Stewardship Trial, the proposed approach was to negotiate with dairy processors to test the incorporation of elements of the ‘green’ package into their food safety programs. Difficulties with droughts and overall milk supply have provided new priorities to the companies, and there has been limited movement on this to date. If this were to happen, they would set their own level along the ‘bar’ between best practice and out-moded practices that, by necessity, will balance their judgement on how many suppliers they may lose by setting the standard at a particular point, and having a standard that is credible to the community. Transition time to achieve standards, and a combination of incentives, could also influence where the bar (level of standard) is set. However, it is envisaged that where there can be integration of the processors and the grower/producer, the benefits from programs like the Dairy Stewardship Trial (and possibly EMS) will bear most fruit.

Reward for effort

Understanding how an individual farm impacts on catchment health is 1 of the more difficult things to unravel in managing catchments in a fully sustainable way. Factors outside the farm change what happens to things on the farm. For example, a range of in-stream processes mean that nutrients that leave farms do not necessarily get to a point down the waterway some kilometres away. While it is difficult to determine the catchment and farm links, there is a substantial body of knowledge and experience from which to draw logical connections. On-going monitoring using agreed indicators of environment health will ultimately tell whether the logic stacks up. In the meantime, there is scope for more research into how multiple farm actions combine to produce a catchment outcome.

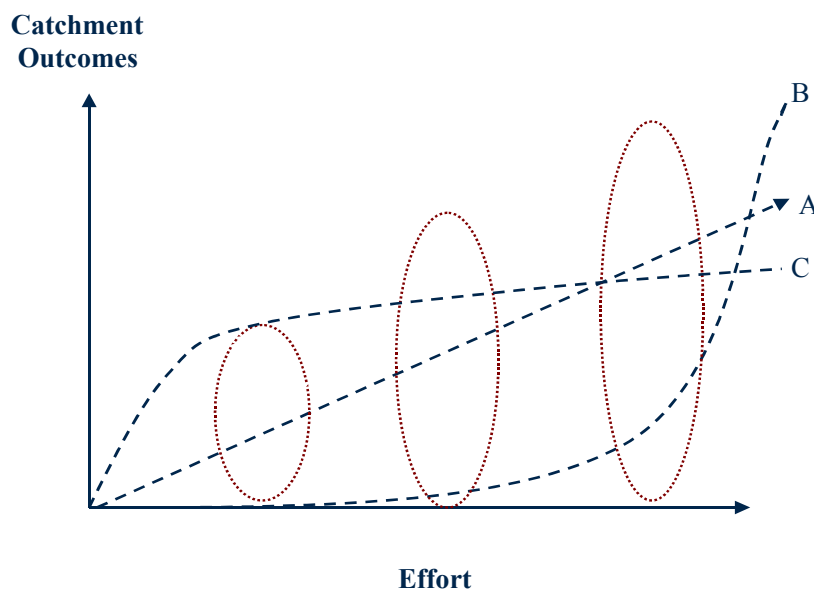


Figure 3. Relation between Outcome and Effort.

The underlying challenge for the Dairy Stewardship Trial (as it was for the whole of the Environmental Stewardship Program) was to test if increasing the effort on farm (e.g. more complex documentation, reporting, range of issues dealt with, degree of management of the resources) resulted in improved catchment outcomes. In this way, moving from ‘ems’ to ‘EMS’ is increasing that complexity – does it result in better catchment health?

The trial is still seeking answers to the question of the shape of the curve between effort and outcome. Figure 3 shows 3 possibilities for 1 variable, the 'check' part of the cycle in 'ems' terms. It is unlikely that course A will be the answer as natural systems rarely follow straight lines. Those urging full ISO 14000 as EMS would be banking on B as the answer, and C may reflect more of the reality. However, it is too early to bank on any of these.

Audits

Within the Dairy Stewardship Trial, farmers scored their own business and then, as part of testing the value of increased complexity, a person from the local Victorian Department of Primary Industries dairy team reviewed the scores. This was referred to as a second party audit.

Lessons from this were:

- ❑ wording of categories in the set standards needs to be very clear to gain consistent interpretation,
- ❑ some people are harder on themselves than others, and
- ❑ it is unlikely that the second party audit will result in a change in priorities for action on any of the trial farms.

Reasons for the trial farmers to change are likely to fall into the following categories:

- ❑ an illegal practice is pointed out (generally they can see this themselves, but not always, particularly in relation to effluent management around the farm),
- ❑ they have a personal pride in being a high performer,
- ❑ the community sets a priority on an outcome and is prepared to pay for it (financial incentives to change), and
- ❑ the need to demonstrate a certain level of performance becomes a necessity to sell into a particular market, or continue to access resources like water for irrigation (needs clear messages from markets or government).

There have been several lessons learnt by individual farmers in the trial, but there has been insufficient time to go around the 'ems' cycle to demonstrate improvement.

Complex systems

There has been considerable interest in improving water use efficiency on irrigated dairy farms as there is a 4-fold range in the amount of milk protein plus fat produced from pasture per megalitre of water (Armstrong *et al.* 2000). This range indicated that many farms could make substantial improvements. However, irrigated dairy farm systems involve many complex interactions, and decisions to improve water use efficiency can impact on many other parts of the business, such as herd size, milk harvesting and effluent management infrastructure (Armstrong 2004). This examination of how individual businesses might approach improvements in environmental management indicates that the 'ems' continuous improvement cycle on farms will lead to gradual improvements, but the time frame may not be short.

This complexity, incorporated into an EMS, can result in only gradual improvement because, as Anna Ridley was reported as saying in *Groundcover* (Nicol 2004), the concept of EMS is not about setting standards, a point also made in the National Framework. However, EMS has the capacity to incorporate standards if it is desirable or required.

Environmental Management Systems without standards may help individuals to improve in an incremental way, but cannot be used to demonstrate achievement of sound environmental management without some reference points, i.e. standards.

OTHER TRIALS

The Dairy Stewardship Trial is 1 of a myriad of trials relating to EMS in varying degrees. Retaining an understanding of all these projects is very resource hungry. While it is important, the proliferation of projects has made it nearly impossible to keep up while delivering on a project a person is engaged to deliver.

OUTCOMES

What we understand from the Dairy Stewardship Trial so far is that:

- while we rely on logic to connect farm activities and catchment health/impacts, we must all recognise the need to move toward better practices, and not use lack of hard data as a reason to stop,
- catchment standards (the level of performance on-farm needed to achieve accepted catchment health, say through meeting catchment targets) may vary depending on the situation or context of each farm,
- second party involvement is recognised by farmers as being useful to challenge their thinking,
- having 'ems' or 'EMS' without the incorporation of standards limits its value significantly, and certainly does not address the need of the dairyfarmer in northern Victoria who seeks to demonstrate change in performance, and
- ultimately the aggregation of individual monitoring or achievement of particular standards across a catchment will tell us how well the farm practices are connected to catchment health.

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