



An Economic Analysis of GRDC Investment in Partners in Grain



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Enquiries should be addressed to:

Mr Vincent Fernandes

Corporate Strategy & Impact Assessment

Grains Research and Development Corporation

PO Box 5367

KINGSTON ACT 2604

Phone: 02 6166 4500

Email: v.fernandes@grdc.com.au

Author:

Agtrans Research

PO Box 385

TOOWONG QLD 4066

Phone: 07 3870 4047

Email: info@agtrans.com.au

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GRDC

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Executive Summary

GRDC's "Partners in Grain" project commenced in 2001 and has been funded in three separate phases with the current four year phase ending 30th June 2011. This economic evaluation refers to the current third phase investment (2007-2011).

The rationale for this GRDC investment was that women and young people involved in grain growing may constitute, at least to some degree, an underutilised resource for the grains industry and that a support initiative for this group could help build capacity in terms of engagement and involvement, confidence, skills and leadership so benefiting both the grains industry and the local communities.

The investment supported a range of training and other engagement activities across all grain producing states. While there has been a National Reference Group and national coordination of activities, management and allocation of funds was managed on an individual state basis in order to deliver what was deemed to be required locally, rather than adopt a top-down national approach. Activities within states were directed by State Reference Groups.

The main focus of the investment was on education and training of the target group, other professional development activities and communication and networking. For example, newsletters were produced and distributed within each state.

There is evidence of capacity building benefits emerging from this investment. The principal benefits emanating from the project were captured by individuals, farm businesses, the grain industry, other agricultural and horticultural industries, and rural and regional communities. The benefits identified are summarised in a triple bottom line categorisation in the following table.

Categories of Benefits from the Investment

Levy Paying Industry	Spillovers		
	Other Industries	Public	Foreign
<u>Economic benefits</u>			
Increased profitability (e.g. more effective marketing, cost reductions) of grain farms due to the contributions of those benefiting from the project	Spinoff benefits to livestock producers and other agricultural and horticultural industries		
Spin-off profitability benefits to other grain farms not directly involved with PinG due to			

networking			
<u>Environmental benefits</u>			
Natural resource management benefits for grain farms particularly due to improved chemical management on farm		Natural resource management benefits for farms particularly due to improved chemical management and reduced export of chemicals off farm	
<u>Social benefits</u>			
Increased personal well-being of participants and farm families through education and training Increased contribution of participants to agribusiness and grain industry activities		Increased involvement and contribution of PinG participants to rural and regional communities	

The economic evaluation required a valuation of the benefits associated with the investment. This was difficult as any assessment of the enhanced performance of individuals required assumptions that were necessarily subjective.

Given the conservative assumptions made on likely financial outcomes, the results indicate the four year investment to June 2011 will provide positive returns. The net present value for the total investment (GRDC and others) of \$2.45 million (present value of costs in 2010/11 dollar terms) is estimated at \$6.63 million giving a benefit cost ratio of 3.7 to 1 and an internal rate of return of 46%. These criteria should be considered an underestimate of the true value of the investment due to the difficulty in valuing the social benefits that are likely to have accrued.

1. Introduction

This evaluation refers to the GRDC investment in the Partners in Grain (PinG) project. This industry capacity building project has been supported by GRDC for nearly ten years. Previous to 2001, GRDC had supported Victorian projects associated with "Women in Grains", as well as South Australian and Western Australian projects associated with Families in Agriculture.

GRDC's "Partners in Grain" project commenced in 2001 and has been funded in three separate phases with the current four year phase ending 30 June 2011. This economic evaluation refers to the investment in the current phase.

The objectives of the investment in the initial phase (2001 to 2004) included:

1. To develop a nationally coordinated strategic approach to enhance the active involvement of women and young participants in the grains industry by increasing their technical knowledge and skills.
2. To provide a supportive community based environment working towards reducing real and perceived barriers to participation.
3. To enable greater and more confident participation of women and young people in performance benchmarking, financial management and information programs.

The emphasis on women and young people in grain growing has remained in the following two phases on the basis that this is an underutilised resource that can be unlocked by the project. A strategic plan has been developed for the 2007 to 2010 phase of the project (PinG, 2007).

GRDC provides other forms of capacity building initiatives for industry such as:

1. Grain Research Updates have become established since the mid 1990s as focal events for the grain industry to keep up to date on the most recent research findings. Adviser Updates are held annually at one or more locations in each GRDC Region. They are followed by a series of smaller Grower Updates in main centres in each Region that are targeted at local growers and groups.
2. The Australian Rural Leadership Program is supported by GRDC. The aim is to improve the competitiveness and profitability of rural industries in an international context, for the benefit of all Australia, through the development of highly capable leaders in rural industries and the support of the community.
3. The Nuffield Scholarship Program is supported by GRDC. Its aim is to promote excellence in all aspects of Australian agricultural production, distribution and management through the adoption of local and international best practice, and continuous development of a unique network of industry leaders and innovators; a second aim is to increase practical farming knowledge and management skills and techniques generally. The GRDC's support of the Nuffield scholarship program ensures the continued development of skill and leadership in people working in the grains industry.
4. The Sustainable Grain Production course funded by GRDC offers agricultural advisers, agronomists, researchers, grain traders, agricultural teachers and

grows the opportunity to gain, update and upgrade formal agricultural qualifications.

5. GRDC supports a diverse range of conferences and parallel activities each year. In 2010 alone nearly 40 separate events were supported, involving audiences of between 50 and 1,800 people.
6. Grains Industry Development Awards are specifically designed to help grain growers or groups working directly with growers develop new skills, build relationships and acquire information for the benefit of the industry. The awards can be for study tours, travel or training, usually within Australia.

There are numerous GRDC supported science and research capacity building initiatives such as the National Youth Science Forum (NYSF), undergraduate and postgraduate scholarships, research fellowships, the BHP Billiton Science Awards (funding from GRDC now ceased), and the Way We Were Competition, a national program to recognise the contribution GRDC research and development has made to the innovation and progress of the Australian grains industry over the past 20 years.

There are a number of other (non-GRDC) grants funded by groups other than GRDC that also support women and young people in agriculture including:

1. Australian Women in Agriculture (AWiA) is an organisation that provides recognition of women in agriculture, addresses rural and agricultural inequities, provides leadership through facilitating change, and strives to ensure the survival of agriculture for future generations. AWiA's recent "Leading the Way" project focused on building the leadership, representative capacity and decision making skills of women, enabling women to contribute more effectively to processes which affect them, their industries and their communities.
2. The program 'Recognising Women Farmers' is funded by DAFF and offers funding of up to \$50,000 (GST exclusive) as support for activities that will build the leadership and representative capacity of women in primary industries — to strengthen primary industry productivity and build rural, regional and remote community resilience to a changing climate.
3. The Rural Women's Award is managed by RIRDC and is open to women from agriculture, fisheries and forestry production, food processing, community development and natural resource management. It is awarded not for reward for previous innovation or contribution, but rather to provide support for women to implement their vision and develop their skills.
4. Heywire is an online platform developed by the ABC for creative young leaders from rural Australia to share their stories. It is now in its thirteenth year. The Forum gives rural youth a voice in their communities and promotes concerns and ideas that are important to youth in rural, regional and remote Australia.

A niche for PinG

The research/science capacity building initiatives identified above are not competitive with PinG. While there are clearly some overlaps between PinG and many of the other industry capacity building initiatives available to grain producers, it could be

argued that the PinG investment provides a more engaging starter activity for an increased number of women and young people compared to other initiatives. Some of these other initiatives could be seen to be more directed at persons where motivation to improve is already strong.

Other (non-GRDC initiatives) that focus on rural women include 'Australian Women in Agriculture' (AWiA) and the DAFF program 'Recognising Women Farmers'. Both focus on leadership and building capacity. However, AWiA does not support training and the DAFF program provides short term grants that do not provide the continuity afforded by PinG.

The value of the PinG investment will hinge on not only the contribution the investment has made to capacity building for the grains industry and their communities, but also factors such as:

- the uniqueness of the investment and its 'low key' activities in engaging additional resources vis a vis other initiatives that are open to women and young people.
- the 'needs driven' characteristic of PinG training and its inclusion of both specific practical topics and the more holistic and social issues of concern to grain communities.
- the value for money in encouraging engagement and participation vis a vis other initiatives.

A key question to ask is what would happen if the project no longer existed; would other existing initiatives substitute in terms of capacity building and engagement?

2. Project Investment

Investment by GRDC

Broad details of the GRDC project supporting PinG are listed in Table 1. Although not explicitly stated in the services agreement, the project objectives are assumed to be the same as the strategic aims identified for the entire Program in the 2007-2010 strategic plan of the 'Partners in Grain' initiative. These aims are listed in Table 2. The project PIG00005 is the only project funded to meet the aims of the PinG Strategic Plan.

Table 1: Partners in Grain Project Funded by GRDC

Project Code and Title	Other Details
PIG000005: Delivering Professional Development through Partners in Grain	Supervisor: Nickie Berrisford Start Date: 1 July 2007 Finish Date: 30 June 2011

Table 2: Stated Aims of Partners in Grain Strategic Plan 2007-2010

1. To facilitate professional development to farming partners across the grain producing states.
2. To generate collaborative partnerships with Government and Industry to gain funding and in-kind support from a diverse range of sources and optimise the efficient use of resources.
3. To foster a culture of networking, sharing and mentoring to encourage more active participation in the industry, particularly by women and young people.
4. To ensure effective and timely communication about PinG and its activities to contribute to a higher profile and recognition of the valuable role PinG has in the industry.

Investment Inputs

Estimates of the funding by GRDC (and others) for the project by year are provided in Tables 3 and 4. Table 5 shows the total investment by both GRDC and partners in the project.

Table 3: Investment by GRDC in PIG00005 for Years Ending June 2008 to June 2011 (nominal \$)

Year ended June	GRDC
2008	230,000
2009	230,000
2010	230,000
2011	300,000
Total	990,000

Source: GRDC

PinG encourages sponsorship by government, industry, and commercial and community groups. Estimates of external and in kind support by state and nationally for the years ending June 2008 to June 2011 are provided in Table 4.

Table 4: Support by Sponsors and Participants (\$)

State	Year ending June 2008	Year ending June 2009	Year ending June 2010	Year ended June 2011 (a)
WA	30,100	20,990	48,626	413,699
SA	114,800	35,775	78,825	
VIC/TAS	26,200	33,250	22,500	
NSW	78,500	147,470	79,907	
QLD	7,650	58,502	91,700	
National	32,000	54,000	2,000	
TOTAL	289,250	349,987	323,558	

Source: Annual Reports

(a) Estimated from total over the four years of \$606,711 from sponsors and partners and \$769,783 in kind (PinG, 2011).

Table 5: Total Resources for Project (\$)

Year ending June	GRDC	External, Sponsorships, Partners, Deliverers (including in-kind)	Total Year ending June
2008	230,000	289,250	519,250
2009	230,000	349,987	579,987
2010	230,000	323,558	553,558
2011	300,000	413,699	713,699
TOTAL	990,000	1,376,494	2,366,494

The GRDC funds are divided between the grain growing states. The resource provides for a part-time National Coordinator, five part-time State Coordinators, a small amount for activities and for meetings for each state Reference Group. Significant volunteer input is provided by Reference Group Members.

Another feature of the financial arrangements for the investment is associated with leveraging external resources as illustrated in the tables above. PinG has generated an additional \$1,376,494 over GRDC funding of \$990,000 over the four years. A total of \$606,711 of this was generated through additional cash grants, sponsorships and FarmReady funds and \$769,783 from in-kind contributions from industry partners, deliverers and growers (PinG, 2011).

3. Activities and Outputs

Activities

The principal targets of the project were women and young people associated with grain producing farms. However, non-target group participation was also encouraged in most states. The principal objective was to build skills and confidence and hence additional management capacity personally with on-farm, industry and community benefits.

The project supported activities in all states. There was a National Reference Group and national coordination. However, management and allocation of funds was on an individual state basis in order to deliver what was deemed to be required locally, rather than adopt a top-down approach. State activities were directed by State Reference Groups. Reference Group meetings for each State took place during each year.

A key feature of the PinG activities was its professional development activities, particularly its organisation and support of training and development programs including workshops and field days. Training interests, gaps and needs have been determined by annual planning but most directly from grain producers through the Reference Groups. PinG also has been active in facilitating communication and networking among its target groups. Newsletters have been distributed regularly within each state; other communication methods have been via Rural Newspapers and Rural Journals.

Outputs

The most important output of the investment has been the training and learning events supported by PinG. The recent draft internal review report for PinG states the following about these events:

“Delivery of demand driven, flexible and innovative programs; an average of 10,847 hours of professional development has been facilitated each year, this being 5,847 hours over the targeted number of 5,000 hours” (PinG, 2011). The review states that women and young people have been particularly targeted with good success although challenges remain in finding the best way to engage young men.

Professional Development Events

A summary of the workshop types and other professional development events supported by PinG is reported in Table 6.

Table 6: Examples of Workshops and Other Professional Development Events

Examples of Workshops and Training Events	Examples of Other Professional Development Events
<ul style="list-style-type: none"> • Spray Application Workshop (use of chemicals) • Crop Disease Identification Workshop • Grain Storage Workshop • First Aid Workshop • Farm Safety Workshop • Farm Family Communication Workshop • Positive Business Planning Workshop • Managing Change Workshop • Off Farm Investment Workshop • Grain Marketing Workshop (after decline of single desk) • Understanding Futures Workshop • Succession Planning Workshop • Beer Appreciation Dinners (Product Quality and the Supply Chain) • Managing Tricky People Workshop (Conflict resolution) • Professional Development Session “Building Personal and Community Resilience” • Machinery Replacement Workshop • Farm Office Procedure Workshop • Office Meltdown Workshop 	<ul style="list-style-type: none"> • Attendance at Agribusiness Crop Updates • Womens Crop Agronomy Groups (several) • Attendance at BRI One Day Wheat Quality Session • Internet, email and video conferencing • Young Grain Growers Forums • Offering of Scholarships (a Grains Industry Conference Scholarship, NSW University Scholarships and Victorian Leadership Scholarships at Marcus Oldham)

The numbers of training events, training participants and hours of training delivered over each of the four years are provided in Table 7.

Table 7: Number of Training Events and Participation in Training over the Four Years

Year ended June	Number of Training Events	Number of Participants	Hours of Training
2008	99	2,096	9,437
2009	125	2,314	12,546
2010	164	2,227	12,570
2011 (a)	125	2,049	9,437
Totals	513	8,686	43,990

Source: PinG (2011)
(a) To end of March only

Some participants attending training events may have been from the same grain growing business so the number of farms represented may have been lower than this number. The freezing of Farm Ready funding until July 2011 will reduce the number of workshops held in 2010-11 (PinG, 2010a).

The most popular workshops overall have included Office Meltdown, Grain Marketing, Succession Planning, Grain Storage and Spray Application. For example, the Grain Marketing Workshop was delivered 21 times over the 2009-10 year and the Office Meltdown Workshop 34 times.

Also, Partners in Grain has created opportunities for women and young people to attend/participate in programs and activities such as:

- BRI Research Horizons program in Sydney
- Gene Technology Workshops in Canberra
- Company Directors Courses in regional areas
- Facilitated undergraduate scholarships
- Assisted a new generation of growers to access meetings and professional development activities
- Facilitated growers entering leadership programs (e.g. Marcus Oldham Leadership program)
- Supported regional and national conference attendance
- Supported young growers to attend the Grain Growers Association Innovation Generation Forum

Communication

A national communication plan has been developed and used by all states. Communication outputs include the newsletters, phonelinks, emails (an email forum has been operating where National Reference Group members share information about the project), and development of a PinG website. The PinG website (www.partnersingrain.org.au) is being regularly maintained by the state coordinators. For example the site received 1,527 hits during July 2009 of which 36% were new visits to the site.

PinG has hired an on-line conference room to be used instead of teleconferencing. The room is being used for training sessions as well as the quarterly meetings of the national reference group. It enables sharing of documents, use of a whiteboard, power point presentations, voting and voice over. There have been some spillover benefits to other farm groups (e.g. Nuffield group in Queensland, SPAA – Precision Agriculture Australia). The web room is currently being used by the GRDC project on Extension, Adoption Training and Support.

Network and Partnership Development

PinG has integrated with and facilitated the development of broader and stronger networks among grain growers and other community groups. For example with Regional NRM Groups, Landcare Groups, Kondinin Group, Farming System Groups, Country Health SA, VFF Grains, NSW Farmers Association, TAFE, Graingrowers Australia, Qld Rural Women's Network, and others.

4. Outcomes

Satisfaction Levels

All activities are evaluated and the information assembled is used for making improvements to workshops. Participant ratings for workshops identified in annual reports were highly positive with over 70% of feedback being positive (PinG, 2008, 2009, 2010).

An example is three one-day Pre Harvest Marketing Forums held in mid-calendar 2010 in Condamine, Dalby and Goondiwindi in Queensland. These forums were held in partnership with NAB Agribusiness and attracted 95 growers in all. The balance of big picture market direction, on farm risk management strategies and the presentations from the merchants about their harvest products was well received with 89% of participant expectations met (PinG, 2010b).

Communication and Spread

PinG communication activities appear to be quite extensive and the locations where workshops have been supported are widespread among grain growing regions. It has been reported that PinG personnel have encouraged trainers to come to regional areas (PinG, 2011). On the basis that servicing would not have happened without PinG and that it has not displaced trainers' efforts in other areas, this has increased the accessibility of practical training programs for grain growers in regional areas.

Participation and Engagement

The major form of participation with PinG has been through workshop and training activities with over 2,000 persons engaged each year. Support for attendance at other events would have increased the number of women and young people associated with grain growing potentially influenced by PinG.

Capacity Building

PinG's activities can develop skills and confidence in participants to question existing practices and can contribute to improved farming practices and business decision making. Such capacity building can provide an additional skill and management resource on-farm, and for industry and community.

Apart from the potential capacity built by individual training, the leadership and networking outcomes would also appear to be potentially significant. Networks have been built not only among PinG participants but also between PinG national, state and group coordinators with other industry and community initiatives and groups of relevance to grain growers.

Reporting on Patricia Hamilton's PhD thesis, Leonard (2008) comments:

"as a social change project, Patricia found PinG works at two levels. First, it promotes the recognition of women's contribution to sustaining the profitability of

the family farming business. Second, the training increases the skill and knowledge base of women, so these attributes can no longer be an excuse for not including women on agricultural boards.”

The evidence of PinG influencing involvement and representation of women in leadership positions appears to stand on the success of national and state coordinators taking on prominent roles in the industry and community and thereby setting examples of what is possible for others. Several prominent leadership awards have been attributed to engagement with PinG (PinG, 2011).

The increase in women’s representation in industry leadership positions has not only been confined to coordinators and reference group members, but also to some workshop participants (Jeanette Long, pers.comm., 2011).

Practice Change

The characteristics of the PinG training activities and workshops that have likely to have engendered practice change include:

- the demand driven nature of the activities
- the practical and hands-on philosophy approach used

Apart from exit surveys of events, the practice change evidence from the investment is not copious (as is the case for many rural R&D extension type investments). In the example of the Pre-Harvest Marketing Forum reported earlier, of significance was that 98% of the evaluation respondents indicated that they would immediately, or in the near future, take action in their business due to the information presented on that day (PinG, 2010b).

Strategies for strengthening the evidence base appear to be given increasing attention through follow up initiatives with workshop participants. For example a blog is being trialed in Queensland to follow up with participants after workshops. Other avenues of follow up after workshops are also being trialed (or intending to be trialed) including follow up-group sessions, and mentoring. These trials and their interpretation could not only increase effectiveness of the original training session but also could assemble valuable data for evaluation purposes.

Performance Stories and Case Studies

'Performance Stories' were an important contributor to the evidence base in the recent internal review of PinG. Examples of on-farm practice change provided were:

- a grower attending a PinG grain storage workshop and discovering an interim use of silo bags was cost effective.
- a grower attending an office workshop leading to changes in the office and encouraging greater efficiency allowing more time to be spent on on-farm activities and with family.
- a grower attending a spray workshop that has cut down on water and chemicals by purchasing drift reduction nozzles for \$700, as well as achieving a better weed knockdown.

Target Audiences

There are differences between states in their target audiences with South Australian activities most clearly targeted at women and young people with other states being more inclusive of men participants; the South Australian justification of women as the target group appears to stand on:

- (a) women from non-farming areas marrying farmers and therefore creating a unique need
- (b) the safe learning environment (women having greater confidence to ask questions and speak out in absence of men)

While these may be good reasons for the choice of target groups, it needs to be questioned why these two factors would not apply in other states. Other reasons for concentrating on women targets would include:

- (c) the capacity argument (building capacity from an underutilised resource) and
- (d) the greater attention given to social and holistic issues by women (often a different perspective to men).

The difference in state target audiences may present an opportunity to collect relevant data in the future and measure the relative effectiveness of engagement, learning outcomes and capacity building impacts.

5. Benefits

Benefits that can be attributed to PinG can be divided into three types:

- Benefits to the individuals associated with PinG
- Benefits to primary industry, particularly grain growers
- Benefits to the Australian community

Individual Benefits

PinG has contributed to the personal growth and increased skills that allow greater fulfilment and well being of a range of people associated with PinG. These would include state and national coordinators, state and national reference group members, group leaders, and most importantly, PinG professional development participants and recipients of other support. Some financial rewards may be associated with this increased well being, and in some cases, career advancement (e.g. part-time work off farm).

Benefits to Primary Industry

Perhaps the most important benefit delivered by PinG to the grains industry is the contribution to the skills base and the contribution to improved decision making associated with the farm business. These contributions would not only most likely affect the net income of grain growers involved, but there would also be improvements associated with the holistic approach to management in terms of such aspects of succession planning, farm health and safety and the physical environment on- and off-farm.

These benefits may largely accrue from the training courses attended. However, other avenues for benefit delivery may be from the networking characteristic of PinG and interaction with other groups and initiatives facilitated by PinG. It is possible that the total number of grain growers influenced by PinG is greater than the number participating.

Furthermore, there have been several young agronomists who have attended workshops on spray management and grain storage who are not only learning skills but also passing information onto their clients. Bankers and accountants often attend workshops and pass information onto their farm-based clients.

A second benefit to industry is from the increased capacity for industry servicing and leadership. Developing the skills of grain growers has led to improved business practices and given people the confidence to take on new roles within the industry. Examples of this include Reference Group members becoming involved in GRDC's Panels and Chairing industry committees (Long et al, 2008).

Some of the communication and evaluation processes may lead to benefits to GRDC and the grains industry. For example, the web conference room is being used by other grain networking groups and could increase effectiveness and/or reduce costs. The PinG trialling of post workshop communication and evaluation methods could have significant spinoff for evaluation and hence assessment of the cost effectiveness of different GRDC extension investments.

A somewhat unexploited industry benefit could accrue to industry via GRDC. GRDC could possibly develop PinG to assist with integration of its extension and training activities. This could be commenced by ensuring GRDC program managers become involved with PinG from time to time. A possible start would be for each program manager to attend one workshop each year focused on their field of interest to assess how PinG may complement other communication and extension activities in their field.

Benefits to Australian Communities

A benefit to the community is the increased capacity for community servicing and leadership from the increased confidence and skills developed from some of the PinG affected individuals. Examples of this include Reference Group members and others taking on community roles in local government and school committees (Long et al, 2008). These roles are most likely to be localised in the first instance (e.g. committee memberships, facilitation of local community initiatives).

Benefit Distribution

A range of other capacity building initiatives supported by GRDC such as the Rural Women's Award, Nuffield Scholarships, and the Australian Rural Leadership Program focus largely on individuals requiring very strategic selection of a few people who gain the benefits.

It could be argued that these specific capacity building programs that rely on selection could be balanced by more generalised capacity building investment (such as PinG) whereby support is distributed across a wider group of growers that:

- (a) builds capacity for changes on farm across a large grain grower group but with perhaps a smaller average benefit per participant
- (b) allows capacity to make industry and community contributions to emerge rather than being selected; selection processes can have the disadvantages that the capacity built would have happened anyway due to the characteristics of persons being selected.

Overview of Benefits

An overview of benefits in a triple bottom line categorisation is shown in Table 8.

Table 8: Categories of Benefits from the Investment

Levy Paying Industry	Spillovers		
	Other Industries	Public	Foreign
<u>Economic benefits</u>			
<p>Increased profitability (e.g. more effective marketing, cost reductions) of grain farms due to the contributions of those benefiting from the project</p> <p>Spin-off profitability benefits to other grain farms not directly involved with PinG due to networking</p>	Spinoff benefits to livestock producers and other agricultural and horticultural industries		
<u>Environmental benefits</u>			
Natural resource management benefits for grain farms particularly due to improved chemical management on farm		Natural resource management benefits for farms particularly due to improved chemical management and reduced export of chemicals off farm	
<u>Social benefits</u>			
<p>Increased personal well-being of participants and farm families through education and training</p> <p>Increased contribution of participants to agribusiness and grain industry activities</p>		Increased involvement and contribution of PinG participants in rural and regional communities	

Public versus Private Benefits

The benefits identified from the investment are predominantly private benefits, namely benefits to individuals, farm businesses and the grain industry. Some public

benefits are manifest such as environmental benefits off-farm and the contribution made to local communities.

Benefits to other Primary Industries

Industries other than grains are also benefiting from PinG. Foremost are the livestock industries as they are often joint enterprises on some cropping farms. Other industries that have benefitted are the dairy, egg and horticulture industries. For example, the spray workshop has been extended to the Australian almond growers due to its pre-registration with Farm Ready.

Distribution of Benefits along the Grains Supply Chain

Most of the productivity benefits will fall initially to grain producers but in the longer term others in the supply chain may capture some of these benefits. Agribusiness may also benefit directly from improved decision making on-farm.

Benefits Overseas

There are not likely to have been any significant benefits captured overseas, although there have been several papers delivered at overseas conferences about PinG.

Match with National Priorities

The Australian Government's national and rural R&D priorities are reproduced in Table 9.

Table 9: National and Rural R&D Research Priorities 2007-08

Australian Government	
National Research Priorities	Rural Research Priorities
1. An environmentally sustainable Australia	1. Productivity and adding value
2. Promoting and maintaining good health	2. Supply chain and markets
3. Frontier technologies for building and transforming Australian industries	3. Natural resource management
4. Safeguarding Australia	4. Climate variability and climate change
	5. Biosecurity
	<i>Supporting the priorities:</i>
	1. Innovation skills
	2. Technology

Table 10 identifies the national and rural research priorities that the principal benefits address. PinG is a significant contributor to industry and communication capacity and it is apparent that the current national and rural research priorities do not directly address such a benefit.

Table 10: Categorisation of Benefits by Priorities

Benefit	National Research Priority Addressed	Rural Research Priorities Addressed
Profitability benefits on farm		1. *** 2.* Supporting Priority 1 * Supporting Priority 2 *
Natural resource management benefits	1. *	3. *
Increased personal and farm family wellbeing	2. **	Supporting Priority 1 *
Contribution to industry and community leadership		Supporting Priority 1 *

*** Strong contribution **Some contribution * Marginal contribution

Additionality and Marginality

The investment in this project was targeted principally towards building the skills and confidence of women and young people in the grains industry.

Most of the public spillovers that have been identified would not have been delivered without the GRDC investment. If no public funding at all had been available, it is likely that the investment would have been curtailed to about 50% of what GRDC actually funded, or the project would not have been funded at all. Table 11 shows more detail.

Table 11: Potential Response to Reduced Public Funding

1. What priority were the projects in this cluster when funded?	Medium
2. Would industry have funded this cluster if less public funds were available?	Yes, but with a lesser amount
3. To what extent would industry have funded this cluster if only industry funds were available and no public funds?	Not funded

6. Pathway to Adoption

This section of the evaluation analysis is aimed at identifying how the research results have been further developed, commercialised and used by industry. Capacity building/extension investment such as that applying to PinG is the actual process of transferring existing knowledge to industry and hence the previous description of PinG already includes detail on the pathway to adoption.

In summary:

1. PinG has delivered training and networks to grain growers, both male and female. There have been some differences between states in terms of their target audiences.
2. The outputs have been viewed favourably by those participating as evidenced by numbers attending workshops and feedback from those workshops.
3. There is some anecdotal evidence of practice change on grain farms due to associations with PinG.
4. There is some evidence of industry and community capacity building impacts due to PinG in terms of increased involvement and leadership.

7. Measurement of Benefits

The benefits valued in the quantitative analysis are:

- the impact of individual training on improved practices and hence the profitability of the farms of PinG participants (for example, costs saved for the same production or improved prices).
- the impact of networking by PinG participants on the adoption of improved practices on non-PinG participant grain farms.

The benefits identified but not valued include:

- the impact of the increased confidence and/or skills of PinG participants on their industry and community involvement and leadership.
- enhanced personal and family wellbeing.
- natural resource management and environmental benefits.
- spinoff benefits to other primary industries.

It is likely that the benefits valued in this economic evaluation are a conservative estimate of the total benefits being delivered by PinG. The identified benefits not valued are difficult to value largely due to their diversity; while there was some anecdotal evidence available, the specific nature of the available evidence varied significantly so that generalisations were difficult to make. Moreover, increased industry and community involvement/leadership and/or family wellbeing are difficult to value.

Counterfactual

Without the investment in PinG over the four year period, it is assumed that the benefits valued would not have been delivered. However, it should be noted that there are attribution factors in the primary benefits valued that addresses to some extent the 'without PinG' scenario.

Participant Farm Profitability

Number of Farms Impacted

The total number of participants engaged in some way through professional development training activities is assumed to be 2,170 per year. This number is assumed to apply for each year over the four years. The number is derived from Table 7.

Allowances were made for multiple attendees from the same grain enterprise and for multiple representations of enterprises at different workshops. After these

adjustments were made it was estimated that there were potentially about 1,300 grain enterprises that could potentially be influenced each year.

Of the 1,300 it was assumed from anecdotal evidence that at least 50% would leave their PinG activity with the intention to change some farm practice. This is a conservative estimate based on some exit survey results.

It was then assumed that 30% of those intending to change would have actually changed and received the level of per farm benefits assumed (see later). While no evidence is available specifically for grain farms to support this estimate, the estimate is considered conservative and is supported by experience with follow up surveys (3-6 months) of actual practice change after intentions were stated at information forums for the northern beef industry. These assumptions resulted in an estimate of 195 grain farms being influenced each year to make practice changes on their farm that were associated with the PinG engagement.

Only a proportion of the impact of the practice change is attributed to the PinG engagement. It is assumed that practice change decisions are complex in their scope and timing and are usually the result of a number of factors that build on the existing frameworks and state of mind.

The detail of these assumptions used for deriving the final number of farm enterprises where improvement have resulted in financial gains are summarised in Table 12.

Impact per Grain Farm

Three types of impact are valued; these were selected to represent the most likely type of impacts associated with PinG and rely to some extent on the case studies reported earlier. The representative gains are:

- a chemical cost reduction due to improved spray applications,
- a cash receipts gain from improved marketing and grain storage decisions (higher grain price or less wastage in storage). and
- reduced time spent in the office due to improved office management.

Each farm only receives one of the above three benefits.

The specific assumptions used to value these benefits are detailed in Table 12.

Non-Participant Farm Profitability

Neighbours and /or other grain producers may have made changes as a result of observing actions of, and discussing options with, the PinG training participants. This is assumed to be a corollary of the networking developed by PinG. It was estimated that for each 100 participants in training who made practice changes there were another ten producers who also made changes as a result, part of which can therefore be attributed to the Partners in Grain Project.

Summary of Assumptions

A summary of the key assumptions made for valuing financial gains is shown in Table 12.

Table 12: Summary of Assumptions

Variable	Assumption	Source
FINANCIAL GAINS BY PARTICIPANTS		
Participant Farms Changing Practice		
Annual number of attendees engaged in professional development through PinG	2,170 per annum	Average from Table 7
Annual number of grain enterprises engaged by PinG	1,627 (2170 x 75%)	Agtrans Research (allowance made for more than one person attending training from the same grain farm)
Annual number of grain enterprises potentially affected by PinG	1,302 (1627 x 80%)	Agtrans Research (allowance for an enterprise making multiple attendances over the four years)
Number of enterprises potentially affected that may state intentions to change practices	650 (1,302 x 50%)	Agtrans Research (some exit survey reports from PinG suggest this may be higher but will depend on the individual training workshop; 50% is considered conservative)
Number of enterprises actually changing practice and receiving the level of financial gains assumed	195 (650 x 30%)	Agtrans Research (based conservatively on follow-up surveys to forums conducted by MLA)
Period to which benefits from practice change apply	Ten years including year of practice change	Agtrans Research
Year of initial benefit	Year after workshop attended	Agtrans Research
Financial Gains Linked to Training Sessions		
Farm office workshop		
Office time assumed without workshop	20 hours per month	Agtrans Research
Office time assumed with workshop	12 hours per month	Agtrans Research
Saving in time	96 hours per annum	From above rows
Value of time	\$20 per hour	Agtrans Research
Value of practice change	\$1,920 per farm per annum	From above assumptions
Attribution to PinG training	70%	High as limited other sources of practical training available
Number of enterprises actually changing practice and receiving the level of	65	195/3 (as one third of enterprises receive this benefit)

financial gains assumed		
<i>Spray workshop</i>		
Cost of chemicals per grain farm	\$66,054	ABARES Farm Survey (AgSurf) Average for years ending June 2006 to June 2010
Cost reduction assumed	2.5%	Agtrans Research
Value of practice change	\$1,651 per farm per annum	From above assumptions
Attribution of cost reduction to PinG training	60%	Agtrans Research
Number of enterprises actually changing practice and receiving the level of financial gains assumed	65	195/3 (as one third of enterprises receive this benefit)
<i>Grain storage and grain marketing</i>		
Cash receipts per grain farm	\$615,376 per annum	ABARES Farm Survey (AgSurf) Average for years ending June 2006 to June 2010
Revenue gain	0.5%	Agtrans Research
Value of practice change	\$3,077 per annum	From above
Attribution of revenue gain to PinG training	50%	Agtrans Research
Number of enterprises actually changing practice and receiving the level of financial gains assumed	65	195/3 (as one third of enterprises receive this benefit)
NON-PARTICIPANT FINANCIAL GAINS		
Proportion of PinG participants changing practices who influence at least one other grain farm to change practice	10%	Agtrans Research
Average value of a change in practice per farm	\$2,216 per farm	Average of three practice change values from above
Attribution of practice change to spillover from PinG participants	50%	Agtrans Research

Results

All past costs and benefits were expressed in 2010/11 dollar terms using the CPI. All benefits after 2010/11 were expressed in 2010/11 dollar terms. All costs and benefits were discounted to 2010/11 using a discount rate of 5%. The base run used the best estimates of each variable, notwithstanding a high level of uncertainty for many of the estimates. All analyses ran for the length of the investment period plus 30 years from the last year of investment (2010/11).

The present value of benefits (PVB) from each of the two sources of benefits was estimated separately and then summed to provide an estimate of the total value of benefits.

Investment criteria were estimated for both total investment and for the GRDC investment alone. Each set of investment criteria were estimated for different periods of benefits. The investment criteria were all positive as reported in Tables 13 and 14.

Table 13: Investment Criteria for Total Investment and Total Benefits for Each Benefit Period (discount rate 5%)

Criterion	0 years	5 years	10 years	15 years	20 years	25 years	30 years
Present value of benefits (m\$)	1.63	6.35	9.07	9.08	9.08	9.08	9.08
Present value of costs (m\$)	2.64	2.64	2.64	2.64	2.64	2.64	2.64
Net present value (m\$)	-1.01	3.72	6.43	6.44	6.44	6.44	6.44
Benefit-cost ratio	0.62	2.41	3.44	3.44	3.44	3.44	3.44
Internal rate of return (%)	negative	39.9	43.6	43.6	43.6	43.6	43.6

Table 14: Investment Criteria for GRDC Investment and Benefits to GRDC for Each Benefit Period (discount rate 5%)

Criterion	0 Years	5 years	10 years	15 years	20 years	25 years	30 years
Present value of benefits (m\$)	0.68	2.66	3.80	3.80	3.80	3.80	3.80
Present value of costs (m\$)	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Net present value (m\$)	-0.42	1.55	2.69	2.69	2.69	2.69	2.69
Benefit-cost ratio	0.62	2.41	3.44	3.44	3.44	3.44	3.44
Internal rate of return (%)	negative	39.6	43.2	43.3	43.3	43.3	43.3

There are two sources of benefits valued in the analysis. Table 15 shows the relative estimates of the contribution from each source.

Table 15: Contribution of Source of Benefits to Present Value of Benefits

Source of Benefit	Relative Contribution to Present Value of Benefits	
	\$ million	%
Financial gains by participants	8.39	92
Financial gains by non-participants	0.69	8
Total	9.08	100

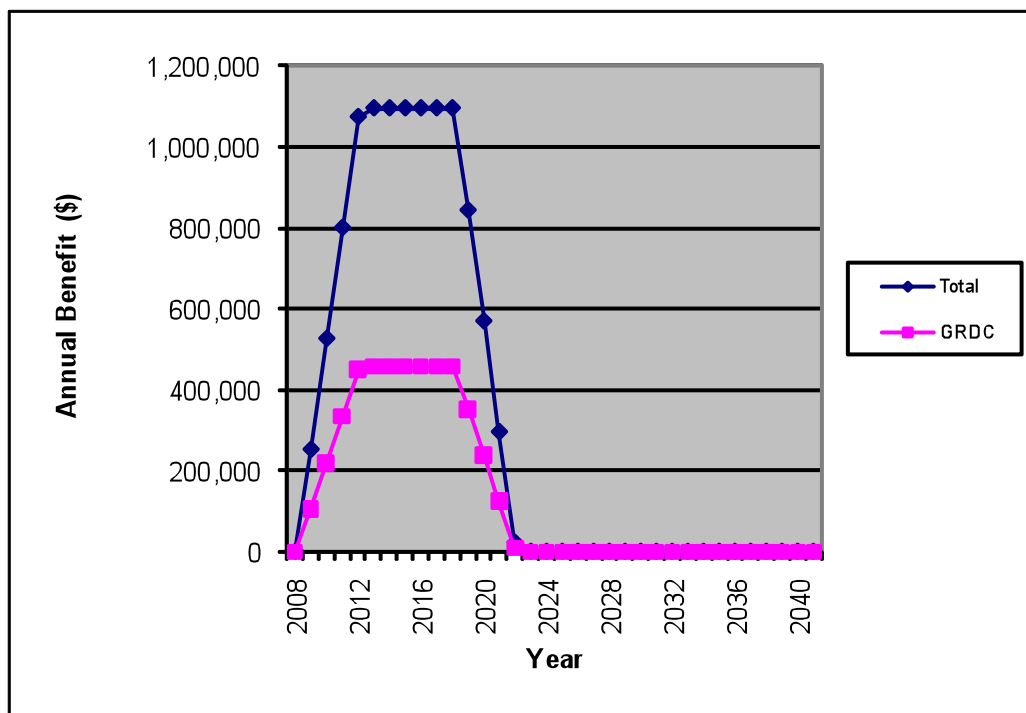
The quantified benefits are allocated to the Rural Research Priorities as expressed in Table 16.

Table 16: Allocation of Quantified Benefits to Rural Research Priorities

Rural Research Priority	Allocation
1. Productivity and adding value	100%

The annual net benefit cash flows for both total investment and GRDC investment for the 30 year period from the year of last investment are shown in Figure 1.

Figure 1: Annual Benefit Cash Flow



Sensitivity Analyses

Sensitivity analyses were carried out on several variables and results are reported in Tables 17 and 18. The sensitivity analyses were performed on the GRDC investment results using a 5% discount rate with benefits taken over the life of the investment plus 30 years from the year of last investment. All other parameters were held at their base values.

Table 17 shows the sensitivity of the investment criteria to changes in the discount rate.

Table 17: Sensitivity of Investment Criteria to Discount Rate
(GRDC investment, 30 years)

Criterion	0%	5% (Base)	10%
Present value of benefits (m\$)	4.58	3.80	3.24
Present value of costs (m\$)	1.03	1.10	1.18
Net present value (m\$)	3.55	2.69	2.06
Benefit cost ratio	4.46	3.44	2.74

Table 18 shows the sensitivity of the investment criteria to changed assumptions regarding the number of grain farms changing practice where PinG was a major causal factor. The benefits include both PinG participant changes as well as the spinoff farms changes. The break even (benefit cost ratio =1) number of participant farms changing practice as a result of one year investment in PinG is 57.

Table 18: Sensitivity of Investment Criteria to Number of PinG Participants Changing Practices as a Result of PinG investment in One Year
(GRDC investment, 5% discount rate, 30 years)

Criterion	Number of PinG Participant Farms Changing Practice each Year		
	97	195 (base)	390
Present value of benefits (m\$)	1.90	3.80	7.60
Present value of costs (m\$)	1.10	1.10	1.10
Net present value (m\$)	0.80	2.69	6.49
Benefit-cost ratio	1.72	3.44	6.88
Internal rate of return (%)	18.0	43.3	88.5

8. Confidence Rating

The results produced are highly dependent on the assumptions made, some of which are uncertain. There are two factors that warrant recognition. The first factor is the coverage of benefits. Where there are multiple types of benefits it is often not possible to quantify all the benefits that may be linked to the investment. The second factor involves uncertainty regarding the assumptions made, including the linkage between the research and the assumed outcomes.

A confidence rating based on these two factors has been given to the results of the investment analysis (Table 19). The rating categories used are High, Medium and Low, where:

- High: denotes a good coverage of benefits or reasonable confidence in the assumptions made
- Medium: denotes only a reasonable coverage of benefits or some significant uncertainties in assumptions made
- Low: denotes a poor coverage of benefits or many uncertainties in assumptions made

Table 19: Confidence in Analysis of PinG Investment

Coverage of Benefits	Confidence in Assumptions
Low	Medium

9. Conclusions and Lessons Learned

The investment supported a range of training and engagement activities for grain farmers across all grain producing states. The target audience was women and young people on grain farms but this target varied to some extent between states with all farmers (men included) being targeted in some states.

One of the strengths of PinG was that management and allocation of funds was managed on an individual state basis in order to deliver what was deemed to be required locally. Apart from being demand led, a second strength of the project was PinG's practical (hands on) training approach. A third strength was the leverage partnership and sponsorship attracted, allowing PinG to reach significant numbers of grain enterprises across Australia.

A key consideration in any evaluation of PinG is whether the project is servicing a niche that is not well covered by other GRDC or non-GRDC investments in industry capacity building. A quick review of other GRDC initiatives suggests that, while there are other extension, training, leadership and capacity building investments, there is a gap in local demand-led training with such a high practical focus.

Non-GRDC initiatives that focus on rural women include 'Australian Women in Agriculture' (AWiA) and the DAFF program 'Recognising Women Farmers'. Both focus on leadership and building capacity. However, AWiA does not support training and the DAFF program provides short term grants that do not provide the continuity afforded by PinG.

The danger of GRDC supporting a permanent infrastructure that could become self-centred among a small group of personnel or bureaucratic in nature needs to be recognised. However, the number of grain producers associated with PinG training and the leverage exerted by PinG from the GRDC support should allay this fear and performance in both areas provides evidence that PinG is servicing a niche that is benefiting grain enterprises across Australia.

A key question is what would happen if the project no longer existed; would other existing initiatives substitute in terms of capacity building and engagement? Our considered conclusion based on the material presented in this economic evaluation is that the niche occupied by PinG would be difficult to service without some structure akin to PinG.

The difference in target audiences between states may present an opportunity to address the relative effectiveness of different models of application regarding engagement, learning outcomes and capacity building impacts.

There are three avenues whereby PinG could be strengthened further by GRDC.

The first is through the development of PinG to assist with integration of its overall extension and training activities. A start could be made by encouraging GRDC program managers to become familiar with PinG. This could commence with each program manager attending one PinG workshop each year that was focused on the manager's field of interest to assess how PinG may complement other communication and extension activities in their field.

The second is through PinG being encouraged to adopt a stronger and formalised evaluation framework for planning, monitoring and reporting (e.g. Bennett's Hierarchy – Bennett, 1979) in order to trace the linkage between the investment inputs, activities, outputs and impacts (Figure 2).

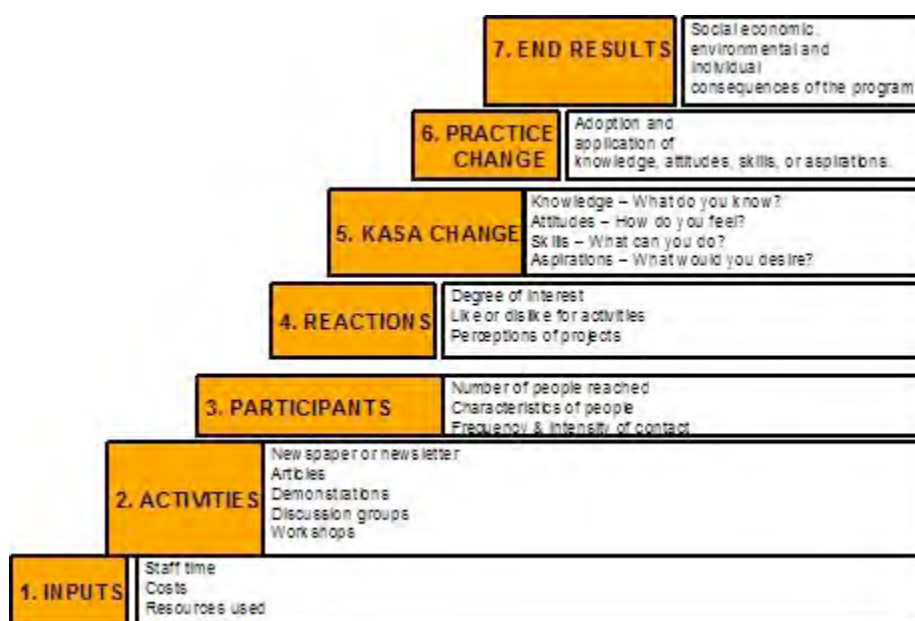


Figure 2: Basics of Bennett's Hierarchy

The third is through active encouragement by GRDC (perhaps via special funding) to assess different forms of follow-up activities to training in workshops. This could serve the purposes of:

- assessing the merits and cost effectiveness of different follow-up activities in terms of increasing successful adoption and effectiveness of practice changes.
- providing evidence of practice change to improve evaluation of PinG investment by contributing to improved reporting against the logical framework of the program.

The four year investment in the Partners in Grain project has produced a number of benefits some of which have been valued. The total investment of \$2.64 million (present value terms) has been estimated to produce total gross benefits of \$9.08 million (present value terms) providing a net present value of \$6.44 million, a benefit-cost ratio of 3.4 to 1 (over 30 years, using a 5% discount rate) and an internal rate of return of 44%.

These results should be considered an underestimate of the true value of the investment due to the difficulty in valuing the social benefits that are likely to have accrued.

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