OPPORTUNISTIC USE OF BREAK CROP VS FALLOW, SECOND SEASON

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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. 2012 was the second season for this trial. Wheat sown into the residues of canola, fallow and wheat from 2011.

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

Break crops, crops other than cereals, perform a similar function. They offer a rotation of herbicides and an ability to manage weeds differently. Many also break the disease cycle of cereal diseases. Unlike fallow they can 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 selected for this systems demonstration because of several characteristics. 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.

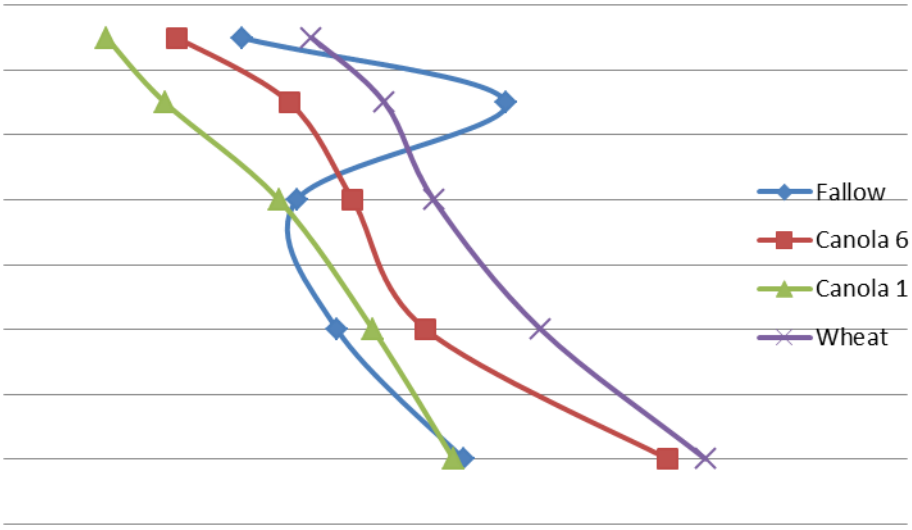
Property	*Ardingly Research Annex.*
Soil type	*Red loam*
Crop & Variety / ies	*Wheat - Magenta, Canola - Cobbler*
Treatments:	*2011 Canola 4 sowing rates of 1, 2, 4 and 6 kg/ha, wheat and fallow as comparisons* *2012 Wheat into old plots of each Canola, Fallow and Wheat*
Replicates:	*4 rep latinised row column design*
Sowing date	*Dry sown 26th April;*
Seeding rate	*Wheat 40kg/ha*
Fertiliser (kg/ha)	*Agras 80kg/ha*
Growing Season Rainfall	*April to end September 115.8 mm*

RESULTS

Table 2. Combined yield results from 2011 and 2012. During 2012 wheat was sown into the canola, wheat and fallow plots from 2011.

2011 TREATMENT	2011 Yield (t/ha)	2011 Gross return Wheat $220 Canola $525	2011 Input Cost est.	2012 Yield (t/ha)	2012 Gross return Wheat $347
Canola 6	2.94	$1543	$114	2.5	$896
Canola 4	2.9	$1522	$114	2.35	$816
Canola 2	2.73	$1433	$114	2.6	$903
Canola 1	2.75	$1443	$114	2.29	$795
Wheat	3.3	$752	$100	1.98	$688
Fallow	0	$0	$40	2.98	$1033
LSD (*P<0.1*)	0.49			0.37	

Figure 1. Soil moisture measurements from canola, wheat and fallow plots during April 2012, Percentage Moisture by Depth (cm)



DISCUSSION

In this instance the opportunistic crop of canola in 2011 has proven the more successful rotation. At the beginning of the season, given the rainfall during harvest, the soil had comparable moisture at depth irrespective of the crop in 2011. The weed break given by the canola was significant, very few grass weeds coming through in old canola plots. The management of weeds proved telling in this trial. Much of the potential wheat yield was removed by the brome grass in the wheat on wheat plots.

Wheat on wheat this season achieved approximately 16kg/mm of rainfall. Wheat growing without the competition of weeds on the canola plots achieved in excess of 19kg/mm. Making crude assumptions that wheat on fallow grew at 19kg/mm, and the additional 400kg/ha yield was the result of additional moisture alone, then there was approximately 21mm of additional moisture in the fallow plots. Fallow had more moisture available closer to the surface than the other plots though not significantly more moisture throughout the remainder of the profile (Figure 1).

In 2012 wheat on fallow plots returned $100 more than wheat grown on either wheat or canola residue. This recouped the $40 loss from the 2011 fallow with additional profit. But fallow did not result in the greatest total profit over the two seasons of the trial. The extra production on the fallowed treatments was unable to make up the opportunity cost of not growing a crop in 2011. This is not unexpected given the high crop yields achieved in 2011.

TECHNICAL SUPPORT

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

Research Support Unit Geraldton, Steve Cosh, Trevor Bell, Dirranie Kirby, Larry Prosser with seeding, harvest and seasonal management.

ILLUSTRATIONS

Figure 2. Emerging wheat on canola stubble

Figure 3. Wheat emerging on fallow

Figure 4. Wheat on wheat

Figure 5. An indication of the brome grass present in the wheat on wheat plot.

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