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Foliar Fungicide Comparison for Southern Rust Management, Stay Green, Push Lodging, and Yield in Nebraska, 2015

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Foliar fungicide comparison for southern rust management, stay green, push lodging, and yield 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. Eight 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-inch 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, SR severity (7 Oct), and stay green (14 Oct). Corn stalk lodging (push lodging) was assessed (5 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 (13 Nov). Grain yields were 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 were 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 shown). GLS severity on this particular hybrid was <5%. SR severity at 55 DAT was significantly lower in plots treated with fungicides versus the nontreated check. Headline AMP and Priaxor fungicides significantly reduced SR severity versus Stratego YLD, Quilt Xcel, Fortix, Affiance, and Aproach Prima. Percent stay green was significantly greater with fungicide treatments versus the nontreated check. Stay green was significantly greater with Headline AMP and Priaxor fungicide treatments versus the other fungicide treatments. Stalk lodging was significantly less in plots treated with fungicides versus the nontreated check. Priaxor significantly reduced stalk lodging versus the other fungicides; however, Priaxor was similar to Fortix. Grain moisture was significantly greater in fungicide treated plots versus the nontreated check. Grain test weight was significantly less in all fungicide treated plots versus the nontreated check, with the exception of Stratego YLD. Yield differences were nonsignificant between fungicide treated plots and the nontreated check.

Treatment, Formulation, Rate/A ^z	SR Severity ^y %	Stay Green ^x %	Stalk Lodging ^w %	Grain, % moisture	Test weight, lb/bu	Yield, bu/A ^y
Headline AMP 1.66 SE, 10 fl oz	1.8 d ^v	54.8 a	6.6 b	17.3 b	61.9 bcd	254
Stratego YLD 4.18 F, 4 fl oz	11.0 bc	38.7 b	8.8 b	17.1 ^u	62.2 ab	275
Quilt Xcel 3.18 SE, 10.5 fl oz	8.5 c	41.7 b	6.8 b	17.4 ab	61.9 cd	248
Fortix 3.22F, 5 fl oz	10.1 c	38.2 b	4.4 bc	17.3 b	62.0 bc	256
Affiance 1.5 SC, 10 fl oz	13.4 b	37.8 b	9.8 b	17.3 b	62.0 bc	256
Aproach Prima 2.34 SC, 6.8 fl oz	10.2 c	39.3 b	7.2 b	17.3 b	62.0 bc	257
Priaxor 4.17 SE, 6 fl oz	2.0 d	56.3 a	0.6 c	17.7 a	61.6 d	254
Nontreated check	18.1 a	20.7 c	27.4 a	16.9 c	62.4 a	255
<i>P</i> -value	0.0001	0.0001	0.0018	0.0245	0.0081	0.9724
CV (%)	26.8	14.8	77.5	2.1	0.52	6.13

^z Treatments were applied at R2 (13 Aug 2015).

^y Southern rust (SR) % severity evaluated 7 Oct 2015.

^x Stay green was determined by visually estimating the percentage of green foliage in each plot on 14 Oct 2015.

^w Corn stalk lodging (push lodging) was assessed (5 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 Missing data values and thus unable to provide means separation.