

Project Title: Orange wheat blossom midge (OWBM) response to spring wheat varieties and insecticides

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Objectives: To evaluate insecticide efficacy when applied to spring wheat varieties differing in susceptibility to OWBM.

Materials and Methods:

The factorial treatment arrangement consisted of three insecticide treatments and eight spring wheat varieties that varied in susceptibility to the orange wheat blossom midge (OWBM). The spring wheat varieties consisted of Brennan, Hank, Kuntz, McNeal, Reeder, Treasure, MT0802 and MT1073. The insecticide treatments included Lorsban, Warrior, and a non-treated control. The study was planted on April 13, and individual plots consisted of seven, 6-inch rows, 15 feet in length, with each variety-insecticide combination replicated 3 times in a split plot design. Warrior and Lorsban were applied on June 30 at 1.9 oz/A and 1 pt/A, respectively. Treatments were applied with a backpack sprayer in 20 GPA of water. The developmental stage for the study averaged 67% headed, but varied from 0 to 100% depending on the variety (Table 1 and 2).

The previous crop was alfalfa. The soil type was a Creston silt loam, with a pH of 7.5 and an organic matter content of 4.5 percent. The site was fertilized with a blend of N-P-K-S at rates of 138-0-75-14 lb/A, respectively. The herbicide Wolverine was applied on May 16 at 1.7 pt/A. The fungicide Headline was applied at 9 oz/A on June 21 to control stripe rust.

Results:

Wheat varieties varied greatly in susceptibility to stripe rust, despite being treated with a fungicide. Hank was the most susceptible and averaged 60%, while MT0802 demonstrated the greatest resistance with an infection level of 17 percent (Table 1). Differences in OWBM levels also were detected among varieties. MT0802 and Hank had the highest infestations while MT1073 and Treasure had the lowest populations. Although differences in midge densities were detected among varieties, the overall level of infestation was negligible and insect populations had no direct impact on grain yield or quality. As a consequence, insecticide application had no effect on any of the response variables (Table 1).

Table 1. Spring wheat response to the main effects of insecticide and variety for management of the OWBM, Kalispell, 2012.

	% head June 30	SR July 13	SR July 31	HT inches	LOD %	owbm no/spk	Yield bu/A	PRO %	TWT lb/bu	TKW g
Variety										
Brennan	100	14	30	34	0	1.44	101	13.93	60	34
Hank	93	36	60	37	1	7.30	96	13.81	57	42
Kuntz	93	14	26	34	11	2.63	98	14.00	61	33
McNeal	59	9	20	40	10	3.04	105	14.41	59	40
Reeder	84	11	27	42	40	3.11	102	14.99	60	38
Treasure	3	13	22	40	77	0.30	102	11.74	59	36
MT0802	9	10	17	42	1	11.08	96	15.43	59	44
MT1073	100	7	21	36	1	0.54	110	14.30	60	37
LSD	11	3	6	1	21	5	8.2	0.3	1.8	1.1
Insecticide										
None	74	14	29	38	14	4.20	99	13.98	59	38
Warrior	66	14	29	38	20	2.39	105	14.00	60	38
Lorsban	63	15	26	38	19	4.45	100	14.26	59	38
LSD	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

head: Heading, SR: stripe rust, HT: height, LOD: lodging, OWBM: orange wheat blossom midge, PRO: protein, TWT: test weight, TKW: thousand kernel weight.

Table 2. Spring wheat response to the effects of insecticide and variety on the management of the OWBM, Kalispell, 2012.

	% head June 30	SR July 13	SR July 31	HT inches	LOD %	owbm no/spk	Yield bu/A	PRO %	TWT lb/bu	TKW g
Variety	None									
Brennan	100	12	33	33	0	2.90	96	13.90	61	34
Hank	88	40	70	37	0	12.10	89	13.83	56	42
Kuntz	97	14	26	33	0	2.90	95	13.87	61	33
McNeal	90	9	20	40	0	3.87	102	14.43	57	40
Reeder	93	11	25	42	32	4.43	96	15.03	60	38
Treasure	10	13	19	39	79	0.10	107	11.57	59	37
MT0802	17	8	17	42	0	7.23	92	15.03	58	44
MT1073	100	5	22	36	0	0.10	113	14.17	60	36
	Warrior									
Brennan	100	13	28	34	0	0.00	102	13.97	62	34
Hank	97	33	56	37	3	5.23	103	13.63	57	41
Kuntz	90	14	27	34	33	0.00	101	14.03	60	33
McNeal	50	8	23	40	30	2.13	111	14.17	61	41
Reeder	87	13	29	43	24	0.00	109	14.67	60	39
Treasure	0	12	25	40	61	0.23	99	11.80	59	36
MT0802	7	10	18	42	2	10.77	108	15.43	60	45
MT1073	100	6	22	37	3	0.77	110	14.27	61	37
	Lorsban									
Brennan	100	17	28	34	0	1.43	105	13.93	57	34
Hank	93	34	55	36	0	4.57	97	13.97	57	42
Kuntz	93	13	26	34	0	5.00	99	14.10	61	32
McNeal	37	8	16	38	0	3.13	101	14.63	60	40
Reeder	73	10	27	42	63	4.90	101	15.27	60	37
Treasure	0	15	22	40	90	0.57	100	11.87	59	36
MT0802	3	14	17	42	0	15.23	89	15.83	58	43
MT1073	100	8	20	36	0	0.77	109	14.47	59	37
Mean	67	14	27	38	17	3.60	101	14	59	38
CV	17	25	23	3	123	152	9	2	3	3
LSD (TMT)	19.5	6.0	10.6	1.8	35.7	9.2	14.2	0.5	3.0	1.8
Pr>F	0.0001	0.0001	0.0001	0.0001	0.0001	0.0912	0.0497	0.0001	0.0185	0.0001

head: Heading, SR: stripe rust, HT: height, LOD: lodging, OWBM: orange wheat blossom midge, PRO: protein, TWT: test weight, TKW: thousand kernel weight.