A research–extension model for encouraging the adoption of productive and sustainable practice in high rainfall grazing areas

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Abstract. The experiences of participants in the Sustainable Grazing Systems (SGS) Program were examined to understand why more productive and sustainable practices were adopted by producers involved in SGS. This paper explores from a range of perspectives (producers, researchers, extension agents and facilitators) the delivery mechanism that led to these practices being adopted and concludes with a model describing the adoption process observed in SGS. The model describes a continuous 3-stage process of motivation, trialing–exploration and farm practice change. Support for decision making during the transition between each stage of the process was recognised as an essential ingredient for success.

Introduction

The Sustainable Grazing Systems (SGS) Program (Mason \textit{et al.} 2003) supported producers in creating and adopting grazing systems that not only enhanced the productivity and profitability of farm businesses, but achieved this gain whilst increasing water use, protecting on-farm natural resources and creating more diverse landscapes. These outcomes clearly articulated the need to marry productivity-based programs with emerging natural resource imperatives. Social researchers have recognised fundamental differences in achieving the adoption of conservation practices compared with production-oriented ones (Barr and Cary 2000; Vanclay and Lawrence 1995). If production-oriented extension approaches were adopted, we should expect only low adoption of practices with improved natural resource management outcomes.

The development of the SGS Program, from the Temperate Pasture Sustainability Key Program (PDF Australia Ltd 1996) and the insights of Reeve \textit{et al.} (2000) led to a project that embraced some of the ideology and methods of the early landcare movement (Cary and Webb 2000) as well as the adult education school of extension (Brookfield 1986). The landcare influence on SGS included components such as regional producer networks, local trialing and experimentation and the devolution of decision making to regional committees (Simpson \textit{et al.} 2003). These initiatives were supported by the more traditional research and skills training components of an extension program. The adult education influence on the program can be seen in the commitment to the goal of building decision-making capacity within the framework of a respect for the personal goals of all participants of the program (Salmon 1981; Anderson 1982; Andrew 2003).

The outcome goals of the SGS Program were by 2001 to have at least 2000 producers in the high rainfall zone (HRZ) adopt changes to their grazing systems that could be shown to be at least 10% more profitable and also more sustainable than those they used before participating in the program. A further 5000 producers were to have trialed at least a component of the recommended changes to grazing management systems. Results from Allan \textit{et al.} (2003) demonstrated that trialing and adoption have occurred as a direct consequence of the SGS Program and that both productivity and natural resource outcomes have been achieved simultaneously. The scale of adoption described by Allan \textit{et al.} (2003) suggests that the extension techniques used have been highly successful.

Before embarking on the next stage of research and extension, the program management believed it would be
valuable to review the delivery mechanism that led to these productivity and natural resource outcomes being achieved. In particular, there was a strong interest in describing the progression (from a producer’s point of view) that led to the successful trialing and adoption of practices in the SGS Program.

This paper presents the model that emerged from the evidence of the narratives of participants in the SGS Program and supplements this with insights from the existing body of Australian extension research literature.

Methods
Development of the SGS farm practice change model involved a team of 4 producers, 4 facilitators and 3 state agency staff who were all actively involved in the program. The selection of team members was designed to capture different perspectives of the program.

A process evaluation technique underpinned the methodology, as it was considered necessary to capture the possible unintended or unexpected outcomes of the SGS experience (Wadsworth 1991). This open-ended type evaluation relies more on people's knowledge and perceptions than a numerically focused, objective-based evaluation (Woodhill and Robins 1998) and was considered appropriate given that the review task did not have a clear measurable objective at the beginning.

The first stage of development of the SGS farm practice change model involved documenting and interpreting the team experiences. This was conducted using a technology of participation workshop method (Spencer 1989) with the following focus question: ‘What activities inside or outside SGS have been successful/unsuccesful in building understanding and adoption of ideas and technologies?’ Responses were listed and then grouped under cluster headings. Reviewing internal reports and evaluations of the SGS Program further expanded this data set.

The team used a focus discussion method (Carman and Keith 1994) to explore the deeper meaning and circumstances under which each of the cluster headings may work. The discussion teased out from team examples where these different approaches had been used in their region or when they had observed them elsewhere. The main points from the discussion were distilled into a draft model, which helped order the team thinking and explain why various activities worked the way they did.

The draft model was then tested at the National SGS harvest year conference in Albany (Mason et al. 2003), again using the focus discussion method. Eleven focus groups were assembled with a team member facilitating each focus group discussion. A discussion guide was prepared as a reference point for the group facilitator, based on the underlying assumptions and the key components of the draft model. Team members were assigned up to 9 people who had similar backgrounds to the group facilitator, in a deliberate attempt to assemble groups with similar experiences. This matched farmers with farmers, researchers with researchers and regional producer network (RPN) facilitators with other regional facilitators. Creating homogeneous affinity groups was done to encourage more open discussion and allow for perspective differences between groups to be analysed at a later stage if needed. This is a common practice in qualitative research (Patton 1990). A total of 92 producers, researchers, RPN facilitators and Meat and Livestock Australia employees participated in the discussions.

A debriefing session was held with the team immediately after the workshop session to capture the insights from each group. Discussion followed the debriefing and the model was modified according to the new information.

The model presented is an example of grounded theory, where the theoretical description or model is created out of the systematic analysis of real life experiences of participants in the program. The aim of grounded theory is to discover theory that is evident in the data (Haig 2000; Glaser 2001; Dick 2000; Strauss and Corbin 1990).

Results and discussion
Many insights gained from a reflection on SGS by team members and later by SGS participants were consistent with the body of research into practice change on farms. The initial responses and cluster heading generated by the SGS team members to the focus group question are presented in Table 1.

Subsequent examination of the cluster headings resulted in the creation of a draft practice change model. The model suggests adoption follows a continuous and logical sequence that involves 3 key stages (Fig. 1), with transition between the stages involving a conscious decision to progress.

Motivation
Motivation was identified by team members as an essential stage in the change or adoption process and this conclusion is supported by other literature (Clark et al. 1997). Results from SGS participant focus groups confirmed that without genuine motivation, few producers would participate in the SGS Program or, if they did, there was a low probability of sustaining interest and commitment through the other stages of the program.

Five elements that underpin the motivation stage were identified by team members and were subsequently tested in focus group discussion. The strength and frequency of response of SGS participants to these elements is summarised (Table 2) and discussed.

Highlight relative advantage. The first element recognised that the desire to change is usually created by exposing producers to a situation where they come to believe that they may be able to capture an advantage by changing practice. This often occurs through the observation of a local example that is already yielding a fellow producer benefits that meet financial, social or environmental objectives of importance to that producer. Similarly, the desire to change may be created by becoming (more) dissatisfied or discontented with a current situation. Being constantly exposed or reminded of an undesirable circumstance can create a reason to change, as a producer finally feels compelled to do something.

‘A farm walk called ‘Adopt or Crash’ was held on the national experimental sites and covered indicators of production and sustainability. You could see the difference in the plots and most of us had pastures like the poorer plots. Seeing first hand sold the message.’ (Producer, North West Slopes).

The concept of relative advantage, whether it is for profit or social gain, is not new (Barr and Cary 2000; Frank 1995). This element was strongly exploited in the SGS Program through the emphasis placed on potential positive gain in various extension methods including ‘Prograzier’ magazine,
The SGS farm practice change model

Continual exposure to the opportunities created by the practice change. The second element of motivation recognised was the serendipitous nature of a producer’s discovery of an opportunity. Like most managers, researchers and business people, producers inhabit a world in which information overload is an on-going reality. SGS competed for attention within this constant flow. Some key strategies adopted by SGS to expose producers to opportunity included continuing presentation of ideas and options in an unthreatening manner through magazines and newsletters, integration of financial, social and environmental objectives within the program and an emphasis on personal contact in attracting members. Participants indicated these strategies were successful in SGS because they often evoked a response in producers so they wanted to find out more about a practice or concept that went beyond the intended focus of the message. It was suggested this might be in contrast to other observed programs where the objective is to achieve replication of a described practice.

The concept of using a range of methods to ‘release a response’ rather than ‘mimic a behaviour’ is well accepted by communication experts (Mackay 1994; Schwartz 1973). This did not appear to be a deliberate strategy in SGS but, on reflection, was recognised as an important contributing factor to increasing motivation.

Non-threatening learning environment. The third aspect of stimulating motivation was to create a non-threatening learning environment (Fell 1997; Rogers 1973). This enabled producers to experience and absorb new concepts and ideas without necessarily forcing active participation or making an individual subject to excessive external scrutiny. Information packages or monitoring tools that were developed in SGS could be picked up by producers and applied with minimal external support, thereby allowing producers to remain anonymous while testing the value of a new practice against their existing goals and aspirations. The ‘Pasture Health Kit’ developed by the north-west NSW regional committee (McCormick and Lodge 2001) contained simple assessment tools and benchmarks to allow producers to assess their soil health without outside observation. ‘Terry the Toolman’ (Mason et al. 2003) portrayed grazing management not as a complex suite of practices, but as a series of options in a menu. ‘Prograzier’ newsletters (Mason et al. 2003) maintained a steady stream of messages from producers who reported on the results of using these tools. These communication tools reached beyond the SGS regional producer network. A review by ABARE indicated a significant readership of ‘Prograzier’ by producers not

<table>
<thead>
<tr>
<th>Cluster heading</th>
<th>Individual responses</th>
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<tbody>
<tr>
<td>Producers to producers</td>
<td>Local producers presenting to local producers</td>
</tr>
<tr>
<td>Comparative tools</td>
<td>Benchmarking for comparative analysis</td>
</tr>
<tr>
<td>Ongoing support</td>
<td>Follow up information available on questions raised</td>
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<tr>
<td></td>
<td>Mentoring system or support structure to take from learning to adoption</td>
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<tr>
<td></td>
<td>Prograze farmwalk with facilitated discussion in groups</td>
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<tr>
<td></td>
<td>Overnight visits to build relationships</td>
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<tr>
<td></td>
<td>Using a formal discussion technique to review what has been learnt</td>
</tr>
<tr>
<td>Small progression over time</td>
<td>Keep it simple — don’t make transition steps too large</td>
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<tr>
<td></td>
<td>Take time to deliver the message</td>
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<tr>
<td>Good facilitation</td>
<td>Professional ‘salesperson’ presenting the information</td>
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<tr>
<td></td>
<td>Professional facilitator/mentor (paid)</td>
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<tr>
<td>Relevant demonstrations</td>
<td>Demonstrations of ‘credible farms’</td>
</tr>
<tr>
<td></td>
<td>Demo sites designed and run by groups with technical input</td>
</tr>
<tr>
<td></td>
<td>Seeing is believing — physical encounter</td>
</tr>
<tr>
<td>Producer ownership</td>
<td>Farmers involved have ownership — intellectually or financially</td>
</tr>
<tr>
<td></td>
<td>Group decides the needs</td>
</tr>
<tr>
<td>Planned learning approach</td>
<td>Structured courses over a period of time (with a skilled presenter)</td>
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<tr>
<td></td>
<td>Mixture of formal presentation and practical exercises in small groups</td>
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<tr>
<td></td>
<td>Stimulating venue and environment</td>
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<tr>
<td></td>
<td>Mix of approaches to extension</td>
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<tr>
<td>Small groups</td>
<td>Hands on and interactive approaches in a group</td>
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<tr>
<td></td>
<td>Small groups with 2-way discussion and aids to reinforce learning</td>
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<tr>
<td>Getting off your own patch</td>
<td>Bus trips to similar environment</td>
</tr>
<tr>
<td></td>
<td>Visiting successful businesses outside of agriculture or vice versa</td>
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<tr>
<td>Using external forces</td>
<td>Creating a need so that people are willing to listen (outside influence or stimulus)</td>
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</table>
actively involved in the SGS Program (Meat & Livestock Australia 2002). The ready acceptance of these messages by producers uninvolved in the program helped develop a motivation to join the SGS movement and a motivation to change.

**Combined financial, social and environmental opportunities.** The fourth motivational element of the SGS Program was to explore environmental benefits in combination with financial or productivity outcomes, rather than focus solely on the environmental damage being caused by the current grazing systems. The emphasis in the program was largely on the promotion of a combination of financial, social and environmental opportunities rather than concentrating on the avoidance of future losses which, according to participants, sometimes occurs in programs with an environmental focus. Reliance on possible loss as a motivation was generally seen by SGS participants as a less successful strategy, as it proved difficult to demonstrate the potential scale of the loss and relate it to a producer’s farming system. The reasons for this difficulty are documented in the literature (Vanclay and Cary 1989; Barr 1984).

Participants also recognised an additional advantage from promoting a program with a combination of economic, environmental and social benefits. Extension theory and research indicate that it is easier to promote practice change if this can be achieved by satisfying an existing goal than having to change goals and then demonstrate how the new goals can be achieved (Wilkinson and Cary 1994a, 1994b; Vanclay and Lawrence 1994). While environmental benefits are a motivation to many producers, there is also clear evidence in the research domain that producer perceptions of improved future financial security are a major motivation for practice change (Cary et al. 2001; Vanclay 1992). Participants clearly identified that by promoting a program offering multiple outcomes, SGS was more likely to meet at least 1 element of a producer’s goals.

**Personal contact to encourage involvement.** The final motivational element identified was the personal contact and encouragement to become involved. This was recognised as a crucial step to later practice change and was convincingly demonstrated by the experimental approach of Trompf (2001) in his evaluation of Triple P, a predecessor to SGS.

![Figure 1. The 3 stages of the SGS Farm Practice Change Model: ‘motivation’, ‘exploration & trialing’ and ‘farm practice change’. Decision points that signal movement from 1 stage to the next are identified. During the ‘exploration and trialing’ stage, producers display increasing commitment to the practice change until a decision is made to build the change into the farm operation.](image)

<table>
<thead>
<tr>
<th>Element</th>
<th>Strength and frequency of response</th>
</tr>
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<tbody>
<tr>
<td>Highlight relative advantage</td>
<td>Moderate to high, strongest response with producers</td>
</tr>
<tr>
<td>Continual exposure to the opportunities created by the practice change</td>
<td>Moderate, equal response by all groupings</td>
</tr>
<tr>
<td>Non-threatening learning environment</td>
<td>Moderate, strongest with extension agents and facilitators</td>
</tr>
<tr>
<td>Combined financial, social and environmental opportunities</td>
<td>Moderate, strongest with producers and MLA employees</td>
</tr>
<tr>
<td>Personal contact to encourage involvement</td>
<td>Moderate to high, very strong response from producers</td>
</tr>
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</table>
After initially surveying producers in a region, he personally invited a random sample of uninvolved producers to participate in a similar group program, and was able to measure a consequent change in motivation and adoption. The barrier to interest was that of gaining initial attention and involvement (Trompf 2001). A few enthusiastic producers interacting with other producers and encouraging them to become part of the regional producer network created many successful producer group activities.

‘Participation in the north facing slopes project was largely triggered by peer pressure and individual contact to do something about an obvious problem.’ (Producer, Tasmania).

Success with some or all of these 5 elements in the SGS Program resulted in producers making an active decision to seek further information about the practice change. Activities at the motivational stage of the SGS farm practice change model had created a reason or desire for a producer to want to change practice and led to the next stage of the adoption process.

Exploration and trialing

The second stage of the SGS farm practice change model involves producers planning changes and how to make these changes. SGS participants identified 4 elements they believed were essential for successful progression through the exploration and trialing stage. These are summarised in Table 3 and further discussed below.

Seek information. SGS participants believed that producers who were motivated to change sought information on potential solutions to their individual issues. Producers seek a range of possible solutions, as they believe any single recipe is unlikely to meet all their requirements (Phillips 1985). A critical part of the multiple investigation stage is an ability to compare alternative solutions. The provision of information, free of judgement, so producers could explore the impacts of the various systems in the SGS Program was highly valued and greatly aided the formulation of a preferred solution. Producers often use multiple sources of information in the quest to find an appropriate solution to their problem or issue (Bardsley 1982).

‘There was a lot of interest in our region on the different types of rotational grazing. Rather than set up a site to demonstrate a preferred system of rotational grazing, we identified 6 farmers in the region who were operating different grazing systems and began detailed soil, pasture and animal monitoring. These sites were then open for inspection and the farmers talked about their system and what they were trying to achieve in setting up the system. The SGS data helped to illustrate what impacts each individual type of system was having, without passing judgement.’ (RPN Facilitator, Victoria)

Producers process the potential solutions through a gradual ‘filtering’ process, where unpalatable options are excluded from consideration. The filtering generally involved assessing practices that could be incorporated without dramatic disruption to the current farming situation (Cary and Weston 1978). This is not surprising as communication specialists identify that people pay most attention to messages that are perceived to be relevant to their own circumstances and points of view (Mackay 1994).

Having collected a manageable list of responses, the next step for the producer was to consider them. While the initial investigation of options may be done with acquaintances and distant professionals, SGS participants agreed that in major decisions the evaluation of options is done with members of the family and with close friends — the ‘significant others’ (ABS 1994). For decisions with significant consequences, the weighing of alternatives can be stressful, because there is usually insufficient information to be sure of making the correct decision. The ability to cope with this stress is influenced by the psychological profile of the individual (Shrapnel et al. 1997). Nevertheless, participants supported the view that most producers coped with this uncertainty and risk by both seeking further information and by seeking social support for their decision making. Research suggests that the commitment to a decision is often a public statement about changed farm management and is easier to adopt in a

Table 3. Key elements in the exploration and trialing stage

<table>
<thead>
<tr>
<th>Element</th>
<th>Supporting consensus from SGS participants</th>
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<tbody>
<tr>
<td>Seek information</td>
<td>Initially a range of solutions are sought, not ‘the’ answer</td>
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<tr>
<td></td>
<td>Weighing up options involves close confidants</td>
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<td></td>
<td>Detailed information is sought once a decision to trial a practice is made</td>
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<td>Gain skills/understanding</td>
<td>Reduces risk with adoption</td>
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<td></td>
<td>Prepares producers for the speed at which a result may be achieved</td>
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<td></td>
<td>Identifies additional opportunity</td>
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<td></td>
<td>Builds a common base for interaction between participants, extension agents and researchers</td>
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<tr>
<td>Develop a ‘future picture’</td>
<td>Requires some structured skills training e.g. PROGRAZE</td>
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<tr>
<td>Trial the practice change</td>
<td>Must be able to describe what the aspirational change is to maintain involvement</td>
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<td></td>
<td>Reduces risk and develops confidence in the practice</td>
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<td></td>
<td>Helps quantify impacts</td>
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<td></td>
<td>Identifies issues that were not initially anticipated</td>
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</table>
supportive environment (Phillips 1985). Thus, the weighing
up of options is, in part, a social task.

‘For important decisions, 2–5 years is pretty common in
stage 2.’ (Agency Extension, New South Wales)

Gaining skills/understanding. Progressing past the
identification and evaluation of multiple alternatives usually
involved a larger investment, both financially and
intellectually. This is represented diagrammatically by the
arrow on the lower right hand side of the SGS Farm Practice
Change Model (Fig. 1).

SGS participants noted that at this point in the model,
there was a notable change in the level of overall program
participation. This is described as getting past the
‘tyre-kicking’ stage, where considerable time is often spent
weighing up the risks, identifying skill requirements and
examining the financial impacts. They seek hard data on the
impacts of the changes. The complexity, compatibility and
reversibility of incorporating the alternatives into the current
practices was also recognised to influence the degree and rate
of change.

‘At one field day, attended by a group of producers keen to
change their grazing systems, there was real frustration with the
lack of hard economic data given by the host producer.’
(Producer, New South Wales).

The process used to develop understanding and skills
within SGS reflected the belief that this stage required
information, time, social support and inspiration.
PROGRAZE was the primary skills training program
through SGS and SGS participants strongly supported the
need for a structured learning program that continued over a
significant period of time.

‘Prograze has allowed better decisions in management with
producers making major decisions on mob size and number of
paddocks because they understand the reasons for making these
decisions.’ (Agency extension, New South Wales).

Developing a ‘future picture’. A major aim of the SGS
Program was to help producers develop a ‘picture in their mind’ of what they wanted to see different on their farms.
Participants recognised that failure to develop this picture
often led to frustration. Examples were described where a
poorly defined plan led to unwise investments of time,
money and emotional resources.

‘Very few people have a true and meaningful goal that they
understand and truly believe in. Learning how to set a goal is
difficult because it involves money, values and resources. So,
unless the overriding goal is put first and foremost, the whole
adoption process is slow. A clearly defined goal helps to
develop a desire and self confidence. From this will come
decisions that will be better economically, environmentally and
socially.’ (Producer, New South Wales).

This insight raises questions about the timing of some
goal-setting exercises in the adoption process. Several
producers who had participated in goal-setting workshops
said these were often conducted at the start of a program as
a motivational exercise, when it now appears they are of
more value as a strategic planning process before major
investments of resources are made. For a program like SGS,
assisting producers in describing and maintaining a ‘future
picture’ is crucial for ongoing commitment to implementing
practice change. Producers said this picture was more likely
to be sustainable if they had a clear understanding of all the
foreseeable positive and negative consequences of the
management practices under consideration. The anticipation
of foreseeable negative consequences is described in the
psychological literature as an inoculation against future
short-term implementation difficulties (Janis and Mann
1977).

Trialing practice change. The local trial was used
extensively in SGS, partly as a means of understanding the
consequences of a practice. Trialing has been a standard tool
in extension for many decades. Producers commented that
the difficulties associated with a new practice are often hard
to identify because they are likely to be site specific.
Therefore, it follows that a producer who adopts a new
practice on a large scale is choosing to gain knowledge at
significant risk. Trials provide a cheap means of gaining
information through risk sharing. Importantly, it was
recognised that if the practice change trialed on a small scale
did not provide the response anticipated by the producers, it
was easy for them to revert back to previous practices with
minimal disruption.

‘Small scale trials on your own property, in combination with
group activities is a good way to gain confidence.’ (Producer,
New South Wales).

The SGS approach to trialing was consistent with modern
extension best practice (Barr and Cary 1992). Trials were
managed by producers to test propositions of greatest
concern to local producers. The design of trials was often
undertaken in consultation with researchers involved in the
SGS national experiment to ensure the trial best tested the
issue of concern to the producer group (Andrew and Lodge
2003). Trialing thus became a critical tool to assist producer
decision making. This form of trialing has many advantages
for producers as it minimises the risk for individual adopters,
highlights the benefits and difficulties as part of decision
inoculation and allows for parts of a more complex system to
be effectively tested. Conversely, researchers gain practical
insights from the producers and a co-learning environment is
created (Roberts et al. 2002).

A key aspect of trialing identified by producers was the
need to show short-term results, say within 1–3 years.
Financial benefits are commonly sought. It was commented
that if producers had to trust that outcomes would eventually
occur, rather than see them first hand, then adoption would be
considerably slower.

‘The Southern Farming Systems (SFS) cropping group in
Western Victoria has been very successful in getting farmers to
trial narrow raised bed technology as a means of reducing the impact of waterlogging on crop yields. The area of crop sown on raised beds grew exponentially in the first few years with many producers having a paddock or two in beds to compare with their conventional cropping program. However, after 4 drier than average years, many producers experienced limited yield differences compared to flat paddocks. This greatly tempered further adoption, however the last slightly wet year has again highlighted the benefits and further implementation of the technology is likely.’ (RPN Regional Facilitator, Victoria)

Combining trialing with formalised group discussion, often in conjunction with a skills development program was a very powerful strategy used by SGS to aid producers in progressing through the trialing stage. Participants reported that the questioning coming from other producers was largely associated with the crucial, but often neglected, area of difficulties and potential problems in practice change. Producers said they needed to be aware of the ‘downsides’ with any changes and work through these potential problems. The more trials that were conducted in a local area, the more effective was the discussion, which then led to a greater probability that unrealistically perceived risks of adoption would be dismissed. This did not necessarily require the establishment of independent, stand-alone trials, as participants said much of this trialing was regularly conducted by individual producers on their own properties. The value according to SGS participants was allowing others to share those experiences. Recognition of this need is not new (Millar and Curtis 1997; Carr and Wilkinson 1997a; Edgar and Patterson 1992), although the value of individual trialing may be under-acknowledged.

Broadening horizons beyond the local trial site was often a highlight of the participants’ involvement in the SGS Program. Common strategies used were bus trips to another region to visit trial sites and trips to annual conferences. The opportunities associated with this strategy provided benefits at each stage of the decision-making process. The network of SGS sites and groups provided an opportunity for the transfer of new perspectives and ideas between producers in different locations. This benefit was most obvious when a producer is given opportunity to develop the skills and knowledge to adopt the practice, then adoption will result. This proposition fails to acknowledge the importance of the elements identified in Table 4. It also fails to recognise that a program does not end with initial adoption, but when the participants have met their needs. Not everyone is able, or should be expected, to adopt at a single point in time.

**Farm practice change**

Three elements were identified as necessary to support the farm practice change stage (Table 4).

It is common for extension programs to cease support at the exploration and trialing stage of the adoption process. It is argued that if a new practice can be proven to be beneficial and if a producer is given opportunity to develop the skills and knowledge to adopt the practice, then adoption will result. This proposition fails to acknowledge the importance of the elements identified in Table 4. It also fails to recognise that a program does not end with initial adoption, but when the participants have met their needs. Not everyone is able, or should be expected, to adopt at a single point in time.

**Peer support and encouragement**. Having to ‘keep the faith’ during the adoption stage can be a stressful experience and social support can be a crucial component in continued perseverance (Janis and Mann 1977). SGS producers said

<table>
<thead>
<tr>
<th>Element</th>
<th>Supporting consensus from SGS participants</th>
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<tbody>
<tr>
<td>Peer support and encouragement</td>
<td>Large-scale change is often very stressful</td>
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<tr>
<td></td>
<td>Positive recognition maintains the practice change behaviour</td>
</tr>
<tr>
<td>Effective answering of questions during adoption</td>
<td>Required to address unforeseen issues that occur during adoption</td>
</tr>
<tr>
<td>Supportive structure between producers and scientists</td>
<td>Positive benefits for both parties if the appropriate relationships can be established</td>
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</table>
major changes to their grazing management system did involve a degree of ‘faith’ and that social inclusion, recognition and support were critical in helping to maintain confidence and commitment, especially if the results were below expectation or slower than expected. SGS participants noted that this was particularly the case for conservation technologies with long-term outcomes. The requirement for this ongoing support lends weight to a case for SGS to retain existing group structures used in the trialing stage and adapt these to support ongoing practice change.

‘Resource Consulting Services have developed a program called Executive Link. It operates as a “mentoring system” for those that have completed their Grazing For Profit school.’ (RPN Facilitator, Western Victoria and South Australia)

**Effective answering of questions.** SGS participants agreed that adoption often leads not to certainty but to new questions about the technology. If these are not answered effectively, the outcome can result in a discontinuation of the trialed practice. This was recognised as a big risk to the previous investment in sustainable grazing systems. For example, Wilkinson and Cary (1994) describe conservation cropping as ‘an agricultural technology that is characterised in some regions as much by dis-adoption as adoption’. Where a reversion to previous practices occurs because of technical ambiguity rather than clear failure of the technology, the outcome may be worse than if the technology had not been adopted in the first place. Not only have resources invested in extension been wasted, but the negative attitude to the technology may have considerably hardened.

**Supportive structure between producers and scientists.** A crucial aspect of SGS has been the attempt to build a supportive culture between farmers and researchers that has progressed beyond the often limited relationships commonly recognised between these 2 groups (Roberts et al. 2002; Vanclay 1994). What has been created in SGS is a context in which the 2 groups can build a convergence of knowledge (Carr and Wilkinson 1997b). In this culture, neither the decision not to adopt, nor the failure of a grazing adoption decision is interpreted as a failure of the producer or an indication of his or her personal lack of capacity. The respect of the SGS research community for producer participants can be seen in the views expressed by a researcher from New South Wales (see also Andrew 2003).

‘I think most producers tend to sell themselves short in terms of their skills and abilities.’ (Researcher, New South Wales).

In a focus group of researchers conducted as part of the harvest year annual conference, researchers expressed surprise at the number of times producers described themselves as being ‘just farmers’, when in fact they were managing complex biological systems on a daily basis using ambiguous information in an unstable environment. This sense of respect was reciprocated by producers and other members of the program in their behaviour to researchers.

Tangible evidence of this position can be seen in the innovative adoption of the harvest year by SGS (Mason et al. 2003), in which researchers were enabled to devote additional resources to the production of scientific papers as an outcome of their contribution to the program. This was a recognition of the importance of continued commitment by researchers to the industry, the importance of scientific papers to the reward system for researchers and a respect for intrinsic motivations of the research community. It is a neat reversal of the usual interpretation of an effective extension relationship being built upon the extension agent’s respect for the producer’s intrinsic goals (Anderson 1979).

A key aspect of a supportive environment is acceptance that it is possible to accept non-adoption as a reasonable decision. Physical and financial resources can often limit capacity for adoption (Vanclay and Lawrence 1994). Sometimes it is merely a case of the timing not being right or that the exploration and trialing has found that the practice is not appropriate for some producers (Roberts et al. 2002). The time for adoption will come when circumstances are more propitious.

SGS participants also recognised the adoption of new grazing technologies that led to large-scale farm change is not the final stage in a process, but rather a point in a continuing cycle of adaptive management.

**Conclusions**

The SGS Program has undertaken much in common with programs such as landcare, soilcare and industry discussion groups. The power of the model is that it represents a consensus of many parties who have come to similar conclusions through their personal experience of the process from generating the initial interest through to the adoption of significant practice change on farm.

The SGS farm practice change model provides a framework for extension personnel to understand the social process of changing farm management practices. Many of the observations and comments by participants in this project are well described by the existing extension literature. However, there are additional insights that contribute to a stronger understanding of the process of adoption of practices with combined productivity and sustainability outcomes.

SGS has clearly demonstrated that it is possible to promote improved environmental outcomes by combining these messages with a productivity message, as long as the emphasis is placed on describing the possible gain rather than promoting potential losses. The chance of adoption is enhanced if the desirable practice change can be presented as a suite of different possible approaches rather than a somewhat narrow solution.

Trialing has previously been recognised in the literature as necessary to allow producers to gain confidence and develop new skills in a certain practice. However, the SGS
Program has clearly demonstrated that the value of these trials is greatly enhanced if a support structure consisting of producers, researchers and others can be established in conjunction with these trials. In particular, the value and importance producers place on being able to discuss the potential negative consequences of adopting a practice and the impact this has on the rate of adoption have not been widely recognised previously.

Traditionally, most extension programs have focused on providing support only during the motivation and exploration/trialing stages of the practice change process. The model clearly highlights the requirements for on-going support during the farm practice change stage of the cycle to ensure the personal growth in the exploration and trialing stage, and the considerable resources invested to reach this stage, are translated into broad-scale action.

One of the lessons that has emerged from the SGS Program has been the recognition of the different speeds of individual learning, the need to provide different entry points for producers, depending on their current thinking and the need for a supportive infrastructure throughout the practice change process.

The SGS Farm Practice Change Model suggests the transition between each of the 3 stages is important, as it is this period that involves significant decision making. Between the motivation and exploration–trialing stages, producers need to make a decision to seek further information about the practice change. Between the exploration–trialing and the farm practice change stages, they need to make a decision to build the practice change into the farm operation. Between the farm practice change and motivation stages they need to make a decision to seek further opportunities to improve their grazing systems. This implies a continuous planning, trialing, adoption and evaluation cycle.

Finally, the model provides a practical framework for potential program investors to understand the components that contribute to achieving successful practice change. This will allow for the testing of project proposals against the framework and assist in the identification of gaps in the suggested approach. It also has the potential to be used as an evaluation tool to help make sense of the outcomes achieved by comparing the approach used against the elements identified in the farm practice change model.

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