

sustainable
agriculture



Trialling best cropping practices for maximum soil cover



Project Snapshot

Land Manager's Names:	Clint Della Bosca & Bodallin
Property Size:	9800ha
Location:	South Moorine Rock
Annual Rainfall:	290mm
Enterprise mix:	Cropping and livestock (sheep)
Soil types/vegetation types:	Loam, gumtrees



Key Messages

- Consider maintaining good groundcover to reduce topsoil loss particularly over the summer months. Cover crops offer a quick solution to maximise biomass.
- Brown manuring is a high return option in low rainfall areas; however remember seasonal variation can influence the financial outcomes of farming practices.
- Protect the soil; it is your main asset.
- Making trials locally relevant is important for community participation

This project is supported by Wheatbelt NRM, through funding from the Australian Government's Caring for our Country.

Getting started

The Bodallin Catchment Group is an innovative, community driven grower group that was formed due to farmers in the area wanting to come together to discuss localised agricultural issues and test practices with on-farm trials. The environment can be a harsh when you're farming east of Merredin and any farm practice that gives you 'the edge' in dry and windy conditions is worth adopting.

Funding in 2010 provided by Wheatbelt NRM, provided another opportunity for the group to undertake a farmer demonstration. Group leader Merrilyn Temby explained, "We wanted to raise awareness of wind erosion risks among Westonia & Yilgarn cropping farmers by promoting 'best practice' via field days". With the help of industry consultation the Bodallin Catchment Group designed a broad acre trial (10.5ha) that compared four farming practices (full stubble retention, cultivation, brown manuring and cover cropping) and their effect on groundcover. After hearing about the concept of the project, South Moorine Rock grower, Clint Della Bosca willingly offered his time, equipment and paddock to the project. Clint said, "Being directly involved in the project allows for better understanding of its findings".

In 2010 a paddock was selected on the Della Bosca property which had good stubble cover after the 2009/2010 harvest. The soil type was medium loam. Pallingup oats were sown dry in 2010 and an area was left as a chemical fallow for the brown manure treatment, while the rest of the paddock was sown to wheat. A total of 177.5mm was recorded in 2010.

Over the 2010/2011 summer either conventional weed control or WeedSeeker technology was used across the treatments (see Figure 1) and after a wet start to 2011 (129.5mm) wheat was sown across all treatments using either a disc seeder (Flexicoil® 500 on 225mm spacings with Discamate® disc openers) or a tyne seeder (ConservaPak® on 300mm spacings) on the 13 May.



	1	2	3	4	5	6	7
	Cover crop	Cover crop	Brown manure	Brown manure	Cultivation	Full stubble retention	Full stubble retention
Disc sown wheat 2011	Pallingup oats senesced 23-Aug 2010, 2010/11 summer weed control	Pallingup oats senesced 15-Sep 2010, 2010/11 summer weed control	No crop 2010, sprayed 23-Aug 2010, 2010/11 summer weed control	No crop 2010, sprayed 15-Sep 2010, 2010/11 summer weed control	2010 Barley crop, ploughed 20-Feb 2011	2010 Barley crop, 2010/11 summer weed control	2010 Barley crop, 2010/11 summer weed control
Tyne sown wheat 2011							

Figure 1: Trial design

Production results

In Table 1 below are yields and protein level of the 2011 Frame wheat crop, along with returns on a per hectare basis for the 2011 harvest. The analysis was based on a \$185 farm gate/tonne feed wheat price. Clint points out however, that "Soil type and sub soil moisture plays a large determining factor in this project". Growing season rainfall (1st April-1st Oct) was: 188mm and a total of 415.5mm was recorded for the year.

Table 1: Trial results

SEEDER	TREATMENT	Yield (t/ha)	Protein (%)	Gross \$/ha	Cost \$/ha	Net \$/ha
DISC	1	1.78	10.3	\$329	\$204	\$125
	2	1.57	10.3	\$290	\$204	\$86
	3	2.05	10	\$379	\$204	\$175
	4	1.92	10.1	\$355	\$204	\$151
	5	2.06*	10.5	\$381	\$219	\$161
	6 7	1.92	9.3	\$355	\$204	\$151
TYNE	1	2.04	8.9	\$377	\$208	\$169
	2	1.64	8.8	\$303***	\$208	\$95
	3	2.2**	9.2	\$407	\$208	\$198
	4	2.06	9.3	\$381	\$208	\$172
	5	2.16	9.1	\$399	\$223	\$176
	6 7	2.02	8.3	\$373	\$208	\$165

Interesting results were achieved from the trial, as Clint explains below:

In season 2011 the no-till tyne seeding on the brown manured early spray (treatment 3) was the highest gross margin producing crop of all treatments, producing \$198.69/ha profit result. We can also say for this trial that tynes produced on average 12.8% better results than the Discamate seeding system.

Another interesting result is the tyne seeded oats full cover late spray (treatment 2) recorded a falling number result of 222 which would have put that grain into General Purpose 1 segregation thus making it worth more \$/T.

Farming: A constant learning experience

To maximise the benefit of brown manuring Clint pointed out that subsequent weed control has to be undertaken, otherwise weeds can be difficult to control (e.g. windmill grass). At the end of the day the exercise of brown manuring is a sacrificial year of production, based on reducing water use so that the following year's crop reaps a yield benefit. As Clint says, "Brown manuring will work but timing is crucial. The earlier the better in my experience".

Clint has only been able to implement brown manuring in a small way, given that his sheep enterprise requires more grazing area in the dry years. A question that Clint asks himself is, "In the eastern wheatbelt can a system with fallow and cover crops reduce the risk of cropping enough for farmers to remove the grazing enterprise from their business?". With more seasons incorporating these practices on-farm Clint hopes to get closer to answering this question. He is also interested to see if greater organic matter content and groundcover improves crop production and farm sustainability.

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