

Comparative fungicide efficacy: Management of white mold in soybeans

North Dakota State University Carrington Research Extension Center; Michael Wunsch, Jesse Hafner, Suanne Kallis, Aaron Fauss, Thomas Miorino

Miravis Neo: pydiflumetofen (FRAC 7), azoxystrobin (FRAC 11), propiconazole (FRAC 3) **Headline:** pyraclostrobin (FRAC 11) **Endura:** boscalid (FRAC 7)

Delaro Complete: fluopyram (FRAC 7), trifloxystrobin (FRAC 11), prothioconazole (FRAC 3) **Revytek:** mefentrifluconazole (FRAC 3)

year	2021	2022	2024	COMBINED ANALYSIS 3 studies Miravis Neo 13.7 fl oz vs. other products Two sequential applications of the same fungicide
location	Carrington	Carrington	Carrington	
funding	Gowan	BASF	Corteva	
variety	DSR-0807	AG09Xf0	P08A44E	
brand, maturity	Dairyland, 0.8	Asgrow, 0.9	Pioneer, 0.8	
row spacing	21 inches	14 inches	15 inches	
seeding rate	165,000 pls/ac	165,000 pls/ac	140,000 pls/ac	
previous crop	spring wheat	dry bean	sunflowers	
planting date	May 12	May 27	May 16	
disease assessment date	Oct. 4	Oct. 19	Oct. 9	
rows assessed for disease	1	1	2	
harvest date	Oct. 7	Oct. 21	Oct. 14	
dates, applications 1 and 2	July 26, Aug. 6	July 23, Aug. 1	July 24, July 31	
interval between applications	11 days	9 days	7 days	
growth stage, 1st applic.	R3	100% R2	100% R2	
canopy closure, 1st applic	100%	99-100%	75-90%	
nozzles, pressure, 1st applic.	AIXR110015, 50 psi	AIXR110015, 50 psi	AIXR110015, 60 psi	
droplet size, 1st applic.	medium-coarse	medium-coarse	medium	
canopy closure, 2nd applic.	100%	100%	90-98%	
nozzles, pressure, 2nd applic.	AIXR110015, 50 psi	AIXR110015, 50 psi	AIXR110015, 40 psi	
droplet size, 2nd applic.	medium-coarse	medium-coarse	coarse	
adjuvant	Induce 0.25%, some tre	Masterlock, 6.4 fl oz/ac	Induce, 0.25% v/v	
fungicide spray volume	15 gal/ac	15 gal/ac	15 gal/ac	
application method	hand-held boom	hand-held boom	hand-held boom	
White mold incidence (% of plants)				White mold (% plants)
Non-treated control	35 a	82 c	46 b	54 c
Revytek 8 fl oz/ac	33 a	67 b	51 b	50 bc
Miravis Neo 13.7 fl oz/ac	23 a	68 bc	50 b	47 abc
Endura 6 oz/ac	20 a	53 ab	16 a	30 ab
Delaro Complete 8 fl oz/ac	20 a	41 a	24 ab	28 a
CV:	20.3	14.4	14.9	19
White mold severity index (% of canopy)				White mold (% canopy)
Non-treated control	23 a	70 c	20 b	38 b
Revytek 8 fl oz/ac	21 a	51 b	26 b	33 ab
Miravis Neo 13.7 fl oz/ac	14 a	56 bc	20 b	30 ab
Endura 6 oz/ac	12 a	40 ab	5 a	19 a
Delaro Complete 8 fl oz/ac	12 a	31 a	8 ab	17 a
CV:	26.9	17.5	22.6	23.9
Soybean yield (bu/ac; 13% moisture)				Yield (bu/ac)
Non-treated control	56 a	25 c	53 a	45 b
Revytek 8 fl oz/ac	57 a	33 c	55 a	48 ab
Miravis Neo 13.7 fl oz/ac	64 a	34 bc	55 a	51 ab
Endura 6 oz/ac	62 a	42 ab	58 a	54 ab
Delaro Complete 8 fl oz/ac	61 a	47 a	61 a	56 a
CV:	9	10.7	7.9	6.6

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Revytek: mefentrifluconazole (FRAC 3), pyraclostrobin (FRAC 11), fluxapyroxad (FRAC 7) Endura: boscalid (FRAC 7)								COMBINED ANALYSIS 6 studies Revytek, 8 fl oz versus Endura, 6 oz Two sequential applications of the same fungicide
year	2021	2021	2022	2023	2024	2024	2024	
location	Carrington	Carrington	Carrington	Carrington	Carrington	Carrington	Carrington	
funding	BASF	Gowan	BASF	BASF	BASF	BASF	Corteva	
variety	DSR-0807	DSR-0807	AG09XF0	21XF07	P064T04E	AG07XF2	P08A44E	
brand, maturity	Dairyland, 0.8	Dairyland, 0.8	Asgrow, 0.9	Peterson Farms, 0.7	Pioneer, 0.6	Asgrow, 0.7	Pioneer, 0.8	
row spacing	21 inches	21 inches	14 inches	14 inches	14 inches	14 inches	15 inches	
seeding rate	165,000 pls/ac	165,000 pls/ac	165,000 pls/ac	165,000 pls/ac	165,000 pls/ac	165,000 pls/ac	140,000 pls/ac	
previous crop	spring wheat	spring wheat	dry bean	chickpeas	dry edible beans	dry edible beans	sunflowers	
planting date	May 12	May 12	May 27	May 24	May 15	May 15	May 16	
disease assessment date	Oct. 4	Oct. 4	Oct. 19	Oct. 12	Oct. 1-2	Oct. 2	Oct. 9	
rows assessed for disease	1	1	1	1	1	1	2	
harvest date	Oct. 6	Oct. 7	Oct. 21	Oct. 17	Oct. 4	Oct. 4	Oct. 14	
dates, applications 1 and 2	July 26, Aug. 6	July 26, Aug. 6	July 23, Aug. 1	July 22, Aug. 2	July 23, July 30	July 23, July 30	July 24, July 31	
interval between applications	11 days	11 days	9 days	11 days	7 days	7 days	7 days	
growth stage, 1st applic.	R3	R3	100% R2	100% R2	100% R2	100% R2	100% R2	
canopy closure, 1st applic	100%	100%	99-100%	98-100%	90-95%	90-95%	75-90%	
nozzles, pressure, 1st applic.	AIXR110015, 50 psi	AIXR110015, 50 psi	AIXR110015, 50 psi	AIXR110015, 50 psi	AIXR110015, 60 psi	AIXR110015, 60 psi	AIXR110015, 60 psi	
droplet size, 1st applic.	medium-coarse	medium-coarse	medium-coarse	medium-coarse	medium	medium	medium	
canopy closure, 2nd applic.	100%	100%	100%	100%	99-100%	99-100%	90-98%	
nozzles, pressure, 2nd applic.	AIXR110015, 50 psi	AIXR110015, 50 psi	AIXR110015, 50 psi	AIXR110015, 40 psi	AIXR110015, 40 psi	AIXR110015, 40 psi	AIXR110015, 40 psi	
droplet size, 2nd applic.	medium-coarse	medium-coarse	medium-coarse	coarse	coarse	coarse	coarse	
adjuvant	Masterlock 6.4 fl oz/ac	Induce 0.25%	Masterlock, 6.4 fl oz/ac	Masterlock, 6.4 fl oz/ac	Masterlock, 6.4 fl oz/ac	Masterlock, 6.4 fl oz/ac	Induce, 0.25% v/v	
fungicide spray volume	15 gal/ac	15 gal/ac	15 gal/ac	15 gal/ac	15 gal/ac	15 gal/ac	15 gal/ac	
application method	hand-held boom	hand-held boom	hand-held boom	hand-held boom	hand-held boom	hand-held boom	hand-held boom	
Endura applied at 6.12 oz/ac								
White mold incidence (% of plants)								White mold (% plants)
Non-treated control	42 a	35 a	82 b	54 a	83 b	92 b	46 b	63 b
REVYTEK 8 fl oz/a	43 a	33 a	67 a		72 b	91 b	51 b	59 b
REVYTEK 10 fl oz/a				45 a				
ENDURA 6 oz/a	36 a	20 a	53 a	33 a	44 a	69 a	16 a	40 a
CV:	38.8	20.3	14.4	35.6	16.1	8.5	14.9	13.5
White mold severity index (% of canopy)								White mold (% canopy)
Non-treated control	27 a	23 a	70 b	31 a	68 b	83 b	20 b	49 b
REVYTEK 8 fl oz/a	26 a	21 a	51 a		57 b	82 b	26 b	44 b
REVYTEK 10 fl oz/a				27 a				
ENDURA 6 oz/a	19 a	12 a	40 a	18 a	32 a	54 a	5 a	27 a
CV:	25	26.9	17.5	47.4	18.2	10.7	22.6	17.7
Soybean yield (bu/ac; 13% moisture)								Yield (bu/ac)
Non-treated control	51 a	56 a	25 b	50 a	28 b	16 b	53 a	38 b
REVYTEK 8 fl oz/a	51 a	57 a	33 b		30 b	17 b	55 a	40 b
REVYTEK 10 fl oz/a				49 a				
ENDURA 6 oz/a	55 a	62 a	42 a	50 a	42 a	34 a	58 a	49 a
CV:	13	9	10.7	15	7.2	13.7	7.9	17.7

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Revytek: mefentrifluconazole (FRAC 3), pyraclostrobin (FRAC 11), fluxapyroxad (FRAC 7)

Delaro Complete: fluopyram (FRAC 7), prothioconazole (FRAC 3), trifloxystrobin (FRAC 11)

year	2021	2021	2024	COMBINED ANALYSIS 3 studies Revytek 8 fl oz/ac versus Delaro Complete 8 fl oz/ac Single fungicide application
location	Carrington	Carrington	Carrington	
funding	BASF	Gowan	BASF	
variety	DSR-0807	DSR-0807	P08A44E	
brand, maturity	Dairyland, 0.8	Dairyland, 0.8	Pioneer, 0.8	
row spacing	21 inches	21 inches	14 inches	
seeding rate	165,000 pls/ac	165,000 pls/ac	140,000 pls/ac	
previous crop	spring wheat	spring wheat	field peas	
planting date	May 12	May 12	May 9	
disease assessment date	Oct. 4	Oct. 4	Oct. 3	
rows assessed for disease	1	1	1	
harvest date	Oct. 6	Oct. 7	Oct. 3	
date fungicide was applied	July 26	July 26	July 30	
growth stage when fungicide applied	R3	R3	100% R3	
canopy closure when fungicide applied	1	1	97-99%	
nozzles, application pressure	AIXR110015, 50 psi	AIXR110015, 50 psi	AIXR110015, 50 psi	
spray droplet size	medium-coarse	medium-coarse	medium-coarse	
adjuvant	Masterlock 6.4 fl oz/ac	Induce 0.25%	Induce, 0.25% v/v	
fungicide spray volume	15 gal/ac	15 gal/ac	15 gal/ac	
application method	hand-held boom	hand-held boom	hand-held boom	

White mold incidence (% of plants) White mold (% plants)

Non-treated control	34 a	35 a	13 b	27 b
Delaro Complete 8 fl oz	17 a	20 a	2 a	13 a
Revytek 8 fl oz/ac	35 a	33 a	12 ab	27 b
CV:	35.6	20.3	35.2	10.2

White mold severity index (% of canopy) White mold (% canopy)

Non-treated control	24 a	23 a	3 a	17 b
Delaro Complete 8 fl oz	12 a	12 a	1 a	8 a
Revytek 8 fl oz/ac	23 a	21 a	4 a	16 b
CV:	19.8	26.9	59.2	5.1

Soybean yield (bu/ac; 13% moisture) Yield (bu/ac)

Non-treated control	53 a	56 a	60 a	57 a
Delaro Complete 8 fl oz	62 a	61 a	62 a	61 a
Revytek 8 fl oz/ac	55 a	57 a	61 a	58 a
CV:	8.6	9	5.3	3.5

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Endura: boscalid (FRAC 7)

year	2020	2021	COMBINED ANALYSIS
location	Carrington	Carrington	
funding	BASF	Gowan	
variety	DSR-0418	DSR-0807	
brand, maturity	Dairyland, 0.4	Dairyland, 0.8	
row spacing	21 inches	21 inches	
seeding rate	165,000 pls/ac	165,000 pls/ac	
previous crop	spring wheat	spring wheat	
planting date	May 18	May 12	
disease assessment date	Oct. 15	Oct. 4	
rows assessed for disease	1	1	2 studies Revytek 8 fl oz/ac versus Endura 6 oz/ac
harvest date	Oct. 16	Oct. 7	
date fungicide was applied	July 14	July 26	
growth stage when fungicide applied	100% R2	R3	
canopy closure when fungicide applied	65-95%	1	
nozzles, application pressure	AIXR110015, 60 psi	AIXR110015, 50 psi	
spray droplet size	medium	medium-coarse	
adjuvant	none	Induce 0.25%	
fungicide spray volume	15 gal/ac	15 gal/ac	
application method	hand-held boom	hand-held boom	
White mold incidence (% of plants)			
Non-treated control	26 b	35 a	30 a
Endura 6 oz/ac	3 a	20 a	12 a
Revytek 8 fl oz/ac	30 b	33 a	31 a
CV:	30.7	20.3	20.9
White mold severity index (% of canopy)			
Non-treated control	10 b	23 a	17 b
Endura 6 oz/ac	1 a	12 a	7 a
Revytek 8 fl oz/ac	13 b	21 a	17 b
CV:	39.5	26.9	11.3
Soybean yield (bu/ac; 13% moisture)			
Non-treated control	45 a	56 a	51 b
Endura 6 oz/ac	49 a	62 a	55 a
Revytek 8 fl oz/ac	47 a	57 a	52 b
CV:	15.1	9	2.3

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Miravis Neo: pydiflumetofen (FRAC 7), azoxystrobin (FRAC 11), propiconazole (FRAC 3)

year	2020	2021	2024	COMBINED ANALYSIS
location	Carrington	Carrington	Carrington	
funding	BASF	Gowan	BASF	
variety	DSR-0418	DSR-0807	P08A44E	
brand, maturity	Dairyland, 0.4	Dairyland, 0.8	Pioneer, 0.8	
row spacing	21 inches	21 inches	14 inches	
seeding rate	165,000 pls/ac	165,000 pls/ac	140,000 pls/ac	
previous crop	spring wheat	spring wheat	field peas	
planting date	May 18	May 12	May 9	
disease assessment date	Oct. 15	Oct. 4	Oct. 3	
rows assessed for disease	1	1	1	3 studies Revytek 8 fl oz/ac versus Miravis Neo 13.7 fl oz/ac Single fungicide application
harvest date	Oct. 16	Oct. 7	Oct. 3	
date fungicide was applied	July 14	July 26	July 30	
growth stage when fungicide applied	100% R2	R3	100% R3	
canopy closure when fungicide applied	65-95%	1	97-99%	
nozzles, application pressure	AIXR110015, 60 psi	AIXR110015, 50 psi	AIXR110015, 50 psi	
spray droplet size	medium	medium-coarse	medium-coarse	
adjuvant	none	Induce 0.25%	Induce, 0.25% v/v	
fungicide spray volume	15 gal/ac	15 gal/ac	15 gal/ac	
application method	hand-held boom	hand-held boom	hand-held boom	

White mold incidence (% of plants) White mold (% plants)

Non-treated control	26 a	35 a	13 a	24 b
Revytek 8 fl oz/ac	30 a	33 a	12 a	25 b
Miravis Neo 13.7 fl oz/ac	20 a	23 a	6 a	16 a
CV:	30.7	20.3	35.2	9.3

White mold severity index (% of canopy) White mold (% canopy)

Non-treated control	10 a	23 a	3 a	12 b
Revytek 8 fl oz/ac	13 a	21 a	4 a	13 b
Miravis Neo 13.7 fl oz/ac	8 a	14 a	2 a	8 a
CV:	39.5	26.9	59.2	4.9

Soybean yield (bu/ac; 13% moisture) Yield (bu/ac)

Non-treated control	45 a	56 a	60 a	54 b
Revytek 8 fl oz/ac	47 a	57 a	61 a	55 b
Miravis Neo 13.7 fl oz/ac	46 a	64 a	61 a	57 a
CV:	15.1	9	5.3	4.7