

Evaluation of application timing of fungicides for control of common rust in sweet corn, 2003.

Sweet corn (cvs. Jubilee, susceptible to common rust) was planted at the Michigan State University, Plant Pathology Farm, East Lansing, MI on 15 Jun into four-row by 25-ft plots (30-in between row and 8-in within row spacing) replicated four times in a completely randomized block design. The four-row beds were separated by a five-ft unplanted row. Fertilizer 300 lb/A (15:15:15) was cultivated into the soil 4 weeks prior to planting and a further 150 lb/A (20:10:10) band-applied at planting. Weeds were controlled by cultivation and with Bicep Lite II (3 pt/A on 25 Jun). Insects were controlled with Furadan 4F (1 pt/A on 8 and 25 Jul). The soil was a clay-loam with a pH of 7.2 and about 3% OM. Fungicides were applied with an ATV rear-mounted R&D spray boom delivering 25 gal/A (80 p.s.i.) and using two XR11003VS nozzles per row at 36" above the canopy. Plots were rated visually for number of rust pustules per leaf (n = 20 leaves) on 41 (leaf 3), 46 and 56 (flag leaf -1) days after planting (DAP). Plots (2 x 25-ft row) were harvested on 5 Oct and individual treatments were weighed and graded. Corn ears were harvested from 20 plants per treatment from each replicate and weighed. Maximum and minimum air temperature (°F) were 91.7 and 60.9 (Jun), 89.8 and 69.4 (Jul), 93.8 and 64.8 (Aug) and 85.5 and 61.7 (Sep). Maximum and minimum soil temperature (°F) were 82.3 and 70.1 (Jun), 79.9 and 73.3 (Jul), 82.7 and 75.4 (Aug) and 77.4 and 68.4 (Sep). Precipitation was 0.8" (Jun), 0.37" (Jul), 0.56" (Aug) and 0.98" (Sep).

Rust appeared on lower leaves of plants in untreated control plots on 5 Aug. Rust developed slowly during Aug due to the high temperature and low rainfall; however humidity during Aug was often in excess of 80% which enhanced moderate development. Initially there was little difference among treatments and treatments 1 – 5 and 8 - 11 gave excellent rust control regardless of timing. All treatments had significantly less foliar common rust than the untreated controls. Single applications of effective treatments did not have significantly more foliar rust than treatments than treatments with two applications of fungicide. Yields were moderate and there were no significant differences among treatments. Phytotoxicity was not noted in any of the treatments.

Treatment and rate/A	Foliar rust (pustules per leaf)						Yield	
	Leaf 3 (41 DAP ^z)	Flag leaf - 1 (46 DAP)	Flag leaf - 1 (56 DAP)	Flag leaf - 1 (56 DAP)	Flag leaf - 1 (56 DAP)	Flag leaf - 1 (56 DAP)	[ear weight (lb/20 plants) 56 DAP]	
1 Tilt 3.6EC 0.25 pt (A) A13705 200SC 0.64 pt (B).....	0.74	e	0.84	c	1.16	c	14.7	a
2 Tilt 3.6EC 0.25 pt (A) A13705 200SC 0.86 pt (B).....	0.80	e	0.93	bc	1.45	bc	15.5	a
3 Manzate 75WDG 2.66 lb (A) A13705 200SC 0.86 pt (B).....	0.76	e	1.13	bc	1.35	bc	15.5	a
4 Tilt 3.6EC 0.25 pt (A) Quadris 2.08SC 0.38 pt (B).....	0.90	e	1.14	bc	1.6	bc	14.5	a
5 Manzate 75WDG 2.66 lb (A) Stratego 2.08EC 0.63 pt (B).....	1.31	de	1.46	b	1.46	bc	13.8	a
6 Messenger 75WDG 0.40 lb (A).....	4.05	b	1.44	b	2.47	b	13.5	a
7 Messenger 75WDG 0.40 lb (B).....	3.21	bc	1.36	bc	1.87	bc	14.9	a
8 Quadris 2.08SC 0.38 pt (A).....	1.44	de	1.11	bc	1.45	bc	13.6	a
9 Quadris 2.08SC 0.38 pt (B).....	1.34	de	0.98	bc	1.52	bc	14.7	a
10 Headline 2.09SC 0.38 pt (A).....	1.46	de	0.90	bc	1.52	bc	14.6	a
11 Headline 2.09SC 0.38 pt (B).....	1.11	de	1.04	bc	1.56	bc	14.6	a
12 Headsup 75wdg 0.20 lb (A).....	2.30	cd	1.24	bc	1.9	bc	14.1	a
13 Untreated.....	7.73	a	3.10	a	5.77	a	13.3	a

^z Days after planting on 15 Jun.

^u Fungicides were applied once at different growth stages: **2.5 (A, 8 Jul)**, 5.5 (B, 25 Jul).

^t Values followed by the same letter are not significantly different at P = 0.05 (Fishers Multiple Comparison).