

Project Title: Orange Wheat Blossom Midge (OWBM) Response to Spring Wheat Varieties and Insecticides – 2013

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

Results:

The factorial treatment arrangement consisted of three insecticide treatments and eight spring wheat varieties that varied in attractiveness/susceptibility to the orange wheat blossom midge. 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 May 6, 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 July 2 at 1.9 oz/A, and 1 pt/A, respectively. Treatments were applied with a backpack sprayer in 20 GPA of water. The fungicide Headline was applied at 9 oz/A on June 21 to control stripe rust.

Midge numbers were modest and averaged only 5.3 larvae per spike, yet significant yield differences were observed for the main effect of insecticide treatments (Table 2). Averaged over the eight varieties, yields for the non-treated check were 86 bu/A, whereas the average yield for the Lorsban and Warrior applications was 98 bu/A. This increase of 12 bu/A is impressive, if not disconcerting, considering the low midge population present and illustrates just how damaging this pest can be.

Differences in OWBM levels also were detected among varieties (Table 3). MT0802 and Hank had the highest infestations while MT1073 and Treasure had the lowest numbers. Nonetheless, cultivar attractiveness did not impact insecticide efficacy (Table 4). In summary, low midge pressures did not affect insecticide performance, but did impact yields.

Table 1. Materials and Methods -Spring wheat insecticide - 2013

Seeding Date:	5/6/13	Fertilizer:	150-40-110-20
Julian Date:	126	Herbicide:	5/31/13
Seeding Rate:	80 lb/A		Affinity TankMix 0.6 OZ/A, MCPE
Previous Crop:	Canola		0.5 PT/A, Axial 16.4 FL OZ/A
Tillage:	Conventional	Fungicide:	6/21/13
Irrigation:	None		Headline 9 FL OZ/A
Soil Type:	Creston Sil	Harvest Date:	9/4/13
Soil Test:	136-10-100	Julian Date:	247

Table 2. Main effect of insecticide treatment on management of OWBM in spring wheat – 2013

Treatment	HD Julian	HT in	LOD %	SR %	OWBM no/spk	YLD bu/A	PRO %	TWT lb/bu	TKW g	MC %	FN sec	AA units/g
Check	184	35.1	0.0	17.2	10.9	85.9	14.6	60.6	37.8	13.6	358.3	0.05
Lorsban	183	35.0	0.0	11.8	3.4	98.1	14.3	61.1	37.7	13.7	376.1	0.05
Warrior	183	34.8	4.7	21.8	1.7	98.0	14.2	61.3	38.3	13.8	363.3	0.05
Mean	183.3	34.9	1.6	16.9	5.3	94.0	14.3	61.0	38.0	13.7	365.9	0.05
LSD	0.9	1.2	9.2	3.7	2.6	7.1	0.8	0.4	1.3	0.1	32.3	0.00
Pr>F	0.2043	0.7854	0.3623	0.0045	0.0012	0.0138	0.4833	0.0198	0.4499	0.0128	0.3802	0.4667

Table 3. Agronomic performance of spring wheat cultivars on management of OWBM – 2013

Cultivar	HD Julian	HT in	LOD %	SR %	OWBM no/spk	YLD bu/A	PRO %	TWT lb/bu	TKW g	MC %	FN sec	AA units/g
Brennan	182	29.9	0.0	6.0	4.3	77.7	15.6	61.4	35.5	13.5	297.7	0.07
Hank	181	33.2	0.0	46.4	10.7	88.4	14.0	59.1	42.8	13.5	295.5	0.06
Kuntz	184	33.0	0.0	6.6	6.9	95.0	14.0	62.3	33.7	13.9	412.8	0.06
McNeal	184	37.0	0.0	25.6	6.9	84.5	14.9	60.7	36.9	13.4	483.8	0.04
Reeder	183	38.8	1.3	7.8	2.3	97.9	15.1	61.6	38.1	13.6	400.2	0.05
Treasure	188	34.7	7.2	22.7	0.9	109.5	11.0	59.8	36.1	14.2	303.8	0.05
MT0802	185	37.9	0.0	18.3	8.6	95.8	15.3	60.6	42.4	13.4	358.1	0.06
MT1073	181	34.9	3.9	2.2	1.9	103.4	14.6	62.5	38.2	13.9	375.0	0.04
Mean	183.3	34.9	1.6	16.9	5.3	94.0	14.3	61.0	38.0	13.7	365.9	0.05
LSD	0.7	1.3	7.9	9.1	2.9	7.3	0.4	0.5	1.8	0.3	20.0	0.01
Pr>F	0.0001	0.0001	0.4967	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

HD: heading, HT: height, LOD: lodging, SR: stripe rust, OWBM: orange wheat blossom midge, YLD: Yield, PRO: protein, TWT: test weight, TKW: thousand kernel weight, MC: moisture content, FN: falling number, AA: alpha amylase

Table 4. Spring wheat response to the effects of insecticide and variety on the management of OWBM – 2013

Cultivar	HD Julian	HT in	LOD %	SR %	OWBM no/spk	YLD bu/A	PRO %	TWT lb/bu	TKW g	MC %	FN sec	AA units/g
Check												
Brennan	182	31.4	0.0	6.3	8.3	66.4	15.8	60.6	34.2	13.4	272.1	0.07
Hank	181	32.0	0.0	46.0	26.3	73.2	14.6	58.5	43.9	13.4	291.1	0.06
Kuntz	184	34.0	0.0	8.0	11.9	90.5	14.4	62.2	34.3	13.9	404.9	0.06
McNeal	185	37.1	0.0	25.0	9.5	75.5	15.2	60.1	36.5	13.3	491.3	0.04
Reeder	183	38.1	0.0	10.7	5.2	93.0	15.3	61.3	37.7	13.4	396.2	0.05
Treasure	188	34.7	0.0	20.0	1.1	104.6	11.0	59.8	36.0	14.2	308.6	0.04
MT0802	186	38.2	0.0	18.3	20.3	85.9	15.6	60.1	41.7	13.3	338.4	0.07
MT1073	181	35.1	0.0	3.3	4.5	98.3	14.6	62.0	38.2	13.7	363.7	0.04
Warrior												
Brennan	181	28.8	0.0	4.0	2.0	87.8	15.6	61.7	36.8	13.4	291.1	0.06
Hank	181	33.7	0.0	71.7	3.6	95.3	13.7	59.2	42.2	13.6	286.2	0.06
Kuntz	184	31.2	0.0	7.3	3.5	92.4	13.9	62.6	34.1	14.0	421.6	0.06
McNeal	184	36.7	0.0	30.0	2.7	90.1	14.7	61.4	38.0	13.6	459.6	0.04
Reeder	182	39.5	4.0	8.3	0.1	104.5	15.1	61.9	38.4	13.7	403.2	0.05
Treasure	188	35.2	21.7	31.7	0.0	107.6	11.1	59.7	35.6	14.3	288.8	0.05
MT0802	185	38.2	0.0	20.0	1.2	102.3	15.0	61.1	43.0	13.6	379.6	0.07
MT1073	181	34.6	11.7	1.3	0.3	104.3	14.6	62.8	38.6	14.1	376.0	0.04
Lorsban												
Brennan	181	29.5	0.0	7.7	2.6	78.9	15.4	61.8	35.4	13.6	329.7	0.07
Hank	180	33.8	0.0	21.7	2.3	96.6	13.8	59.5	42.3	13.6	309.2	0.05
Kuntz	183	33.9	0.0	4.3	5.2	102.2	13.6	62.2	32.7	13.9	412.0	0.06
McNeal	184	37.0	0.0	21.7	8.5	88.0	15.0	60.7	36.0	13.3	500.6	0.04
Reeder	183	38.7	0.0	4.3	1.6	96.4	15.1	61.5	38.2	13.7	401.3	0.05
Treasure	187	34.3	0.0	16.3	1.7	116.3	11.1	59.9	36.8	14.2	313.9	0.05
MT0802	184	37.4	0.0	16.7	4.2	99.2	15.3	60.7	42.5	13.4	356.4	0.06
MT1073	181	35.0	0.0	2.0	0.9	107.6	14.7	62.6	37.9	13.9	385.3	0.04
Mean	183.3	34.9	1.6	16.9	5.3	94.0	14.3	61.0	38.0	13.7	365.9	0.05
LSD	1.2	2.3	13.7	15.8	5.1	12.7	0.6	0.8	3.1	0.4	34.7	0.01
Pr>F	0.6554	0.2023	0.5400	0.0119	0.0001	0.3175	0.5139	0.4408	0.8662	0.9754	0.1355	0.9940

HD: heading, HT: height, LOD: lodging, SR: stripe rust, OWBM: orange wheat blossom midge, YLD: Yield, PRO: protein, TWT: test weight, TKW: thousand kernel weight, MC: moisture content, FN: falling number, AA: alpha amylase