

Project Title: The Effects of Copper and Lorsban on the Control of Orange Wheat Blossom Midge in Susceptible and Resistant Spring Wheat – 2013

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Objective: To evaluate the interactive effects of combining copper with Lorsban on grain yield and quality in OWBM susceptible and resistant spring wheat cultivars.

Results:

This study was conducted to compare the treatment effects of copper and Lorsban when applied to CAP 400-1, an experimental cultivar with resistance to the midge, and Solano, a non-resistant cultivar. The study was planted as a split-plot design with three replications. Copper treatments were applied at a rate of 0.5 pt/A at early boot on June 26. There was heavy dew present and a light drizzle occurred 6 hours later for a total precipitation of 0.03". Lorsban treatments were applied at a rate of 1 pt/A at heading on July 2.

The main effect of copper and lorsban treatments had a significant effect on stripe rust and test weight. Stripe rust infection was the highest when treated with copper alone or in combination with Lorsban. Test weights were highest when treated with Lorsban alone and in combination with copper (Table 2).

Cultivar effects were observed. CAP 400-1 had a significantly lower level of stripe rust infection, afforded 100 % control of OWBM and had higher test weight and falling number values relative to Solano (Table 3). Solano was shorter in height and had higher thousand kernel weights. No significant differences were observed for heading, lodging, yield or protein.

No effect of interactions between treatments and cultivars were observed for any of the response variables (Table 4).

Table 1. Materials and Methods - Effect of copper and lorsban on control of the OWBM in susceptible and resistant spring wheat - 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 copper and lorsban inputs on agronomic performance of spring wheat. 2013

	SR	HD	HT	LOD	OWBM	YLD	PRO	TWT	TKW	FN	MC
	%	Julian	in	%	no/spk	bu/A	%	%	%	sec	%
Check	4.5	185	34.5	0.0	5.6	87.8	15.3	61.5	38.0	387.3	14.7
Copper	7.3	185	33.6	0.0	5.9	87.4	15.2	61.7	38.0	402.3	14.8
Lorsban	5.3	185	35.4	0.0	3.7	102.6	15.2	62.1	38.3	403.1	14.7
Copper & Lorsban	8.3	185	34.5	0.0	5.7	91.2	14.7	62.0	37.8	398.1	14.8
LSD	2.5	1.8	1.9	0.0	4.0	24.0	0.7	0.4	2.0	17.6	0.3
Pr>F	0.0327	0.9615	0.2696	1.0000	0.5236	0.4363	0.3415	0.0446	0.9358	0.2098	0.8508

Table 3. Main effect of cultivar on agronomic performance of spring wheat. 2013

CAP 400-1	3.1	185	39.3	0.0	0.0	90.9	15.3	62.1	35.4	450.4	14.4
Solano	9.7	185	29.7	0.0	10.4	93.6	14.9	61.5	40.6	345.0	15.1
LSD	2.2	0.7	1.2	0.0	2.6	11.3	0.5	0.3	0.7	18.7	0.2
Pr>F	0.0001	0.2029	0.0001	1.0000	0.0001	0.5910	0.1124	0.0010	0.0001	0.0001	0.0001

Table 4. Effect of copper and lorsban inputs on agronomic performance of spring wheat. 2013

	CAP 400-1										
Check	1.7	185	39.4	0.0	0.0	87.8	15.4	61.9	35.2	439.5	14.4
Copper	5.7	185	38.3	0.0	0.0	84.2	15.4	62.0	35.1	450.0	14.5
Lorsban	1.7	185	40.4	0.0	0.0	99.4	15.4	62.3	35.7	460.1	14.3
Copper & Lorsban	3.3	185	38.9	0.0	0.0	92.1	15.0	62.2	35.5	452.2	14.3
	Solano										
Check	7.3	185	29.5	0.0	11.2	87.8	15.1	61.1	40.7	335.1	15.0
Copper	9.0	185	28.8	0.0	11.8	90.6	14.9	61.4	40.9	354.6	15.0
Lorsban	9.0	185	30.3	0.0	7.3	105.8	15.0	61.8	40.9	346.1	15.1
Copper & Lorsban	13.3	184	30.2	0.0	11.4	90.2	14.4	61.8	40.1	344.0	15.3
LSD	4.4	1.4	2.5	0.0	5.3	22.6	1.1	0.5	1.4	37.5	0.4
Pr>F	0.1659	0.5820	0.8008	1.0000	0.5127	0.8993	0.9728	0.5907	0.5368	0.8719	0.3871

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