

Corn response to foliar fungicide and pre-harvest desiccant, Carrington, 2010.

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Trial objectives are to measure potential yield increase with foliar-applied 'plant health' fungicide and explore potential for quicker seed dry-down and harvest using a pre-harvest desiccant. The conventional-till, dryland field trial was established at the NDSU Carrington Research Extension Center on a Heimdal-Emrick loam soil with soybean as the previous crop. Experimental design was a split plot [main plot=hybrids (2) and subplots=fungicide (2 trts) and desiccant (2 trts)] with four replications. Roundup Ready Peterson Farms Seed '21A78' [78-day relative maturity (RM)] and DeKalb 'DKC36-34' (86-day RM) were planted in 8-row plots with 30-ft depth and 30-inch row spacing on May 4. Plants emerged on May 24 and were thinned on June 14 for a targeted stand of 26,000 plants/A. Best management practices were used for corn production. Headline (pyraclostrobin) at 6 fl oz/A + Preference (NIS) at 0.25% v/v was applied with a tractor-mounted CO₂ sprayer with 80015 flat fan nozzles delivering 15 gal/A at 35 psi at the VT (tassel) stage on July 23 with 66 degrees F, 86% RH and 5 mph wind. Common leaf rust was visually evaluated on August 5 by examining ten ear leaves/plot. Gramoxone Inteon (paraquat) at 32 fl oz/A + Preference (NIS) at 0.25% v/v was applied on September 22 with 46 degrees F, 91% RH and 12 mph wind to the 78-day RM hybrid and on September 28 with 67 degrees F, 57% RH and 12 mph wind to the 86-day RM hybrid. Seed was sampled from the early-maturing hybrid on September 20 and moisture estimated at 39%. Seed was sampled from the late-maturing hybrid on September 27 and moisture estimated at 34%. Two hours of killing temperatures (26-28 degrees F) occurred on October 2. The trial was harvested with a plot combine on October 13.

The 86-day RM hybrid had greater yield but lower test weight and greater seed moisture compared to the 78-day RM hybrid (Table 1). Common leaf rust incidence was less with fungicide but severity was very low (0 to 5%) across the trial. Seed yield, moisture, protein and starch; and test weight were similar with fungicide compared to the untreated check. Seed moisture was similar between desiccant and untreated check. Factor interactions were statistically non-significant for leaf rust, test weight, and seed moisture, protein and starch (Table 2).

Treatment	Corn					
Name	Common leaf rust	Seed yield	Test weight	Seed moisture	Seed protein	Seed starch
	% incidence	bu/A	lb/bu	————— % —————		
<u>Hybrid:</u>						
PFS 21A78 (78 day RM)	40	157.0	58.5	15.5	9.2	69.9
DeKalb DKC36-34 (86 day RM)	50	187.7	56.5	16.1	8.7	70.5
LSD (0.05)	NS	11.4	0.6	0.4	0.2	NS
<u>Fungicide:</u>						
Headline	40	172.2	57.5	15.9	8.9	70.2
untreated check	60	172.5	57.5	15.8	9.0	70.2
LSD (0.05)	10	NS	NS	NS	NS	NS
<u>Desiccant:</u>						
paraquat	50	174.8	57.7	15.8	8.9	70.2
untreated check	50	169.9	57.3	15.8	8.9	70.3
LSD (0.05)	NS	NS	NS	NS	NS	NS
mean	5	172.4	57.5	15.8	8.9	70.2
CV (%)	30.6	9.0	1.5	3.8	3.3	0.8

Table 2. Corn response to factor interactions, Carrington, 2010.

Treatment		Corn					
		Common leaf rust	Seed yield	Test weight	Seed moisture	Seed protein	Seed starch
		% incidence	bu/A	lb/bu	%		
<u>Hybrid:</u>	<u>Fungicide:</u>						
PFS 21A78 (78 day RM)	Headline	30	162.5	58.7	15.4	9.2	69.8
DeKalb DKC36-34 (86 day RM)	Headline	40	181.9	56.3	16.3	8.6	70.7
PFS 21A78	untreated check	60	151.5	58.3	15.5	9.2	70.1
DeKalb DKC36-34	untreated check	60	193.6	56.7	16.0	8.8	70.4
LSD (0.05)		NS	16.2	NS	NS	NS	NS
<u>Hybrid:</u>	<u>Desiccant:</u>						
PFS 21A78	paraquat	40	165.2	58.8	15.4	9.2	70.0
DeKalb DKC36-34	paraquat	50	184.5	56.6	16.2	8.7	70.4
PFS 21A78	untreated check	50	148.8	58.2	15.6	9.2	69.8
DeKalb DKC36-34	untreated check	50	191.0	56.4	16.0	8.7	70.7
LSD (0.05)		NS	16.2	NS	NS	NS	NS
<u>Fungicide:</u>	<u>Desiccant:</u>						
Headline	paraquat	30	172.1	57.6	15.9	8.9	70.1
untreated check	paraquat	60	177.5	57.8	15.7	9.0	70.2
Headline	untreated check	40	172.2	57.4	15.8	8.9	70.4
untreated check	untreated check	60	167.6	57.2	15.8	9.0	70.2
LSD (0.05)		NS	NS	NS	NS	NS	NS
mean		5	172.4	57.5	15.8	8.9	70.2
CV (%)		30.6	9.0	1.5	3.8	3.3	0.8