

# Why Should GRDC Invest In Participatory Farming Systems Research ?

B.R Eastough

Western Panel Member, Consultant to the GRDC,  
"Wheller Plains", RMB 38, YUNA, WA.

## ABSTRACT

The GRDC's initial investment in participatory farming systems research was driven by the need to learn how to effect change efficiently within a farming system, and the emergence of barriers to long term production capability within a farming system. On the basis of this several projects have been funded throughout Australia which involve participatory farming systems research. The projects have been most successful when the barrier to long term production capability involves a systems change, when growers are involved in experiential learning and the people within the project have strong links with researchers outside the project.

## KEY WORDS

GRDC, Investment, Evaluation, Participatory

## INTRODUCTION

In this presentation I will be discussing why we should invest in "participatory farming systems research", when does GRDC make the decision to invest in participatory farming systems research, how is the return on investment evaluated, and when and how does GRDC cease the investment. A case study of a framework for a farming systems project which has been recently established will be presented to give an example of "participatory farming systems research".

For the purpose of this presentation I will define a "farming system" as a set of interacting components where a change made to one component will impact on other components.

Using key performance indicators for farming sustainability (developed by Centre for Cropping Systems, Northam WA) the impact of component change within a system can be evaluated. These performance indicators are:

- 1) grain conversion efficiency
- 2) nutrient balance audit
- 3) integrated weed management
- 4) integrated disease and pest management
- 5) paddock condition
- 6) rotational gross margin
- 7) environmental indicators
- 8) human resource capacity

Therefore if a change is made to examine weed management, the changes to other indicators require research and monitoring. Due to the complexity of farming systems, changes to be made to improve profitability are better addressed by "participatory farming systems research".

Participatory Farming Systems research can be defined as having two components:

- 1) Traditional research involving " the process where the interactions between the biological, economic and social aspects of farming are studied with a view to increasing farm profitability and sustainability" (Professor Phil Cocks). Therefore a researchable issue is determined with scientists and growers, feedback is required from growers on progress and the results are of practical value and readily adopted.
- 2) Grower experiential learning where growers actually "do". Experiential learning involves growers in the actual measurement of change within their farming system. Experiential learning is of benefit because people learn better:
  - a) as individuals than in groups
  - b) by doing rather than listening and seeing.

Following is a discussion on why and when does the GRDC invest in participatory farming systems research based on experiences with projects currently funded.

## **RESULTS**

### **When to Invest in Participatory Farming Systems Research:**

The GRDC is interested in investing in a farming systems project when

- 1) A baseline study identifies particular issues which require research to better inform producers, and there is a reasonable expectation of significant return to the industry.
- 2) When a research/farmer group presents itself and appears to have the tools, methodology and an issue to deliver successful results.

The use of the participatory research and development approach is most valid when substantial changes in the farming system are being sought. It is imperative that farmers have ownership of the whole process and particularly the outcomes.

For example, the introduction of lucerne into farming systems involves the agronomy of lucerne itself; its impact on groundwater, weeds and subsequent crop yields; and also difficulty of removal from the system. Another example where farming systems research is applicable is the promotion of no-tillage farming and the impact on wind erosion, soil structure, timeliness of sowing, positional availability of trace elements, herbicide resistance and disease buildup. Growers contribute in these circumstances a sense of reality such that the researchers are examining problems that may influence the uptake of the proposed system. The inclusion of growers, where they are actively involved in research, facilitates adoption of change.

### **Guiding Principles on When to Take on a Participatory Approach:**

- 1) When changes advocated are complex - eg the introduction of phase pastures has associated production, economic and sustainability issues.
- 2) When understanding of the social, economic or production aspects of the system is limited
- 3) When feedback from growers is required during the research process - this is required to obtain ownership of the outcomes of the research and allows rapid feedback in identifying and overcoming problems.
- 4) When a high degree of dependence on farmer to farmer information transfer is required - eg Western Australian No Till Farmers Association (WANTFA)
- 5) When changes in environmental practices are sought eg no-tillage

### **Why Do We Invest in Participatory Farming Systems Research?**

#### *Current Experiences*

The currently funded projects within the GRDC portfolio are mostly at a consolidation phase and the reasons why we invest in farming systems research are continually developing.

#### *Issue/Research Question Involves a Systems Change:*

Growers must have an issue which involves a systems change, which usually arises from the emergence of a barrier to long term production. It is sometimes difficult to isolate a research question from the issue and may take 12 months before on ground work commences due to group dynamics. However this process is critical to obtain strong grower involvement and interaction especially with regards to ownership of research. This process will lead to ideas or research programs that tackle real farmer problems. Each group needs a skilled facilitator working with them to enhance group participation. Some groups are small but there is large ownership of information which is often more efficient in achieving adoption of a systems change.

### *Grower Involvement - Enhancing Outcomes*

We invest in participatory farming "systems research" because growers have a better knowledge of their own farming system and by involving growers the standard of research is improved. From this approach we learn new processes on how to effect change efficiently. Participatory research involves a strong consultative element, which means farmers make their major input where it is most needed:

- 1) in hypothesis building to ensure real problems are being tackled.
- 2) during the research process itself to ensure that methods are practical.
- 3) during interpretation to make sure that the hypothesis has been supported (or not).

Growers support the process and make it more rigorous than it would have been otherwise. This combined with experiential learning enhances the adoption of research outcomes. New processes and methodologies for enhancing "systems research" may also be discovered.

### *Team Linkages with Research and Growers:*

We invest in farming systems research if the team involved has the ability to generate equitable interaction/participation between growers, extension officers and researchers, in order to achieve the agreed outcomes. Resource allocation requires agreement, backing and commitment by all stakeholders. The main staff on the project need at least 70% of their time on the project, and the leader preferably 100% of the time, to enhance the effectiveness of the project by improving ownership.

Communication with researchers outside the project is also important to maintain links with external projects and add value to the farming systems project.

## **Evaluation**

Evaluation is important to measure the impact of the project, enabling us to measure our return on investment for growers and the Federal Government. Evaluation must be included as a core component and the methodology must be clearly understood by people working on the project.

### *Benchmarks*

Benchmarks and performance indicators are necessary to evaluate and quantify change in target areas/groups. The indicators developed by the Centre for Cropping Systems, Northam outlined in the introduction on page 1 are an example of indicators that could be used to determine current practice before the commencement of the project.

### *Economics*

All projects should also include an economic component to examine the benefit from application of the science and the impact of R & D on growers. This type of evaluation requires whole farm modelling to properly examine the impact of a systems change on whole farm profitability.

### *Success*

A successful project means adoption of new practices by growers that benefit profitability and sustainability, and this can be supported by the project evaluation. Other beneficiaries of a successful farming systems research project are researchers, GRDC and the community. Researchers will publish technical results in popular and scientific press, and will achieve recognition for being involved in the project. GRDC will have documented quantitative analysis of all aspects of the farming system, a measurable change in best practice and proactive grower communication promoting uptake through experiential learning. The community will benefit from adoption of practices that are less likely to adversely affect the environment and through sustainability of food supply, and maintenance of their standard of living through export earnings. The community must be seen as a major beneficiary to justify taxpayer investment in participatory farming systems research to address the issue of public benefit versus private good.

## **When and How Does Investment Cease:**

Most of the farming systems projects take 2-3 years to become fully operational, therefore the time to achieve results and promote them is outside the normal GRDC time frame for funding. Therefore the farming systems team requires a structure which means it will continue to develop expertise, and also that the corporate understanding of the improved farming methods is not lost when the project concludes. The phasing down of funding over several years to enable the project to source other avenues of funding is likely to be the most successful way to cease our investment.

## **CASE STUDY of PARTICIPATORY FARMING SYSTEMS RESEARCH:**

The farming systems projects to date have taken on several different structures, however they all have an issue which involves a systems change. The structure defined in this paper for the case study appears to be the most suitable model given the nature of the research team, the farming system and the maturity of the grower groups.

### **DAW672**

#### **Rapid Adoption of a systems approach to weed management in the Northern Agricultural Region of WA.**

##### *Why Are We Investing in This Project?*

The main reasons for investment in this project are the ability of the research team, links with other researchers, the importance of the issue and the functional grower group dynamics.

This project has two experienced full time staff allocated to it and is to work with 4-5 well established grower groups who already have their own facilitators. The project is based around the issue of weed management as all grower groups had this topic as one of the three main priorities. This issue provides a focus for the project and changes implemented through research will impact on the farming system.

##### *Participatory Farming Systems Research:*

a) Trials and Demonstrations - Growers will isolate research questions at workshops and be involved in the feedback loop and outcomes of the research. This component of the project will involve researchers other than those on the project. Meetings have already been held involving WAHRI (Western Australian Herbicide Resistance Initiative, University of Western Australia), weed scientists within Agriculture Western Australia and other systems researchers. Meetings have also been held with the grower groups asking them to select a group of 20 growers to be actively involved in the experiential learning component and also to introduce the concept of isolating a research question.

b) Experiential Learning - Growers will be asked to select a weed and then nominate a focus paddock with that particular weed. From this they will be asked to set out their rotation for the next four years (length of the project) and the planned weed management of that paddock. Then if ryegrass resistance is an issue the growers will have a RIM workshop (Ryegrass Integrated Management developed by WAHRI). RIM is an interactive tool which looks at the impact on weed numbers, weed seed bank and gross margin from implementing a change in the farming system. A model for wild radish is currently being developed. RIM will be used to fine tune the planned paddock management. For the next four years growers and researchers will be monitoring what happens to the weed population and the impact on other components of the farming system. From each group 20 focus paddocks will be selected and at this stage it is anticipated 2 will be monitored intensively by Agriculture Western Australia. The remaining paddocks will be monitored by farmers. The experiential learning component will provide the strength of the extension of new research. This combined with the trials and demonstrations component will be the "systems research" to evaluate the impact of a change on the farming system.

##### *Evaluation*

Benchmark surveys will be completed at the beginning and end of the project covering all the aspects mentioned in the evaluation section. The project will be continually monitored to maintain the focus and to adjust to changes as they occur.

## **CONCLUSION**

The GRDC will continue to invest in "participatory farming systems research" where it is deemed the most appropriate process to facilitate the adoption of a systems change. However improved evaluation of the projects is required to know if we are making a difference as a result of our investment.

## **ACKNOWLEDGEMENTS**

Professor Phil Cocks UWA, Mr Neil Smith Southern Panel GRDC, Mr John Sykes Northern Panel GRDC, Mr Peter Newman, Research Officer -Weed Science Agriculture Western Australia Geraldton, WAHRI (UWA), Mr John Blake Centre for Cropping Systems Agriculture Western Australia Northam.