

Healthy Country

managing the land for healthy waterways

Living mulch factsheet #1



Living mulch: What is it?

Living mulch is a green cover crop grown in the inter-row space. The type of cover crop used depends on the season, with oats suitable for autumn, winter and spring, and sorghum or millet in summer.

Frequently asked questions

Growers often ask two main questions about using living mulch.

- Does it create environments where the phytophthora spores can reproduce?
- Is the mulch a host to other plant pests like nematodes?

The project team also had some questions that needed answers,

- Does living mulch help retain the height of the plant beds?
- What is the nutrient content of the eroded soil?

To find out we analysed soil samples for moisture content, measured bed heights and searched for information regarding the cover-crops and their relationship with pests and disease.

What did we find?

Many growers were concerned that living mulch could increase the amount of moisture retained in the soil increasing the risk of phytophthora and nematode problems. The results from the soil moisture tests show that living mulch does not increase moisture levels in the top 15 cm of soil regardless of the farm or bed slope (see Table 1).

Also, significant research conducted on grass crops for insect resistance cultivars has shown oats, sorghum and millet to be resistant to nematodes.



For best results, plant living mulch when the topsoil is most vulnerable to erosion.

Table 1 – Soil moisture

Farm location	Practice	% Moisture 4 Sept 2007	% Moisture 27 Nov 2007
Toorbul 4% slope	standard	11.0	8.5
	living mulch	10.1	7.9
Eilimbah 1.5% slope	standard	9.1	9.9
	living mulch	8.9	9.1

Other Living Mulch fact sheets: #2 Disease and erosion research
#3 Establishment

Healthy Country partners:



We analysed the eroded soil collected from the troughs and found that nutrients are being lost. While the results show the nutrient differences between practices are minimal (Table 2), the situation is alarming when these results are multiplied by the amount of soil captured in the standard practice runoff troughs over 17 months (Table 3). Standard practice lost up to four times more nutrients than the living mulch. Living mulch will also 'soak up' excess nitrogen and assist nutrient cycling.

Table 2 – Average nutrient analysis of eroded soil samples (ppm)

Practice	NO ₃	P	K	Ca	Mg
Standard	8	18.5	67.5	32.5	28
Living mulch	2	15.5	86	76	28

Nitrogen (nitrate) does not cling to soil, but remains dissolved in water which is why the soil samples have low NO₃ readings. Most nitrogen in the soil is in organic form.

The use of living mulch made little difference to retaining bed height. While difference in average bed heights (erosion) between treatments was minimal (standard practice 19 mm, living mulch 7.5 mm), it was consistent with other measures of the living mulch study that indicate it is more effective than standard practice in retaining soil in and between the beds.

Table 3 – Nutrient loss per hectare over 17 months

Nutrient	Standard practice (kg/ha)	Living mulch (kg/ha)
N	0.55	0.03
P	1.27	0.23
K	4.64	1.27
Ca	2.23	1.12
Mg	1.92	0.41
Eroded soil	68 660	14 740



Living mulch significantly reduces top soil and nutrient losses from farming land.

What have we learned from the trial?

Experience with the use of living mulch shows:

- The bed consistently retains its height – this enables the inter-row to perform its principal role of water removal.
- Moisture retention in the top layer is not an issue – and if linked with retaining bed heights will provide better phytophthora control.
- As less soil is eroded from the bed more nutrients are available for the crop because all nutrients (except nitrogen) bind to soil, particularly to clay particles.
- Oats, sorghum and millet varieties are not hosts for nematodes.
- There are cost savings to be made by utilising living mulch (retaining nutrients, pest and disease prevention, and weed control).

For more information

Contact DPI&F Project Officer – Zane Nicholls
(07) 5444 9677 zane.nicholls@dpi.qld.gov.au

Acknowledgements

Forster Bros Farming Co, Fullerton Farms,
Pineforce Pty Ltd., Golden Circle and PRCCA.

The Healthy Country Project is a three-year partnership project between SEQ Catchments, DPI&F, scientists from Healthy Waterways and indigenous representation through the SEQ Traditional Owners Alliance. The other project partners are coordinating river restoration works and water quality monitoring in three 'focal' case study areas in the Lockyer, Bremer and Logan-Albert catchments.

FF08-002