Profit, Risk and Stability: Decision Making Criteria for Sustainable Cropping

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For some time now there has been a growing trend in cropping areas towards the use of so-called 'alternative' crops. Nevertheless, the Australian Bureau of Statistics (ABS 1989) has reported that the area of land under crop on the central and southern slopes of NSW sown to broadleaf varieties in 1988 was still quite low at only 6 percent. Agronomists from the NSW Department of Agriculture believed that an expansion in the area sown to broadleaf crops would dramatically improve the productivity of farms in the area (Mead, 1992).

A joint project was initiated involving NSW Agriculture and the Centre for Rural Social Research to investigate the use of broadleaf based crop rotations and barriers to their further adoption. Researchers from the Centre for Rural Social Research conducted six focus group discussions and 180 random sample interviews, in the agronomy districts of Albury, Cootamundra, Cowra, Temora, Wagga Wagga and Young.

The first finding to emerge from these activities was the discovery that the level of adoption of broadleaf based crop rotations was actually very high. 58 percent of respondents to the interviews were considered to be using a sustainable rotation as promoted by NSW Agriculture, and another 20 percent had partially adopted the package, but were still some way from developing an optimal rotation.
Although this finding challenges the very assumptions on which the study was predicated, the results are nevertheless of great interest, firstly, in understanding why farmers have chosen to adopt particular practices and the criteria by which they judge them, and secondly, in identifying a range of other issues which farmers believed effected their ability to implement sustainable farming systems.

During the focus group discussions farmers constantly referred to four general criteria by which they evaluated farming practices. These were the perceived effect of the proposed farming practice on the profitability, sustainability, stability and riskiness of the whole farming operation. This is not to say that farmers must develop a positive attitude to any given practice in regard to all criteria before that practice is adopted. Rather, they weigh up the pros and cons in regard to each criterion and then decide what is best for them given the circumstances. Different farmers with different values, facing different circumstances, will obviously have different priorities and make different decisions. In achieving a high level of adoption it is obvious that broadleaf crops offer a wide enough range of benefits to appeal to a large number of farmers.

Broadleaf crops, primarily oilseeds like canola and lupins, offer farmers a number of productivity and sustainability benefits when integrated into cropping rotations with the traditional cereal crops such as wheat and barley. These include:

1. breaking disease and pest cycles that affect cereal crops;
2. in the case of legume crops, such as lupins and field peas, boosting soil nitrogen; and,
3. opening up compacted soils with deep roots.

All of these features help to improve the yields of cereal crops grown in following years. In addition, the prices farmers have received for some broadleaf crops in recent years have compared favourably with those received for cereals. This combination of increased productivity, and reasonable returns for broadleaf crops, has led to improved profitability on many farms. It is also possible to achieve these without necessarily investing heavily in new machinery. This would lead many observers to assume that broadleafs would naturally be widely adopted. However, as we know that many innovations that should also lead to increased profitability are not adopted, it is important to also consider the other criteria.

A high level of concern was expressed during the focus group discussions for the sustainability of agricultural and social systems. This was manifested in concern for the maintenance of both productivity and soil health, and family farm units and local communities. The economic and ecological aspects of sustainability were seen as inseparable. Farmers pointed out that not only were they concerned about sustainability, they had done something about it and had changed many of their farming practices, in particular to reduce soil erosion. They were, however, still concerned about the intensity of current production methods, their dependence on high rates of external inputs, and emerging problems such as dryland salinity. Although they could not identify many specific problems with current production systems this view is not irrational, after all, farmers have in the past received a great deal of advice which has over the course of time proved to be unsustainable. Today, for example, bare fallowing has become taboo as it contributes to soil erosion and organic matter and soil structure depletion, whilst in the past it was recommended as a desirable management practice.

Just as important for many farmers as their level of income was the stability of that income. This was directly related to the dynamics of commodity markets and prevailing weather conditions. Farmers tend to accept variability in the weather as a fact of life, they do not on the other hand accept that commodity markets should be inherently unstable and subject to wild fluctuations. Deregulation of marketing arrangements for agricultural produce was a topic subject to spirited debate during the focus group discussions. Participants expressed concern that they had limited time and expertise to market their produce effectively and were, therefore, open to exploitation by agents. Some were also concerned about the possibilities opened up for vertical integration, and increasing corporate control of agricultural output, to the disadvantage of farmers.

In the face of variable seasons and markets, over both of which farmers have little control, many farmers act to minimise their risk. One of the main ways of doing this is through diversification which spreads risk over a greater range of products. This is a very strong rationale for growing broadleaf crops in rotations with cereals, and was vindicated for many farmers over the last season as late rains through harvest damaged crops to varying degrees. Another way to reduce risk is to minimise input costs, and therefore the potential loss. This strategy can, however, also reduce a farmers potential income, which can make the strategy appear irrational to outsiders who believe farmers could boost their incomes and trade out of financial difficulty, without recognising the consequences of significant losses to farmers. From the

farmers point of view it is perhaps better to make a small profit and remain in farming, than to try to make a large profit and risk a substantial loss.

Perhaps the most significant point to be made in relation to risk management, and sustainability, in the context of this study is that farmers believed their production system to be highly dependant on high rates of external, particularly chemical, inputs. This increased their risk, but was believed necessary to maintain sufficient income to remain in farming. They were also extremely concerned about the long term effects of chemicals on their own health and on the environment. Chemical use was constantly likened to a treadmill from which it was impossible to escape without sacrificing the financial viability of the farm. Many farmers expressed the view that if they could be shown how to farm profitably without chemicals - or if they could afford to make a loss for several years - they would make the transition to chemical free farming straight away.

It could be easy to dismiss this concern with maintaining profitability as an excuse which merely hides the real priority, money. However, farmers were acutely aware of the way that diminishing terms of trade - often referred to as the cost/price squeeze - was rapidly diminishing the ranks of Australian farmers. They were also concerned at the rationality of constantly trying to boost agricultural efficiency by increasing economies of scale (ie. farm amalgamation) and increasing input use whilst hoping for comparatively greater gains in production. These two strategies were seen at times to be at odds, as with decreased labour working more land, it was difficult to provide enough management input to fully realise production potential. For example, farmers complained they were too busy with urgent jobs to do things like monitor their crops properly and were, therefore, more open to significant losses from problems such as pest and weed infestation.

It is also important to note that farmers saw a range of broader issues related to rural decline in general as effecting their ability to implement sustainable farming systems. In particular they were concerned about the loss of services and infrastructure in rural areas, which added to the costs of farming, the loss of industries, particularly the machinery and spare parts industries, and the limited educational and professional opportunities for young people in rural areas, not the least of which was the limited opportunity for them to establish themselves in farming.

The farmers involved in this study grew broadleaf crops in rotations with cereals because on the whole they believed this helped them to maximise their current profitability, and hence viability, whilst minimising risk and maintaining stability by diversifying income sources to protect against environmental perturbations. They were not convinced though, that despite definite gains, there farming systems were sustainable, expressing serious misgivings about their intensity of land and input use. If the criteria developed here to evaluate farming practices are to be useful in the future design of research and extension programs it will be necessary to find out more about the circumstances and values of the farmers to which a program or innovation is targeted. They would also favour a Farming Systems Research and Extension approach in which research is conducted at the whole farm level, in cooperation with farmers, so as to more realistically assess the effects of practices on the whole farm system.

References

Australian Bureau of Statistics (1989) *Summary of crops, Australia* Australian Bureau

of Statistics, Canberra
Mead, J. (1992) 'Rotation systems and farming systems: the current situation' in Murray, G. and Heenan, D. (eds) *Rotations and Farming Systems for Southern and Central New South Wales* NSW Agriculture, Agricultural Research Institute, Wagga Wagga, pp.5-9

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