MULLEWA

TRIAL RESULTS 2011

Mullewa Dryland Farmers Initiative Inc.

TOPIC: OPPORTUNISTIC USE OF BREAK CROP VS FALLOW

Group: *Mullewa 2011*

ABSTRACT

The objective of this trial was to compare an opportunistic break crop against fallow and wheat to better define the pros and cons of fallowing.

A well managed chemical fallow enables control of weeds, assists soil moisture retention, allows for earlier and potentially dry sowing, break the disease cycle of the majority of cereal diseases.

When compared to fallow break crops, crops other than cereals, offer a rotation of herbicides and an ability to manage weeds differently. Many also break the disease cycle of cereal diseases. They have the ability to return a profit when a well managed chemical fallow cannot. Further to this most break crops are able to be dry sown.

This trial is designed to help answer the question - is it possible to gain more through tactically using a break crop than strategically relying on fallow? To use a break crop tactically is to play the season. There is the option of brown manuring the crop and treating as a fallow or to continue supplying inputs and treat as crop. This could be seen as an extension to the close of your cropping window, where fallow increases the beginning of the cropping window.

TT canola was the break crop identified for this systems demonstration. TT canola can be dry sown and seed is relatively inexpensive, dependant on variety. Canola has good plasticity with an ability to maintain yield at low plant densities. TT canola has a residual broadleaf herbicide that can be applied after sowing with fewer timing restrictions than other crops.

TRIAL DETAILS

Table 1. Trial particulars.

Property	Ardingly Research Annex.
Soil type	Red loam
Crop & Variety / ies	Wheat - Magenta, Canola - Cobbler
Treatments:	Canola 4 sowing rates of 1, 2, 4 and 6 kg/ha, wheat and fallow as comparisons in 2012
Replicates:	4 rep Latinised row column design
Sowing date	Dry sown 14th April;
Seeding rate	Canola 6, 4, 2 and 1 kg/ha, wheat
Fertiliser (kg/ha)	No fertiliser at sowing, top ups applied June 23. See Table 3
Paddock rotation	2009 Lupins 2008 Canola or … Continuous pasture previous 5 years
Growing Season Rainfall	May to end September 202mm

RESULTS

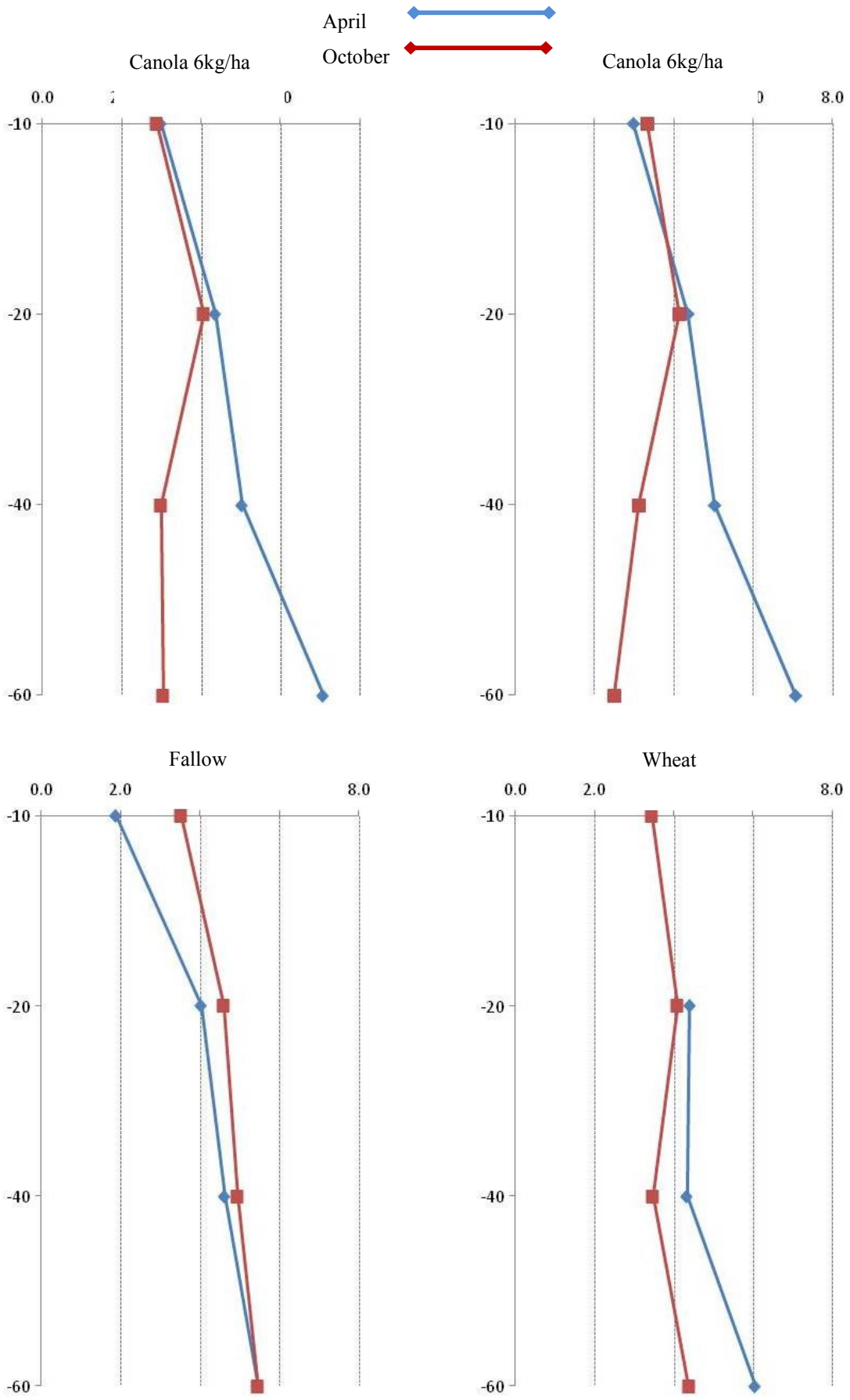
Table 2. Yield and approximate gross return values assuming wheat at $220/t and canola at $525/t.

TREATMENT	Sowing rate (kg/ha)	Emergence (plants/m^2)	Yield (t/ha)	Gross return Wheat $220 Canola $525
Canola	6	128	2.94	$1543
	4	68	2.9	$1522
	2	44	2.73	$1433
	1	22	2.75	$1443
Wheat		128	3.3	$752
Fallow			0	$0
LSD (*P<0.1*)			0.49	

Table 3. Input timings and volumes, providing an approximate cost for each.

TREATMENT	Date	Input	Volume	Approx cost $/ha
Wheat	16 June	Barracuda	0.7lt	17.5
		Lontrel	0.15lt	6.3
		Ally	3g	0.25
	23 June	Monza	25g	27.5
		Urea	50kg	31.5
		NS41	30kg	16.5
			Total	**$99.55**
Canola	16 June	Atrazine	2lt	24
	23 June	Urea	50kg	31.5
		NS41	50kg	16.5
	4 July	Atrazine	2lt	24
		Select + Hasten	500ml	15
		Dominex	400ml	3.1
			Total	**$114.1**
Fallow	23 June	Roundup PowerMax	2lt	16.5
		Atrazine	2lt	24
			Total	**$40.5**

Soil moisture measurements from canola, wheat and fallow plots during 2011, Percentage Moisture by Depth (cm)



Discussion

Soil moisture observations were confounded by the rainfall events of early October. There is a moisture bulge in the top 20 cm depicted on the graphs above. The moisture results indicate that canola uses more water at a greater depth than wheat. There is less water remaining in the soil profile below 40cm under canola sown at 1 and 6 kg/ha than for the same depth under wheat. There will be less moisture accessible to a wheat crop in 2012 on the canola plots than on the fallow plots.

The use of fallow for moisture storage alone is unlikely given the volume of stored soil moisture at the beginning of May 2011. Indications for the use of a break crop were positive from early April. Summer rainfall had refilled the soil profile, following the wheat of 2010, giving some surety to crop yield. Only a small rainfall event was required to break the season and join the soil moisture fronts.

Season length and consistent rainfall has favoured yield of canola regardless of its plant density. A very plastic species as the yield from 22 plants/m^2 is only 200 kg/ha less than that from 68 plants/m^2. The canola plots received all required inputs as a result was a more expensive crop to grow than either the wheat or fallow.

On fallow plots in 2012 there needs to be a recoup of $40/ha of input costs. This is easily measured if there is a yield improvement from wheat on fallow, or if there is a reduction of inputs on fallow plots in 2012. It is not so easily measured in a system where the fallow has allowed for earlier completion of an entire sowing program, or if the fallow allows reduced inputs in future seasons.

Illustrations

Figure 2. Emergence of canola sown at 6 kg/ha

Figure 1. Emergence of canola sown at 1 kg/ha large number of brome grass from old header windrow

Figure 3. Depth to moisture at sowing, 14th April, approximately 80 mm.

Technical Support

Growers of the MDFI for identifying this as an issue they needed to target.

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