WARC Update

Happy Spring! We are so happy to see the snow and ice finally melting away at the Western Applied Research Corporation. The sunny weather has everyone thinking about freshly tilled dirt, green cotyledons poking out of the ground, and t-shirt weather. In anticipation for the field season, the WARC staff is busy calibrating equipment, sourcing products, and gearing up for seeding. We have a full lineup of projects for the 2019 season and we just can't wait to get the seeds in the ground and begin our treatment applications. We wish you all a safe and successful spring season as you prepare for seeding on your farm!

Events

2019 Crop Opportunity Meeting

The 2019 Crop Opportunity Meeting was held on March 13, 2019 at the Dekker Centre in North Battleford. The day was a huge success! We heard presentations from some of agriculture's leading experts including Dr. Steve Shirtliffe, Dr. Jeff Schoenau, Elliott Hildebrand, Scott Chalmers, Garry Hnatowich, Erin Campbell, Trish Johnson, and WARC's own Jessica Weber and Kayla Slind. Everyone came away with some great insights from the presentations, and overall the day was enjoyed by everyone in attendance. We would like to extend a huge thank you to our annual, event sponsors, and product sponsors, along with the presenters, and everyone who came out for the event.


2019 Field Day

The Scott Field Day will be hosted at the Scott Research Farm on July 10, 2019. The theme for this year's Field Day will be oilseeds. Stay tuned for topics, presenters, and further event details!

Crop Diagnostic School

The 2019 Crop Diagnostic School will be held at the Western Applied Research Corporation on July 23 and 24. This event is hosted annually by the Saskatchewan Ministry of Agriculture at different AgriARM locations across the province. Keep watching our website and twitter for more information on this event!

Research Update – 2016 Project Spotlight

Title: Evaluating the Cost-Benefit of Canola Input Recommendations
Location: Scott, SK

Objective: to demonstrate to producers the economic value of canola inputs that are readily available to aid in decision-making.

Treatments:

	Treatments	Description
1	Control "Basic"	"Basic": seeding rate (100 seeds m^2); fertilizer based on soil test recommendations; one in-crop herbicide
2	Foliar Fertilizer	Basic + additional foliar fertilizer application
3	Boron	Basic + boron application
4	Additional Seed Treatment	Basic + Lumiderm
5	Seeding Rate	Basic (seeding rate of 150 seeds m^2 vs. 100 seeds m^2)
6	Fungicide	Basic + fungicide application @ 2-4 leaf + 20% + 50% flower
7	Stacked	Seeding rate (150 seeds m^2) + basic fertilizer soil test recommendations + additional foliar fertilizer + boron + additional seed treatment+ fungicide applications + one in-crop herbicide application

Results and Analysis:

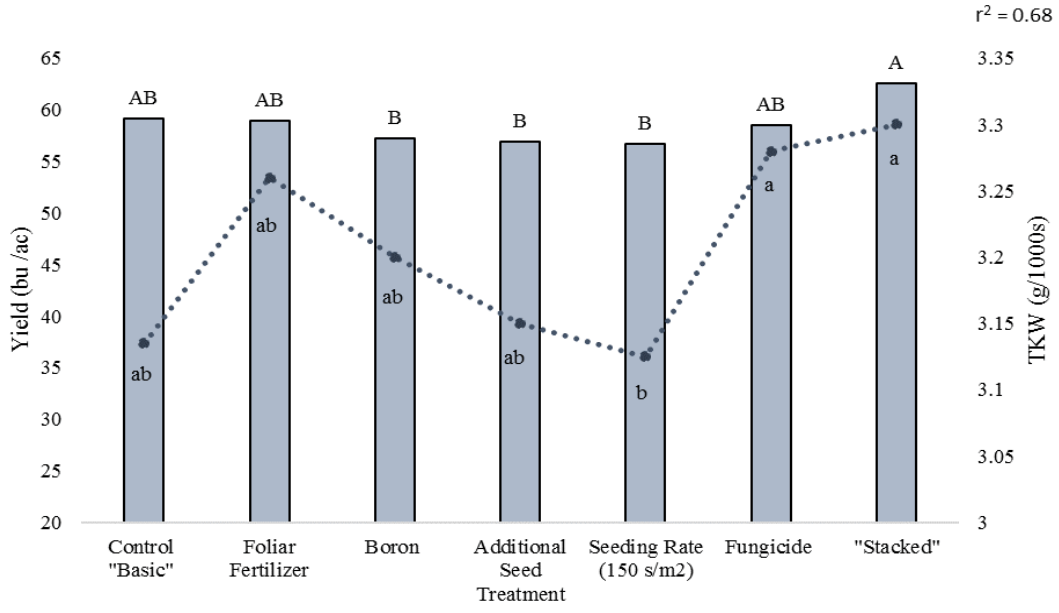

Figure 1. The effect of treatments on canola yield (bu/ac) and thousand kernel weight (TKW) (g/1000seeds) at Scott, SK in 2016 growing season. Different lettering indicates significant difference between treatments, respectively.

Economic Analysis:

Table 4. Economic analysis of the treatments applied during the growing season on canola at Scott, 2016.

	Control "Basic"	Foliar Fertilizer	Boron	Additional Seed Treatment	Seeding Rate	Fungicide	Stacked
Yield (bu/ac)	59[¥]	59	59	59	59	59	63
Price ($/bu)	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Gross Income ($/ac)	*678.50*	*678.50*	*678.50*	*678.50*	*678.50*	*678.50*	*724.50*
Inputs Costs ($/ac)							
Seed cost	55	55	55	63	82	55	94
Fertilizer cost	78.99	78.99	78.99	78.99	78.99	78.99	78.99
Foliar Fertilizer		3.00					3.00
Boron			6.00				6
Fungicides						36.25	36.25
Herbicide	13.13	13.13	13.13	13.13	13.13	13.13	13.13
Fuel Cost [Z]		38.13	38.13			38.13	
Total Cost ($/ac)	147.12	150.12	211.25	155.12	174.12	183.37	231.37
NET Gain ($/ac)	**531.38**	**528.38**	**525.38**	**523.38**	**504.38**	**495.13**	**493.13**

[¥] Yield values for all treatments except stacked were not statistically different; values based on control yield

[Z] Fuel cost of sprayer was not calculated into total cost per treatment (Government of Saskatchewan, 2016)

The addition of boron to improve canola yields has been much debated within the past several years, however, there is strong evidence suggesting that boron applications on canola in western Canada is ineffective. Karamonas et al. (2003) reported that there was no significant yield increase due to boron application in canola in any of the 22 experiments that were conducted throughout the western Canadian prairies. It was concluded that regardless of soil and environmental conditions, yield responses to boron application on the prairies are rare and are unlikely to contribute to overall yield gains.

Seed treatments are used as an additional line of defence against pests, in particular cutworms and flea beetles, in canola production. However, the high costs can be a deterrent. In this demonstration, the effect of an additional seed treatment was negligible and its cost resulted in a net loss of $8/acre (Table 4). Although the addition of a seed treatment was not statistically effective, it is important to note that seed treatments have the potential to reduce the need for additional insecticide applications.

The benefits generally associated with increased seeding rates were not demonstrated in this study due to several underlying factors. The denser canopy resulted in a higher prevalence of disease. Although yield was not influenced, the stacked treatment which included a higher seeding rate resulted in the greatest yield. This could be attributed to the combination of a higher seeding rate and multiple fungicide applications. Higher seeding rates also result in higher input costs. A net loss of $27/acre was attributed to

a higher seeding rate compared to the "basic" management treatment. Overall, seeding rates should be considered a cultural weed management strategy as previous research has shown the benefits of increased seeding rates.

Fungicide applications are often used in canola production, and can be cost-effective under certain environmental conditions. In 2016, the addition of fungicides reduced the incidence and severity of disease within the treated plots. However, yield was not statically different, indicating that the application was not cost effective. A net loss of about $36/acre was calculated for sprayed treatments and $74/ac when considering fuel costs (Table 4). When deciding to spray fungicides, it is important to determine the benefits and costs of the application.

Foliar fertilizer is an effective application strategy that could be used when requirements exceed recommended application rates. Split application in the form of granular or foliar can be beneficial. In this demonstration, available soil nitrogen was marginal to deficient while phosphorous was slightly better than marginal. In this study, foliar fertilizer applications resulted in similar yields, indicating that the addition of foliar fertilizer was not cost effective.

When comparing the "stacked" to "basic" canola input treatments, the stacked treatment resulted in a non-significant, higher yield (Figure 1). However, when determining the overall net return, the "stacked" treatment was less cost effective, resulting in a net loss of $ 38.25/acre when compared to the "basic" treatment (Table 4).

Conclusions and Recommendations:

The results of this trial have provided insights to improve canola production by demonstrating the costs and benefits associated with different agronomic practices. The application of both foliar fertilizers and fungicides, while not statistically significant, provided slightly greater yields compared to the other treatments. However, compared to the untreated "basic" check, neither of these options resulted in an economic benefit. A significant difference was detected between the "stacked" treatment and the treatments of boron, additional seed treatment and higher seeding rates, and resulted in a 6 % yield boost compared to the untreated "basic" check. However, due to the high input costs associated with the "stacked" treatment, the returns were 7% less compared to the untreated "basic" check. Overall, it appears that the simplest, yet efficient management strategy that most producers follow may provide the best profit return.