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2018 Field Plot Summaries for Corn: Fungicide Trials

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SUMMARY

This document contains results of corn field trials conducted during the 2018 growing season to evaluate foliar fungicides to manage various corn diseases. The research studies were conducted at Volga and Southeast Research Farms. Weather conditions at the two research farms are different which in turn influenced the level disease development. Consequently, results between the two locations may vary and should therefore be interpreted within the confines of the particular study and location. Any questions regarding results and/or protocol of these experiments should be directed to the authors above.

While some of the products used in these studies were registered for use in SD at the time of the study, new chemical products were tested on strictly experimental purposes to compare their efficacies in controlling various fungal diseases of corn. In addition, some of the application protocols listed on the product labels were changed to test other possible application rates and time of application or both. Please note that results from these studies should not be regarded recommendations until the experiments are closed at which point new or alternative recommendations will be disseminated. Therefore, growers are urged to continue consulting product label and/or specialists in their locality for recommended product use.

Similar to previous seasons, disease pressure was very low which made it difficult to detect significant statistical differences between treatments at both locations. Where differences were not statistically significant, some of the numerical differences were large enough but due to the high variation between replicates, statistically, we are not confident to conclude the differences were due to fungicide treatments.

ACKNOWLEDGEMENT

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1.0 Foliar Fungicide Study (FF I)

SERF & Volga

This trial was conducted to determine the efficacy of several fungicides in managing corn foliar diseases. This trial had 11 fungicides applied between V5 and VT (tasseling). There were no statistically significant differences for all measured characteristics at Southeast Research Farm (Table 1.1). This is most probably due to low disease incidence and uneven fertilizer application as a result of equipment malfunction. A significant association between yield and stand count, $r = -0.29$, $p=0.042$ was most likely due to limited nutrients (faulty fertilizer application).

No statistical differences were observed at the Volga research farm (Table 1.2). Disease intensity was too low to have significant effect on yield. A correlation coefficient between yield and stand count was detected at this location as well, $r = 0.30$, $p=0.039$, the higher the plant stand count, the higher was yield.

Hybrid planted: DKC45-65RIB

Previous Crop: Soybean

Planted: 5/17/2018 (SERF); 5/8/2018 (Volga)

Table 1.1 Corn Foliar Fungicide I (FF I): The efficacy of different products for corn foliar disease management at Southeast research farm, SD

Treatment name/Rate/Time	Yield (bu/ac)	Stalk rot (%)	Eyespot (%)	Stand count (plants/ac)
Untreated	103.03 a	0.05 a	1.38 a	23180 a
Delaro, 8fl oz/A@VT	121.12 a	0.05 a	0.58 a	29403 a
Delaro, 4fl oz/A@V5	131.29 a	0.12 a	1.83 a	27692 a
Trivapro (A4.1 oz/A+B10.5 oz/A), 13.7fl oz/A@V5	146.39 a	0.18 a	1.73 a	29092 a
Priaxor, 4fl oz/A@V5	114.73 a	0.05 a	1.13 a	29248 a
Fortix, 4fl oz/A@V5	129.72 a	0.10 a	1.00 a	28936 a
Stratego YLD, 2.5fl oz/A@V5	131.11 a	0.05 a	1.25 a	27847 a
Zolera FX 3.34SC, 5fl oz/A@V5	108.99 a	0.08 a	1.55 a	24736 a
Priaxor, 4fl oz/A@VT	134.96 a	0.00 a	0.38 a	26136 a
Fortix, 4fl oz/A@VT	109.98 a	0.00 a	0.98 a	27381 a
Trivapro (A4.1 oz/A+B10.5 oz/A), 13.7fl oz/A@VT	100.52 a	0.13 a	0.43 a	27536 a
Zolera FX 3.34SC, 5fl oz/A@VT	131.26 a	0.10 a	0.95 a	25669 a

Means followed by the same letter are not significantly different, $p \leq 0.05$

Table 1.2 Corn Foliar Fungicide I (FF I): The efficacy of different products for corn foliar disease management at Volga research farm, SD

Treatment name/Rate/Time	Yield (bu/ac)	Stalk rot (%)	Rust (%)	Eyespot (%)	Stand count (plants/ac)
Untreated	162.66 a	0.00 a	4.80 a	3.10 a	30492 a
Delaro, 8fl oz/A @VT	176.11 a	0.00 a	1.58 ab	1.05 a	30336 a
Delaro, 4fl oz/A @V5	178.63 a	0.00 a	1.53 ab	2.73 a	33137 a
Trivapro (A4.1 oz/A+B10.5 oz/A), 13.7fl oz/A @V5	186.70 a	0.00 a	1.85 ab	2.18 a	30337 a
Priaxor, 4fl oz/A @V5	173.89 a	0.00 a	1.20 b	1.13 a	32514 a
Fortix, 4fl oz/A @V5	165.83 a	0.05 a	1.00 b	1.95 a	29403 a
Stratego YLD, 2.5fl oz/A @V5	189.09 a	0.00 a	3.58 ab	2.30 a	32981 a
Zolera FX 3.34SC, 5fl oz/A @V5	172.12 a	0.00 a	2.45 ab	2.70 a	29870 a
Priaxor, 4fl oz/A @VT	182.37 a	0.00 a	0.93 b	0.38 a	30803 a
Fortix, 4fl oz/A @VT	164.26 a	0.00 a	1.90 ab	0.98 a	30025 a
Trivapro (A4.1 oz/A+B10.5 oz/A), 13.7fl oz/A @VT	168.76 a	0.00 a	0.58 b	0.43 a	32826 a
Zolera FX 3.34SC, 5fl oz/A @VT	203.20 a	0.00 a	0.60 b	0.78 a	30648 a

Means followed by the same letter are not significantly different, $p \leq 0.05$

Statistically significant differences among treatments were observed in yield and eyespot at SERF (Table 2.1). Association analysis between yield and eyespot revealed a significant Pearson correlation coefficient, $r = -0.30$, $p=0.029$, indicating higher eyespot severity reduced yield.

Similarly, significant differences were observed at Volga with the untreated check generating lower yield and higher disease severity than the rest of the treatments (Table 2.2). In addition, a Pearson correlation coefficient analyses revealed a significant yield – rust association, $r = -0.44$, $p=0.0008$ meaning the higher the common rust severity, the less was yield.

Hybrid planted: DKC45-65RIB

Previous Crop: Soybean

Planted: 5/17/2018 (SERF); 5/8/2018 (Volga)

Table 2.1. Corn Foliar Fungicide II (FF II): The efficacy of experimental and commercial products for corn foliar disease management applied at tasseling at Southeast research farm, SD

Treatment name/Rate	Yield (bu/ac)	Stand count (plants/ac)	Eyespot (%)
Untreated Check	122.02 b	24788 a	2.84 a
Aproach prima, 6.8fl oz/ac	125.11 b	26447 a	1.56 abc
Delaro 325 SC, 8fl oz/ac	131.21 ab	24788 a	1.95 ab
Trivapro (A+B), 13.7fl oz/ac	143.04 ab	23854 a	0.92 bc
Headline AMP, 10fl oz/ac	151.51 a	26655 a	1.27 bc
A1	150.09 a	26136 a	1.04 bc
A2	142.56 ab	26240 a	0.59 bc

Means followed by the same letter are not significantly different, $p \leq 0.05$

Table 2.2. Corn Foliar Fungicide II (FF II): The efficacy of experimental and commercial products for corn foliar disease management applied at tasseling at Volga research farm, SD

Treatment name/Rate	Yield (bu/ac)	Stand count (plants/ac)	Stalk rot (%)	Rust (%)	Eyespot (%)
Untreated Check	168.98 c	30492 ab	0.73 a	3.77 a	3.82 a
Aproach prima, 6.8fl oz/ac	192.63 ab	31114 ab	2.03 a	0.90 b	1.80 ab
Delaro 325 SC, 8fl oz/ac	188.43 ab	32774 a	0.73 a	0.90 b	2.18 ab
Trivapro (A+B), 13.7fl oz/ac	193.90 ab	31011 ab	0.00 a	0.78 b	1.02 b
Headline AMP, 10fl oz/ac	191.53 ab	29040 b	0.00 a	1.03 b	1.97 ab
A1	179.43 bc	29870 ab	2.76 a	1.02 b	1.35 ab
A2	198.15 a	31115 ab	0.70 a	0.57 b	0.67 b

Means followed by the same letter are not significantly different, $p \leq 0.05$