RURAL SOCIAL AND ECONOMIC RESEARCH CENTRE

Producer-Focused Extension Education

Central Queensland
UNIVERSITY

PRODUCER - FOCUSED EXTENSION EDUCATION: A Central Queensland Case Study

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I have a respect, affection and curiosity for nature which was nurtured and stimulated by my parents at a young age. My parents and extended family are from a rural background so I grew up with stories of the bush, walks through paddocks and country shows.

This respect, affection and curiosity for nature led to my obtaining a Bachelor of Science majoring in botany and ecology. I then completed a Graduate Diploma of Education which opened another dimension to my life, working with people. This paper is a summary of a Masters research project that represents a natural progression combining both education and nature. Learning about the project process and the implications of extension education is the focus.

The research was completed while a student at CQU Rockhampton. The thesis title is *The Use of Action Research to Address Vegetation Management on Beef Properties in Central Queensland.*

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INTRODUCTION

"Extension" education is a name given to information offered to agricultural producers by government departments such as the Department of Primary Industries. There is no agreement or single definition for extension which, in part, contributes to "...a felt lack of direction, a very poorly articulated theoretical basis for action, and a loss of professionalism" (Russel *et al.* 1989, p iii). There are significant debates about how extension is and should be practised. This paper seeks to contribute to those debates.

The paper reports on one aspect of a major project which used an action research process developed and implemented as an alternative extension education approach. I worked with two groups of beef producers and their needs in relation to vegetation management in central Queensland over a seven month period during 1994. The groups were located in two different valleys approximately 30 minutes south of Rockhampton. The groups had a fairly even male to female ratio for they were comprised of couples with some of their children participating in one of the group meetings. During this paper I will refer to them as Group 1 and Group 2.

The project was initiated because of the apparent lack of adoption of vegetation management recommendations put forward by the Department of Primary Industries. Knowledge about producers in important, since little is recorded in extension education literature and the processes used to gain this knowledge may be extrapolated from this study to other studies using a similar approach. Also with recognition of the severe land degradation problems of the southern states this project was seen as a proactive step to halt this trend in central Queensland. The overall project has been recorded elsewhere (Gray 1994).

One important outcome of this project is a recommendation that extension education should become more producer focussed. A modified action-learning framework used and evaluated in the project is offered as one way of achieving this. I would see this book as most useful to groups of producers who want to organise their own extension program(s) and extension officers who want to improve their own practice.

In this paper I give a short history of extension education. I then outline the rationale for the method used. I then draw out the key features and strengths of the project with some discussion of the cautions with the use of action research. The project also documents how producer themselves preferred to work and learn, an area that is usually missing from extension education literature. Findings about the producer participants follow with the paper concluding with a discussion on producer-focused extension education and how extension can improve

Action research or action learning was used because it is a methodology which aims at action to bring about change in some community or organisation or program and seeks to increase understanding on the part of the researcher or the client, or both. "The whole purpose of action research is to determine simultaneously an understanding of the social system and the best opportunities for change" (Dick 1993, p.11). Producers need an extension process which assists them in finding solutions to their problems in groups at a local level.

Keith and Bryant (1992) recognised the links between action research and extension education. In the project, I have attempted to make this link explicit. All of these, however, were primarily theoretical discussions of new horizons for extension education. There was little practical assistance from either extension or action research literature in designing or conducting the project other than Clark's (1993) Participatory Problem Solving cycle which was used as the framework.

The project's aim was to conduct a collaborative inquiry with producers and key researchers into vegetation management. It was designed to lead to an improved understanding of vegetation management between producers and specialists and in turn to improve the existing problems. I was interested to investigate whether action research could bring about an improvement in vegetation management practice through group examination and interruption of practice. From the outcomes of this study, it was anticipated that valuable insights would be gained into how to best work with producers and how to process information and improve practice from a producer's perspective. This research also sought a process that would allow the producers themselves to benefit from the study and be instrumental in establishing the direction of any change which might result.

This research project on my part was a response to the call of urgency in relation to land degradation. It investigated whether action research is able to contribute to changes in producer practice and thereby address the problem of land degradation. A critical focus of the research, therefore was producers' perceptions of the situation. The project treated the issue of land degradation as primarily a problem of learning to change practice rather than a technical, information problem. Projects that allow producers to be challenged and learn are urgently needed as producers seek to improve their practice and businesses as this is part of their achieving self-determination.

Extension Education History

Traditional extension processes have overemphasised the natural environment and technology and have underplayed the impact of people on the environment. The weaknesses of traditional extension processes are well noted in the literature. A more balanced approach is needed, one that recognises the role humans play as major change agents and modifiers of the environment.

> *It is our view that a technocentric approach to agricultural extension, where the reason for extension is technology and its transfer, is at best a short sighted approach to a far more complex set of issues. These issues arise in part because of the family managed nature of agriculture in Australia. They arise because farming families construct their situation in a way which is different to that used by the extension services (Hannibal and Sriskandarajah 1992, p.40).*

Extension has tended to concentrate on transmitting information and knowledge. Hall (1979) makes the point that the production of information and knowledge has become a big business; knowledge has become a commodity. The Department of Primary Industries, for example, is a developer and holder of knowledge. People within these organisations control what knowledge is

seen to be valued and therefore what is disseminated and how, and what knowledge will be created in the future.

Traditional extension does not take into consideration issues of adult learning, nor has it made a distinction between or linking of the terms information, knowledge and learning. Information is something received or obtained through informing. Knowledge is the fact or condition of knowing something with a considerable degree of familiarity gained through experience of or contact or association with the individual or thing so known. Learning is the process of acquisition and extinction of modification of existing knowledge, skills, habits or action tendencies in a motivational organism through experience, practice or exercise. One can generate and utilise knowledge but not transfer it (Roling 1988). With learning, the emphasis is on process and on certain attributes of the learned. These issues come under the auspices of adult education which has not been greatly linked to extension literature.

Gray and Phillips (1992) point out that the supply of information does not in itself constitute learning. Nor can the acquisition of information be regarded as evidence of learning. There is an importance in the processing of information by learners. They argue that learning is the creation of knowledge. To talk about the transmission of knowledge is 'biologically impossible' and 'philosophically unattractive'.

Australian agricultural research and development has largely been based on a linear model (Russel *et al.* 1989, Ison and Ampt 1992, Lees 1990, Campbell and Junor 1992). This model is based on reductionist science and the view that science alone holds the key to increased productivity and profit (Ison and Ampt 1992). The process is described as:

research ➡ knowledge ➡ transfer ➡ adoption ➡ diffusion

Here the communication is top-down and in one direction from researcher to producer: the technology/information flows in this one direction. Campbell and Junor (1992) argue that it is unrealistic to assume that information flows in one direction only. The model starts with researchers conducting experiments, research findings are passed onto an extension officer who extends to farmers, who may or may not implement the technology. Farmers are viewed as passive recipients of information. It assumes that they should apply the technology/information for their own good (Seelinger 1992, Vanclay 1992b, Russel *et al.* 1989). The producer represents a deficit model. Extension "...deals with top down formal learning from experts who lecture, and outcomes which are measured by changes in behaviour" (Gray and Phillips 1992, p.54). It assumes that scientists possess essential and superior knowledge about agriculture and that the farmer will be the unambiguous beneficiary of that knowledge (Lawler *et al.* 1985). It is assumed that improved practices will eventually 'trickle down' to the majority of producers, something which proved to be problematic (Russel *et al.* 1989).

Traditional extension programs are aimed at solving the problem of how information can be transferred through by some form of communication. Knowledge or information is held by a 'change agent' that they consider will benefit the producer. An extension officer is the link between

what research has developed and the producer who adopts and implements the research findings (Lees 1990). This model has tended to be supported by both producers and researchers

With this model the responsibility lies with the target client: if change does not occur it is their 'fault'. Another way of looking at this model is to allow the 'target client' to adapt the extension message or method so that it is suited to the client. Information is thus given to producers (the end-users) after the information was developed for their benefit. This approach to extension has proven to be unsatisfactory for the information may be unusable or require major transformation to be relevant.

The message from extension has often concentrated on the attributes of technology rather than on the benefits that could be provided to the farmer (Murray 1992, Strachan 1992). Researchers found that farmers were not following recommendations. This then led to new ways of searching for ways to get farmers to do what the 'experts' had decided was good for them (Lawler *et al.* 1985). This attitude still prevails.

Many of the current extension strategies that are being undertaken for example, Queensland's Department of Primary Industries do not take enough account of the complexity of the situation, not only with individual producers but with whole areas. Areas are not just physical entities that are on maps; they also represent social networks, ways in which people relate to the land and each other. The complexities of the situation include the difficulties of working together when there is a history of family rivalry and the incompetence of different generations as well as a number of advantages.

Extension education tends to focus either on individual strategies or land strategies. Only recently has there been interest in group strategies. Richard Clark's Participatory Problem Solving (PPS) cycle is one of the few working examples of extension education based on the use of small groups (Clark 1993).

Chambers (1983) argues that present extension processes devalue the knowledge of rural people. He proposed that farmers and scientists can and should be full partners in the research and extension process. Communication should be 'bottom up' to allow information from farmers to inform the work of researchers. Farmer trials and experiments continue to make significant (though poorly harnessed) contributions to the total pool of knowledge, and good extension officers and researchers can also learn from producers (Cary 1992a). There is a need to explore ways of bringing farmers and their local knowledge back into formal knowledge production for agriculture (Kloppenburg 1991, p.521). Kloppenburg, goes further to say that;

> *There is concern that corporations and agribusinesses have managed to shape to their own advantage the choice of the problems that public agricultural science has undertaken and the way solutions to those problems are expressed in technologies.*

This view is also supported by Woods *et al.* (1993) when they note that extension often serves the needs of the institutions rather than the producers. They believe that farmers have been treated as recipients rather than generators of knowledge and that people should be treated as subjects rather than objects and that extension should 'learn' with producers see (Frank and Chamala 1992, p.127).

There is increasing pressure on extension to provide evidence of its effectiveness. "Evaluation of the effectiveness and cost benefit of extension, in order to determine appropriate funding levels, to direct resources most appropriately, and to plan the structure of future advisory, research and development systems, is most important" (Hartley 1992b, p.89). An evaluation process where producers, facililator and researcher evaluate together at each step of the research process is needed. Extension evaluation is essential, to ensure sound programs and to satisfy increasing pressures of accountability (Hartley 1992b).

Summary

Traditional extension has not worked for a number of reasons. It has not viewed producers as knowledgable partners. The location of power was where the information and influence on future research was held, with the specialists (experts). This contributes to a narrow view of extension which is primarily about technology transfer. This rigid approach has been slow to adopt and support new approaches to extension. There has been a lack of emphasis on adult education and learning principles, effective educational processes in which activities are co-ordinated and building on questioning and understanding of information by the participants. Too often extension processes have treated producers as a homogeneous group and have failed to involve the end-user in the planning and development stage of extension and research. New approaches in extension have saught to overcome these and other dificiencies.

New approaches have developed out of an increasingly strong sense of unease about the existing model which saw producers as 'empty vessels'. With this unease came studies and findings which gave new understanding of communication in extension process and an acknowledgment of the complex nature of farmers decision-making processes (Russell *et al.* 1989).

THE PROJECT

The Action Learning Framework

In any project there are methodological choices to be made: the choices for this project have been made explicit so it can be well understood that action research was chosen because it possesses certain qualities that fit the focus on the human aspects of the research situation (see Gray 1995).

> *The methods of natural science, extremely productive in enabling external observers to discover the regularities of the natural universe, are exceptionally difficult to apply to human affairs (Checkland 1992, p.1).*

Experimental research based on natural sciences has been shown to possess weaknesses or limitations when used in relation to people oriented research (Reason 1988). By simplifying complexity down into researching 'manageable bits' researchers have failed to come to terms with the interrelationships central to the complex human situation. Different issues that producers might face and their relationships with the environment and each other are not able to be dealt with using the methods of natural sciences which avoid human qualities such as attitudes, ethics, and knowledge which add complexity to a situation. Learning how and why producers do what they do would allow for understanding what is necessary to bring about change and improvement of current management practice (Clark 1993, pers. comm.).

What is important is to work on **how** to make agricultural extension education more effective, which in turn will mean an improvement in practice and health of the environment.

This research project was interested in the most ethical way of researching with people engaged in vegetation management. The project wanted to treat people with respect and regard, and wanted the givers of information to benefit from the research. Thus, the possible ways of approaching and learning about a situation were explored for the researcher felt that research must have a responsibility to the community. Traditionally those involved with research at the information giving phase did not benefit from the research; it did not influence the everyday functioning of their lives (Davies 1994, seminar).

This research project explores a framework of research and change. The framework involves people and the identification of problems, solutions, opportunities and alternative practice. This framework was developed and implemented to fill the gap that exists in agricultural extension education, drawing on a research approach known as action research.

> *Action research is a methodology which has the dual aims of action and research, action to bring about change in some community or organisation or program, research to increase understanding on the part of the researcher or the client, or both (Dick 1993, p.2).*

An action research process is useful because it explains the need for an ongoing, continuous, cyclical process of 'coming to know' and of improving practice, and with this is the integration of theory and practice (Zuber-Skerritt 1991). The aim of this section is to develop the theoretical concepts of action research and explain the particular properties that were chosen for this research.

Swepson (1994) argues that the four questions that a researcher needs to ask when implementing any form of research are:

1. Who decides if there is a problem or what is the problem?
2. What is the aim of the inquiry?
3. What is the nature of the problem situation?
4. What is the relationship of the researcher to the world?

Because action research has a different set of values and hence different aims to experimental and other forms of research, action research then makes different choices, which lead to a different collection of techniques.

In this project participants worked in small groups, with me acting as a facilitator. They interacted with specialists from various government departments. They also progressed through a sequence of techniques that were related and that were based and built on producer knowledge, expertise and learning.

The project's framework (Figure 1) and techniques were created and developed in such a way to maximise the involvement of producers in a process which captured their experience, knowledge, attitudes and perceptions. This process was developed to ensure adoption of improved vegetation management would be optimised.

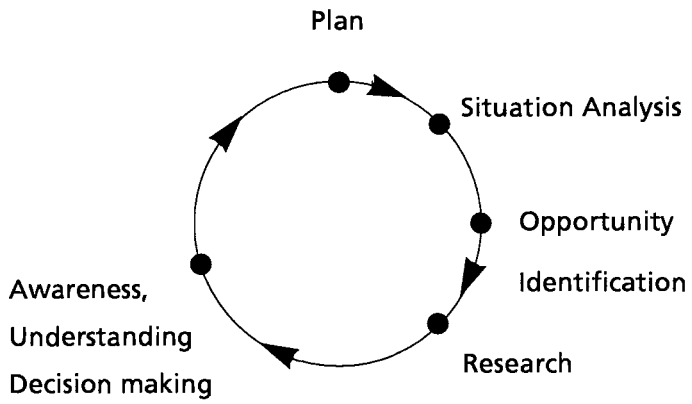

Figure 1: Amended Participatory Problem Solving Cycle Used in This Research Project.(Clark 1993)

The techniques implemented at each new step were developed from reflection by facilitation after each meeting. Each technique pushed in a different direction, creating different dynamics, learning and the kind of knowledge created and collected. Each of these steps was designed very much for the particular setting, group and topic. In another setting even with the same topic something totally different may have to be done.

The techniques that were used initially were used to record and emphasise producer knowledge. The next techniques focused on opportunities and solutions to vegetation management problems, and the understanding and evaluating of specialist knowledge which lead to decision-making. Each group meeting ranged from three hours to half a day. Discussion and learning about issues identified by the communities of producers was emphasised. New knowledge was introduced at the third step of the model. At each step producer knowledge and introduced information was recorded, discussed and evaluated. At step five better alternative practices were discussed, as was future action.

The research framework is classified as participative action research. Participation is an important aspect of this research. Participation with producers is very important for it introduces a more complete picture as to how and why producers are doing what they are doing. It also allows an understanding of what is necessary to bring about change (improvement of current management practices). Also producers' involvement in active discussions and creating recommendations will start a learning process and this will enhance successful adoption of new practices. To be effective any process designed to change human behaviour has to take into account the existing value system of the participants (Clark and Lawrence 1994).

Producers can no longer work in isolation. Their goals to minimise degradation are also the goals of the community at large and they must/need to work together. This research will provide a means to rethink what, why and most importantly how extension education can best work with producers. This thinking will lead to a regenerative process which will lead to improvements in the relationship between humans and the environment.

This research aimed to develop a way in which action research ideas could be used to tackle 'soft', ill-structured problem situations. This research assumed that the problem of vegetation management centred upon human perception, behaviour, interests, needs and interaction and hence its aims also included finding out more about the human factor. The framework was to tackle actual problems facing real-world managers of natural resources. Interaction with the stakeholders in land degradation cannot occur without a process. The process used in this research emphasised the creation of a relaxed interactive atmosphere in which to work. This research was interested in establishing a social dimension to vegetation management and developing skills and knowledge required to work effectively with others. The content must be relevant to instil motivation, self help, leadership and active roles in planning. The framework was designed to meet the learning needs of the participants. This research offers a methodology for researching social systems in a way which gains more valid data while treating those researched as mature and responsible adults.

Summary of Process

Table 1 summarises the techniques and content of the five steps of the framework that were implemented. I was able to use a combination of group and individual work when working with producers to solve problems. This seemed to work well.

TABLE 1.

Step	Techniques used to collect data
One	Establishment of project aims, processes and techniques. Producers contacted.
Two	Situation analysis - used semi-structured interview, questionnaire and Local Best Practice techniques.
	Reflection 1 - 2 semi-structured interviews and a questionnaire
Three	Opportunity Identification - brainstorming and futuring activities.
	Reflection 2 - semi-structured interview
Four	Research - specialist comments on producer practice collated and sent to producers.
Five	Awareness, Understanding and Decision Making - modified delphi technique and the distillation of alternative practice and whether or not producers would support this practice.
	Reflection - group meeting.

Key Features Of The Framework

In this section I outline the key features of the framework implemented. The project was based, intimately on understanding the 'human element' in decision-making. This section gives an indication of the features which should be kept in mind when planning extension education activities.

Making initial contact

I used a flexible approach for it did not set the total agenda and it could be changed by negiotiation with the participants.

I tried to make the content as relevant and interesting to the participants as possible. I used strategies and tactics to target the stakeholders and involve them in a topic that was of great interest to them.

This initial time extablishing contact with the producers and developing their trust is extremely important. More time was initially spent with Group one participants for they were involved in the

semi-structured interview and questionnaire phase. This resulted in consistent attendence and a motivated and more committed group of people.

It was important once the project began to keep the momentum going by maintaining contact with the participants in some way. I feel that that is one of the most important issues that if not managed well may cause a disjointed feel about the meetings and so dampen enthuasiasm and energy of group members. I returned feedback to the group in the form of reports to each participant no longer than two weeks after the group meeting. I often achieved feedback within a week. I also visited each family after each group meeting to discuss what they thought of the content and process used.

My role as a facilitator

I acted as facilitator, recorder and document writer. I also provided the ongoing organisation of the project's meetings and tried to encourage the participation of members and direction for future work on their part. I think because I initially did not have the agricultural knowledge base to be an 'expert', was an advantage.

I entered the situation with the attitude that producers had knowledge and that I could learn from them. I wanted to start from a producer perspective and build on this. The thought that needs to be kept in mind is that, as in any business, improvement of practice needs is a key to continued profitability. There was an expectation by me that producers would recognise the desirability of implementing change in property management. It was thus very disheartening to conclude that vegetation management practice had not changed after seven months.

From this project experience, I would suggest that facilitators need to develop trust and confidence and observe strict confidentiality to be able to discuss controversial, sensitive and contradictory subjects. Developing these attributes also works to create a safe environment in which group members can work and also encourages questions and hence learning. Participants in this project were encouraged to ask questions, but they clearly had little prior experience in doing so. Providing producers with an opportunity to ask and debate questions in group settings would appear to have been seriously underrated in past extension activities.

The real issue is how to challenge and still maintain a safe, constructive and positive working-learning environment.

Another important, unique aspect of this project is the role of the facilitator in challenging people, but in ways that inspired them to continue to search for new and better ways to manage their vegetation. Facilitation took on a co-researcher role. All facilitators will have to learn their way into a group; they cannot assume that their information and knowledge will automatically allow entry. From this project, it would seem that an emphasis on allowing the group to explore the dimensions of a situation that they are interested in is of importance in gaining their interest and support.

Strength of the framework

The process provides an excellent opportunity to involve producers to 'own' problems and find solutions and explore opportunities. The process allowed for effective participation: each participant had a role, a contribution to make. The framework also allowed for the introduction of specialised information. 'Ownership' of the information, problems and solutions was an important issue.

A description of best practice is valuable information for extension and improvement of practice by participants and research. Clear descriptions of problems within each land-type was linked with a full array of solutions and opportunities. Clear descriptions of problems by producers allowed for ownership and stimulateed the process of thinking about solutions and making the connection between cause and effect. These discussions also educated producers about practices they may not have been aware of.

Evaluation

A distinct strength of this framework that is absent in many extension programs is the issue of evaluation. The framework of the project was continually evaluated by participants and me in the form of reflection on action outputs. The fact that I was asking questions and feeding back issues in an open, honest way throughout the project (not merely at the end) had an effect of the group. I continually emphasised the creation of a safe learning environment where information was fedback to participants in a confidential manner.

Feedback

Obtaining direct feedback from participants was a challenge for me. Most producers are very busy people. They were often tired after a group meeting and the last thing they wanted to do was complete an evaluation form. Some were very thorough in their reading and making notes all through the project.

Reflection also provides material for later analysis. This reflective phase is repeated a number of times, involving one 'turn' of Lewin's cycle after each technique. The purpose of each turn was to increase the level of awareness of how practice has been shaped and decide on possible alternative action. Ultimately, a positive outcome would be for the groups to become self reflective without the intervention of a project.

Feedback was an important aspect of the project. Validity checks, where I fed back project findings to the producers, helped ensure that the interpretation of the situation was fair, relevant, accurate and mutually recognisable. These validity checks with the participants were also used as stimulus to move them on to the next stage in the learning cycle. They were used to ask: Where do we go now? Do we need to change our minds? Do we need more knowledge?, Do we need to do something different?

Power

The issue of power is an important one. Traditional models of extension placed power in the hands of researchers and extension officers. The project processes allowed for the equitable use of power and transferred power to producers. If change in producer practice were to occur it could not be considered without addressing this issue.

In this project, the issue of power was considered and dealt with. This issue of power is not discussed in the literature or addressed by extension education. This is surprising for it has a great impact on the development of situations. Some think that the only power that is relevant is personal power. All other forms of power are 'given'. Others say that other forms of power are relevant for they affect people. The issue is "...how do we use the various forms and degrees of power present in (and outside) a group, in such a way that the group values and utilises the strengths of all its members optimally?" (Cowan 1994).

Action research is based upon the sharing of power. This relates to my study because researchers and extension officers often see their role as the ultimate givers of wisdom, as they perceive themselves as potentially more educated, brighter, more intelligent and more able to provide solutions. Producers are aware of this attitude of many researchers and extension officers. Researchers believe that they know best and that their knowledge is powerful and superior and is to be transferred to producers. Chambers and Jiggins (1987, p. 41) argue that the knowledge of such outsiders is not always appropriate, borne out in part by this project.

Emphasis on Producer Knowledge and Learning

Keith and Bryant (1992) suggest that once skills and processes to drive a cycle are put into place learning will continue. They think that a critical step for farmers is moving from experience to reflection to review. They consider it important to involve interaction with other farmers and the general community is essential in keeping the learning going. "Thus, group oriented education activities or those based on student interactions with landholders, have a key role. Shared experience can be reviewed, generalised and re-applied" (Keith and Bryant 1992, p. 416).

Key adult learning principles - such as participation, use of small groups, use of information that is relevant, building on participant experience and knowledge, providing a setting that supports questions and allowing participants to define problems and solutions - were put into practice during this project. While initially sceptical, producers engaged strongly in all activities designed when using these principles. Only one producer (who joined the project late during the second LBP meeting) pulled out during the project.

By giving producers respect in acknowledging their knowledge, and giving them the opportunity and means to record and share their knowledge, new information related to this knowledge can be explored. Processes that tap into producer knowledge are very few and not well documented. "The new challenge for extension is to develop new more efficient techniques to obtain information from the farming community" (Daniels and Chamala 1989, p.10).

This project suggested that one way to work with producers to address problems is to start from the position that they already have much knowledge, knowledge that specialists and others may not readily appreciate or understand. Producers respond favourably to situations which start from the premise they are capable of handling and analysing knowledge and that they are capable of prioritising what is important to them.

Use of Groups

Another strength of the project is the use of small groups which are very versatile when considering the type and format of information that is to be examined.

The groups allowed for the bringing together of an heterogeneous gathering of people. Each group had a mix of abilities and experience. Use of small groups was a strength because this encouraged questions from individuals in a supportive environment. Participants had an opportunity to have a say, but the group was large enough for a diverse array of people to make contributions that stimulated discussion.

In order to be inclusive, this project included women and men but was unsuccessful in including the younger generation. These participants have a lot to offer and may greatly speed and enrich the adoption of new practice.

Some producers had never before clearly verbalised their practice individually or as a group. Because of this they were able to learn from each other. The verbalising of practice allowed for the interruption of habit. The processes and techniques used in this study were consciously developed to provide and develop the skills of producers. Skills and processes regarding the processing of information and communication skills were particularly important to this study. The techniques used during the project gave producers opportunities to experience and participate in group discussions and presentation of reasoning for decision-making.

Producers in the project worked as a team which is an effective way of solving problems, yet each was given a chance to voice her or his individual ideas and opinions. By providing producers with an opportunity to work and act as a continuous group, a working relationship that embodied friendship, trust and confidence was developed. Interest was stimulated by the process which could result in ongoing participation.

It was important not to create 'exclusivity' where people belonged to a group or not. This could be detrimental when wanting to tackle local issues collectively.

The participants within a group were from the same area/valley so that they could share knowledge and could act together. Compared to the majority of extension education which is aimed at the individual or producers as a general mass, this project was singular in it attempt to focus on group activity where the group was located within a geographic entity. It catered to a heterogeneous group which reflects the situation in the valley where the properties are located. The use of groups and the creation of a supportive environment allowed for stimulating discussions and learning.

Appropriate and effective support is seen to be enhanced when producers' practice has been identified.

Ongoing Nature of the Process

One of the most important features of this project was that it was ongoing. Ongoing meetings and evaluation with small groups of participants allowed for a building process. Woods *et al.* (1993) make the point that the critical feature of working with groups is the question, "Whose agenda will a group follow, or how do funders of information transfer relate to on going groups?" This question needs to be answered before why and how to work with groups can be answered.

What was uncommon was the stringing together of the techniques. No other process would have got the group to the level of cohesion that it displayed at the end of the project, in terms of willingness to work harder, in terms of being able to understand and trust one another.

The objective of the sequenced group meetings was to build on learning from the previous group meeting by co-ordinating or relating it to the content of the next meeting. This occurred throughout the process.

Allowing for Discussion

The project allowed for frank discussions and the exploration of new ideas. Many producers commented on how they appreciated the opportunity to listen to others' ideas which at times were quite varied. Traditional extension education does not give this questioning and discussion among participants a high priority.

The processes allowed for the discussion of controversial issues and was able to deal with contradictions. Contradiction is something which people may find difficult to deal with especially in a face-to-face situation. Issues could be raised that could cause a loss of face which might mean that the project could deteriorate or participants withdraw.

Allowing the Introduction of New Information

The introduction of new information was very important for a criticism of producer participative processes was that the knowledge base of producers did not change. The question, "How do they know what they do not know?" is asked of these processes for it is assumed that only producer knowledge is dealt with.

This project allowed for the introduction of new information which was 'outside' the group. This addition to their knowledge brought about awareness, allowed for the questioning of 'expert' information which, in turn, brought understanding. Daniels and Chamala (1989) concluded that farmers' level of understanding of 'facts' in published Department of Primary Industries documents was low. In this project, by allowing time for questioning, producers were challenged to be explicit about their own knowledge and to judge the appropriateness of specialist knowledge.

High Relevance of Content

The content was highly relevant to the producers' situation for the project captured their knowledge and built on this. The specialist feedback was aimed directly at their practice and particular situation. This allowed them to explore what they were interested in, something which also increased the relevance of the project. Research findings could thus be put together in a more meaningful way for the producers.

The situation was thoroughly analysed before action was initiated. As well, the project oriented itself towards benefits for participants, rather than traditional extension education which tends to concentrate upon passing on information alone.

The emphasis was on local problems and solutions. By dealing directly with knowledge and information, producers could relate this directly to their own situation. Because the group's activities are ongoing relevance will need to be continually explored. However, to put vegetation management issues on producers' agenda required attention to how to help them see these issues as urgent. The 'outside' facilitator initially suggested the topic of vegetation management for the producers to work with, but it was producers who put forward the specific issues for discussion and their order of priority.

Cautions About The Use Of Action Research

I think that initially producers did not really understand the action research approach. It was such a shift of thinking for them (as it was for me) because it was so different from anything they had experienced.

The process relies on good facilitation. The realities of working and trying to support a process of change within a small rural area become quite apparent. It is time and energy consuming for the facilitator as well as the participants.

The participants had the opportunity of using the learning they had acquired during the project. This was a disappointing aspect of the project for some participants felt that they had not learnt anything and that their circumstances had not changed. It is difficult to really know if this was the case or if the problem was not related to the project. Perhaps it was mainly a matter of time constraints.

Action research is not something that is automatically acted out. There is much to learn about processes and working with people individually and in small groups as well as trying to offer processes that are empowering. But it is important to highlight that not all processes empower. It is what people do with the processes that engenders empowerment.

I learnt that a great deal of time is needed for building trust. Finding out about the producers took a lot of hard work and listening. It was sometime before they realised that I was serious about their being able to control the direction in which they wanted to go. Every other approach they have had has not allowed for this opportunity. It will take a long time and a lot of convincing for them to

trust anything an 'expert' says because everything they have experienced has been dismissive of them.

I used many different kinds of strategies to show that I was serious in trying to develop a joint effort. Developments like community empowerment and cooperation, improved networking, resource sharing and leadership development are important and valued outcomes from the project. To do this, the group should be voluntary.

HOW PRODUCERS WOULD BEST PREFER TO WORK AND LEARN

Some participants saw the value of working in groups and were interested in maintaining their group. They were also aware that groups of producers would be more likely to attract funding. They participated well in the activities, not aggressively or in an overbearing manner, allowing others to have a say when adding to the rich picture of issues. They worked through specialist recommendations and gave a number of reasons as to why they do not follow these recommendations.

Producers place a lot of emphasis on experience. They also used as a criterion whether or not a new technology or practice has worked in a 'real life' situation. This means a reduction of risk on their part and greater certainty of success, which seem quite important considerations. They are not impressed or greatly influenced by information alone. The information is often weighed against their experience and present circumstances. This shows that there is a need for a balance between information and practical advice/examples, for each improves the other.

Producers obviously prefer to work with information that is relevant to their particular situation. Time and effort should be placed in highlighting the benefits of the 'new' information in specific ways.

Producers are more interested in learning-by-doing and seeing the evidence of applied practice. The availability and volume of new information and technology has greatly increased, giving rise to the need for more reading and keeping and interpreting of records. They find this difficult because of time constraints. They find the accessing of information is at times difficult as well. The issues are how and where to access this information.

The research experience raised questions that producers found challenging:

Hadn't thought of questions before; some of them made me think.

Most in the group were keen to learn and desirous of information.

They felt comfortable enough with me as facilitator to discuss issues honestly and openly. This also allowed for the discussion of controversial issues.

Producers enjoyed the meetings for a number of reasons. Many said it gave them a chance to catch up with their neighbours socially. They enjoyed an 'outsider' coming along and showing interest in what they thought of vegetation management.

If another similar project were run, in my view these producers would participate well and would be more confident and interested to take on the challenge. They would also be likely to be more critical of projects.

If producers are to work on controversial and difficult issues such as vegetation management they must feel supported to take risks (financial as well as informational). The group processes seemed to fulfil this requirement from the producers' perspective.

> *We don't need someone who is educated to tell us where we are going wrong. What we do need are people who can prove to us in a common sense way that we can achieve greater productivity by adopting new methods and ideas. Face-to-face and hands-on.*

FINDINGS ABOUT PRODUCER PARTICIPANTS

Producers have knowledge. They are interested in working as co-ordinated groups but find it difficult to initiate on their own. A participant in one group expressed interest in continuing to meet as a group after the completion of the study. They realised that there was an advantage to working in groups to tackle local problems and it was a good way to attract external funding. A couple of key players in a group will be all that is needed to maintain activity.

The groups were diverse, in that there was a range of answers to questions asked. This was particularly evident in answers to the questionnaire which I provided during the study. It was interesting to discover that there was not agreement on all issues according to the questionnaire findings. In group meetings ideas and opinions which were shared by the groups were the focus of discussion.

For these groups to work, trust needs to be developed. They are suspicious of 'outside' people particularly 'academics' and 'experts' from government departments. Support, relevance and continuity need to be expressed and provided for. Outsiders have to show that they genuinely want producer participation and that their knowledge and experience is respected: that the project is interested in what producers have to say and that building on this knowledge is important.

Producer Constraints

Producers felt constrained in undertaking new forms of vegetation management by weather, money, time, policy, risk, labour and contractors.

Risk

There is an element of risk associated with new practice (new technology). In some cases producers do not have the resources to take the risk of failure or are not willing to take the gamble. To reduce the risk factor producers will often watch to see what the results are, particularly if a

practice is implemented in their local area. In order to be convinced of new practice, they want to see that it has been well tested on a property before they will adopt the practice.

> *I hope I'm open to suggestions, I like listening to what's going on. If there was something that they showed me I needed I would look at it. I'd have to see it to believe it.*

Labour

No longer is it an easy and economic option to employ extra labour.

> *A lot of red tape to employ anyone - cannot do it yourself so often it does not get done.*

This means that planting projects and projects involving tree management are postponed.

Contractors

Producers often spoke about bad past experiences where contractors have not followed clearing instructions which often resulted in over clearing.

> *(Contractors are) now more conscious. ... they're groups of no hopers and the men don't care. It's the boss who realises it. If they clear everything they'll get backlash from conservationists. That's the main reason for people clearing all the trees having trouble with contractors. They either leave too many and you won't get value out of their work, so tell them to clear the lot.*
>
> *Have had problems with two lots of contractors not following instructions.*
>
> *Can't always convince clearing contractors of what you want left. Tordoners kill everything.*
>
> *Regrowth control is expensive. It's a problem to get the right contractors to do it. Getting a better understanding now that they have to be more careful what they control.*

It is now recognised that off-farm constraints such as contract work, policy, markets and other socio-political concerns (Clark *et al.* 1992) may limit behaviour changes for on-farm practice. Processes for adequately dealing with off-farm issues need to be developed (Clark and Coffey 1993).

How Producers View Themselves Within A Community

When community support was mentioned most responded with, 'we do not need help from the community' and they did not want outside people on their properties. Community in this instance referred to the population at large, both urban and rural.

Don't want community involvement, it would mean government legislation, we'll lose independence. They mean well but they bumble along.

Bringing people on the place would only cause more problems for you.

Don't really want people coming in: a loss of privacy. It's great to have people help. They're only here temporarily, they're gone again and you're left to keep them (trees) alive. Overall hard to organise.

Community involvement was difficult for the ideas of the community are different from the producers.

Everyone has different points of view and ideas. I don't think you'd achieve a lot there. People have the wrong ideas; got to educate the townies.

One producer highlighted this difference of view by pointing out that some people in the community think that no clearing should occur. The public need educating to the fact that some thinning of trees is necessary.

One participant gave a personal view of the producer community. He felt that producers were guarded about what they said.

They don't want to be in a position of compromising or bringing themselves down.

They felt that the producers in their area were apathetic and that they would only change if they saw something work to their advantage or they have no option. Often the participants do not want to know the problems and deal with them.

There are people who will only do things for themselves and don't advance anyone and there are the do gooders but do they do any good? How many people do you know that do good for themselves and others around them?

The Effect Of Other Producers

They are aware that the practices of managers outside their property fences could affect them. Two issues that they felt were out of their control were salinity and the control of pest species such as rubbervine. They understood the concept that the clearing of land by those higher in the valley could cause salinity problems for those further down the valley.

Most were happy to work with neighbours and, on reflection, it was said that more work across properties should be occurring. They were unsure as to how to approach working across properties. They were conscious and respectful of the fact that others may have different ideas.

Each person has their own block of land and goals. Depending on their goal if you had something in common, a common goal, something could come out of working with a neighbour.

There was a wide response to the questions on collaboration between property owners. Was it important to their achieving their ideals? Most said that management practices at the top of a valley will affect those below. They seemed to say that collaboration was tricky because:

You cannot enforce your wants on other persons.

Don't like to interfere in other peoples property management.

Producers And The Research Community

There exists an 'us and them' mentality between producers and specialists, including DPI and other government or university representatives. This is due to the attitudes of certain specialists, their perceived lack of practical experience and their position of sticking rigidly to regulations without considering individual situations. Producers know that they need research and its findings to have a chance of being effective, efficient and competitive. This highlights the importance of a need for healthy 2-way communication. This study showed that producers want to learn and want to be given an opportunity where they feel that they are learning and benefiting from the experience. This has not been the case in their experience of extension education activities in the past.

Producers were most cautious of so called 'experts'. This is not surprising as government officers mostly treated producers as idiots or children, in an authoritarian, patronising way. Many things, government officers say and do tend to position producers as ignorant. Producers of course resist such a label.

A lot of literature on trees on farms is seen as too technical and/or general and/or confusing. Producers found that research findings was often not made available to producers in a form they could use for efficient reading: absorption of information was therefore hampered. It would be preferable if the information was in list or point form or used tables and diagrams. Also with the use of frequent summaries and further references. Producers often did not have the time to access the available information. Different sources often contradicted each other.

Again the lack of site specificity of research and recommendations was a major inadequacy.

Producers were very quick to dismiss information if it did not relate to their particular situation. The project found that it was difficult to extrapolate non specific information to producers' situations.

Generally producers did not have respect for information that was given from the DPI and the specialists themselves. Specialists were seen as unpractical and they 'spent too much time in their office' and not enough time understanding the situation from a field perspective.

Producers are not using specialist decision-making aids and specialist information to help solve problems. Most producers had little knowledge of, let alone used ,the decision-making computer package "Grassman" (DPI package) which was specifically designed to help with vegetation management. Extension technologies such as this give the perception that they are what the

producers need, that they contain all the answers, but this is viewed not to be the case. They can be only used as a guide used in conjunction with related information and experience.

Producer reception of information highlights the problem that the current extension paradigm is ineffective in passing on information. There are few in the interface between researchers and producers who are effective. The information that is being produced is not targeting clients, it is generic. There is no change because no learning is occurring. No learning is ocurring because there is no communication. And there is no communication because there is no matching of information. People will not act unless they understand and learning has occurred.

Specialists tended to concentrate recommendations on the use of monitoring, decision making and/or management tools such as Grass Check, and the keeping of records. These tools were not mentioned but producers at any stage of the project.

This project confirms the lack of congruence between different kinds of knowledge, especially from the producers' perspective. It also confirms the lack of respect by specialists for producers' knowledge - or indeed, for any one else's knowledge.

Yet, it was evident that producers supported the traditional model of extension. For tree management to improve, producers often said they needed information on specific topic and they saw researchers and extension personnel as keys to such information.

Working with the research community is important for producers. The information collected from this project could add to the bank of knowledge of research institutions such as the Department of Primary Industries. Contributions might be in the form of answering what research recommendations are practical and cost effective, and what are not. Another contribution could be the added dimension of researcher knowledge working with existing producer knowledge. Communication enhanced by this research between producers and the research community could improve research outcomes.

An important project finding is that there were times when producers agreed with 'expert' recommendation but did not put the recommendation into practice because of real constraints. If the research framework employed in this project had been worked through to the final step, it would have allowed for the addressing of these constraints.

There needs to be the recognition that producers and 'experts' have a different frame of reference. They think differently and use different language. But these are not insurmountable problems. The project is on-going. In the next step, it is anticipated that further action on vegetation management will be taken.

The research community has the capacity to provide new and useful information to producers. Future extension education needs to overcome the mis-match of information between producers and specialists that was evident in this project. Areas which are lacking in knowledge can be identified and research and support networks could result to improve the situation.

The project also provided a means by which specialists and producers could communicate. It provided a means by which producers could query information from specialists in a more meaningful way. This has the potential, although not fully realised in this project, to result in better producer utilisation of information.

The project attended to problems in communication between producers and specialists. The study was aware of the need to improve producer and specialist interaction. My role as facilitator was, to a large extent to act as a go-between. Having made the first step of providing information from producers to specialists and their comments in response, there may now be opportunities in the ongoing groups for more face-to-face discussions as a follow-up. The Participatory Problem Solving cycle could have been improved by allowing feedback to specialists about producers' views. This could have been a way to strengthen the link between producers and specialists.

How Producers Feel About Their Situation

Producers felt a great sense of frustration and unease about what policies may develop in the future, particularly referring to the discussion paper titled "The Sustainable Use and Management of Queensland's Natural Resources Policies and Strategies". Producers are concerned about this discussion paper because they have not got time to challenge and assert their point of view and vision. The desire in the document for community feedback they considered to be a token gesture. They feel powerless for the present system does not genuinely want or support their contributions. They feel that they have not got a voice on what is happening in the future. Because of this they feel that they have little control over their future.

In the past producers did not actively and continually seek information outside their immediate area. This trend is changing for they see information as important in remaining competitive. Many older farmers did not have the opportunities to gain educational qualifications beyond high school. The younger generation, though, are attending agricultural colleges and universities.

Producers genuinely want to do the right thing, towards their properties (in most cases), their immediate families and future generations, then to themselves. All these factors are very much interwoven. The condition of the property when the time comes for it to change hands is seen as a reflection of their worth as individuals.

One of the most important features of this project is that producers did not, before the study, see themselves as a group, nor act as one. They only formed and acted as a group with outside intervention. They are individuals or family groups within a valley who focus their energies within their individual properties. They are aware of the practices of neighbours pertaining to issues such as salinity and weed control which could adversely affect them. They are, however, respectful of neighbours' privacy and so generally keep to themselves.

When they are interested and motivated, producers appear genuinely committed to learning and improving their practice. This interest is evident in their attendance and participation at interviews and group meetings and by their willingness to have their knowledge challenged by specialists. This

latter step shows commitment and the willingness to openly engage with others. Producers also showed support and commitment to the project by offering their homes for meetings, attending group meetings, participating earnestly and openly, giving up their time to attend five group meetings and six individual meetings, complete two questionnaires and read pages of specialist comments. It was felt by producers that it is extremely important for specialists to honestly acknowledge when their findings are not useful or relevant and to act to improve their findings.

At the time of this project, the producers were experiencing a prolonged period of drought years which has caused most families financial and emotional hardship. Changes to practice that have a long term consequence may not have been attractive to them at a time when survival was at stake. Once resources and money become available, they may have other more immediate priorities than implementing new practice in vegetation management. A question that was asked by producers was, What can we do to diversify? Agroforestry?

This study showed that when producers are slow to act on problems this is often due to financial and climatic constraints. I worked with the two groups over a seven month period, visiting each family a number of times as well as through group work. They all expressed concern about the decline of trees, particularly in land-type one (blue-gum flats). As a group we discussed a range of solutions and alternative practices, but regretfully nothing has yet occurred to change specific vegetation management practice on these properties. Producers are strongly dictated to, and constrained by, unexpected crises and outside forces.

The following quote illustrates the difficult position that producers are in:

> *We have managed to pool our knowledge but there is still a lot to learn. We do what we think is best, but this is not necessarily the case. I feel it takes more than the three generations of white settlement to know all the answers. We are smug about lack of salinity in our bore water, but does the clearing of timber in the top end of our valley have any effect further down? Have we cleared too much of 'useless timber' and upset the balance, hence brown beetles and army worm. We need to know.*

Producers feel uncertain; they worry that their actions might prove in the future to be detrimental, but they are not sure. They want answers; they want to have the ability to solve their problems effectively. I know they would be willing to work with government officers such as DPI, Land dept or advisory groups if this were mutually beneficial. Producers do not, in some uncritical manner, want to support the view of "outsider".

Autonomy was important to participants; they liked to make their own decisions. Each had her or his own opinions and ways of doing things. But producers themselves recognised that they do not have a united front and seemed to work against each other.

The literature in extension education is somewhat silent in relation to the characteristics of producers for whom the activities are presumably designed. This study identified a number of

characteristics of the specific producers involved. Clearly, further research will be needed to see how generalised these characteristics are.

This study clarified and confirmed certain features or characteristics of participants that are important to keep in mind when planning an extension education program.

PRODUCER - FOCUSED EXTENSION EDUCATION

What is the significance of this research methodology as a way of dealing with vegetation management through extension education? This project has many unique features which are contributing factors to the project's success.

This project was built upon and has strengthened past extension education practice with a rationale for the development of new extension education approaches. The project gave producers an opportunity to work with and develop their own knowledge. The approach valued their existing knowledge and experience. They had not experienced a situation particularly in extension education where their knowledge was actively sought, recorded and treated with respect. They readily acknowledged the importance of this aspect of the study.

Table 2: How This Action Research Process Differs From Traditional Extension Practice

Traditional Extension	**Action Research Extension**
• expert centered	• producer centered
• one on one or large groups	• small groups
• information based	• based on information, knowledge and learning
• does not encourage questioning	• supports and encourages questioning
• often associated with government legislation or administrative requirments	
• information generated is generic	• information is site specific there is direct and obvious local relevance of content and action allowing for the generation of worthwhile outcomes.
• science based information	• takes into consideration social sciences and the human factor
• audience unknown	• participants known
• has little understanding of producer knowledge and practice	• builds on and challenges existing knowledge and practice
	• supports valley (catchment) concept
	• explores and integrates other people's knowledge and different information
	• helps people to articulate their knowledge this leads to an understanding of producer knowledge and their situation.
• does not view producers as knowledgeable partners.	• documents producer knowledge

• simplifies situation compartmentalises	• systems approach that looks at the situation as a whole and takes into consideration complexity.
• power held with specialists the generators and influencers of future information	• collaborative equalising in the positioning of power all participants are co-researchers.
• technology fix view	
• emphasis on dessimination of information	• emphasis on adult education and learning principles
• activities run in isolation	• activities are co-ordinated and built on
• treats producers as a homogeneous group	
• does not involve end-user in planning and development stage of extension and research	
	• properties are seen as social networks - ways in which people relate to the land.
	• participation of all participants
	• integrates theory and practice
	• based on problem solving
	• enhances creativity
	• involves ongoing evaluation
	• stimulates learning
	• more challenging for the reseacher has less control. Learn from experience and apply the learning.
	• cyclic allowing for conscious reflection on action.
	• research and outcome oriented
	• community oriented - the participants decide what the problems are. The community is consulted and is integral in the evaluation of the collected data.
	• system of change
	• most ethical way of working with people
	• responsive to participants, identifies key issues
• collects quantiative data	• collects qualitative data
	• uses feedback
	• uses facilitation

The key points to consider from this project when planning extension education, are: respect for existing knowledge and skills of participants; opportunities for skill development; communication; prior extension practice; providing regular feedback; dealing with controversial and contradictory content; careful introduction of new information relevant to priority issues of participants; and connecting different sources of knowledge.

The processes used allowed for the inclusion of attitudes, perception and constraints of producers. It acknowledged producers' attitudes towards specialists and tried to work around this scepticism of specialists. This also allowed for a better understanding of the constraints producers are faced with.

Table 3: Skills Required

Skills for a successful action researcher include:
• being a good listener, being able to listen not only to the context but also the feelings underlying what is being said. Emotions are important. Is the interviewee uncomfortable, aggressive or angry about the topic?
• being very aware of the process being used and how to ensure the process runs as smoothly as possible.
• obtaining a broad picture at the start which highlights the more specific and sensitive questions to ask later on.
• having an observer to record what happens and how people respond to the discussion of particular issues.
• being flexible - being clear about the purpose of the research and areas to be covered. Have a few key questions but follow what happens and probe responses (Wadsworth 1990).
• commitment to the process
• empathy for others' position
• respect for the knowledge of others

How Extension Can Improve

Some of the recommendations for improving extension programs were that producers need to participate, information needs to move 'bottom up', producers need to identify problems, need to own the information and have their knowledge recognised and incorporated into action. There is now starting to be an emphasis on participative approaches with producers to ensure modern technology and new information is introduced to improve management practice. What is needed is a strategy that effectively combines specialist and producer resources (Clark and Coffey 1993). Extension processes that result in practice that is profitable and conservation-minded is also needed. It should be recognised that for land degradation to be tackled, producers need skills and training programs.

> *Through empowering community groups to resolve and manage local Landcare problems, the likelihood of developing agricultural and pastoral systems that are both ecologically and economically viable for that region is greatly enhanced. With landholders contributing to the identification of acceptable landuse and management practices, the workability, profitability and financial capacity of landholders to implement these practices are made accountable (Hanlon and Cooke 1992, p.1).*

The later models of extension clearly have an emphasis on education/learning, community and individual development. The emphasis on education was late and slow to rise because of the challenge to early enthusiasts of education such as attitudes and perspective's of producers and

extension officers. A study carried out in 1973 had found that farmers regarded training or education that was applied to farming or management as irrelevant (Russell *et al.* 1989).

Campbell and Junor (1992) say that there is no single ideal model. There are instead key elements, the balance of which can change depending on the situation. The key elements are:

- integration of conservation with productivity,
- focus on locally-relevant, land management systems,
- land users directly involved in defining priorities of relevant research, participating in R&D at farm and catchment scales, extension and research seeking out and incorporating local knowledge,
- involvement of all farming partners in whole-farm, land management and business planning,
- development of strategies based on a recognition of the role of women in farm decision-making and rural communities,
- recognition and targeting of different modes of communication appropriate to different categories of land users,
- extension strategies guided by an understanding of the socio-cultural context within which land users operate,
- most 1:1 technology transfer between land users, such as farmer-to-farmer,
- facilitation of contiguous catchment/landcare groups and non-contiguous peer groups with common characteristics (sharing the same geographic area does not make a group homogenous),
- assistance and systems designed to cater for individual land users who are not predisposed to group activity,
- clear extension objectives, monitoring and evaluation of measurable outputs (Campbell and Junor 1992, p.21).

Clark *et al.* (1993) wrote that any strategy whose goal was to improve the management of grazing systems should:

1. Promote end-user ownership of processes and improvements.
2. Involve specialists on components of the systems, and use of decision aids to identify elements of the systems most sensitive to inputs.
3. Use processes that maximise understanding of improvements.
4. Conduct proper evaluation of the effectiveness of the strategy (Clark *et al.* 1993, p.1).

Clark (1994, pers. comm.) also suggests that an action research style be adopted as an essential step to manage effectively complex systems. This was also supported by Keith and Bryant (1992) who suggest that the concepts of action research initiated by Kurt Lewin and refined into an experiential learning cycle, such as the Kolb cycle be incorporated into extension practice.

There is much criticism in the literature of existing extension models. However, Vanclay (1992b) points out that there has not been a replacement model and that extension is experiencing a theoretical vacuum. Some think the Landcare model is an example of a new model but it remains without a substantial theoretical basis or a satisfactory evaluation process. Campbell and Junor (1992) believe that Landcare groups are a move towards autonomy and self-reliance which could be the basis for new approaches which are 'bottom up', 'land user-driven' and 'farmer first' (Campbell and Junor 1992).

The reversal and control of land degradation is not just about providing better information, technology and communication - it is about human practice. Information is only one element in decision-making. It is not information on its own that actually makes for better practice. It is how the person relates to that information, how the information fits in with existing knowledge, how practical and useful it is perceived to be and whether it can be readily implemented.

Vegetation management is at the heart of what producers are doing and their understanding of their properties. They have strong opinions about this topic as well as constraints such as drought and lack of faith in 'expert' information.

Turner and Woog (1992) argue that this change needs the involvement of all to view agriculture not simply as a combination of scientific disciplines but more as a humanistic system, where values and judgements are used to manage present changing circumstances as well as planning for the future. Chambers (1983) makes the point that recognition of farmers' knowledge and innovative capacity does not mean that producers do not need extension services. What is needed is improvement of the interaction between extension officers and local people to reverse conventional 'top-down' communication and to overcome gaps and miscommunication.

There is considerable concern with the failure of research, development and traditional extension models. For "the traditional view of extension as the disseminator of research information is dead" (Gray and Phillips 1992, p.59). Extension services will need radically to change their structure and the way they undertake tasks if they are to be of any use (Hannibal and Sriskandarajah 1992). According to Woods *et al.* (1993, p.1),

> *A more useful paradigm is to consider the role of information generation and information use in solving problems or developing opportunities. This implies that producers could/should be involved in problem identification and information generation. It provides a context to judge both the relevance of the information and the appropriateness of the delivery mechanism(s).*

These new models, however, have yet to be developed as a widespread practice in extension. Many remain at the conceptual level, with little literature exploring their significance in practice. This thesis adds to this small but growing literature on alternative extension practices.

This research provides an opportunity for the use of new approaches in agricultural extension that takes into consideration the suggested improvements on the old models of extension. The

methodology endorsed by this study is participatory action research based on action research theory and adult education principles.

The size and scope of land degradation is too urgent a problem for existing extension approaches to be allowed to continue. Roling (1988) has identified some future trends for extension which are important if land degradation is to be adequately addressed by producers and researchers alike. There is a need for joint action of research, extension and education to become the 'spearhead' of agricultural development. Extension is becoming more and more concerned with utilising sociology, psychology and communication and borrowing heavily from the neighbouring fields of education, marketing and advertising. But these remain largely theoretical suggestions at present. The current study builds on the suggestions for improvement of extension processes in relation to land degradation in central Queensland.

Producers have been working under the traditional extension model where 'experts' who possess information seek to pass on this information to producers. This research project is different in that this study is attempting to confront, and possibly to overcome, the existing shortcomings of extension. This research has emphasised producer participation, and allowed the development of what is important to producers. This study is a form of extension education. With this new approach I am trying to develop a different relationship between myself as a facilitator - a learner who is not the 'expert' - and producers. Specialists knowledge is still brought into the producers' setting. It is brought in, however, in a very different way from that which occurs in traditional extension.

Traditional extension has also mostly concerned itself with techniques that are used in one-off situations, techniques used in isolation. Processes, frameworks or methodologies have not been developed which connect extension techniques and allow them to build on each other. Only now is the idea of using a sequence of techniques that provide a learning experience to a group of individuals being implemented. This avoids the problem of an ad hoc approach where a field day or seminar is given and no relation is developed between the techniques.

This research has taken up the challenge of developing new approaches to extension and has developed principles to guide the action learning. Key learning taken up includes full participation by producers in capturing and building on their knowledge. This helps to ensure ownership of problems and solutions remain with the producers. Rather than focussing on individual producers, groups are formed to maximise understanding. Specialist information is introduced and interrogated. This approach has a theoretical base and an in-built evaluation process. Because of the time limitations in the original study, suggested improvements have yet to be implemented by producers. It will be important to evaluate changes in producer action during the next year or two.

Today, with community groups questioning land degradation, there has been a move towards efficient, but non-degrading uses of natural resources. The depletion of natural resources is both serious and complex. New extension approaches are needed to further understand and improve the human/environment relationship. The significance of this research is to harness action learning

to implement and develop a new extension approach that examines and includes the human aspects of primary production which will contribute to the sustainable use of natural resources.

The findings of this project have the potential to contribute to the design and running of future extension education programs. This research has made the following contributions. It has:

- identified knowledge mismatch between producers and researchers without seeing one as automatically better than the other.
- identified vegetation management issues
- asked both producers and researchers to resolve issues.

It has also provided a level of documentation about specific techniques, their rationale, and outcomes in pratice. This level of documentation is not readily available elsewhere in the literature. That the producers themselves continued to have a high level of interest and commitment to the project suggest that the framework of Participatory Problem Solving has the potential for use in other extension settings.

A contribution to knowledge on how to improve extension education has been made. I have learned from this study that to achieve a change to land degradation is a long term proposition. I have also learned how to proceed towards this change and how to introduce new information and work through it with producers; these are important processes towards change.

What emerges strongly from this study is that the producers' experience of extension education has put many barriers in the way of their being able to acknowledge the extent of their own knowledge and the sharing of this knowledge. In the group sessions producers considered themselves as 'experts'. Virtually every other extension education approach that producers have experienced had treated them as passive recipients of someone else's knowledge, of which they are critical or do not understand. At the time the project ended action learning had not markedly changed practices of vegetation management. What was revealed was how hard it is to change the practice of producers and of the 'experts' - with, obvious implications for the practice of extension education.

The study also found that when producers were given 'expert' information and they worked through this information as a group, they dismissed a great deal of it. This dismissal was partly due to the fact that the information was not relevant to their particular situation. When asked for reasons for this dismissal, producers did not express their opinion effectively. They clearly had not had experience with this kind of debate before. Yet, over the time of the project, participants became much more articulate about their own knowledge. There were also a number of times they supported specialists suggestions but felt they were not in a position to follow for example for reasons of finance, drought, or past management history.

The producer research groups are still ongoing and there are grounds for anticipating that their learning will continue. It can be argued that, from this experience to date, the participants have gained confidence, skills and a community-based network to extend their learning and to seek and take responsibility for learning action and outcomes. Producers have both an economic and social

investment in their properties. It is evident that they have a genuine interest in handing down their properties to their children in the best possible condition.

This project allowed for the formation of a rich picture that clearly described the current situation. A clear idea of what producers think of land degradation and how land degradation may realistically be tackled was considered. Specific types of land degradation were a problem from producers' perspective and in most cases a significant problem. Producers suggested that they gave priority to loss of trees, salinity, compaction of soil, introduced weeds and erosion issues in land degradation.

The study also provided an efficient way of tackling problems. Problems cannot be left to researchers and to individuals alone. The project's process gave an opportunity to solve problems from producers' perspective on a group basis. These problems then ended up being jointly shared problems that producers could tackle and were interested in solving.

By working in this manner, practical and producer-desired conservation management techniques and strategies were developed. The project process may not offer a 'quick fix' to the problems of environmental degradation. Rather it represents a move towards producer autonomy and self reliance. Research and extension officers may find this threatening for there is a shift of power.

A number of the features of this project outlined above pose enormous challenges to the dominant models of extension education. If producers and their knowledge are seen as the starting point, then other relationships between extension officers, specialists and other researchers must follow. This one project suggests that other approaches are both necessary and possible.

CONCLUSION

There is no simple 'process' of action research that will work for extension education. The processes used in this study were tailored to the specific participants and their issues in relation to vegetation management. From this study, I would advise those embarking on a similar venture to consider starting by designing processes which meet the needs of the specific people involved and the issues they are trying to address. Processes cannot be fixed well ahead of time but need to be continually carried out. The use of regular group discussions, with someone acting as a facilitator, together with validity checks on the collation of findings and interpretations of their situation, should be regularly carried out. In this way, participants develop trust in the group process and develop together a mutually recognisable picture. It is important to ask questions such as, "Is this right? What does it mean? Where do we go from here?" with the group. Such questions also build group solidarity, understanding and respect.

It took a long time for producers to believe that they could make a difference and that someone else would listen to them. This is a negative finding about existing extension education. By the end of the five steps (discussed earlier) producers were already active and had committed themselves to continue working in the groups.

It is impossible to know to what extent people have changed their way of thinking and base beliefs and practice as part of this project. However, it was obvious that people were willing to entertain

change. By the end of the study they did not dismiss specialist knowledge quickly and in some cases they did agree with specialist knowledge which had not been articulated before. However, producers often had good reasons for not pursuing such advice. Extension education needs the help of producers to improve research information and improve how information and learning are approached. The communication between producers, extension and researchers needs to be improved significantly.

I strongly believe that producers must break this reliance on the 'expert' model. They need to 'drive' research and become active participants. They are at a point in time where some of their knowledge needs rebuilding and supplementing. It is not a call for replacement of knowledge but for a rebuilding of current knowledge. Theory informs and improves practice and practice informs and improves theory.

Producers need to acknowledge that working as isolated individuals is not going to help them in the long run. There are environmental and other issues that producers cannot effectively work on alone. The formation of and work in small groups has many advantages. Producers who participated in this study are now aware of the help that others can provide when developing ideas.

The notion of what counts as a serious problem is an interesting issue. The signs of degradation need to be quite advanced before the problem would be considered serious. Action in this case is "reactive" as opposed to preventative. This is a concern. They often compared their degree of land degradation to that of the southern states - a poor comparison.

However, producers really have not had the opportunity to think through this problem of tree loss. At times I felt that producers liked to present situations where the problem had no solutions, or the solution or new practice had more problems then it was worth, that is, they looked for problems without giving an idea a chance.

With an issue like land degradation, a united, informed and co-ordinated effort is needed between all stakeholders. Since the action research processes were successful in engaging the producers, this seems one important place to continue the work on land reclamation. Such an activity would be a prerequisite for any further action by them on vegetation management.

Producers possess a great deal of knowledge, knowledge that supports their present practice. But practice is going to have to change to reverse detrimental trends which are causing tree decline. It is clear to me that they will continue to lose trees unless there is a change in practice. This change needs a change in knowledge base which they are not being provided with, yet their existing knowledge base is inadequate. Producers should be involved in the data collection stage of research for the information they will eventually obtain to have more meaning.

The project confirmed both the extent of the problem and the hope that improved extension education might contribute to better vegetation management.

I was disappointed with the outcomes of this project in that I would have liked to have seen more done directly about vegetation management. I entered the project with idealistic hopes that action would be carried out within the time spent working with the groups. Frustration was expressed by

both parties, facilitator and producer. After discussion about this with them they stated that when conditions were more favourable improved vegetation management practice such as fencing areas of in land-type one (blue gum flats) to encourage regrowth of blue gums would be carried out. There is clear evidence that tree numbers are declining. Yet, producers hesitate to act. More time needs to be spent on really understanding the problem from the producers' perspective.

They know that there needs to be a balance between clearing and tree retention, but are not sure in which direction to go because past practice is not working. They are waiting for information, yet what is available has been rejected. The cycle of waiting for information and rejecting it when it arrives needs to be broken. In its place there needs to be developed a capacity to work in groups to identify and trial new vegetation management practice with the involvement of faciliatators, researchers and producers.

Attitudes to formal education, gloom about agriculture's future and lack of perception of the need for more sustainable practices, often lead to lack of involvement in land management education programs. Costs, lack of access and time available to attend formal activities are also seen as reasons for non-involvement. Many of these barriers can be overcome or perhaps avoided using educational methods that allow landholders to become members, and creators of new knowledge about balanced agricultural systems.

> *As they become more experienced in these informal approaches to learning, landholders may become more open to the range of formal learning opportunities available, particularly if government initiatives can significantly improve access. (Keith and Bryant 1992, p. 418).*

Knowing the people, knowing their setting and their values, recognising their existing knowledge and their fears is necessary for good extension education. Knowledge as information is not going to change practice. Just giving people information does not in some automatic fashion. lead to change.

Producers, researchers and extension officers need to alter their relationship. They do that best, it seems, in a situation of mutual appreciation for their respective knowledge. Action learning is a useful technique for ensuring that knowledge (as power) is shared in a mutually rewarding manner.

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Rural Social and Economic Research Centre
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The Rural Social and Economic Research Centre is a designated research centre of CQU. It has over 35 academic members drawn from each of the six faculties - and from each of the five campuses - of the University.

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