

**Submission to the Rural Skills Training and Research Inquiry  
by the  
The House of Representatives Agriculture, Fisheries and Forestry Committee**

Submission by  
Bill Cotching

From my experience in agricultural extension and research,  
the keys to getting successful adoption of sustainable agricultural practices are:

- Farmers can fit the practice into their current farming system
- The practice/technology actually works
- The practice is cheap to adopt (both dollars and time)
- Those pushing for adoption have established credibility with the farmers
- One-on-one assistance is required for some time to familiarise farmers with the practice.
- Incentive funding is more likely to achieve adoption than regulation

Putting on a field day will at best create awareness, but will not achieve adoption. Farmers might see the theory of how the practice works but they inevitably will resist change – it is human nature – and they will see even small obstacles to the use of the practice on their farm. Farmers usually need one-on-one advice to tailor the practice to their farm and their management style. This is because, even if the technology is simple, it must be implemented into a complex farming system. After an initial period of one on one advice, farmers can be weaned off this reliance and they are able to include the practice as part of their day to day operations. The practice becomes part of their new culture.

I have attached a case study example of adoption of sustainable land management practices in soil erosion control undertaken in northwest Tasmania.

I recently participated in a  
Dairying for Tomorrow – On the Ground Information Exchange Workshop held on  
April 13-14 2005 in Melbourne.

The primary aim of the workshop was to provide an opportunity for representatives from the Regional Development Programs to learn about industry initiated NRM programs being implemented across Australia. Participants included RDP Executive Officers, Regional NRM coordinators, farmers and state agency representatives

The objectives of the workshop were:

- To share and exchange ideas on facilitating change in on farm natural resource management
- To identify regional strengths and key learning's in facilitating on farm NRM
- To identify regional and/or national 'gaps' in products and processes to support on farm NRM

Key success factors identified by participants to get adoption of sustainable practices were:

- Incentives need to be provided to support on-farm actions
- Technical support is required through 1:1 extension or group discussion
- Trusted and highly competent people in key roles
- Farmer advocates are valuable for increasing adoption
- Small group sizes (10-12 businesses) work best
- Programs/projects are best when Industry driven with agency support
- Projects need to have local relevance
- There is definite value in establishing linkages between farm practices and catchment targets (Targets for Change)
- DairySAT (Self Assessment Tool) is a great awareness raising tool when supported by 1:1 extension
- Ability to leverage funds from other agencies for further roll out
- Adoption requires credible science with farmer input into BMPs
- The best projects have strong planning processes
- Flexibility is required to adapt to changing legislation

It was generally felt that the key success factors listed above were transferable and were not characteristics of particular programs.

## Adoption of sustainable land management practices – a case study

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### Introduction

Agricultural extension staff are always looking for the magic way of getting adoption of new farming practices or technology without the cost of one-on-one methodologies. There is a considerable volume of theory on the subject but there are still difficulties in getting change on the ground.

The following is an example of the adoption of a sustainable land management practice that required the development of new technology and a change from past methods. The new technology involves the use of a specialised implement to install mulched rip lines for soil erosion control in paddocks used for annual crop production in northwest Tasmania.

One of the factors working in favour of adoption of the new technology was that I had been working closely with farmers over the previous 6 years in soil management issues, including soil erosion control. This had built up my level of credibility with the farmers allowing for greater acceptance of my new idea. My position in agricultural extension was funded by a State Government agency allowing for the development of these sorts of new technologies. However, greater resources were required to get this technology adopted across more farms. Supplementary resources were accessed from the Natural Heritage Trust (NHT) through community group initiatives. This additional funding allowed for the purchase for several ripper-mulcher implements and the employment of a specialist Project Officer to work one-on-one with farmers.

### The technique

A new soil erosion control technique has been developed for steep slopes that are used for annual cropping in north-west Tasmania. Mulched rip lines are installed in paddocks sown to annual crops each year soon after planting using a purpose-built implement. The technique has been found to be most useful in crops of onions (*Allium cepa*), pyrethrum (*Tanacetum cinerariifolium*), poppies (*Papaver somniferum*) and peas (*Pisum sativum*). Immediately after sowing, level contour lines are marked (using a hand held inclinometer) across the slope with small brightly coloured flags. A two-tined ripper hitched to a wheeled tractor is used to install rip lines across the slope. Soil is ripped to approximately 250 mm depth. At the same time cereal straw is laid on top of the rip lines at the rate of a small square bale for each 25–30 m of rip line (approximately 5 tonnes/hectare).

On slopes of 12–14 % the mulched rip lines are spaced at approximately 40 m intervals - on steeper slopes the lines may be as close as 25 m apart while on flatter slopes they can be up to 80 m apart. The straw and rip lines are designed to retain run-off water on the paddock by:

- slowing water movement downslope with the straw; and
- getting the water to infiltrate into the soil through the rip lines.

The rip lines create a zone of loose soil that acts like a 'sponge'. Any soil moving downslope is also trapped by the straw and so prevented from leaving the paddock

Previous erosion control techniques relied on catching run-off water in sloping contour drains and directing it into grassed drains to remove the water from the paddock. These drains were unpopular with farmers and contractors because:

- they give a rough ride when spraying by tractor;
- crops have to be pulled either side of the drain prior to harvest;
- drains have to be filled in before harvest; and
- spray and harvesting equipment suffer breakages.

The new technique not only overcomes these problems, it also occupies about half the land compared to drains.

### **Time for increased ownership**

There was a considerable time lag from the original idea to developing a workable technology and then adoption on a broader scale. A timeline of how the process occurred is presented below.

#### ***1999***

In June 1999, I came up with the idea for a new erosion control method which I trialled using currently available soil rippers and hand laying of straw in 5 paddocks. In February 2000, the chairman of the Kindred Landcare Group, Kevin Goodwin, and I met with Philip Dobson, the owner of a local engineering company, Dobmac Machinery, to put together a design of the new implement. Funding was obtained from a NHT funded soil management project to build the new implement.

#### ***2000***

The first 'ripper-mulcher' was delivered in April 2000 for some initial trial work. In the first May to September planting season of having the technique readily available (2000), I used my personal farmer contacts and those passed on by field staff in the companies offering crop contracts. I went out on each of the paddocks to survey in the contour lines, rode on the implement to feed in the straw and 'direct the traffic'. This resulted in 120 ha of annual cropping ground being protected from erosion. I also realised that to get greater adoption of the technique, I needed the assistance of a dedicated Project Officer to offer one-on-one assistance to farmers.

During 2000, I also monitored the effectiveness of the new technique using runoff collectors.

#### ***2001***

In January 2001, the technique was demonstrated at the annual field day held on the DPIWE Vegetable Research farm at Forthside. In May 2001, the Five Rivers Waterwatch group was fortunate to obtain funds from NHT to appoint a full time Project Officer for on-ground implementation of soil erosion control works. From May to September 2001, 500 ha of paddocks used for annual cropping were protected against soil erosion.

Farmers in the Wesley Vale district, who are members of the Rubicon Catchment Group, were convinced of the merits of the technique and wanted an implement to be available more readily. They took the initiative by getting companies involved in the

local farming industry to jointly fund, together with NHT, the purchase of another ripper-mulcher implement, which was delivered in June 2001.

### **2002**

In 2002, a second Project Officer was employed by Five Rivers Waterwatch for on-ground implementation. In July 2002 a new implement was delivered for use in southern Tasmania. From May to September 2002, 500 ha of paddocks used for annual cropping were protected against soil erosion.

### **2003/04**

During 2003 and 2004, the Regional Land Management Officer with DPIWE, Jason McNeill took over the responsibility of providing the on-paddock assistance to farmers. In both 2003 and 2004, over 600 ha of cropping paddocks were protected against soil erosion. A new implement was also delivered for use in north eastern Tasmania. In 2003 and 2004, farmers have been encouraged to supply their own straw and to take on more of the paddock work themselves. Many have responded well to this encouragement as the technique is accepted as being a legitimate part of their farming operation.

### ***The future***

Attempts are underway to obtain further funding from NHT for more ripper-mulcher implements so that more farmer groups can be set up to be independent of the DPIWE. It is envisaged that these groups would operate in a similar manner to the Wesley Vale Farmers who jointly share ongoing use and maintenance of the implement. This model of ownership and adoption can be repeated by farmers in other local districts in order to get the commitment from individual farmers. The DPIWE would limit their input to training individuals to survey the contour lines but the farmers would be expected to operate the implement and supply their own straw.

### **Lessons learnt**

This case study illustrates the keys to getting successful adoption which are:

- Farmers can fit the practice into their current farming system
- The practice/technology works
- The practice is cheap to adopt (both dollars and time)
- Those pushing for adoption have established credibility with the farmers
- One-on-one assistance is required for some time to familiarise farmers with the practice

Putting on a field day will at best create awareness but will not achieve adoption. Farmers might see the theory of how the practice works but they inevitably will resist change – it is human nature – and they will see even small obstacles to the use of the practice on their farm. Farmers usually need one-on-one advice to tailor the practice to their farm and their management style. This is because, even if the technology is simple, it must be implemented into a complex farming system. After an initial period of one on one advice, farmers can be weaned off this reliance and they are able to include the practice as part of their day to day operations. The practice becomes part of their new culture.

