



IRRIGATION RESEARCH & EXTENSION COMMITTEE

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FOR IRRIGATION CROPPERS

Factors influencing irrigation farm productivity

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Background to the Project

State and Federal Governments have been promoting improved water use efficiency in irrigation farming for some time, but have only provided limited support to assist farmers with this challenge. Research has been conducted in the past about 'higher value' cropping sequences and rotations; however, this information has failed to lead to any major change in on-farm practices.

Low water availability in recent years has led many farmers to think about ways to maximise whole farm income despite low water allocations, while recent work by NSW DPI in the Murrumbidgee Valley predicted that at allocation levels below 50%, many irrigation farmers would be unable to create positive cash flow within 'traditional' farming systems.

The project studies farmer behaviour in that it seeks an understanding of farm decision making and practice across the irrigation regions from Northern Victoria to Lachlan Valley, and in particular, aspects of productivity, profitability and water use in the face of reduced water allocations. In so doing, it will attempt to explain the rationale and apparent 'non-adoption' of higher value systems.

Introduction

The following paper represents an extract of the findings of a social study into the broader factors influencing irrigation farm productivity in the southern NSW and northern Victoria irrigation regions. The final report of this research will be submitted to the Irrigated Cropping Forum later this year.

This research is part of a larger GRDC funded project that seeks to investigate ways of lifting productivity and profitability on irrigation farms, particularly focusing on factors that influence the adoption of more water efficient farm layouts and irrigation design and higher value systems.

Data Collection Methods

The information presented is based on data collected from both a series of face to face interviews with individual irrigators (in 2006) and focus group discussions with groups of irrigators (in 2007) across the Murrumbidgee, Coleambally, Murray and Jemalong Irrigation districts of NSW and Goulburn Murray Irrigation district of northern Victoria. Overall a total of 86 farmers participated in this study, the majority of which were based in the Murray (NSW), Coleambally and Murrumbidgee regions.

A variety of questions were asked to reveal information relating to enterprise mix and choice, changes to farm practice, factors impacting on management and decision making, drivers of investment, interpretation of higher value systems, irrigation layout, rotations, implications of reduced water availability and opportunities for the future. Although we used the same questions at each interview or focus group, we also had the capacity to pursue special points of view resulting from individual or regional experience. In every case we collected data until no new information was volunteered.

Some Key Findings

Enterprise Interest and Choice

While rice growers were the most numerous participants (depending on available water) other enterprises were frequently mentioned – including wheat, barley, oats, triticale, soybeans, faba beans, canola, sorghum, maize, chickpeas, field peas, sunflowers and lupins. The major pastures mentioned were lucerne and clover and many participants also had livestock production systems. Several dairy farmers also participated.

There was strong awareness of the full range of enterprise options suited to each region. Despite the emphasis on winter cereals in recent seasons, there was a strong message that rice would be grown when it could ("we've never not been paid for rice"). Factors influencing this thinking were availability of markets, fear of being locked into contracts that might not be able to be filled, personal preference for mixed systems, labour availability and skill, and aversion to risk.

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Farm Layouts

Layouts and design are strongly determined by soil type and water supply. All participants indicated a strong awareness of the nature and properties of their soils. Limitations on capital meant it was often not feasible for farmers to have different layouts on the one farm, so the layout choice often reflected the dominant soil type, even though 'more productive' layout systems for part of the farm might have been available. Knowledge of terrace systems, bank-less channels and raised beds was high, as was the importance of matching suitability to specific farm situations – including the capacity of the supply system to provide the water to suit different layouts. The clear message that emerged was that all farmers actively attempt to improve their systems, isolating or restricting 'poorer' performing soils to matching enterprises. In a nutshell we concluded that all farmers were keenly aware of available options for farm layout.

Double Cropping

The concept of double cropping is not new to those we interviewed. From the focus groups, the consensus was that it was very difficult to be prescriptive about double cropping, and it was wrong to assume that this was the most profitable approach given that farms are whole systems. We also noted that in recent seasons double cropping occurred on an 'opportunistic' basis, and that it wasn't necessarily planned (or expected). On this matter, however, there was variation between regions – in that some regions said that water was the limiting factor while others said double cropping needed more land.

Higher Value Systems

There was considerable discussion and variation between and within regions about what is meant by the terms 'higher value system' and it was clear that the concept had specific meanings for each person. Examples and explanations of the variety mentioned include:

- requires increased security or reliability of allocation;
- depends on inputs, not gross margin vs. maximum \$/ML;
- no standard rotation vs. dedicated farm areas to enterprises;
- higher value crop;
- minimise cost of production;
- highly capital intensive and scale dependent;
- heavily influenced by 'boom and bust';
- existing system is high value already;
- more contractors and more labour (hard to get) vs. less labour;
- double cost of production;
- more production from the same labour unit, or less (can't work more hours);
- a system that's here for the long term is higher value;
- one that maximises disposal income.

Research and Technology

Water reform was the major driver for technology uptake, however, many participants felt that for their region, technology and research was necessary if higher value systems were to be identified and implemented. There was a strong push for the development of winter cereal varieties for irrigation, focusing on higher yields / ML rather than disease resistance. Many felt that to maximise returns in any given season there was a need to understand the fine detail of irrigation timing and, at the same time, taking into account the risks of water supply and seasonal conditions. Also mentioned was the importance of maximising transpiration

efficiency and developing more system based options for the use of deep rooted perennials. Finally, there was a big concern about the out of region water capturing capacity of agro forestry and its impact on dam levels.

Conclusions

This study revealed that across a range of environments, farmers have a sound understanding of new technologies and the consequences of adoption. In particular this meant that farmers had thought about (and in many cases experienced) the effect of change on farm layouts and management. The study also reminded us of the uniqueness of every farm – their resources and goals, and the need (or not) for change.

Each farm system has a potential based on its resources (including human) and is either limited or enhanced by its environment. Such 'outside' factors include water security, political uncertainty, natural and physical features. 'Internal' features include personal preferences and labour, and (to some extent) appropriate new technologies. Amongst this uniqueness and diversity there are common features and knowledge apparent, such as agreement about enterprise mix and irrigation layout – which were the two key areas of interest investigated by this project.

What does this mean for driving change (from the farmers' perspective) and for the GRDC research program – in particular? First, that farmers' knowledge (especially about their own farm and district) is knowable and important – especially to RDCs. Second, such knowledge may not be generalisable across farms or districts; however, it should be built in to research programs. Third, forces that are driving change at the farm level are often outside the control of farmers and production researchers. Such forces are often macro-economic, market and political and can overarch areas of interest such as those in GRDC's ambit. Consequently farmers can be interested but not prepared to act on production level changes and innovations. What GRDC needs to know is how such a hierarchy of needs and forces for change will affect their interests/products, not whether or not their products are good in themselves. Thus such products should only be judged within a socio-economic / political environment – and 'locally' – from a farmer's viewpoint.

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