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Deposition Aid Adjuvants plus a Fungicide for Southern Rust Management, Stay Green, Push Lodging, and Yield Comparisons in Field Corn in Nebraska, 2015

J. D. Harbour
University of Nebraska-Lincoln, jharbour2@unl.edu

T. A. Jackson-Ziems
University of Nebraska-Lincoln, tjackson3@unl.edu

CORN (*Zea mays* 'DKC 65-79 RIB')
Grey leaf spot (*Cercospora zeae-maydis*
Southern rust (*Puccinia polysora*)

J. D. Harbour and T. A. Jackson-Ziems
Department of Plant Pathology
University of Nebraska-Lincoln
448 Plant Science Hall
Lincoln, NE 68583-0722

Deposition aid adjuvants plus a fungicide for southern rust management, stay green, push lodging, and yield comparisons in field corn in Nebraska, 2015.

The objective of the trial was to compare foliar fungicides for southern rust (SR) efficacy. Irrigated corn was grown based on Nebraska Extension irrigation recommendations at the South Central Ag Lab near Clay Center, NE. Soils were a silt loam with 6.7 pH and 1.8 % OM and the previous crop was soybean. Reduced tillage was performed to the field prior to planting. Corn (DKC 65-79 RIB, tolerant to gray leaf spot (GLS)) was planted at approximately 34,000 seed/A on 26 May. Eleven treatments were arranged in a randomized complete block design with six replications. Fungicide treatments were applied using a high-clearance sprayer equipped with a 10 ft wide spray boom housing six TeeJet XR11002 spray nozzles with 20-in. spacing. Spray solutions were delivered at 3 mph with 40 psi compressed air for a spray volume of 20 gpa. Treatments were applied at R2 stage (i.e., blister) on 13 Aug. Plots were assessed for phytotoxicity, GLS and SR severity (5 Oct), and stay green (16 Oct). Corn stalk lodging (push lodging) was assessed (4 Nov) by pushing 20 random stalks, at shoulder height, to the 45° position. Plots were taken to yield from the center two rows using a Gleaner K2 plot combine (10 Nov). Grain yield was adjusted to 15.5% moisture. All treatments were analyzed using ANOVA, and means were separated using Fisher's protected LSD with $P = 0.10$. Precipitation was greater than normal in Jun (8.05 in. vs 2.9 in.), and 4.74 in. rain fell on 4 Jun. The longest rain-free period occurred from 20 Aug to 3 Sep. An overhead linear-move sprinkler irrigator delivered approximately 1.6 in. water to the trial on 18, 27, and 29 Jul, 17, 24 Aug, and 1 Sep. Average monthly temperatures (°F) were 72 (Jun), 76 (Jul), 73 (Aug), 72 (Sep) and 58 (Oct). The hottest month was Jul with a high of 97°F on 5 Jul. The longest consecutive days with temperatures >90°F occurred 31 Aug to 6 Sep. High temperatures at the R1 through R2 stage (29 Jul - 13 Aug) ranged in the low-80s (°F) and decreased to the mid-70s (°F).

Phytotoxicity was not observed from any fungicide treatment 7 DAT (data not presented). GLS severity on this particular hybrid was <10% and plots treated with fungicide were not significantly different than the non-treated check. SR severity was significantly less in plots treated with Headline AMP alone or with adjuvants compared to the non-treated check. Plots treated with Headline AMP plus Control at both rates and Control Duo significantly decreased SR severity compared to CoRoN, InPlace, Interlock, Liberate, or Headline AMP alone. Stay green, stalk lodging nor yield differences were not significantly different between fungicide + adjuvant treated plots and the non-treated check.

Treatment, Rate[z]	Deposition Adjuvant, Rate[z]	GLS Severity[y] %	SR Severity[y] %	Stay Green[x] %	Stalk Lodging[w] %	Yield, bu/A
Non-treated Check	-	7	13.7 a[v]	25	30	252
Headline AMP 1.66 SE, 10 fl oz	- -	4	3.0 bc	28	20	240
Headline AMP 1.66 SE, 10 fl oz	Control 1 fl oz/100 gal	4	1.0 d	26	17	255
Headline AMP 1.66 SE, 10 fl oz	Control 2 fl oz/100 gal	5	0.8 d	32	25	261
Headline AMP 1.66 SE, 10 fl oz	Control Duo 2 qt/100 gal	4	1.0 d	25	26	249
Headline AMP 1.66 SE, 10 fl oz	Control Combo 1 gal/100 gal	5	3.2 bcd	28	20	263
Headline AMP 1.66 SE, 10 fl oz	CoRoN 1 gal/a	5	3.3 b	31	21	266
Headline AMP 1.66 SE, 10 fl oz	InPlace 8 fl oz/a	5	5.5 b	26	21	251
Headline AMP 1.66 SE, 10 fl oz	Interlock 4 fl oz/a	5	2.7 bc	28	9	263
Headline AMP 1.66 SE, 10 fl oz	Liberate 1 qt/100 gal	4	3.2 bc	27	28	263
Headline AMP 1.66 SE, 10 fl oz	Volare DC 1 qt/100 gal	4	1.5 cd	27	23	255
P-value		0.1597[u]	0.0001[u]	0.1958	0.1667	0.2834
CV (%)		35.5[u]	83.4[u]	17.2	52.3	6.66

[z] Headline AMP 10 fl oz/a was added to each adjuvant, and treatments were applied at R2 (13 Aug 2015).
[y] Grey Leaf Spot (GLS) and Southern Rust (SR) % severity evaluated 5 Oct 2015.
[x] Stay green was determined by visually estimating the percentage of green foliage in each plot on 16 Oct 2015.
[w] Corn stalk lodging (push lodging) was assessed (4 Nov 2015) by pushing 20 random stalks, at shoulder height, to the 45° position.
[v] Data followed by the same letter or without letters within the column are not significantly different at P=0.10 according to Fisher's protected LSD test.
[u] Mean descriptions are reported on de-transformed values; (log X+1) transformation performed on original values.