

1. General Overview

Protocol ID:	22-PSC-DST
Crop:	Cereals: durum, barley & canary seed
Trial Type:	Varietal Performance/demonstration for crop tour
Location:	Avonlea, SK (Field ID: Maier's Trees)

2. Methodology

Seeding

A custom R-Tech plot seeder was used to seed these trials. This seeder is equipped with 6 Pillar Laser openers on 30 cm spacing. These openers are a hybrid between a hoe-point and disk type opener. The disk cuts a shelf for the fertilizer to be placed below and away from the seed. The hoe-point cuts the seed furrow. Downward spring pressure on rubber packing wheels is used to pack the seed and fertilizer furrows. A 4-row, ground-driven cone distributor is used to place products in the seed row. The drill also has 2 fertilizer boxes which are ground driven to place product either in the seed row or in a side band away from the seed.

All the seed for each variety was weighed out and placed in individual envelopes prior to seeding based on the target seeding rate and TKW for the respective variety. All seed was treated prior to seeding. A summary to seeding dates and agronomic information for each trial can be found in Table 1.

Table 1. Summary of seeding information for Petruic Seed Company trials. Avonlea, SK. 2022

Trial ID	Plot size ^A	Seeding Date	Crop Type	Seeding rate (lb/ac)	Phos ^B (lb/ac)	Urea ^C (lb/ac)	Seeding Depth
22-PSC-DST	1.2 x 6	May-25	Durum	120 lb/ac	40	158	1.5"
	1.2 x 6		Barley	130 lb/ac	40	158	
	1.2 x 6		Canaryseed	30 lb/ac	40	158	

^A meters; length x width

^B 11-52-0; lb/ac

^C 46-0-0; lb/ac

Maintenance

Maintenance sprays were done using a 3-point hitch tractor mounted sprayer, equipped with John Deere PSLDXQ2002 nozzles spaced 50 cm apart. This sprayer was calibrated to apply products at a rate of 10 US gal/ac (100 L/ha) when operated at 40 psi.

Due to high feeding pressure from grasshoppers early in the season, Coragen[®] (Chlorantraniliprole, 200 g/L) was sprayed several times this growing season. A summary of all maintenance sprays for each trial can be found below.

Trial ID:	22-PSC-DST		
Date	Product	Rate	Notes
May-22	RT540	0.67 L/ac	PRE-seed burnoff
Jun-15	Coragen	101 mL/ac	Overspray for grasshoppers
Jun-20	Prestige XL	950 mL/ac	In-crop maintenance
<p>All maintenance sprays applied at 10 US gal ac⁻¹ (100 L ha⁻¹) Trials were over sprayed with Coragen at the end of July via airplane sprayer No fungicides were applied this season as disease pressure was low</p>			
<p><u>Harvest</u> All trials were harvested using a 2011 Wintersteiger Classic combine, equipped with a Harvest Master HM 800 weight and moisture system. This weighing system measures the total weight and moisture of each plot at the time of harvest. Because of the different crop types in this trial, we couldn't use a standardized moisture curve. Therefore, each plot was caught in a cotton bag, dried, and weighed after harvest.</p>			
<p>3. Data collection</p>			
<p>Plant heights were collected by measuring 5 plants in each plot and recording the average.</p> <p>Lodging ratings were done at maturity using a 1 to 9 scale: 1 representing no lodging, 9 representing plants completely lodged.</p> <p>Plants were considered mature when they had reached swath timing.</p>			
<p>4. Weather</p>			
<p>We started the growing season with excellent soil moisture content. There were frequent rains in early May that delayed seeding in some instances. The last substantial moisture event of the spring came on May 19th in the form of both snow and rain. Our area did not have another significant rainfall event until June 15. During these weeks, wind speeds were high, and temperatures were cool which resulted in us drying out substantially. On the evening of June 19th, we had a heavy thunderstorm pass over the area. This resulted in 2 inches (50 mm) of rain falling in only a few hours. The water ran so hard that crop residue was washed into and across some plots. On June 20th we had another 25mm of rain, which resulted in some water laying in areas. However, over the next few weeks the temperature started to increase and crop recovery in some trials was substantial. Unfortunately, there was some standing water at the Maier's Trees location, which impacted some trials. The rain continued periodically throughout the month of July. To date, we have had 294 mm of precipitation.</p> <p>Temperatures were cooler overall in May and at the beginning of June (Table 2). By the end of June, temperatures began to rise to a more normal level, and remained high throughout the rest of the summer. We had several weeks of extreme heat in the months of July and August which helped to progress crop development and ripening. A detailed monthly data summary can be found in the appendix at the end of this report.</p>			

Table 2. Monthly summary. April 1 to August 23, 2022. Avonlea, SK. 2022.

Month	Temperature (°C)			GDD ^A	Precipitation
	High	Low	Average		mm
April	18.0	-13.0	1.4	0	4.8
May	28.0	-2.0	12.2	93	85.09
June	34.0	3.0	17.5	224	72.9
July	36.0	8.0	20.1	312	97.6
August	36.0	8.0	20.8	335	33.6
September ^B	35.0	8.0	20.8	65	0.0

^A Growing degree days

^B September 1 to 6, 2022

5. Yield Map

Overall yields were quite good and consistent across varieties. The heavy rains in June appear to have impacted the plots 304, 305, and 405 the most. The pattern in the yield map indicates there was likely an area that was saturated. This correlates with what we observed in-season. All varieties performed well, with the newer durum's surpassing older varieties in yield. Synergy remained very consistent in terms of yield. With the exception of the fourth replicate, on average Lumino averaged around 26 bushels acre⁻¹.

Yield (bu/ac)	74.7	67.6	78.3	76.3	12.7	112.9
Variety	AAC DONLOW	CONGRESS	AAC SCHRADER	CDC DEFY	CDC LUMINO	AAC SYNERGY
Plot	401	402	403	404	405	406
Yield (bu/ac)	88.2	79.0	72.8	63.9	111.3	21.9
Variety	AAC SCHRADER	CDC DEFY	CONGRESS	AAC DONLOW	AAC SYNERGY	CDC LUMINO
Plot	301	302	303	304	305	306
Yield (bu/ac)	79.2	77.1	77.3	73.1	28.6	116.8
Variety	CDC DEFY	AAC SCHRADER	AAC DONLOW	CONGRESS	CDC LUMINO	AAC SYNERGY
Plot	201	202	203	204	205	206
Yield (bu/ac)	75.1	82.1	76.2	67.6	115.9	28.6
Variety	CONGRESS	AAC DONLOW	CDC DEFY	AAC SCHRADER	AAC SYNERGY	CDC LUMINO
Plot	101	102	103	104	105	106

Yield Map for 22-PSC-DST. Avonlea, SK. 2022

6. Additional Information

Monthly weather summary by date. Avonlea, SK. 2022

Date	Moisture	Unit	Min Temp	Max Temp	Avg Temp	Temp Unit	GDD	Max Wind	Avg Wind	Unit
01-Apr	0	mm	-5	8	3	C	0	37	15	mph
02-Apr	0	mm	-10	10	1	C	0	22	6	mph
03-Apr	0	mm	-5	12	4	C	0	18	5	mph
04-Apr	0	mm	2	18	9	C	0	25	9	mph

05-Apr	2	mm	1	10	5	C	0	26	9	mph
06-Apr	0	mm	0	8	3	C	0	25	7	mph
07-Apr	0	mm	-2	9	3	C	0	23	7	mph
08-Apr	0	mm	-3	17	7	C	0	33	12	mph
09-Apr	2	mm	0	12	6	C	0	31	10	mph
10-Apr	0	mm	-4	8	2	C	0	31	10	mph
11-Apr	0	mm	-9	1	-3	C	0	24	8	mph
12-Apr	0	mm	-10	-5	-7	C	0	21	8	mph
13-Apr	0	mm	-9	-6	-7	C	0	27	12	mph
14-Apr	0	mm	-9	-6	-7	C	0	30	13	mph
15-Apr	0	mm	-13	-5	-8	C	0	18	6	mph
16-Apr	0	mm	-9	-1	-5	C	0	16	6	mph
17-Apr	0.5	mm	-8	0	-4	C	0	17	4	mph
18-Apr	0	mm	-7	5	-1	C	0	18	7	mph
19-Apr	0	mm	-4	2	-1	C	0	37	13	mph
20-Apr	0	mm	-2	3	0	C	0	39	14	mph
21-Apr	0	mm	-6	3	-1	C	0	24	7	mph
22-Apr	0	mm	-1	3	1	C	0	17	8	mph
23-Apr	0	mm	0	5	2	C	0	32	11	mph
24-Apr	0	mm	-3	9	3	C	0	31	11	mph
25-Apr	0	mm	-5	8	1	C	0	23	8	mph
26-Apr	0	mm	-3	9	2	C	0	36	17	mph
27-Apr	0	mm	0	15	5	C	0	30	13	mph
28-Apr	0.3	mm	0	18	10	C	0	22	5	mph
29-Apr	0	mm	0	17	9	C	0	17	3	mph
30-Apr	0	mm	2	15	9	C	0	24	4	mph
01-May	0	mm	-2	15	8	C	0	21	3	mph
02-May	0	mm	-2	18	8	C	0	24	8	mph
03-May	0	mm	3	18	11	C	1	25	7	mph
04-May	0	mm	6	24	15	C	5	39	6	mph
05-May	0	mm	11	28	20	C	10	24	9	mph
06-May	0	mm	13	25	19	C	9	35	12	mph

07-May	10.16	mm	8	19	12	C	2	37	4	mph
08-May	0	mm	7	19	12	C	2	22	5	mph
09-May	6.35	mm	1	16	9	C	0	23	3	mph
10-May	1.778	mm	3	16	8	C	0	25	7	mph
11-May	0	mm	2	18	11	C	1	23	4	mph
12-May	4.318	mm	2	19	11	C	1	29	5	mph
13-May	50.8	mm	4	8	6	C	0	39	18	mph
14-May	0	mm	3	16	9	C	0	34	13	mph
15-May	0	mm	6	20	13	C	3	28	9	mph
16-May	3.556	mm	6	24	14	C	4	32	7	mph
17-May	1.016	mm	10	24	17	C	7	28	4	mph
18-May	0.254	mm	9	16	11	C	1	28	5	mph
19-May	4.826	mm	0	15	9	C	0	34	3	mph
20-May	2.032	mm	0	5	3	C	0	29	11	mph
21-May	0	mm	0	12	6	C	0	24	6	mph
22-May	0	mm	5	16	11	C	1	21	6	mph
23-May	0	mm	7	21	14	C	4	21	6	mph
24-May	0	mm	8	24	16	C	6	21	6	mph
25-May	0	mm	10	23	17	C	7	33	8	mph
26-May	0	mm	10	25	19	C	9	22	6	mph
27-May	0	mm	8	24	15	C	5	23	2	mph
28-May	0	mm	6	23	16	C	6	19	5	mph
29-May	0	mm	11	18	14	C	4	27	8	mph
30-May	0	mm	10	16	13	C	3	35	15	mph
31-May	0	mm	7	18	12	C	2	35	16	mph
01-Jun	0	mm	7	20	14	C	4	32	11	mph
02-Jun	0	mm	7	21	14	C	4	35	12	mph
03-Jun	0	mm	4	23	15	C	5	22	3	mph
04-Jun	0	mm	6	25	17	C	7	18	4	mph
05-Jun	0	mm	6	20	14	C	4	26	8	mph
06-Jun	0	mm	3	20	12	C	2	23	7	mph
07-Jun	0.5	mm	7	21	15	C	5	16	3	mph

08-Jun	0	mm	9	24	18	C	8	13	3	mph
09-Jun	0	mm	11	26	18	C	8	24	8	mph
10-Jun	0.5	mm	10	29	19	C	9	29	9	mph
11-Jun	1	mm	9	26	18	C	8	18	3	mph
12-Jun	0	mm	8	27	19	C	9	23	4	mph
13-Jun	0.3	mm	14	28	19	C	9	37	6	mph
14-Jun	0	mm	9	22	16	C	6	27	7	mph
15-Jun	2.5	mm	9	20	13	C	3	25	7	mph
16-Jun	0.8	mm	11	22	16	C	6	22	8	mph
17-Jun	0	mm	10	30	21	C	11	44	16	mph
18-Jun	0	mm	17	34	25	C	15	27	8	mph
19-Jun	2	mm	15	22	19	C	9	25	7	mph
20-Jun	51.1	mm	13	26	19	C	9	32	5	mph
21-Jun	8.4	mm	13	22	17	C	7	23	7	mph
22-Jun	0	mm	13	28	21	C	11	22	6	mph
23-Jun	0	mm	15	30	23	C	13	24	4	mph
24-Jun	0	mm	12	23	17	C	7	22	8	mph
25-Jun	0	mm	9	21	13	C	3	33	13	mph
26-Jun	0	mm	12	25	18	C	8	20	5	mph
27-Jun	0	mm	12	25	20	C	10	20	5	mph
28-Jun	2.5	mm	11	23	17	C	7	14	3	mph
29-Jun	3	mm	14	28	20	C	10	31	9	mph
30-Jun	0.3	mm	12	23	17	C	7	25	7	mph
01-Jul	0	mm	12	24	18	C	8	13	3	mph
02-Jul	4.064	mm	8	22	16	C	6	20	3	mph
03-Jul	0.762	mm	12	25	19	C	9	13	3	mph
04-Jul	5.6	mm	14	18	16	C	6	22	4	mph
05-Jul	0.508	mm	14	21	16	C	6	16	4	mph
06-Jul	0	mm	13	26	20	C	10	14	3	mph
07-Jul	0	mm	15	24	19	C	9	20	7	mph
08-Jul	0	mm	16	30	23	C	13	24	8	mph
09-Jul	5.1	mm	17	31	24	C	14	30	5	mph

10-Jul	7.366	mm	15	27	20	C	10	35	6	mph
11-Jul	0	mm	15	26	20	C	10	19	5	mph
12-Jul	0	mm	13	28	21	C	11	19	2	mph
13-Jul	0.254	mm	16	31	24	C	14	26	8	mph
14-Jul	0.5	mm	17	27	22	C	12	24	4	mph
15-Jul	0.5	mm	17	34	25	C	15	16	5	mph
16-Jul	0	mm	16	36	26	C	16	24	4	mph
17-Jul	0.5	mm	16	35	26	C	16	19	3	mph
18-Jul	13	mm	14	30	21	C	11	29	4	mph
19-Jul	25.146	mm	12	27	20	C	10	49	8	mph
20-Jul	0	mm	13	24	19	C	9	27	6	mph
21-Jul	0	mm	12	28	21	C	11	24	4	mph
22-Jul	0	mm	11	25	19	C	9	17	3	mph
23-Jul	0	mm	10	21	16	C	6	19	5	mph
24-Jul	0	mm	9	25	18	C	8	14	2	mph
25-Jul	1.27	mm	14	21	18	C	8	20	5	mph
26-Jul	3	mm	11	24	17	C	7	22	3	mph
27-Jul	0	mm	10	24	17	C	7	19	4	mph
28-Jul	0	mm	8	24	17	C	7	11	1	mph
29-Jul	0	mm	13	30	22	C	12	14	3	mph
30-Jul	14.5	mm	17	30	22	C	12	24	5	mph
31-Jul	15.5	mm	16	26	20	C	10	30	4	mph
01-Aug	11.7	mm	15	25	20	C	10	17	3	mph
02-Aug	0	mm	15	27	21	C	11	27	10	mph
03-Aug	0	mm	14	25	18	C	8	13	3	mph
04-Aug	0	mm	16	36	26	C	16	23	6	mph
05-Aug	0	mm	11	24	18	C	8	33	9	mph
06-Aug	0	mm	8	20	14	C	4	13	3	mph
07-Aug	0	mm	11	29	20	C	10	21	5	mph
08-Aug	0	mm	16	36	25	C	15	21	4	mph
09-Aug	0	mm	11	25	18	C	8	17	3	mph
10-Aug	0	mm	9	26	17	C	7	15	4	mph

11-Aug	2.8	mm	14	20	17	C	7	25	5	mph
12-Aug	0	mm	13	28	20	C	10	12	2	mph
13-Aug	0	mm	16	33	24	C	14	19	3	mph
14-Aug	1	mm	17	34	24	C	14	27	5	mph
15-Aug	0	mm	17	29	22	C	12	16	4	mph
16-Aug	0	mm	16	33	24	C	14	18	4	mph
17-Aug	0	mm	17	31	23	C	13	20	4	mph
18-Aug	0	mm	15	29	21	C	11	15	4	mph
19-Aug	0	mm	12	27	20	C	10	14	2	mph
20-Aug	0	mm	14	30	22	C	12	18	5	mph
21-Aug	0	mm	17	33	25	C	15	22	5	mph
22-Aug	0	mm	14	31	23	C	13	11	2	mph
23-Aug	0	mm	18	20	18	C	8	17	7	mph