BUILDING CAPACITY FOR DELIVERY OF COMMERCIAL IRRIGATION SERVICES: A CASE STUDY IN THE COTTON AND GRAINS INDUSTRIES

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ABSTRACT

In the irrigation sector, much of our effective knowledge is not only contained within the products of our research undertakings, but also within the practitioners, farmers and service providers of the industry. With a focus on improving water use efficiency, it is important that the individuals who make the decisions about how irrigation water is used, farmers and their advisors, have effective access to as much of the collective industry knowledge as possible.

Phase 1 of the Knowledge Management in Cotton and Grain Irrigation project identified some of the key mechanisms by which knowledge is created and transferred by industry stakeholders.

Recommendations to improve the adoption of appropriate irrigation practices and technologies included innovative new training, changes to the delivery of irrigation extension services and the development of a service sector to provide irrigation services commercially.

In developing a model for commercial delivery of irrigation services, it was recognised that the service providers would require two major components:

- The product; a suite of services and the skills, knowledge, technology and equipment to deliver these services. Confidence in their own abilities was seen as a key.
- The business; an understanding of how irrigation services fit with existing business components, pricing regimes, costings and a sustainable client base for ongoing demand.

The Consultant Support Program was initiated in August 2007 to provide support to existing commercial service providers (agronomic consultants) in the Cotton and Northern Grains industries to expand their delivery of irrigation related services. The aim was to increase the capacity of these businesses to deliver sustainable irrigation services into the future.

A total of 14 consultants were selected from a number of regions from the Darling Downs to the Namoi valley through an expression of interest process. An initial meeting in September brought the consultants together to identify the types of services that might be delivered and to develop individual action plans for the 2007-08 summer irrigation season.

Individual follow-up meetings were conducted to refine these action plans and to determine the role that project staff would play. Training was provided to the consultants as well as many of their grower clients to increase the skills of the whole group and encourage demand for services by the clients.

Over the course of the season, regular mentoring by project staff built on the initial training to increase the confidence of consultants to deliver their chosen services. Additional assistance to source funding and better understand the economics of various service delivery options aimed to provide consultants with the ability to continue delivery of these services into the future.

INTRODUCTION

Knowledge is fundamental to improving the competitiveness, responsiveness and levels of innovation that we see in industries (Callan et al., 2004). However knowledge is not an abstract, tangible thing that be exchanged between people without any mediation, transformation or interpretation (Campbell, 2006). A frequent misconception is that knowledge can be equated with information; however knowledge is really the application of information within a given context. The way this information is applied will also vary depending upon the characteristics of, and resources available to, those who are applying it. Therefore, whilst it can be easy to codify and distribute information, knowledge is much more difficult to capture or transfer.

The Australian Cotton and Grains industries identified that a wealth of irrigation knowledge exists within their industries and maximising the management of this knowledge is vital. A project to investigate and improve the existing the irrigation knowledge system was developed with the National Program for Sustainable Irrigation (NPSI) and began in 2004.

The first phase of this project involved extensive consultation with stakeholders across these industries to determine how they currently accessed information and shared knowledge, and how they would like to achieve this into the future. This phase concluded that there were many existing components of the knowledge system which worked quite effectively, but that also there was potential to build in new components and improve others.

Some key observations included:

- Growers preferred personal contact, particularly one-on-one, to gain information about water management.
- Agronomic consultants were a major source of information to growers and provided an opportunity to integrate knowledge from a number of sources, including other growers.
- Growers and consultants learned best from each other, as this suggested the knowledge shared was practical and previously tested.
- Information was best delivered in short, concise, practical and timely formats.

Following a workshop to integrate the initial observations and progress the interim recommendations, a number of key priorities were identified to be addressed during phase 2 of the project. The priorities included:

- Development of training targeted at grower managers and consultants (decision makers), designed in keeping with the key observations noted above.
- A pathway for accreditation in irrigation management.
- Development of case studies of grower's efficient practices and improvements.
- Development of appropriate information resources, both detailed (WATERpak) and concise (media, newsletters, web, etc).
- Integration of local on-farm trials and regional extension activities.
- Development of a business model for delivering commercial irrigation services.

This paper will discuss the most recent work undertaken to encourage the development of commercial irrigation services within the cotton and grains industries.

INITIAL OBSERVATIONS

The concept of encouraging the delivery of commercial irrigation services was borne largely out of the information obtained during phase 1 of the project. There were numerous observations that suggested that commercial irrigation services would benefit both consumers (growers) and suppliers (existing service providers). These observations are summarised below.

- The cotton industry in particular, but also many grains growers, already utilised an extensive network of private consultants to provide agronomic advice.

- Consultants provided services to growers in a one-on-one fashion, typically on a weekly, or more frequent, basis. This method of delivery was consistent with the observations from growers as to how they prefer to access information.
- Consultants tended to have long-term relationships with individual growers built upon a deep understanding of the grower's experience, risk profile, soil and water conditions, as well as high levels of trust.
- Because they service a number of growers, consultants were a key resource in terms of bringing in the experiences of other growers in similar regions or conditions with similar problems. In this way consultants are already a key knowledge transfer mechanism.
- Agronomic consultants felt that many growers were more sophisticated than themselves when it came to irrigation. Consultants were the repository of agronomic expertise, but had not become the repository of irrigation expertise, so growers had looked elsewhere to access this.
- Consultants believed that water has now emerged as the new area of focus for them. At the time of the Phase 1 study (2004) Bollgard II cotton had recently been released and consultants anticipated that they would need to focus on other issues as the substantial proportion of time that had previously been devoted to checking for Helicoverpa (Heliothis moth) would no longer be required. In effect there was some concern that Bollgard II would reduce the workload, and possibly income, for agronomic consultants.
- Consultants are generally paid for agronomic services according to the area of crop planted. Some forward thinking consultants were able to see that if they were able to provide irrigation services that saved water for their clients, then this water might be used to grow a larger area of crop. In this situation, there is potential for increased revenue from both stand-alone irrigation services and an increase in agronomic services.

Hence, it seemed logical that building the capacity of consultants to deliver irrigation services would satisfy their demand to expand into this market, as well as provide a key component of the irrigation knowledge system.

The concept of capacity building is often discussed, yet seldom defined. In the Australian Rural context it may be construed as processes designed to help individuals or groups to improve their stock of human, social, financial, physical and natural capital (Macadam et al. 2004). When applied to the task of building the capacity for delivery of irrigation services, these stocks encompass an array of skills, knowledge, confidence, social networks, trust, tools, equipment and land and water resources. For these services to be delivered commercially, an array of financial considerations must also be met.

Following analysis of these various considerations, the issues that need to be addressed in order to develop a sustainable commercial irrigation service sector can be reduced to two main categories:

- The Product
  - Skills, knowledge and confidence within the individuals delivering services.
  - Tools and equipment required.
  - A range of services to deliver, matched to potential demand and with on-going deliverability.
  - Recognised (standardised) procedures and processes.
- The Business
  - An understanding of how irrigation services fit into their business.
  - Social networks for expertise and support as well as client identification.
  - Demand for services including client value for money, ability to pay and on-going (not one-off) services.
  - Financial viability – capital costs, labour, return on investment, incentives to encourage investment.

DEVELOPING THE COMMERCIAL IRRIGATION SERVICE MODEL

Initial development efforts were unsuccessful due to an inability to engage potential service providers as a collective and the perceived lack of interest from most consultants, despite the

positive indications suggested during phase 1 and described previously. These issues will be discussed in further detail later in this paper

A revised approach involved calling for Expressions of Interest in July 2007 for individuals or businesses to be involved in a Consultant Support Program to assist consultants to improve their ability to deliver commercial irrigation services. The aim of this program was to provide training, advice, one-on-one support and relevant economic analysis to successful applicants to build their confidence that they were able to deliver a service that added value to their business.

Support would be provided by the local extension officer in the first instance, with further support offered by the National Irrigation Knowledge Broker. Specific training, developed separately within this project, would be provided.

Whilst there was no target audience for the EoI, applicants were all agronomic consultants. A total of 14 applications were received, and all of these applications were accepted. This represents a reasonable proportion of the agronomic consulting businesses within the industry, estimated at between 90 and 120.

The applications were reasonably well spread across the industry with 3 in the Namoi Valley, 3 in the Gwydir valley, 3 in the Border Rivers/St George and 6 on the Darling Downs. The Darling Downs consultants were included in initial meetings, but were organised separately in order to fit with another complimentary project local to that region. One Darling Downs consultant subsequently withdrew from the program in order to work overseas, reducing the total number of participants to 13.

THE CONSULTANT SUPPORT PROGRAM

Many of the consultants had already been involved in the delivery of some types of irrigation services, mostly irrigation scheduling. Figure 1 shows the number of consultants that had previous experience in delivering a number of different services.

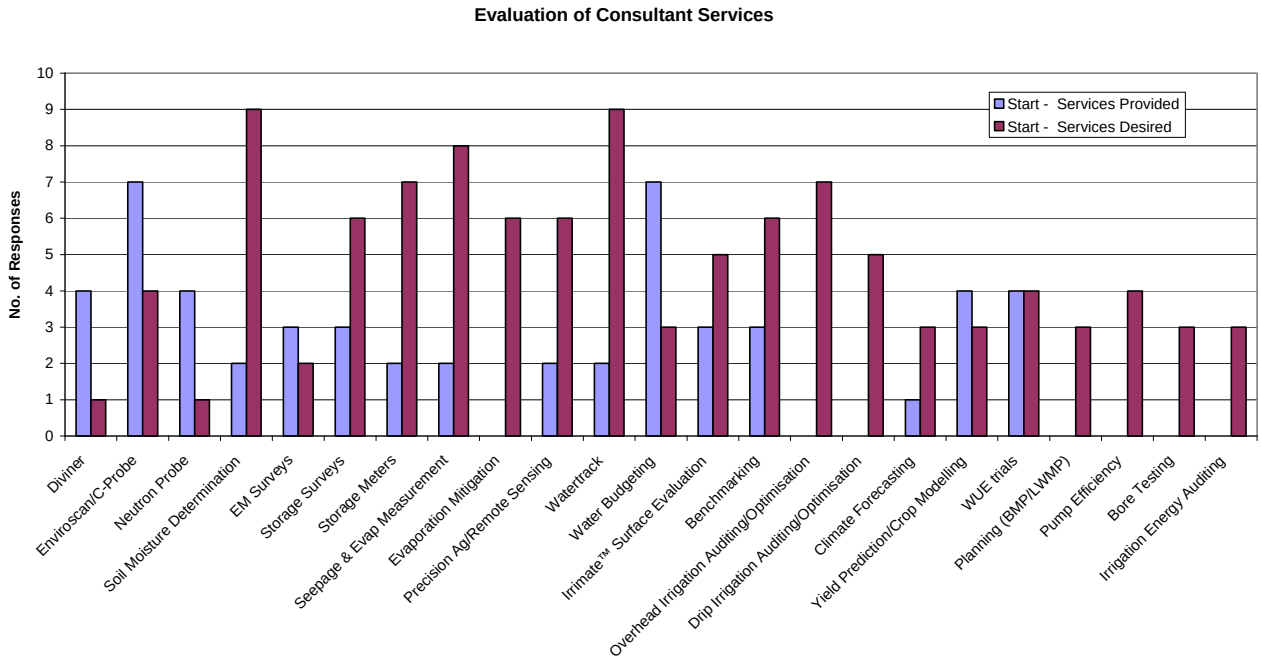

Figure 1 – The number of consultants who already delivered (blue) or wanted to deliver (red) a range of different irrigation services.

The Consultant Support Program started with a meeting for all participants in Toowoomba. This meeting was designed to get the participants together to initially share some thoughts on service

types and the experiences of those who had already tried to deliver an irrigation service of some type. Individual actions plans were also developed that outlined the services that individuals wanted to focus on for the upcoming summer irrigation season (see also Figure 1), and the specific types of support they required.

Participants chose up to 3 services to focus on, although most consultants ended up focussing on only one, or none. The main services that were of interest included Surface Irrigation Performance Evaluation (using the commercially available Irrimate™ system), Centre Pivot/Lateral move assessment and management, storage measurement and metering, and Watertrack™, a commercially available whole farm water accounting package.

The types of support accessed typically involved initial training. In most cases, this training consisted of one or more of the irrigation training workshops developed as part of the wider project. Key workshops included Irrigation Benchmarking and Water Budgeting, Scheduling I, Pumps and Surface Irrigation Performance Evaluation. In addition to these project workshops, some participants attended one of many Centre Pivot and Lateral Move workshops throughout the industry. In addition to this basic training, some specific events were conducted as demanded.

For example, consultants in the Gwydir valley attended a Lateral Move system audit and were then taken through the process of analysing the data collected and recommending changes to the system. Many consultants were directly supported with field visits to discuss or demonstrate pump testing, lateral move management, surface irrigation performance assessment or storage metering.

RESULTS

This program is still underway, so the effectiveness of the model presented is still to be evaluated. Unfortunately, progress to date has not been as successful as originally envisaged. Some participants have had limited involvement, and have not delivered any irrigation services. Most participants have increased their knowledge of the services they were interested in, and are now more aware of what is involved in delivery, but have not actually progressed to the point of delivery.

Five participants have actually delivered a commercial service, all of whom are located on the Darling Downs, where a complementary project includes incentive funds for growers to be able to provide payment to the consultants for these services. All of these consultants undertook surface irrigation performance evaluations, with one also intending to audit an overhead irrigation system. Two of the five consultants had already undertaken surface irrigation evaluations prior to involvement in this program, and their capacity to conduct these has increased. Many of the participants intend to undertake water benchmarking with their clients at the end of the current season.

Whilst this shows potential, the disappointing progress, particularly by participants in other regions, has been due to a number of unique factors. A combination of seasonal conditions and drought related capacity constraints made it extremely difficult for consultants to actively partake in the program. Early in the season, during the planning phase (August – November 2007) most consultants were unsure of the extent of irrigation to be undertaken by their clients due to a severe lack of water. Early in the New Year, nearly all consultants became extremely busy as recent rain had stimulated sowing of an extensive area of dryland grain crops, for which they were required to provide agronomic advice. This was coupled with existing capacity constraints as most consulting businesses had drastically reduced staffing levels due to drought and growers did not have capital reserves to spend on new irrigation services. This resulted in many consultants either delaying, decreasing of ceasing their activity within the program.

Delivery of the Consultant Support Program also varied regionally. In some regions, all consultants involved were contacted regularly and numerous opportunities were given for direct support. In other regions, there was insufficient ongoing contact with the consultants and few opportunities were presented. Whilst the enthusiasm and time commitments of the consultant contributed

significantly, it is also possible that different levels of input provided from local extension staff may have contributed to these regional differences.

In one region, a consultant who had already started delivering irrigation services in the previous season was reluctant to share openly through the group process, particularly with other consultants within his region, because of a fear that his existing competitive advantage (more experience) would be reduced. Whilst there was truth to this argument, this also meant that he was unable to identify potential opportunities and synergies with the other local participants.

EXAMPLES OF SERVICE DELIVERY

Consultant A – Darling Downs

Prior to this season, this consultant had offered only limited irrigation scheduling advice to his clients. With support from the financial incentives available in this region, he has conducted two surface irrigation performance evaluations. He has also organised a visit from project staff to provide advice to a grower on management of his Lateral Move irrigator and to work through recommendations to improve performance. He is also keen to evaluate the use of *Watertrack Rapid*™ to benchmark water use indices.

Consultant B – Namoi Valley

This consultant in the Namoi Valley had already started to deliver some irrigation services prior to this season, including scheduling, surface irrigation performance evaluation, storage metering and whole farm water accounting, using existing commercially supported products. He identified a desire to increase his capacity to measure pump performance and provide recommendations that would ultimately deliver cost savings so his clients. He was accompanied by a project team member for a day to undertake an initial pump test. During this time he was shown the equipment and procedures required.

Following this initial supported visit, the consultant subsequently revisited the site and undertook further measurements, contacted suppliers and provided recommendations to his client which would improve pump performance. He did not offer this service commercially at this early stage, but is currently working to increase his confidence and to determine the cost effectiveness of this service delivery to his business, and hopes to be able to deliver the service commercially in the near future.

DISCUSSION

Information obtained over the course of this project has suggested that a commercial irrigation service sector would provide potential benefits to consulting businesses and growers as well as improve the irrigation knowledge system within the cotton and grains industry. However there have been challenges in establishing this sector which need to be addressed.

As discussed previously, data obtained from both growers and consultants in 2004 suggested that commercial irrigation services would be attractive to both growers (consumers) as well as consultants (suppliers). A lengthy delay between completion of the scoping study (November 2004) and implementation of phase 2 (December 2005) meant that the program lost momentum and industry conditions changed. Most notably, drought conditions worsened (and would continue to worsen over the life of the project) which reduced the capacity of growers to pay for services and also reduced the capacity of consultancy businesses to supply services, particularly due to downsizing and scant availability of labour.

Furthermore, during this period of time, Bollgard II cotton was completely introduced, subsequently forming 80% of the Australian crop (Rossiter, 2006). During the scoping study, consultants predicted that introduction of Bollgard II cotton would dramatically reduce the time they spent checking and advising on Heliothis. Whilst this proved to be true, the majority of consultants have

instead spent this time checking and advising on secondary pests, rather than expanding their services in other areas, such as water. However, although the widespread desire to deliver irrigation services which was initially predicted has not occurred, there are still some consultants who are keen to expand into this area, as evidenced by their involvement in this program.

Uncertainty of water supply is a factor that has the ability to increase the demand for irrigation services in an attempt to make better use of the water available, but also decreases the ability to pay for services due to tightening of farm budgets. As shown on the Darling Downs this season, providing incentive money in conjunction with the consultant support program has enabled all of the consultants to become more involved. This particular incentive program was novel, in that it only allowed funds to be spent on services delivered by consultants, thus filling a major role in providing the financial capital that allows businesses to move into new business areas. The Consultant Support Program was then in a position to build the human, social, physical and natural capital required.

Whilst in the past there have been concerns about public extension programs assisting private enterprise, it has been clearly demonstrated that in the cotton and grains industries, these consultants are an integral part of the knowledge system. These consultants provide one on one services in the format desired by growers, which cannot be delivered to all growers by public extension with the current level of resourcing. It makes sense to leverage the extension resources available to ensure that the knowledge being delivered by the consulting sector is congruent with extension service priorities.

CONCLUSION

It seems clear that the Consultant Support Program has the potential to help build capacity within the commercial irrigation service sector. Whilst the program has met with obstacles during its development phase, there have also been demonstrated positive outcomes. Where irrigation incentives have been provided, the quantum of services delivered has been significantly greater, and these services have been delivered on a fee for service basis, establishing the commercial culture.

A range of services have been trialled across several regions by consultants with a mix of experience. Even where services have not been delivered on a fee for service basis, often services have been trialled, or the first steps have been made that will allow delivery to be expanded in subsequent years. In most circumstances, consultants have indicated that if nothing else, they are keen to better understand the principles so that this knowledge can be reflected in other parts of their business.

Extension staff have largely been supportive of the program. In most cases, activities align with existing extension project requirements and extension staff can see that they are able to reach a larger proportion of growers by working through consultants. Numerous extension staff involved in this project have indicated that they wish to see the program continue, and this is reflected in new extension funding proposals that are now being negotiated.

Should this program be continued, it is recommended that existing consultants be encouraged to trial new services in subsequent seasons and that new consultants should be brought into the program. Demonstration trials and training workshops should be better integrated with the services being trialled and more opportunities should be provided for participants to meet and share experiences. Coordination across regions is vital, particularly when attempting to integrate regionally delivered incentive programs.

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