Sunflower control for *Sclerotinia* rot and rust

DuPont™ Vertisan® fungicide

DuPont™ Vertisan® fungicide (penthiopyrad)

- Group 7 mode of action (FRAC), SDHI (succinate dehydrogenase inhibitor)
- Broad-spectrum control of foliar and soil-borne diseases
- Labeled for use on sunflower,* canola,* cereals,*† corn,* cotton,* legume vegetables,* soybean,* sugar beet,* potatoes
- Soil application: cotton, sugar beet, potatoes, sweet potatoes and yams
- Application and harvest flexibility: Apply by ground, air and chemigation
- MRLs in place
- Signal word = CAUTION, 12-hour reentry interval

A fungicide with residual, preventive and post-infection activity:

- High potency
- Preventive, curative and residual activity
- Movement within the plant: translaminar and local systemic
- Redistribution within the canopy
- Rainfast in 1 hour
- Opportunity for higher yields and improved quality from disease control
- Plant health effects observed in research studies

DuPont™ Vertisan® fungicide is labeled on sunflowers for the following diseases:

Crop	Diseases controlled	Product rate	Comments
Sunflower*	Alternaria leaf spot (*Alternaria* spp.) Powdery mildew (*Erysiphe cichoracearum*) Rust (*Puccinia helianthi*, *Uromyces* spp.) Septoria leaf spot (*Septoria* spp.)	10 to 30 fl oz/A	Begin applications prior to disease development and continue on a 7- to 14-day interval. Use higher rate and shorter interval when disease pressure is high.
	Sclerotinia stem rot (*Sclerotinia* spp.)	16 to 30 fl oz/A	

Make no more than two sequential applications of Vertisan® before switching to a fungicide with a different mode of action. Minimum time (PHI) between application and harvest is 14 days. Do not exceed 61 fl oz/A per year.

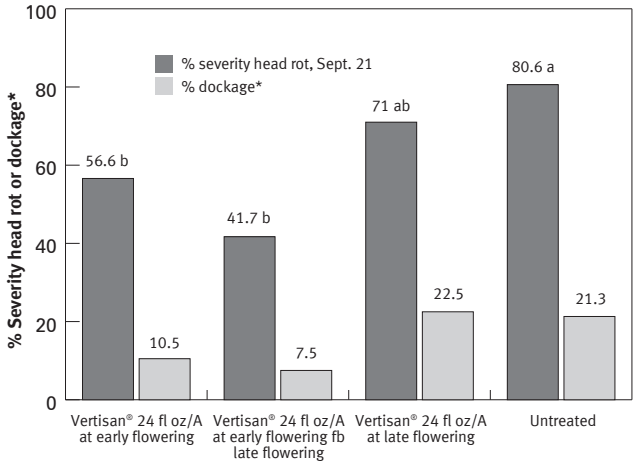
Sclerotinia rot in sunflower

* Not for use in California or New York.
† Includes wheat, oats, rye and sorghum.

DuPont™ Vertisan® fungicide field results for sunflower *Sclerotinia* rot

Reduction in sunflower *Sclerotinia* head rot by DuPont™ Vertisan® fungicide applied at early and/or late flowering — Manitoba, Canada, 2009

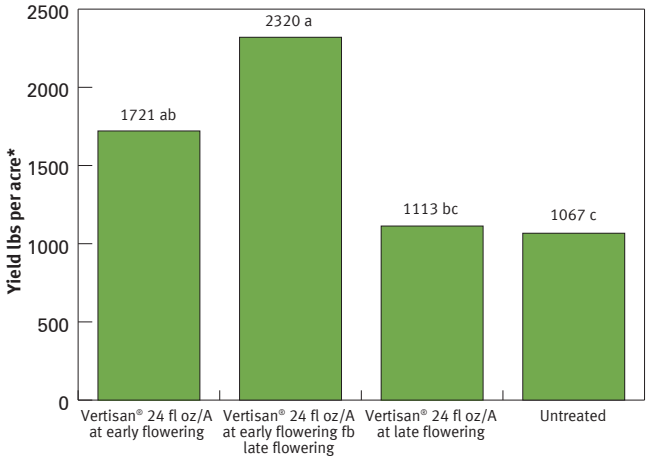
Early flowering (vs. late flowering) was the best application timing for reducing head rot severity. A similar trend was seen for dockage reduction in cleaned seed.



* % dockage measures the % infestation of fungal sclerotia in the sunflower seed after cleaning.
- Applications made Aug. 4 (early flowering) and/or Aug. 17, (late flowering), 2009, to HYSUN 6511 sunflower in Morden, Manitoba, Canada, courtesy Khalid Rashid (CAR-09-731).
- Columns that are the same color and have the same letter are not statistically different according to Fisher's LSD. p value for % severity = 0.04; p value for % dockage = 0.18.

Yield effects in sunflower from Vertisan® fungicide application at early and/or late flowering — Manitoba, Canada, 2009

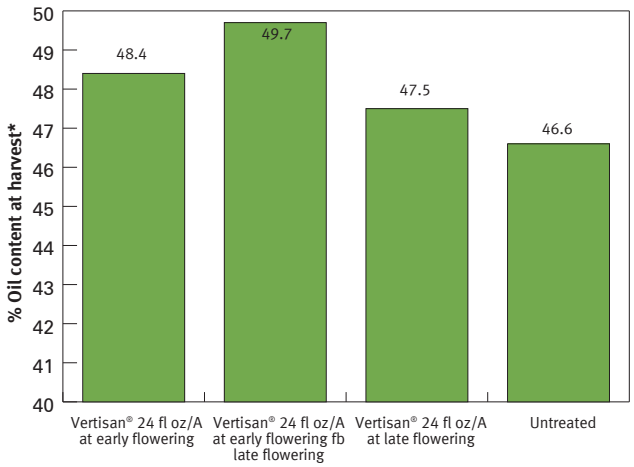
Early flowering was the best application timing for increasing yield. Early flowering followed by late flowering was numerically better than early flowering alone but not statistically better.



* Harvested Sept. 21, 2009.
- Applications made Aug. 4 (early flowering) and/or Aug. 17 (late flowering), 2009, to HYSUN 6511 sunflower in Morden, Manitoba, Canada, courtesy Khalid Rashid (CAR-09-731).
- Columns that are the same color and have the same letter are not statistically different according to Fisher's LSD. p value for yield= 0.01.

Yield effects in sunflower from Vertisan® fungicide application at early and/or late flowering — Manitoba, Canada, 2009

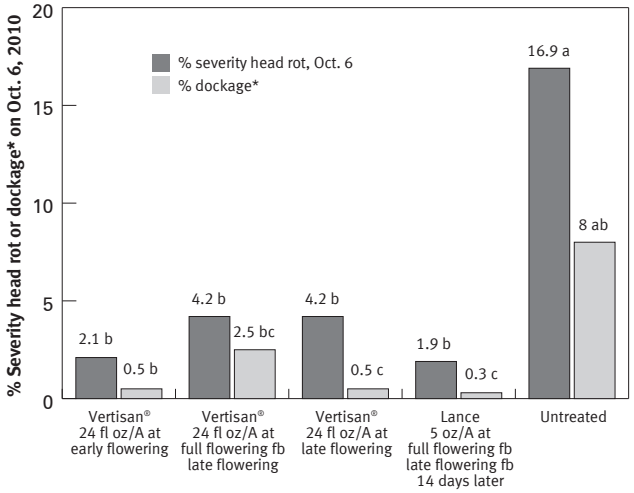
A trend for higher oil content in all the fungicide treatments was seen, with early flowering followed by late flowering giving the highest numerical oil content.



* Harvested Sept. 21, 2009.
- Applications made Aug. 4 (early flowering) and/or Aug. 17 (late flowering), 2009, to HYSUN 6511 sunflower in Morden, Manitoba, Canada, courtesy Khalid Rashid (CAR-09-731).
- Columns that are the same color and have the same letter are not statistically different according to Fisher's LSD. p value for % oil content = 0.26.

Reduction in sunflower *Sclerotinia* head rot by Vertisan® fungicide applied at full and/or late flowering — Manitoba, Canada, 2010

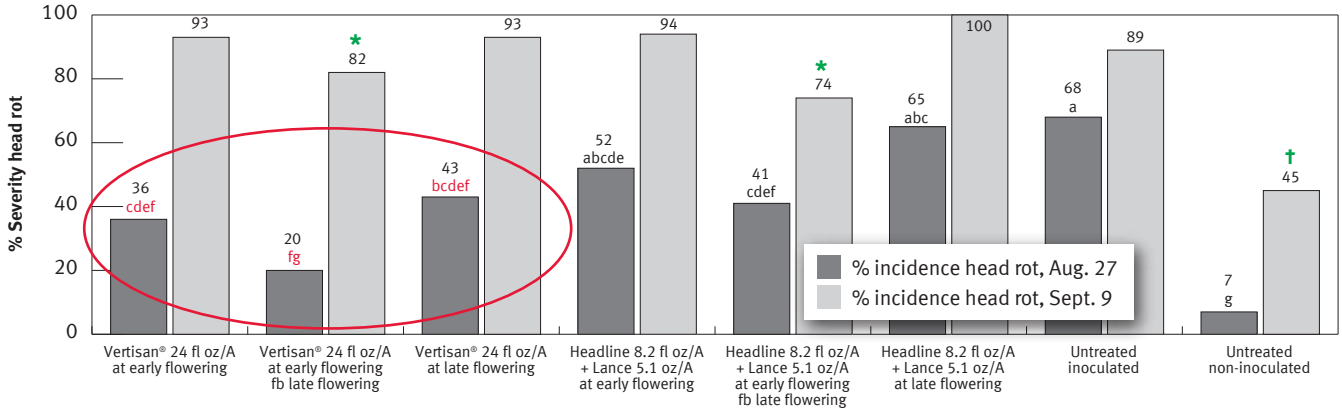
All fungicide treatments reduced % head rot and seed dockage over the untreated. Vertisan®, applied once at full or late flowering, or sequentially, gave *Sclerotinia* head rot control similar to Lance applied 3x.



* % dockage measures the % infestation of fungal sclerotia in the sunflower seed after cleaning.
- Applications made Aug. 10 (full flowering), Aug. 23 (late flowering) and Sept. 7 (14 days later), 2010, to HYSUN 6511 sunflower in Morden, Manitoba, courtesy Khalid Rashid (CAR-10-730).
- Columns that are the same color and have the same letter are not statistically different according to Fisher's LSD. p value for % severity = 0.12; p value for % dockage = 0.02.

Reduction in sunflower *Sclerotinia* head rot by Vertisan® fungicide applied at early and/or late flowering — Manitoba, Canada, 2014

For the Aug. 27 evaluation, all three application timings for Vertisan® reduced head rot significantly over the untreated and better than the standard fungicide programs. On Sept. 9, the two-application timing for Vertisan® (and standard) was best.*,†

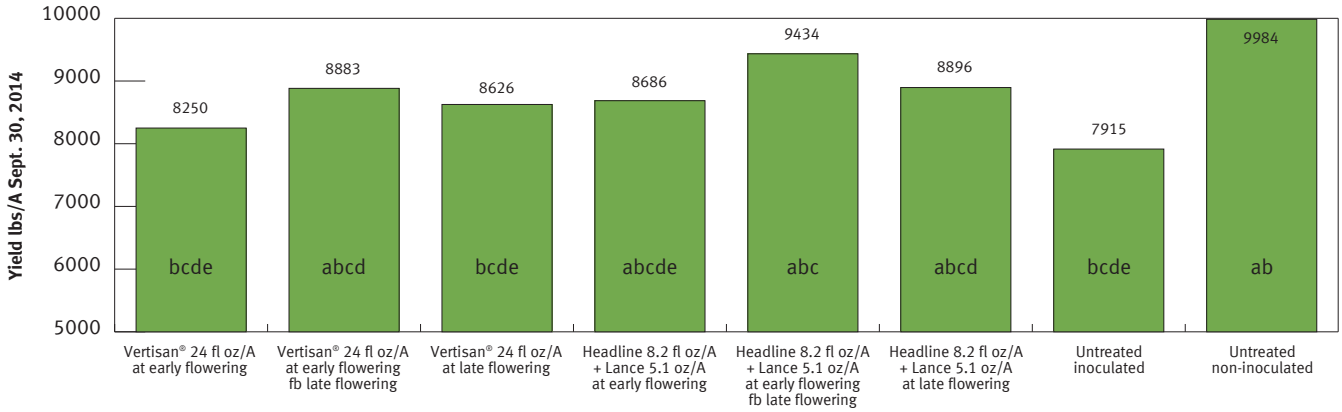


*,† Treatments with green asterisk are statistically similar, but significantly different from treatments with green dagger; for light gray columns, treatments marked with an asterisk or dagger are statistically better than unmarked treatments.

- Applications made Aug. 8 (early flowering) and/or Aug. 27 (late flowering), 2014, to sunflower in Manitoba, Canada, courtesy Khalid Rashid (CAR-14-731).
- Columns that are the same color and have the same letter are not statistically different according to Fisher's LSD. p value for % severity = 0.01 for both evaluation dates.

Yield effects in sunflower from Vertisan® fungicide application at early and/or late flowering — Manitoba, Canada, 2014

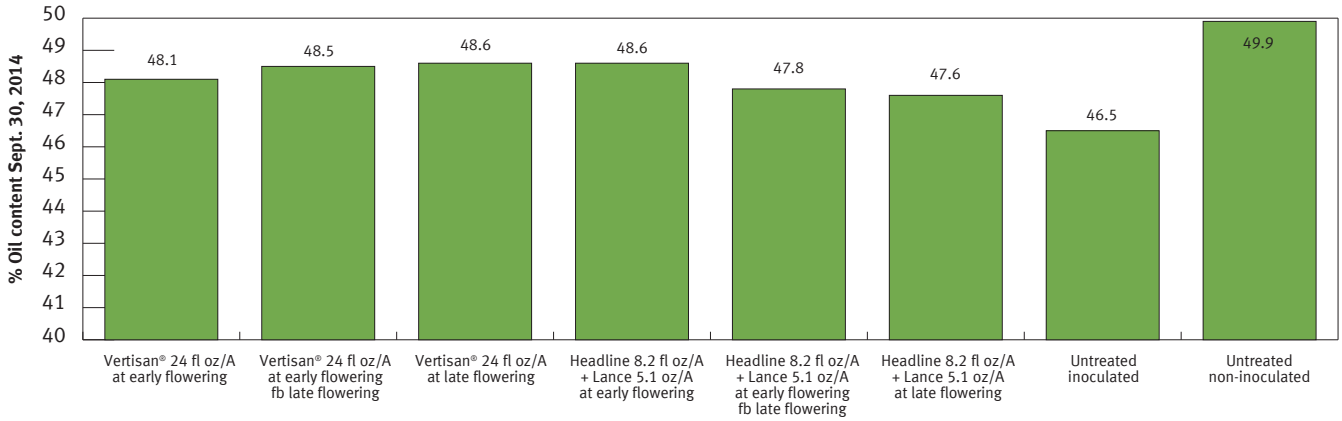
Treatment yields did not split out clearly, but a good trend was seen for higher yields from two applications vs. one application in 2014.



- Applications made Aug. 8 (early flowering) and/or Aug. 27 (late flowering), 2014, to sunflower in Manitoba, Canada, courtesy Khalid Rashid (CAR-14-731).
- Columns that are the same color and have the same letter are not statistically different according to Fisher's LSD. p value for % yield = 0.02.

Yield effects in sunflower from Vertisan® fungicide application at early and/or late flowering — Manitoba, Canada, 2014

A trend* toward higher oil content was seen in all Vertisan® treatment (avg. 48.4%) vs. Untreated inoculated (46.5%).



* A numerical trend toward higher oil content was seen. p value for % oil content = 0.26.

- Applications made Aug. 8 (early flowering) and/or Aug. 27 (late flowering), 2014, to sunflower (harvest Sept. 30) in Manitoba, Canada, courtesy Khalid Rashid (CAR-14-731).

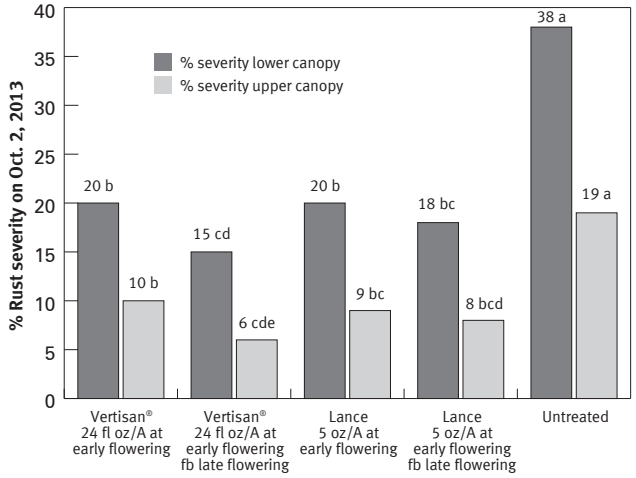
DuPont™ Vertisan®

fungicide

DuPont™ Vertisan® fungicide field results for sunflower rust

Reduction in sunflower rust on foliage by Vertisan® fungicide applied at early flowering or early and late flowering — Manitoba, Canada, 2013

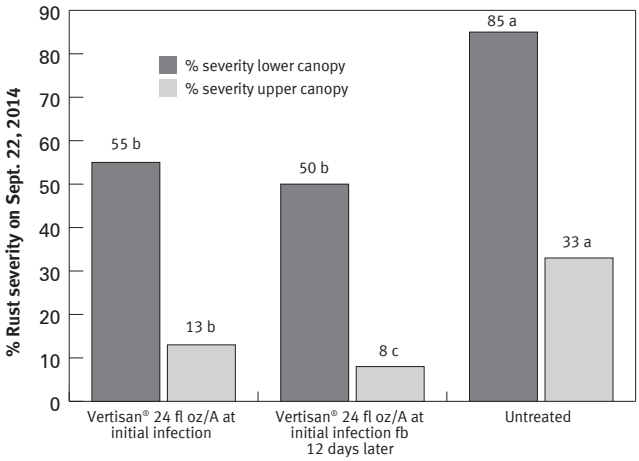
All fungicide treatments reduced rust over the untreated. Vertisan® gave rust control equal to Lance, with two applications of Vertisan® numerically the best treatment.



- Applications made Aug. 21 (early flowering) and Sept. 4 (late flowering), 2013, to variety 9530CL sunflower in Minto, Manitoba, Canada, courtesy Diane Logeot (CAR-13-710).
- Columns that are the same color and have the same letter are not statistically different according to Fisher's LSD. p values for % severity = 0.01, 0.01.

Reduction in sunflower rust on foliage by Vertisan® fungicide applied at initial infection — Manitoba, Canada, 2014

Both one and two applications of Vertisan® significantly reduced rust in both plant canopies over the untreated, with two applications giving the greatest rust reduction in the upper canopy.



- Applications made Aug. 8 and Aug. 20 (initial infection in lower canopy), 2014, to variety Clearfield 400 sunflower in Portage La Prairie, Manitoba, Canada (CAR-14-762).
- Columns that are the same color and have the same letter are not statistically different according to Fisher's LSD. p values for % severity = 0.01, 0.01.

For more information

Contact your local DuPont retailer or representative to learn more about Vertisan® fungicide. And visit us at **vertisan.dupont.com**.

Reorder No.: K-29503