DEMO SITE

MARCH 2019

Soil Wealth NURTURING CROPS

Integrated Crop Protection PROTECTING CROPS

Image: Theresa Chapman

EROSION CONTROL MACHINERY

KEY MESSAGES

- ✔ **Vegetable cropping can leave topsoil vulnerable to significant erosion**
- ✔ **The ripper mulcher is an important tool being used by Harvest Moon to prevent topsoil loss**
- ✔ **Ripper mulchers are free for Tasmanian growers to borrow and use**

The author would like to acknowledge Mark Kable and the team at Harvest Moon and the generosity of Dr Bill Cotching.

THE RIPPER MULCHER IN TASMANIA

The Soil Wealth and Integrated Crop Protection (SWICP) case study demo site in north west Tasmania is Harvest Moon. This factsheet showcases one of the practices employed at Harvest Moon, the ripper mulcher, which is used to manage the risk of soil erosion.

The top layer of soil contains the highest concentration of organic matter, micro-organisms, nutrients and biological activity. It is important to consider and prevent topsoil erosion as lost topsoil can't be replaced in a human's lifespan. If you're cropping on sloped land in Tasmania, your risk of soil erosion from winter rainfall is high. Certain key vegetable crops, such as onions and carrots, rely on a clean seedbed in early spring, leaving paddocks vulnerable.

The risk of soil erosion can be reduced using winter cover crops, retaining crop residue and improving soil structure, but previous control methods relied on catching run-off water in sloping contour drains and directing it into grassed drains to remove the water

Hort Innovation

ahr applied horticultural research

RMCG

This project has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

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 ripper mulcher

The ripper mulcher overcomes the issues caused by contour drains and occupies about half the land compared to drains. It can be used for crops when it is impractical to have cover crops or retain crop residue.

The machinery has been designed specifically for steep slopes that are used for annual cropping on the valuable ferrosols of north west Tasmania. Mulched rip lines are installed in paddocks sown to annual crops soon after planting each year. 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.

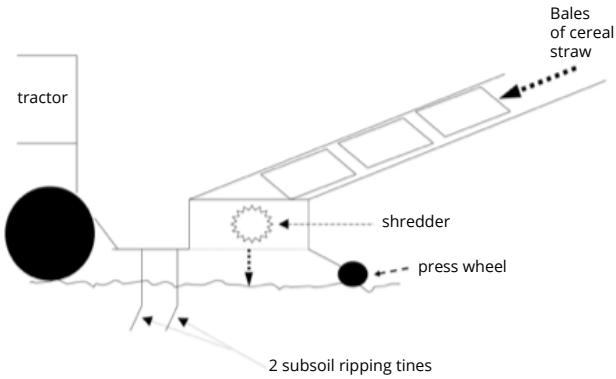

Diagram of ripper mulcher (image courtesy of Dr Bill Cotching)

Marking out the lines

(requires 2 people)

1. Stand approximately 30 metres apart across the slope.
2. Rest the clinometre on pole without the cross.
3. With your right hand bring the clinometer up to the right eye or hold the clinometer up at eye level, hold away from your eye slightly and look through the clinometre and line up cross hairs with the cross on the other pole/ person at the same height.
4. Read the scale on the right and move up or down the hill until cross hairs align with zero.
5. Place a red flag at your feet in the correct position.
6. Each person then moves across the slope approximately 30 m to place the next flag.
7. Work across the slope from one side of the paddock to the other and once a line is completed, move down slope to the next line.

Important: It is critical to ensure that the lines are level or on-the-contour, because if not, the lines will concentrate surface runoff water into depressions resulting in increased erosion rather than infiltration of the runoff into the soil.

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).

Hort Innovation
ahr applied horticultural research
RMCG

This project has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

The ripper mulcher in the field (Image: Theresa Chapman)

The straw and rip lines are designed to retain run-off water on the paddock by:

1. slowing water movement downslope with the straw; and
2. allowing 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.

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. Start at the top of the slope with the first line just below the top break in slope.

CURRENT STATUS

There were eight ripper mulchers built in Tasmania using public funds, and entrusted to the farming community to look after, paying only for breakages if they occurred while being used. Harvest Moon has one machine in use. Mark Kable of Harvest Moon speaks highly of the ripper mulcher, calling it “a great machine”, and considers it valuable to his farm business.

There is another ripper mulcher at TIA’s Forthside Vegetable Research Facility, along with a related machine that mulches wheel tracks. The location and status of the others is not known to the author at this time. Bill Cotching recommends keeping an eye out for ripped mulch lines and asking around. Preventing erosion should be a top priority given the investment of amendments and carbon into topsoil by farmers and the importance of soil health to farm productivity.

A podcast about the ripper mulcher is available here - https://soundcloud.com/soilwealthandicp/the-ripper-mulcher-in-tasmania

For more information contact:

Donna Lucas, RMCG,

0459 047 478, donnal@rmcg.com.au