


Sowing into retained pasture residue at Mount Cooper

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RESEARCH

Searching for answers



Location:
Mt Cooper
Ian, Robyn and Angus Gunn

Rainfall
Av. Annual: 435 mm
Av. GSR: 325 mm
2014 Total: 470 mm
2014 GSR: 305 mm

Yield
Potential: 4.2 t/ha (W)
Actual: 3.6 t/ha

Paddock History
2014: Wheat
2013: Medic pasture
2012: Barley

Soil Type
Red loam

Plot Size
20 m x 4 m x 3 reps

improve soil health, and reduce exposure to wind erosion. The major outcome to be achieved is increased knowledge and skills allowing farmers and advisers to improve farm profitability while retaining stubble in farming systems on upper Eyre Peninsula (EP).

One issue upper EP farmers identified as a problem was sowing into retained pasture residue with pasture vines causing issues with blockages at sowing and uneven germination. The trial at Mount Cooper was designed to compare crop establishment and production, and weed and pest control effectiveness in the presence and absence of legume pasture residues.

How was it done?

A trial site was selected at Mount Cooper and the pasture residue was measured with an average of 1.59 t/ha of vine and leaf material, which was a lighter pasture for this region given the 2013 season. In early April 2014 pasture residue treatments were imposed: (i) Harrowed, (ii) Mowing to the ground (residue removal), (iii) Cultivate with offset disc and (iv) Nil control.

The trial was sown using a plot seeder with Harrington points and press wheels at 3-4 cm sowing depth. It was sown in drier conditions on 21 May with Mace wheat @ 65 kg/ha and base fertiliser of DAP @ 75 kg/ha sown into the stubble treatments. The treatments were replicated 3 times. Pre-sowing chemical applications were Roundup Powermax @ 1.0 L/ha, trifluralin @ 1 L/ha and 80 ml/ha Hammer. Broad-leaved spray was applied on 29 July using Amicide @ 800 ml/ha and Lontrel @ 100 ml/ha.

The measurements taken were pasture residue and soil moisture at sowing, plant emergence counts, grain yield, grain quality and harvest soil moistures. Data were analysed using Analysis of Variance in GENSTAT version 16.

At the end of the season the stubbles were harvested at different heights, high and low, and the low treatments will be rolled in 2015 to determine the impact of stubble management on medic germination and establishment in the following season.

What happened?

The 2014 sowing conditions in mid-May resulted in dry topsoil and dry pasture vine residues with the soil being cloddy after sowing. The dry pasture residue allowed it to flow through seeder easier than if the residue was wet. In several Nil plots the pasture residue bundled up in some areas however severe blockages and dragging did not occur. There were small medic pasture plants present at sowing which were sprayed out.

There were no differences in wheat plant establishment after sowing into the different pasture residue treatments and no differences in grain yield or grain quality measurements, except 1000 grain weight with the cultivated residue treatment being lower than other treatments in the 2014 season (Table 1).

Key messages

- **The 1.6 t/ha pasture residue had no impact on sowing and plant establishment in drier sowing conditions in 2014.**
- **In 2014 there were no differences in wheat establishment, yield or grain quality due to different pre-sowing treatments with pasture residues.**
- **The wheat stubbles have been harvested at different heights and pasture establishment and will be monitored next season.**

Why do the trial?

The project 'Maintaining profitable farming systems with retained stubble - upper Eyre Peninsula' aims to produce sustainable management guidelines to control pests, weeds and diseases while retaining stubble to maintain or

Table 1 Grain yield and quality as affected by stubble treatments and additional nutrients at Mount Cooper, 2014

Pasture residue treatment	Plant counts (plants/m ²)	Harvest index	Yield (t/ha)	Protein (%)	Test weight (kg/hL)	1000 Grain weight (g)	Screenings (%)
Residue harrowed	101	0.43	3.63	10.0	84.7	37.5	2.6
Residue mown	102	0.44	3.56	9.9	84.7	37.4	2.5
Residue cultivated	108	0.43	3.60	10.1	84.3	36.2	3.2
Nil control	108	0.43	3.54	9.9	84.5	37.1	3.0
<i>LSD (P=0.05)</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>0.8</i>	<i>ns</i>

What does this mean?

In 2014 the 1.6 t/ha medic pasture residue did not cause problems at sowing in drier sowing conditions and there were no differences in wheat establishment, yield or grain quality due to different pasture residue treatments imposed before seeding. However with heavier pasture residue, a different sowing system or different sowing conditions, the plant establishment and yield outcomes may have

changed. There were no major weed or pest issues at this site in the 2014 season.

In 2014 the plots were harvested at different heights, high and low, and the stubble in the low plots will be rolled in Jan/Feb 2015 to determine if there are any differences in medic establishment depending on the stubble treatments.

Acknowledgements

Thank you to the Gunn family for having the trial on their property. Thanks to Roy Latta for establishing this trial in 2013.



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