

Applying sustainability through farm planning

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Summary. There have been many conferences, reports and papers directed towards the topic of sustainability. Recommendations for the development of whole farm plans and guidelines as to how these should be conducted are also quite common. This paper discusses the results of an extension approach that attempted to apply the concepts of sustainability at the property level, in what was commonly called a 'Dirt to Dollars' approach. This meant starting with the property's resources and developing a farm plan that culminated in a viability/profitability assessment for each farm. The exercise was very complex. The procedure and difficulties which arose are discussed.

Introduction

For the last few years there has been much discussion about sustainable agriculture, farm planning, and economic viability. There has been the formation of the Landcare Movement and many conferences have been held with 'sustainability' as their theme. There has been the publication of reports such as the Report to the Australian Agricultural Council of the Working Group on Sustainable Agriculture (6) and the Australian Conservation Foundation's 'Recovering Ground' (3), to name two of the most recent. One of the recommendations to come from both of these reports was the need for more 'Whole Farm Planning'.

This is an excellent recommendation, but what is a 'whole farm plan', and how does it relate to sustainable agriculture? The answer to this question is not simple. The Australian Taxation Office, for example, considers that 'A whole farm plan is a plan of an area of land which indicates the different land classes on the land and the location of any fencing that is required to separate different land classes to prevent land degradation. The plan must also describe the different type of fencing required and explain how it will prevent land degradation.' It also expects that it will include an aerial photograph showing different classes of land (1). Other interpretations are given by the Soil Conservation Service of New South Wales (9), the Queensland Department of Primary Industries (5,10), and the Victorian Department of Conservation Forests and Lands (7) to name a few. One's interpretation will even be influenced by prior experience for example with the Potter Farmland Plan (4) or courses such as the Property Development Planning Short Course organised by University College of Southern Queensland. There is clearly a range of opinions and options as to what constitutes a farm plan. In most cases, the closest connection to sustainability will be soil conservation, wildlife preservation and tree retention. However sustainability goes much further than that. This paper outlines the results of a concept using a 'Resource to Revenue' or 'Dirt to Dollars' Farm Planning Approach which was an attempt to apply sustainability to land use practices on individual farms and see what effect it would have on the owner's economic viability.

To do this a simple definition of sustainability was used: 'Land use is sustainable if biological *inputs* are greater than or equal to the *outputs* and don't *pollute* or *degrade*'.

Where: *inputs* included clearing, pesticide and fertiliser usage, cultivation and other land use practices; *outputs* included soil, meat, milk, wool, grain and any product that represented nutrient removal; *pollution* includes residues, salinity, noxious plants and decreased water quality; *degradation* includes pasture decline, wildlife loss, woody weeds acidification, soil structure and soil fertility.

Methods

The farm planning approach was considered to be the most appropriate procedure to follow. Made up of eight property owners and with assistance from the authors, this activity was undertaken as one of the Crows Nest Landcare Group's projects. It involved starting with each individual property's resources and progressing logically through a series of steps detailed in Table 1. The end point was to be an actual

sustainable level of agricultural output (beef, grain or milk) that could be produced from that property within its resource capacity, and without damaging or polluting the environment.

The participants included beef and dairy enterprises on hobby farms and properties that are considered to be living areas. All properties had areas suitable for forage or grain crops. A number of different potential enterprises were assessed to determine the profitability and effects on the individual property owner's economic viability. At the completion of the exercise the landholders had an understanding of what sustainability meant to them. A further benefit was that it provided the participants with some hard data to use in further discussions, requests or submissions. These ideas will be the responsibility of the Landcare Group as a whole to consider at future meetings.

Initially the exercise involved participants meeting monthly. Then at the end of the exercise it also involved property visits by the authors to assist with the financial analyses and assessing the implications.

Prerequisites for this planning activity were mapping kits for each farm. These included plastic overlays, bulldog clips, coloured marker pens, grid sheets, a rubber, ruler and reference materials. Each landholder had to supply their own property plans to work from. In this case it consisted of a range of different aerial photographs, orthophotographs, line drawings or contour maps supplied by private and public enterprise.

Table 1. Sequence of events.

Day 1 1. Resource identification - identifying boundaries of different land capabilities classes as determined by slope, soil type and depth.
2.Current farm inventory - fences, watering points, powerlines, etc. 3.Identification of site specific problem areas such as salinity, gully erosion, poor water quality, woody weeds, pasture degradation, feral animals, access tracks, flooding etc.
Tasks 4. Find solutions to problems helped by recommended resource people (mostly government departments).
5.Soil conservation recommendations were obtained from the local Soil Conservation Officer (if they had not already been obtained).

Day 2 6. Forestry and wildlife recommendations.

7.Establishment of actual areas of different resource groups.

Tasks 8. Estimation of sustainable stocking rates obtained from a consensus of opinion of experienced local graziers. It involved a number of producers giving their ideas of sustainable long-term budgeted stocking rates for different resource groups. 9.Establishment of tree thinning guidelines, assisted by Mr David Cameron (of CSIRO) and the GRASSMAN computer package (8).

Day 3 10. Identification of sustainable land-use recommendations for different resource groups as influenced by current fertility. This meant the pasture and cropping rotations as well as fertiliser recommendations.

Day 4 11. Demonstration and use of GRASSMAN (8) computer package.

Day 5 12. Using Breedcow (2) computer herd model to assess economic returns for sustainable output at the calculated carrying capacity.

Day 6 13. Looking at other computer decision support packages.

Tasks 14. Taking the output so far obtained and looking at each properties financial viability/ profitability with the assistance of computer spreadsheets which also enabled 'what if' type questions to be asked. This enabled assessment of economic sustainability as influenced by season, price, debt structure/equity, interest rates etc.

Day 7 15. Discussion of implications and costs of sustainability. Assuming that the community requires that landholders use their land sustainably and without produce subsidies, then assistance of some form will be required in most situations. Topics discussed included: interest rates, ownership and equity, drought/disaster assistance, rate rebates, taxation concessions for good land care, including subsidies for not clearing land.

Results and discussion

This exercise was undertaken in ignorance of the complications that it would involve. It was undertaken in an effort to give one of the local Landcare groups an opportunity to apply the concepts of sustainability to their own personal property situations.

The application of the sequence of activities detailed in Table 1 encountered difficulties in:

- dealing with gaps in our knowledge;
- determining slope and land suitability classes;
- applying soil conservation recommendations to the whole property. These tended to be dependent on the current land use and confined to arable land;
- deciding what are sustainable land use practices and how to measure these;
- obtaining optimum tree thinning guidelines if total clearing was not sustainable;
- calculating stocking rates for different land classes at different tree densities;
- need for one-to-one consultation of landholders with the authors to produce meaningful results specific to their situation.

The exercise raised many problems which made participants realise that applying the concepts of sustainability at farm gate level is easy to suggest but very hard to apply. There are many gaps in our knowledge that only became apparent as a result of trying to apply the many, varied and often conflicting sources of information that are available.

The acid test of sustainability is to apply it at property level. If we find it does not work there then we must adapt it to make it work. In this exercise, to ensure that we achieved our objective and were not stopped when answers were unavailable, we made a lot of assumptions, most of which could not be substantiated with research results.

This whole complex area of how to achieve sustainability needs to be presented in a package, not as a series of separate and often unrelated recommendations. Farm planning procedures provide an excellent basis to work from. However, currently most of these do not go far enough, and for a very good reason. The information is not available in a useable form.

This is the challenge in the 'planning ahead' part of this conference. Hopefully a current NSCP project which is looking at 'Sustainable agriculture in the Australian summer rainfall cereal belt' will go some way to providing this information. This project aims to produce two books, a scientific monograph and a farmer guide which is intended to lead farmers, scientists, students and anybody interested in sustainable agriculture through the subject in a logical sequence. The components of sustainable agriculture will be broken up into 'bite size bits' which will enable farmers and graziers in this region to develop ecologically and economically sustainable whole farm plans.

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