



Improving management of white mold in soybeans: Comparative fungicide efficacy – Topsin/T-methyl

Michael Wunsch

North Dakota State University Carrington Research Extension Center

Improving white mold management in soybeans: Comparative fungicide efficacy – fundamental concepts

This is an abbreviated summary of comparative fungicide efficacy in field trials conducted from 2019-2024.

Included are all studies conducted 2019 to 2024. Starting in 2019, fungicide spray droplet size was calibrated relative to soybean canopy closure in all soybean white mold fungicide efficacy testing in Carrington and Oakes, ND.

Full results are available in the accompanying PDF fungicide efficacy testing results posted online at <https://www.ndsu.edu/agriculture/ag-hub/research-extension-centers-recs/carrington-rec/research/plant-pathology> (or search for 'NDSU Carrington plant pathology').

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Calibrating fungicide droplet size relative to soybean canopy closure is critical.

Calibrating fungicide droplet size relative to canopy closure sharply improves the performance of all fungicides for white mold management in soybeans and is particularly important for fungicides with intermediate efficacy.

The magnitude of the difference between the most effective fungicides and fungicides with intermediate efficacy is reduced when spray droplet size is optimized relative to soybean canopy closure.

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Improving white mold management in soybeans:

Comparative fungicide efficacy – methods

Soybean row spacing = 14".

Seeding rate = 140,000 or 165,000 viable seeds/ac.

Spray volume = 15 gal/ac.

Fungicides applied with a hand-held boom pressurized by CO₂.

Spray droplet size: Fungicides applied with TeeJet nozzles emitting fine droplets when average canopy closure < 80%, medium droplets when average canopy closure was between 80 and 90%, medium-coarse or coarse droplets when average canopy closure was between 90 and 97%, and coarse droplets when canopy closure average 97-100%.

Number of experimental replicates = 6

White mold assessment: Assessed at soybean maturity by evaluating every plant individually in 1 or 2 rows/plot (entire length of row) for the percent of the plant impacted by white mold.

Application timing: when conditions favor white mold as soybeans enter bloom, 100% R2 or canopy closure, whichever occurred first; when conditions did not favor white mold as soybeans entered bloom, early/full R3; second application (when made) 7 to 14 days later.

Supplemental irrigation: Supplemental overhead irrigation was applied as needed to establish the white mold disease pressure needed to evaluate fungicide performance.

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TWO FUNGICIDE APPLICATIONS, HIGH DISEASE PRESSURE:

Endura 5.5 oz (2x) > Topsin/T-methyl 40 fl oz f.b Endura 5 oz

COMBINED ANALYSIS ACROSS 9 STUDIES

Carrington and Oakes, ND (2021, 2022)

HIGH DISEASE PRESSURE

Topsin/T-methyl: thiophanate-methyl (FRAC 1)

Two fungicide applications 14 days apart

Endura: boscalid (FRAC 7)

**White mold
Incidence
% plants**

**White mold
Severity Index
% canopy**

**Soybean
Yield
bu/ac**

Non-treated control

70 b

55 b

42 b

Endura 5.5 oz f.b. Endura 5.5 oz/ac

43 a

31 a

57 a

Topsin 40 fl oz f.b. Endura 5.5 oz/ac

48 a

34 a

54 a

CV:

13.8

15.5

6.8

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TWO FUNGICIDE APPLICATIONS, LOW DISEASE PRESSURE:

Endura 5.5 oz (2x) = Topsin/T-methyl 40 fl oz f.b Endura 5 oz

COMBINED ANALYSIS ACROSS 4 STUDIES

Carrington and Oakes, ND (2021, 2022)

Topsin/T-methyl: thiophanate-methyl (FRAC 1)

Endura: boscalid (FRAC 7)

LOW DISEASE PRESSURE

Two fungicide applications 7, 10, or 12 days apart

	White mold Incidence % plants	White mold Severity Index % canopy	Soybean Yield bu/ac
Non-treated control	8 b	3 b	67 b
Endura 5.5 oz f.b. Endura 5.5 oz/ac	3 a	1 a	68 a
Topsin 40 fl oz f.b. Endura 5.5 oz/ac	2 a	1 a	68 a

CV:

40.5

24.5

2.4

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TWO FUNGICIDE APPLICATIONS

Endura 5.5 oz/ac > Topsin/T-methyl 20 fl oz/ac

COMBINED ANALYSIS ACROSS 4 STUDIES

Carrington and Oakes, ND (2021, 2022)

Topsin/T-methyl: thiophanate-methyl (FRAC 1)

Endura: boscalid (FRAC 7)

Two sequential fungicide applications

7 or 10 days apart

	White mold Incidence % plants	White mold Severity Index % canopy	Soybean Yield bu/ac
Non-treated control	18 b	19 b	58 b
Endura 5.5 or 6.0 oz/ac	6 a	2 a	68 a
Topsin/T-methyl 20 fl oz/ac	12 b	14 b	62 b
CV:	9.1	14.5	2.2

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SINGLE FUNGICIDE APPLICATION, HIGH DISEASE PRESSURE:

Endura 5.5 oz/ac > Topsin/T-methyl 40 fl oz/ac

COMBINED ANALYSIS ACROSS 9 STUDIES Carrington and Oakes, ND (2021, 2022)		HIGH DISEASE PRESSURE	
Topsin/T-methyl: thiophanate-methyl (FRAC 1)		Single fungicide application	
Endura: boscalid (FRAC 7)			
	White mold Incidence % plants	White mold Severity Index % canopy	Soybean Yield bu/ac
Non-treated control	70 b	55 b	42 b
Endura 5.5 oz/ac	56 a	42 a	51 a
Topsin/T-methyl 40 fl oz/ac	62 a	46 a	47 a
CV:		7.9	10.3
			7.4

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SINGLE FUNGICIDE APPLICATION, LOW DISEASE PRESSURE:

Endura 5.5 oz/ac ≥ Topsin/T-methyl 40 fl oz/ac

COMBINED ANALYSIS ACROSS 4 STUDIES

Carrington and Oakes, ND (2021, 2022)

Topsin/T-methyl: thiophanate-methyl (FRAC 1)

Endura: boscalid (FRAC 7)

LOW DISEASE PRESSURE

Single fungicide application

	White mold Incidence % plants	White mold Severity Index % canopy	Soybean Yield bu/ac
Non-treated control	8 b	3 b	67 b
Endura 5.5 oz/ac	3 a	1 a	69 a
Topsin/T-methyl 40 fl oz/ac	3 a	1 a	68 a
CV:	18.7	23	1.3

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SINGLE FUNGICIDE APPLICATION

Applied as a single application targeting white mold in soybeans, Topsin/T-methyl 20 fl oz/ac was not very effective

COMBINED ANALYSIS ACROSS 6 STUDIES

Carrington and Oakes, ND (2020, 2023)

Topsin/T-methyl: thiophanate-methyl (FRAC 1)

Single fungicide application

	White mold Incidence % plants	White mold Severity Index % canopy	Soybean Yield bu/ac
Non-treated control	26 a	15 a	55 a
Topsin/T-methyl 20 fl oz/ac	24 a	13 a	56 a
CV:	20.2	13.2	3.1

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Improving white mold management in soybeans:

Comparative fungicide efficacy – Topsin/T-methyl

Approximate comparative efficacy ranking among those fungicides assessed relative to Topsin/T-methyl:

1. Endura, 5.5 oz/ac
2. Topsin/T-methyl, 40 fl oz/ac
3. Topsin/T-methyl, 20 fl oz/ac

Topsin/generic exhibits a rate response, with white mold management increasing with application rate.

Topsin/generic applied 40 fl oz/ac was much more effective against white mold in soybeans than 20 fl oz/ac. Testing conducted in pinto beans indicates that Topsin/generic should be applied at a minimum 30 fl oz/ac when targeting white mold.

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Special thanks:

People: **Aaron Fauss, Suanne Kallis, Jesse Hafner, Gabriela Henson;** student workers

This research funded by pesticide registrants and check-off dollars:
North Dakota Soybean Council, BASF, Bayer, Corteva, Gowan, Syngenta