

Using Fungicides to Manage Head Rot on Sunflower

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Methods

- Randomized complete block design with three or four replicates.
- Ascospores applied at early flowering and seven days later followed by cyclic misting (one to two minutes twice per hour) to create infectious environment for three days.
- Confection type sunflowers.
- Fungicides applied with CO₂-pressurized backpack sprayer with XR8001 or 02 nozzles oriented to maximize deposition on the face of the sunflower head.
- Flowers sprayed traveling west in east/.west oriented plots

Results and Discussion

- Two experimental compounds and Topsin M reduced white mold incidence compared to the untreated (Table 1 a & b).
- Numerically, the best treatments were all sprayed in volumes of 18 GPA with one exception.
- A second fungicide application did not reduce the incidence of white mold disease.
- Winfield Solutions, LLC adjuvant AG 6011 combined with Endura fungicide reduced white mold incidences compared to the untreated (Table 2).
- Endura fungicide alone was as effective a control as Endura mixed with an adjuvant.
- No statistical differences were measured at Carrington (Table 3).

Table 1 a. White mold incidence and head severity by fungicide, fungicide rate and spray volume, Langdon, 2007.

Fungicide	Rate	Volume (GPA)	Incidence (%)	Severity (%)
Untreated			26.2	89.45
Prosaro + Induce	8.2 fl oz + 0.125% v/v	18.4	32.1	83.85
Endura + Endura	6 oz 2nd app. 1 wk later	9.2	28.4	89.05
Topsin M	2 lb	9.2	27.2	70.65
Endura + Ronilan	6 + 16 oz/ 2nd app. 1 wk later	9.2	24.8	64.98
Prosaro + Induce	8.2 fl oz + 0.125% v/v	9.2	24.8	56.58
Proprietary A	8.0 oz	18.4	23.7	92.98
LEM	3.0 oz (AI)	18.4	23.0	82.15
Endura	6 oz	9.2	21.2	61.45
Prosaro + In-Place + Syl-Tac	6.5 fl oz + 1 fl oz + 4 fl oz/A	9.2	19.6	81.0
LSD			13.7	NS

Table 1 b. White mold incidence and head severity by fungicide, fungicide rate and spray volume Langdon, 2007.

Fungicide	Rate	Volume (GPA)	Incidence (%)	Severity (%)
Prosaro + Induce	6.5 fl oz + 0.125% v/v	18.4	19.4	78.13
Proline + Induce	5.7 fl oz + 0.125% v/v	18.4	19.1	79.15
LEM	2.0 oz (ai)	18.4	19.0	78.25
Ronilan	16 oz	9.2	18.6	62.28
Endura	6 oz	18.4	18.4	83.40
Headline	9 fl oz	18.4	16.8	77.88
LEM	4.3 oz (ai)	18.4	16.6	71.73
Proprietary B	4.6 fl oz	18.4	10.5	61.73
Topsin M	2 lb.	18.4	8.8	58.60
Proprietary C	9.0 fl oz	18.4	5.0	35.98
LSD			13.7	NS



Figure 1. Sclerotinia infected sunflower head, 5 numerical rating indicating 100% severity.

Table 2. White mold incidence after treatment with Endura fungicide mixed with Winfield Solutions, LLC adjuvants, Langdon, 2007

Treatment	Rate	% Incidence
Untreated		22.5
Interlock + Preference	2 fl oz/ a + 0.25%v/v	27.6
AG 6011	6 fl oz/ a	9.1
AG 7010	1 pt/ a	18.9
AG 7011	1 pt/ a	15.6
AG 7015	1 pt/ a	18.8
AG 7042	0.5% v/v	12.7
Interlock + AG 7042	2 fl oz/ a + 0.5%v/v	27.4
Interlock + AG 3015	2 fl oz/ a + 0.5%v/v	17.2
Endura alone		5.1
LSD		13.9



Figure 2. Sclerotia deposited on ground and Sclerotinia infected sunflower head, 2 numerical rating indicating 25-50% severity.

Table 3 a. White mold incidence, head severity and yield by fungicide and fungicide rate Carrington, 2007.

Treatment	Rate/ acre	Incidence (%)	Severity (0-5)	Yield (Lbs)
Prosaro + Induce	6.5 fl oz + 0.125% v/v	6.8	4.4	1854
Prosaro + Induce	8.2 fl oz + 0.125% v/v	7.6	4.7	2166
Proline + Induce	5.7 fl oz + 0.125% v/v	9.1	5.0	1936
LEM 17 EC	2.0 oz (ai)	3.1	2.5	1991
LEM 17 EC	3.0 oz (ai)	3.8	5.0	1653
LEM 17 EC	4.3.0 oz (ai)	4.7	5.0	2219
LEM 17 SC	4.3.0 oz (ai)	7.8	4.8	2075
Endura	6.7 oz	6.0	3.7	2050
Untreated		7.8	5.0	1881

Table 3 b. White mold incidence, head severity, and yield by fungicide and fungicide rate, Carrington, 2007.

Treatment	Rate/ acre	Incidence (%)	Severity (0-5)	Yield (Lbs)
Headline	9.0 fl oz	2.0	5.0	1746
Topsin M	2 lb	3.6	4.7	2437
Proprietary C	9.0 fl oz	4.1	3.8	1990
Proprietary A	8.0 fl oz	10.9	4.6	1954
Proprietary B	4.6 fl oz	3.1	5.0	2013
Prosaro + In-Place + Syl-Tac	6.5 fl oz + 1 fl oz + 4 fl oz	11.0	4.8	1675
Ronilan	16 oz	5.3	5.0	1854
Prosaro + Induce	8.2 fl oz + 0.125% v/v	4.2	4.7	2066
Untreated		7.8	5.0	1881



Figure 3. Mature sunflowers, note difficulty in effectively applying treatments in plots due to sunflower density and height.

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