Early Sown and Grazed Canola Trial

Location:
Merredin, WA

Consultant:
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Key Messages

- Graze canola crops at the three to five leaf stage to allow the maximum amount of time for the crop to recover
- Canola sown at the beginning of April has more biomass early in the season which allows grazing to occur, reducing the feed gap in early winter
- Grazing canola early did not significantly affect the final yield

Aim

Since 2000 there has been a reduction in May/June double figure rainfall events, with larger events now coming during March/April in the Eastern wheat belt. This has resulted in a need for eastern wheat belt farmers to adapt to these changes, ensuring they can germinate and establish a crop earlier than is normal practice. The moisture from these earlier rainfall events can be lost rapidly; therefore a quick decision to sow canola early is needed.

Early sowing canola has proven to be most beneficial if it is sown onto a ten month fallow in low rainfall areas. This reduces the risk associated as the stored moisture allows the crop to hang on given there is often a dry spell experienced in April and May. There is also a benefit associated with achieving two years weed control that allows wheat or barley to be grown with confidence in the following years.

When sowing early the question of frost will be raised. To overcome this issue grazing was investigated to alter the flowering window and reduce the risk associated with frost. Another benefit discovered was the ability of early sown canola to grow vigorously and reduce the feed gap in early winter, allowing pastures to establish and flourish.

The aim of this trial was to investigate how early canola can be sown in the eastern wheat belt, given there is enough soil moisture to germinate and allow the crop to survive. It was also investigating the effect of grazing the crop with sheep. This was to alter the flowering window, reducing the possibility of a frost event causing damage during flowering and grain fill, without compromising yield.

Method

The trial was established with Snapper canola sown and germinated on two dates, April 2nd and April 2015. Farmer equipment was used which resulted in each of the 24 plots being 18.3 x 200m. To investigate the most effective grazing regime six different grazing time of sowing treatments were established and replicated four times. These were -:

- Canola Germinated April 2nd Ungrazed
- Canola Germinated April 2nd Grazed Early
- Canola Germinated April 2nd Grazed Late
- Canola Germinated April 2nd Grazed Early and Late
- Canola Germinated April 20th Ungrazed
- Canola Germinated April 20th Grazed Early

Weaner ewes were used for grazing at a stocking rate of 4.2 DSE. The stocking rate was decided upon as it is considered achievable given the number of livestock eastern wheat belt farmers have on hand. The stocking rate is between 1.5 and 2 times the average eastern wheat belt stocking rate.

Biomass cuts were taken pre and post grazing to assess the level of grazing achieved in each treatment. Sheep weights were recorded pre and post grazing to allow an economic analysis to be conducted on the live weight gain achieved. Yield data was collected using the farmer's header and a weigh trailer.

Rainfall (mm)

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
4	5	88	19	8	42	63	80	6	6	31	7	359

Grazing Dates

Table 1 Grazing period for each treatment

	GRAZING DATES	GRAZING DAYS
Canola Germinated April 2nd Grazed Early	29th April – 22nd May	24
Canola Germinated April 2nd Grazed Late	15th June – 6th July	21
Canola Germinated April 2nd Grazed Early and Late	29th April – 22nd May and 15th June – 22nd May	45
Canola Germinated April 20th Grazed Early	15th June – 22nd May	21

Results

Food on Offer

Food on offer (FOO) was measured as edible dry matter production and was measured pre and post each of the two grazing periods (Table 1). As shown below the later grazing period had too much initial biomass for the sheep to graze evenly. Therefore they were only able to alter the flowering window in small patches which they grazed heavily.

TREATMENT	START OF 1ST GRAZING	END OF 1ST GRAZING	START OF 2ND GRAZING	END OF 2ND GRAZING
Canola Germinated April 2nd Ungrazed	87	373	888	1405
Canola Germinated April 2nd Grazed Early	87	162	787	1313
Canola Germinated April 2nd Grazed Late	87	373	1242	1805
Canola Germinated April 2nd Grazed Early and Late	87	191	840	1502
Canola Germinated April 20th Ungrazed			662	1180
Canola Germinated April 20th Grazed Early			662	1368
	P-values	LSD		
Treatment	0.003	139.7		
Change through time	<.001	174.2		

Table 2 The impact of grazing on Food on Offer measured as kg/ha of dry matter

Grain Yield

Time of sowing and grazing only recorded a significant yield loss when the treatment was grazed early and late (Table 1). This period resulted in a total of 45 grazing days and wouldn't be considered farmer practice.

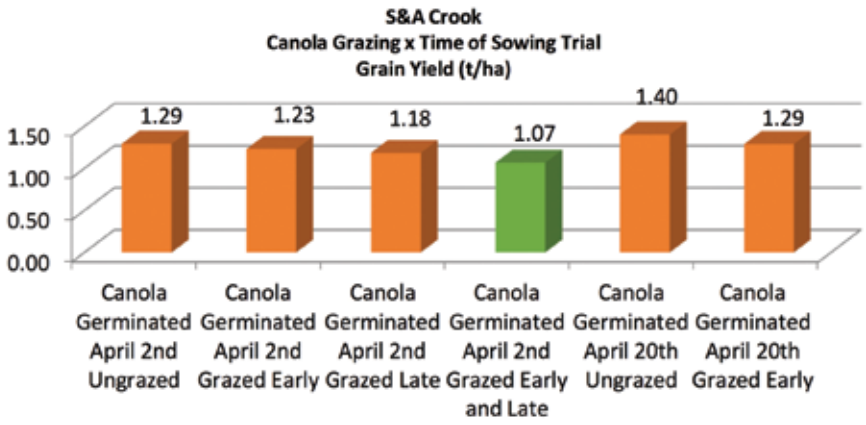

Figure 1 Effect of grazing on the final grain yield P-value – 0.346, LSD – 0.307

Sheep Weights

To investigate the whole farm economic impact of grazing, sheep weights were recorded before and after each grazing period had occurred. The same sheep were used for both times of grazing, therefore the extra weight gain from the second grazing period can be attributed to the sheep having already adjusted to grazing the canola crop.

Conclusion

The early germination date (April 2nd) is two weeks earlier than what would be considered district practice. The yield data shows there was no significant yield difference recorded between either of the two sowing times. However the earlier sowing resulted in more biomass being produced more quickly when compared to the April 20th sowing. This level of increased biomass can be used as a tool to bridge the feed gap that is experienced in early winter, whilst also allowing pasture paddocks to establish and flourish.

Grazing only impacted yield when the April 2nd germinated treatment was grazed both early and late, resulting in a total of 45 grazing days (Fig 1). When grazing was conducted early at the 3-5 leaf stage there was no significant yield penalty. Based on other Grain and Graze research conducted in the eastern wheat belt we know that crops need to be grazed early at the 3-4 leaf stage to allow more time for the crop to recover.

Grazing was able to alter the flowering window. Grazing was not even throughout all of the plots but where it did occur the flowering window was pushed back. A rule of thumb had been established for grazing cereal crops whereby for every one day of grazing the flowering window was pushed back by half a day (24 grazing days – 12 days later flowering). This rule of thumb proved correct with canola also.

This trial has now given us the confidence that canola can be sown in early April if the paddock was previously in a ten month fallow and there has been enough March/April rainfall to germinate and establish the crop. The crop can be grazed early at the 3-5 leaf stage to ensure a more even grazing occurs. Sheep should be removed after two – three weeks ensuring they don't graze the paddock too hard, whilst also giving the crop the maximum amount of time to recover.

	AVG LIVEWEIGHT (KG/HEAD)			
	IN	OUT	WEIGHT INCREASE (KG/HEAD)	% INCREASE
1st Grazing				
29/4 - 22/5	41.25	42.11	0.855	2.07
2nd Grazing				
15/6 - 6/7	48.39	52.35	3.96	8.19