WARC Update
March 2019

Reportedly, this has been one of the coldest winters Saskatchewan has seen in many years. Unfortunately, the forecasts don't provide much hope that we will be experiencing an early spring melt in 2019. At least the chilly weather is making everyone here at the office even more excited for the days of sun, sweat, and field work ahead. Despite the bone-chilling temperatures, the month of February kept us on our toes as we wrote reports, worked on the spring budget, planned for the 2019 research program, and planned our upcoming Crop Opp Meeting. WARC also underwent a logo change! We implemented our brand new logo in the end of February and are excited for the fresh new look it brings to WARC. We anticipate a busy month of March as we host our Crop Opportunity Meeting, wrap up the fiscal year, and begin preparations for the summer including calibrating our seeder, sourcing products, and finalizing our trial list for 2019. Keep watching our website as we upload results, photos, reports, and factsheets from our 2018 projects!

Events

2019 Crop Opp

There are only a few days left to register for the 2019 Crop Opportunity Meeting! Our speakers this year include **Dr. Jeff Schoenau, Elliott Hildebrand, Dr. Steve Shirtliffe, Garry Hnatowich,** and **Scott Chalmers**. Registration begins at 8:30 am and a catered lunch is included! Pre-registration is $25.00 or you can buy a ticket at the door for $35.00. Visit our website at www.warc.ca or call (306) 247-2001 for more information and to register today! See the full agenda attached to this newsletter for event details.

Research Update – 2018 Project Spotlight

Title: Input Contributions to Spring Wheat Yield Components, Grain Quality, and Profits
Objective: To demonstrate agronomic and economic responses of CWRS wheat to various crop inputs both individually and collectively. The project will provide a unique opportunity to explore individual yield components along with how they are impacted by various inputs and contribute to overall grain yield and quality.
Locations: Scott, SK
Funding: The project was supported by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canada-Saskatchewan Growing Forward 2 bi-lateral agreement.

Treatments:

#	Name	Seed-Applied Fungicide (no/yes)	Seed Rate (seeds/m^2)	Fertility (kg/ha N-P_2O_5-K_2O-S)	Manipulator PGR (no/yes)	Foliar-Applied Fungicide (no/yes)
1	Low Input	No	250	90-20-10-10	No	No
2	Seed-Applied Fungicide	Yes	250	90-20-10-10	No	No
3	Seed Rate	No	400	90-20-10-10	No	No
4	Fertility	No	250	135-40-20-20	No	No
5	PGR	No	250	90-20-10-10	Yes	No
6	Fungicide	No	250	90-20-10-10	No	Yes
7	High Input	Yes	400	135-40-20-20	Yes	Yes

Results:

Head Density

Overall, there was no significant effect seen between the seven treatments. Due to its higher seeding rate along with its higher plant density, the highest head density was from the high input treatment at 174.5 spikes m^{-2}, while the lowest was the conventional + PGR treatment at 140 spikes m^{-2}. The conventional + PGR treatment was the only treatment to have a lower head density than the check.

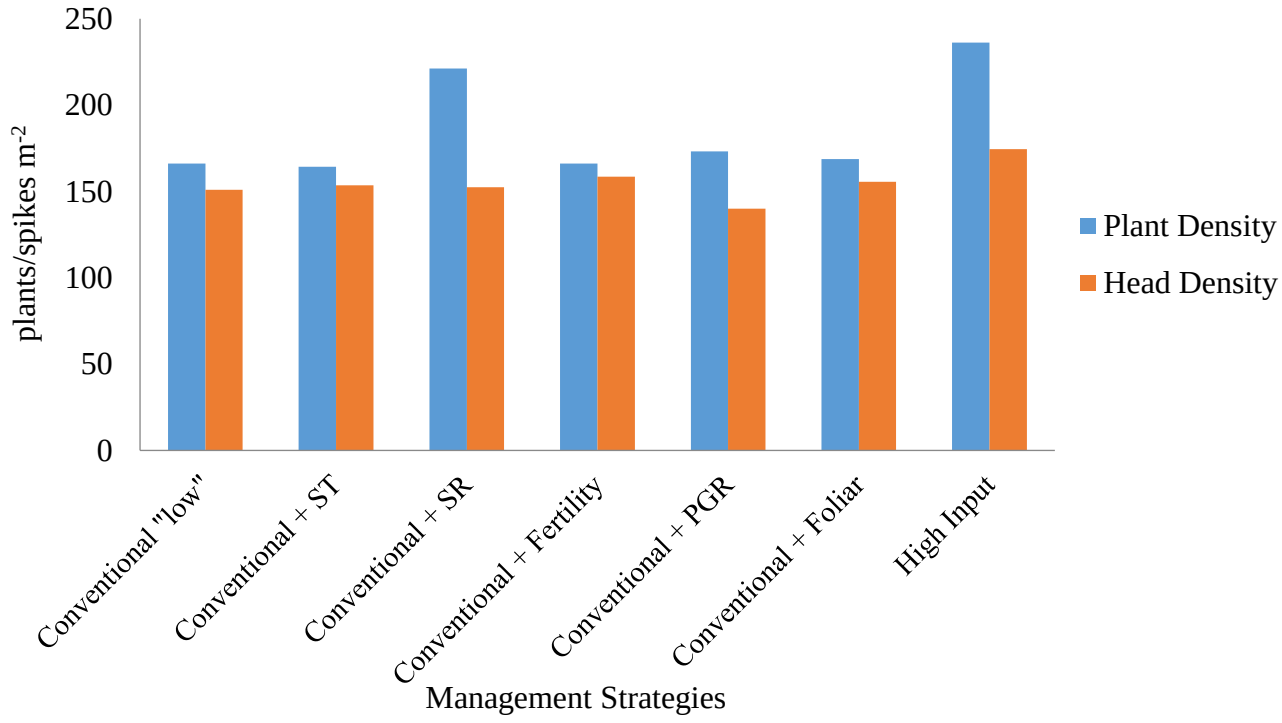

Figure 1: Comparing average plant and head densities between the seven treatments at Scott, SK 2018

Yield

Overall, yields at Scott were lower than expected due to hail and drier conditions. There was significant yield differences between the treatments. As expected, the high input treatment resulted in the highest yield averaged at 38.7 bu ac^{-1}. The conventional + low input had an average yield of 33.9 bu ac^{-1}. Conventional + high seeding rate resulted in the lowest average yield at 30.9 bu ac^{-1}. This could be an effect of a drier growing season resulting in limited growing space and available nutrients for the crop.

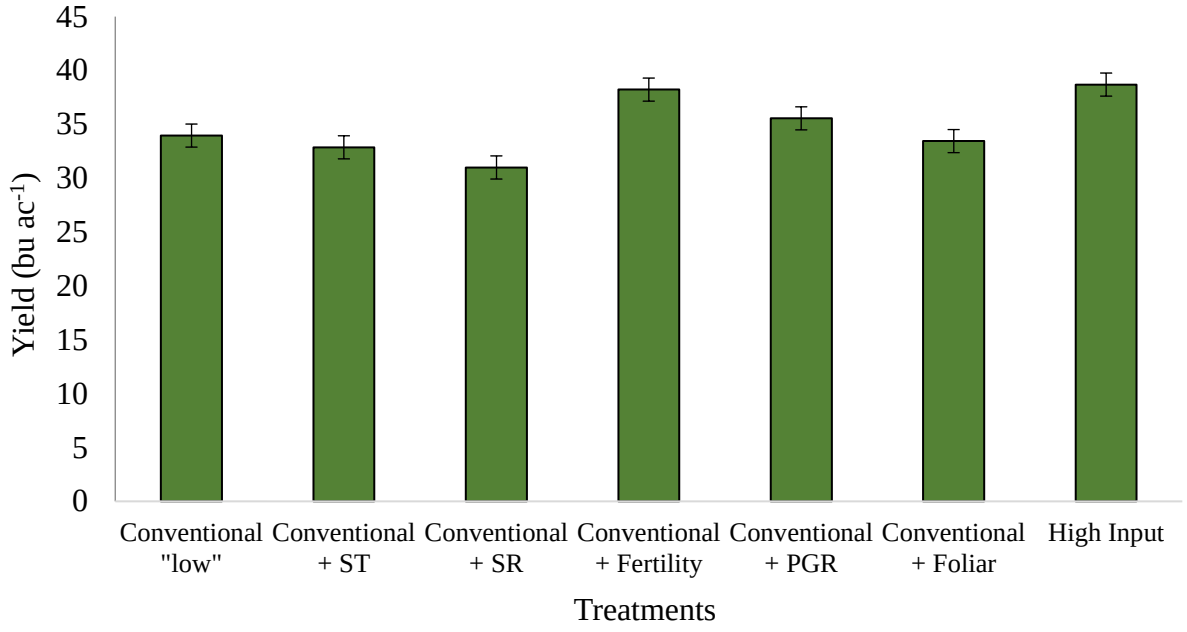

Figure 2: Average yield response to various crop inputs from Scott, SK in 2018

Economic Analysis

The economic analysis took into consideration the yield per treatment and price per bushel to determine gross income minus the total cost to determine net grain.

Herbicide cost did not differ among treatments, therefore this was not included. The main factors that influenced net gain were seed treatment, fertilizer, PGR, seed rate and fungicide. The addition of the seed treatment, Cruiser Vibrance Quatro, increased the conventional + seed treatment and high input total costs by \$8.12 ac^{-1} and \$12.99 ac^{-1}, respectively. Conventional + seeding rate along with the high input treatment had an increased seeding rate from 200 seeds m^{-2} to 400 seeds m^{-2} resulting in an increased cost of \$17.84 ac^{-1} to \$28.55 ac^{-1} compared to the other five treatments. Increasing the fertilizer from 90-20-10-10 to 135-40-20-20 increased conventional +fertility and high input costs from \$51.00 ac^{-1} to \$81.68 ac^{-1}. The total cost for conventional + PGR and high input treatments increased by \$15.02 ac^{-1}. A foliar fungicide was applied on the conventional + foliar and high input increasing the total cost by \$21.55 ac^{-1}.

While the high input treatment had the highest yield, it also contained all the additional treatments resulting in a total cost ($/ac) of $168.75. While yield was higher for the high input management strategy, the yield could not account for the difference in input costs. This resulted in the net gain being the lowest for high input treatment when compared to other treatments. Low input had no additional applications, only containing the lower seeding rate and fertility, as well as, no seed treatment, PGR and fungicides. This resulted in the low input treatment having the highest net gain $169.16 ac^{-1} with a yield of 34 bu ac^{-1} (Figure 3).

	Conventional "Low"	***Conventional + ST***	***Conventional + SR***	***Conventional + Fertility***	***Conventional + PGR***	***Conventional +Foliar***	***High Input***
Yield (bu/ac)	34	33	31	38	36	33	39
Price ($/bu)	7	7	7	7	7	7	7
Gross Income ($/ac)	238.00	231.00	217.00	266.00	252.00	231.00	273.00
Seed cost ($/ac)	17.84	17.84	28.55	17.84	17.84	17.84	28.55
Seed Treatment ($/ac)	0	8.12	0	0	0	0	12.99
Fertilizer cost ($/ac)	51	51	51	81.68	51	51	81.68
PGR ($/ac)	0	0	0	0	15.02	0	15.02
Fungicides ($/ac)	0	0.00	0.00	0.00	0.00	21.55	21.55
Equipment Costs ($/ac)	0.00	0.00	0	0.00	4.48	4.48	8.96
Total Cost ($/ac)	68.84	76.96	79.55	99.52	88.34	94.87	168.75
NET Gain ($/ac)	169.16	154.04	137.45	166.48	163.66	136.13	104.25

Assumes $725/tonne for MAP and $525/tonne for urea – K and S costs excluded as these nutrients were unlikely to have been limiting

Values presented above do not take into account all production costs and are estimates – actual input costs and revenues may vary

Figure 3: Economic analysis for Scott, Saskatchewan comparing the seven different management strategies

Conclusion:

Between seven treatments all with different agronomic factors, the high input treatment had the highest yield. This can mainly be contributed to the higher fertility. This is established from the fact that the conventional + fertility treatment had the second highest yield. As these two treatments had the greatest yields it can be concluded that higher fertility had the highest impact between all the treatments. The conventional "low" input treatment, also known as the "check", had a yield within the middle of the seven treatments. This shows that additional treatment factors such as fungicide, seed treatment and seeding rate did not have a beneficial impact on yield.

The lack of moisture throughout the growing season resulted in little to no disease pressure; this can possibly explain why the fungicide and seed treatment management strategies did not have a positive impact on yield. The conventional low input treatment had a relatively average yield along with a low total cost, resulting in the highest economical return at \$169.16 ac^{-1}. In comparison, while the high input treatment had the greatest yield (39 bu ac^{-1}) it resulted in the lowest economic return at \$104.25 ac^{-1} because of the additional costs associated with the extra treatments. In a year with adequate rainfall we anticipate a greater yield response to these additional treatments resulting in a higher return, therefore, repetition of this study is recommended.

For more information about WARC, visit our website or follow us on twitter!

www.warc.ca @WARC_SK

If you have questions, call our office anytime at (306) 247-2001 or email exec.admin@warc.ca.

Crop Opportunity

March 13th, 2019 Dekker Centre
North Battleford, SK
Pre- Register $25.00 (Door Price $35.00)

8:30	**Registration**
9:00	**Welcome & Opening Remarks**
9:15	**2018 Western Applied Research Corporation Research Update** *Jessica Weber - General Manager, WARC*
9:45	**Alternative Crop Options for Saskatchewan Producers** *Garry Hnatowich – Research Director, ICDC*
10:15	***Coffee Break***
10:30	**Challenges in Accounting for Variability and Developing Variable Rate Prescriptions** *Dr. Jeff Schoenau – U of S Department of Soil Science*
11:00	**Evaluating Soil Properties, Crop Yield, Protein, and Response to Variable N Applications** *Elliott Hildebrand – Western Ag*
11:45	**2018 Western Applied Research Corporation Research Update** *Kayla Slind – Research Associate, WARC*
12: 00	***Lunch Break***
1:00	**Canola Seeding Rates: How Low Can You Go?** *Dr. Steve Shirtliffe – U of S Department of Plant Science*
1:50	**Funding Available Through CAP** *Trish Johnson - SK Ministry of Agriculture*
2:00	***Coffee Break***
2:10	**NW SK Regional Production Update** *Erin Campbell - SK Ministry of Agriculture*
2:40	**Intercropping on Your Farm** *Scott Chalmers – Diversification Specialist, WADO*
3:40	***Short Break (Evaluation Forms)***
3:50	**Closing Remarks**

CCSC & CEU Credits Available

Register today at www.warc.ca

For questions contact (306) 247-2001 or exec.admin@warc.ca