

Integrated Management Trial- Barley  
 IMT\_B\_RS\_2023



<b>Year</b>	2023
<b>Location</b>	Russel E. Larson Agricultural Research Center at Rock Springs
<b>Field</b>	10
<b>GPS coordinates</b>	40.714329, -77.938234
<b>Soil type</b>	Silt loam
<b>Crop</b>	barley
<b>Previous crop</b>	oats
<b>Variety</b>	Violetta (S), Thoroughbred (MS), Calyspo (MR)
<b>Seeding rate</b>	1.6 million
<b>Row space (in)</b>	7.5
<b>Reps</b>	4
<b>Tillage/Residue</b>	tilled
<b>Trial type</b>	split-plot
<b>Plot dimensions</b>	6.3'x14'
<b>Herbicide</b>	Harmony
<b>Foliar insecticide</b>	n
<b>Foliar fungicide</b>	n
<b>Fertilizer</b>	Split-applied
<b>Irrigation</b>	n
<b>Planting date</b>	10/11/22
<b>Artificial inoculations (y/n)</b>	y
<b>Inoculum type/density</b>	Spray, 1*10 <sup>5</sup> spores/mL
<b>Inoculation date</b>	5/16/23
<b>Rating 1 date</b>	6/5/23
<b>Rating 2 date</b>	N/A
<b>Rating 3 date</b>	N/A
<b>Harvest date</b>	7/11/23

## Map:

Barley Integrated Management Trial (IMT) - Rock Springs 2022 (162 feet x 78.8 feet)													
162	F3V3 109	F9V2 110	F2V2 127	F7V2 209	F8V1 210	F6V3 227	F3V3 309	F2V2 310	F9V2 327	F3V1 409	F6V3 410	F6V2 427	B u l k  A l l e y
144	F3V1 108	F9V1 111	F2V3 126	F7V1 208	F8V3 211	F6V1 226	F3V1 308	F2V1 311	F9V3 326	F3V3 408	F6V2 411	F6V3 426	
126	F3V2 107	F9V3 112	F2V1 125	F7V3 207	F8V2 212	F6V2 225	F3V2 307	F2V3 312	F9V1 325	F3V2 407	F6V1 412	F6V1 425	
108	F7V2 106	F8V1 113	F6V2 124	F3V2 206	F5V3 213	F8V3 224	F7V3 306	F2V3 313	F1V1 324	F7V2 406	F8V3 413	F1V1 424	
90	F7V3 105	F8V2 114	F6V1 123	F3V3 205	F5V1 214	F8V2 223	F7V2 305	F9V1 314	F1V3 323	F7V3 405	F8V1 414	F1V2 423	
72	F7V1 104	F8V3 115	F6V3 122	F3V1 204	F5V2 215	F8V1 222	F7V1 304	F9V2 315	F1V2 322	F7V1 404	F8V2 415	F1V3 422	
54	F2V3 103	F5V3 116	F1V1 121	F9V3 203	F4V3 216	F5V2 221	F1V1 303	F4V3 316	F2V2 321	F5V2 403	F4V3 416	F4V3 421	
36	F2V1 102	F5V2 117	F1V2 120	F9V2 202	F4V2 217	F5V1 220	F1V3 302	F4V1 317	F2V1 320	F5V1 402	F4V2 417	F4V1 420	
18	F2V2 101	F5V1 118	F1V3 119	F9V1 201	F4V1 218	F5V3 219	F1V2 301	F4V2 318	F2V3 319	F5V3 401	F4V1 418	F4V2 419	
0	9.5	15.8	22.1	28.4	34.7	41	47.3	53.6	59.9	66.2	72.5	78.8	

## Protocol:

Treat ment	Product, rate, application date/timing			Spray Date1	Spray Date2
1	Untreated check				
2	Uninoculated check				
3	Prosaro	6.5	Feekes 10.5 (heading)	5/8/2023	
4	Miravis Ace	13.7	Feekes 10.5 (heading)	5/8/2023	
5	Prosaro Pro	10.3	Heading (Feekes 10.5)	5/8/2023	
6	Sphaerex	7.3	Feekes 10.5 (heading)	5/8/2023	
7	Sphaerex	7.3	4-6 days after heading	5/15/2023	
8	Miravis Ace fb Tebuconazole	13.7 fb 4	Heading fb 4-6 days after heading	5/8/2023	5/15/2023

## Data by plot:

Var A= Violetta

Var	Treat	Rep	FHB			DON	FDK	Yield	Test wt	100 Kernel	Foliar Disease
			Incidence	Severity	Index	ppm	%	Bu/Ac	Lb/Bu	wt (g)	total foliar disease (%)
<b>A</b>	1	1	1	3.5	0.07	0	3.5	103.9907	47.4	5.333333	14.125
		2	0	0	0	0	6.5	97.11935	46.9	5.316667	10
		3	0	0	0	0	4	103.156	47.85	5.133333	20
		4	0	0	0	0	4.833333	92.83158	47.9	5.466667	6.5
	2	1	0	0	0	0	3.666667	104.6834	43	5.65	6.25
		2	0	0	0	0	4.333333	98.04968	46.8	5.033333	6
		3	0	0	0	0	4.666667	101.2843	45.3	5.133333	10
		4	0	0	0	0	9.333333	115.3252	45.1	5.15	8
	3	1	0	0	0	0	7	89.27709	49.8	5.35	15
		2	0	0	0	0	2.666667	98.51003	42.7	5.1	3.5
		3	0	0	0	0	5.666667	93.0139	45.7	5.583333	8
		4	0	0	0	0	7.333333	100.7399	48.4	5.016667	8.75
	4	1	0	0	0	0	5.666667	103.7385	49.9	5.333333	7
		2	0	0	0	0	6	102.9799	45.6	4.85	4
		3	0	0	0	0	3	95.00157	48.1	5.25	11.25
		4	0	0	0	0	5	104.2187	50.4	5.2	7.25
	5	1	0	0	0	0	5	111.7349	47.6	4.9	5
		2	0	0	0	0	5.333333	99.97513	47	4.833333	6.25
		3	0	0	0	0	6	104.937	50	5.716667	4.5
		4	0	0	0	NA	NA	101.3594	44.5	NA	9.75
	6	1	0	0	0	0	6	101.5809	44.5	4.683333	21.75
		2	0	0	0	0	6.333333	101.7163	47.9	5.383333	4
		3	0	0	0	0	7.333333	92.11468	48.8	4.816667	20
		4	0	0	0	0	4	106.4109	49.5	5.233333	4
	7	1	2	7	0.14	0	3.666667	99.08646	48.3	5.366667	5.5
		2	0	0	0	0	5.333333	91.79353	47	5.5	5
		3	0	0	0	0	5.666667	93.37635	45.3	5.616667	7.25
		4	0	0	0			95.53179	48.2		8.5
	8	1	0	0	0	0	3.333333	108.1931	48.9	4.95	17.5
		2	0	0	0	0	4	105.6907	49	5.1	10
		3	0	0	0	0	6.333333	105.3257	47.9	5.25	5.5
		4	0	0	0	0	6.666667	98.86884	48.7	5.366667	26.25

Var B= Thoroughbred

Var	Treat	Rep	FHB			DON ppm	FDK %	Yield Bu/Ac	Test wt Lb/Bu	100 Kernel wt (g)	Foliar Disease total foliar disease (%)
			Incidence	Severity	Index						
<b>B</b>	1	1	2	3.5	0.14	0.035	4.166667	98.71873	46.5	3.716667	69.375
		2	0	0	0	0	8.166667	101.9157	48.5	3.908333	71.25
		3	0	0	0	0	8.166667	97.88838	45.35	3.641667	48.75
		4	0	0	0	0	6.166667	100.1962	48.65	3.441667	53.125
	2	1	6	16.333333	0.98	0	7	109.6411	50.1	3.8	23.75
		2	0	0	0	0	5.333333	101.4219	48.3	4.083333	27.5
		3	0	0	0	0	5.666667	99.77862	47.7	3.666667	18.75
		4	0	0	0	0	7.666667	82.51164	45.7	3.766667	45
	3	1	4	10.5	0.42	0	5.666667	96.62679	47.8	3.95	10.5
		2	0	0	0	0	6.666667	94.91496	48.5	3.383333	52.5
		3	0	0	0	0	5	107.4276	48.5	4.416667	9.75
		4	0	0	0	0	9	106.5872	45.6	3.466667	15
	4	1	0	0	0	0	3	117.4483	46.7	3.716667	42.5
		2	0	0	0	0	4.666667	106.8845	47.3	3.733333	31.25
		3	0	0	0	0	5.666667	103.4232	48.3	3.65	16.25
		4	2	7	0.14	0	8.666667	109.4262	45	3.683333	18.75
	5	1	2	7	0.14	0	5.666667	112.2784	45.7	3.75	17.5
		2	0	0	0	0	9.333333	94.29632	43.3	4.45	15
		3	0	0	0	0	8.666667	88.17371	48.6	3.816667	45
		4	0	0	0	NA	NA	81.11332	48.4	NA	46.25
	6	1	2	21	0.42	0	7	91.946	46.2	3.533333	30
		2	2	100	2	0	6	97.13208	44.7	3.666667	36.25
		3	0	0	0	0	4	106.853	48.3	3.566667	22.5
		4	0	0	0	0	5.666667	97.45505	45.3	4.1	33.75
	7	1	10	9.8	0.98	0	6.666667	101.0119	46.6	3.633333	38.75
		2	0	0	0	0	5	105.5266	48.2	3.45	25
		3	0	0	0	0	7	104.1812	48.3	3.566667	36.25
		4	0	0	0	0	7	102.8109	46.4	3.816667	41.25
	8	1	0	0	0	0	4.666667	107.1915	49.9	3.433333	75
		2	0	0	0	0	8.333333	97.42867	46.8	4.35	47.5
		3	0	0	0	0	3.666667	112.0988	44.2	3.466667	82.5

Var C= Calypso

Var	Treat	Rep	FHB			DON	FDK	Yield	Test wt	100 Kernel	Foliar Disease
			Incidence	Severity	Index	ppm	%	Bu/Ac	Lb/Bu	wt (g)	total foliar disease (%)
C	1	1	0	0	0	0	6.5	110.9949	48.7	4.758333	17.125
		2	0	0	0	0	4.833333	110.0081	45.6	4.675	36.25
		3	0	0	0	0	6	101.3271	46.5	4.575	56.875
		4	0	0	0	0	5.666667	104.2271	46.5	4.641667	48.125
	2	1	0	0	0	0	7.333333	87.38567	48	4.616667	47.5
		2	0	0	0	0	5.666667	108.4322	45.1	4.45	42.5
		3	0	0	0	0	3	115.406	49.9	4.566667	21.25
		4	0	0	0	0	7.333333	107.2952	49.7	4.5	60
	3	1	0	0	0	0	6	103.4434	49.4	4.666667	31.25
		2	0	0	0	0	5.666667	110.3789	46.7	3.516667	42.5
		3	0	0	0	0	7.333333	101.5905	50.1	4.7	22.5
		4	0	0	0	NA	NA	101.6815	47.1	NA	28.75
	4	1	0	0	0	0	4	82.80768	46.6	4.45	60
		2	0	0	0	0	6.666667	101.4064	42.7	4.966667	65
		3	0	0	0	0	7	94.75939	44.3	4.316667	82.5
		4	0	0	0	0	4.333333	91.42034	48.1	4.516667	70
	5	1	0	0	0	0	6.333333	93.17857	46.5	4.616667	48.75
		2	0	0	0	0	7	94.20898	49.4	4.683333	38.75
		3	0	0	0	0	6.333333	108.1364	45.8	4.666667	38.75
		4	0	0	0	0	5.333333	92.60377	48.3	4.716667	31.25
	6	1	0	0	0	0	3.666667	92.30791	48.6	4.233333	57.5
		2	0	0	0	0	5	92.69111	43.4	4.766667	8.75
		3	0	0	0	0	5.666667	101.6502	45.9	4.55	35
		4	0	0	0	0	5	102.1153	47.6	4.433333	28.75
	7	1	0	0	0	0	4.666667	97.95652	49.5	4.883333	32.5
		2	0	0	0	0	6	104.3097	46.1	3.65	16.25
		3	0	0	0	0	5.333333	92.99898	48.5	3.7	36.25
		4	0	0	0	NA	NA	93.40892	49.5	NA	57.5
	8	1	0	0	0	0	5.333333	112.2254	41.1	4.85	5.5
		2	0	0	0	0	6	95.9461	41.8	4.816667	27.5
		3	0	0	0	0	6.666667	94.65058	49.2	5.116667	47.5
		4	0	0	0	0	5.333333	109.0763	50.3	5.033333	41.25

## Summary by treatment:

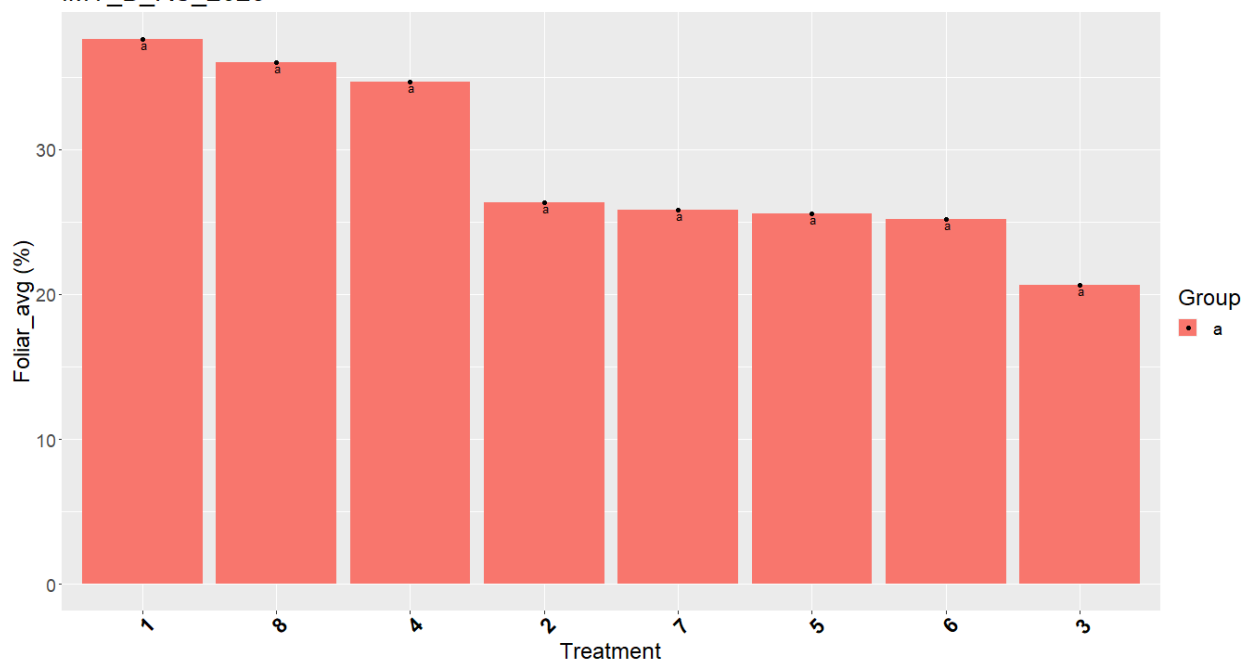
trt	seedwt_avg	fdk_percent	severity	incidence	fhb_index	foliar_avg	yield_bu_a	tw	don
1	4.55	5.71	0.58	0.25	0.02	37.63	101.86	47.20	0.0029
2	4.53	5.92	1.36	0.50	0.08	26.38	102.60	47.06	0.00
3	4.10	5.67	0.88	0.33	0.04	20.67	100.35	47.53	0.00
4	4.47	5.31	0.58	0.17	0.01	34.65	101.13	46.92	0.00
5	3.85	5.42	0.58	0.17	0.01	25.56	98.50	47.09	0.00
6	4.41	5.47	10.08	0.33	0.20	25.19	98.66	46.73	0.00
7	3.60	4.69	1.40	1.00	0.09	25.83	98.50	47.66	0.00
8	4.64	5.64	0.00	0.00	0.00	36.02	103.53	46.88	0.00

var	seedwt_avg	fdk_percent	severity	incidence	fhb_index	foliar_avg	yield_bu_a	tw	don
Violetta	4.94	4.92	0.39	0.11	0.01	9.92	100.52	47.33	0.00
Thoroughbred	3.65	6.20	4.96	0.89	0.15	39.87	100.80	47.03	0.00
Calypso	4.31	5.39	0.00	0.00	0.00	40.06	101.02	47.05	0.00

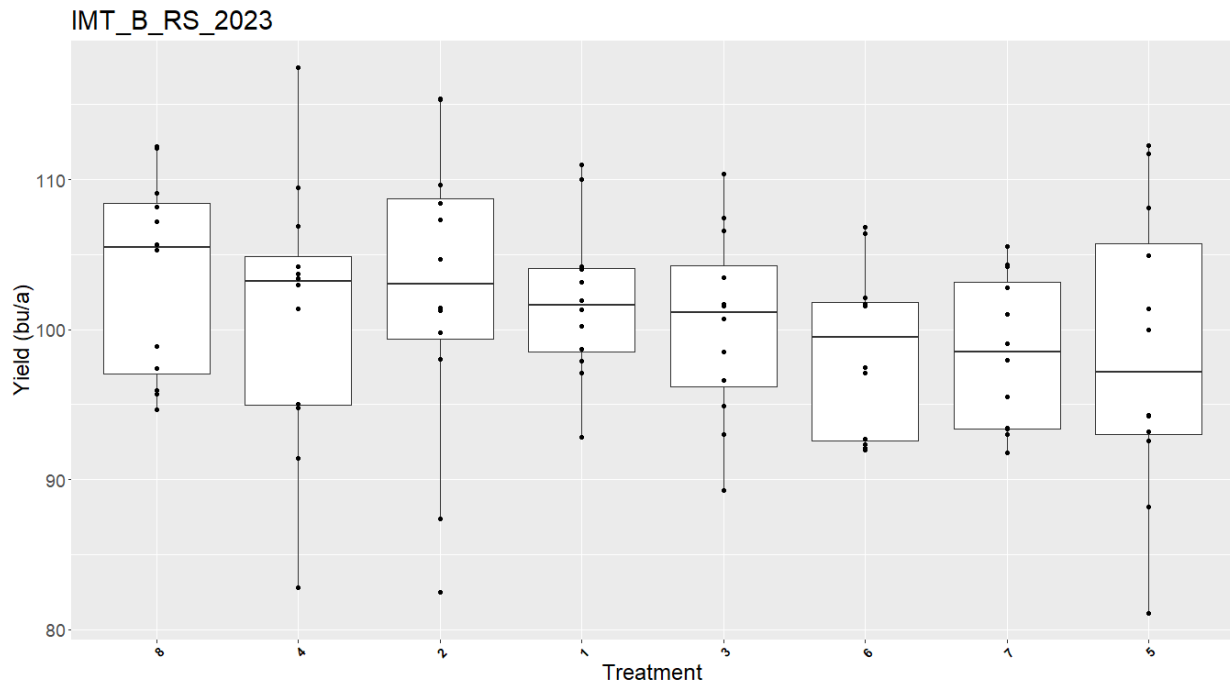
## Discussion/Results:

This trial had very dry conditions in May but ended up with some high yields. Due to the drought, there were very low levels of FHB and almost no DON detected in samples. Because of the low disease pressure, there were no significant differences. Foliar disease severity was reduced compared to the UTC, but not significantly.

IMT\_B\_RS\_2023



**Figure 1.** Graph showing mean foliar disease (percent of flag leaf infected) by treatment. No significant differences were observed, but the untreated check had the highest foliar disease severity. ( $P < 0.05$ )



**Figure 2.** No significant yield differences were found between treatments. ( $P < 0.05$ )

## Acknowledgements:

All products used in this trial were provided by BASF, Bayer- Crop Science, FMC Agricultural Solutions, and Syngenta.