

Field evaluation of fungicides for management of *Alternaria* blight of safflower

Hofflund / Nesson Valley – 25 miles east of Williston, ND (2011)

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KEY FINDINGS

- When *Alternaria* blight is severe, control of *Alternaria* blight increases seed yield and increases test weight and oil content of safflower.
- The registered fungicides **Headline** (pyraclostrobin), **Quadris** (azoxystrobin), and **Priaxor** (pyraclostrobin + fluxapyroxad) performed well. Headline and Priaxor provided better disease control than Quadris, but there was no seed yield or quality penalty associated with using Quadris.
- It is unclear whether Priaxor may confer an advantage over Headline. Priaxor is a premix of pyraclostrobin, the active ingredient in Headline, and fluxapyroxad. The disease control conferred by Priaxor was very similar to that conferred by Headline, and it is not immediately clear whether the second active ingredient in Priaxor also has activity against *Alternaria* on safflower. Tests are currently underway to evaluate this question.
- None of the other fungicides evaluated in this trial provided satisfactory disease control.
- This trial was conducted under irrigation, disease pressure was high, and three sequential fungicide applications were made. In dryland production, a single fungicide application made at bloom initiation is sufficient. The relative efficacy of the different fungicides tested is expected to be similar in dryland production where disease pressure is lower and a single fungicide application is made. Future fungicide evaluations will be conducted under these conditions.

SUMMARY OF KEY RESULTS

The fungicides TILT, FOLICUR, ENDURA, VERTISAN, SCALA, SWITCH, and OMEGA are currently not registered for use on safflower and should not be used.

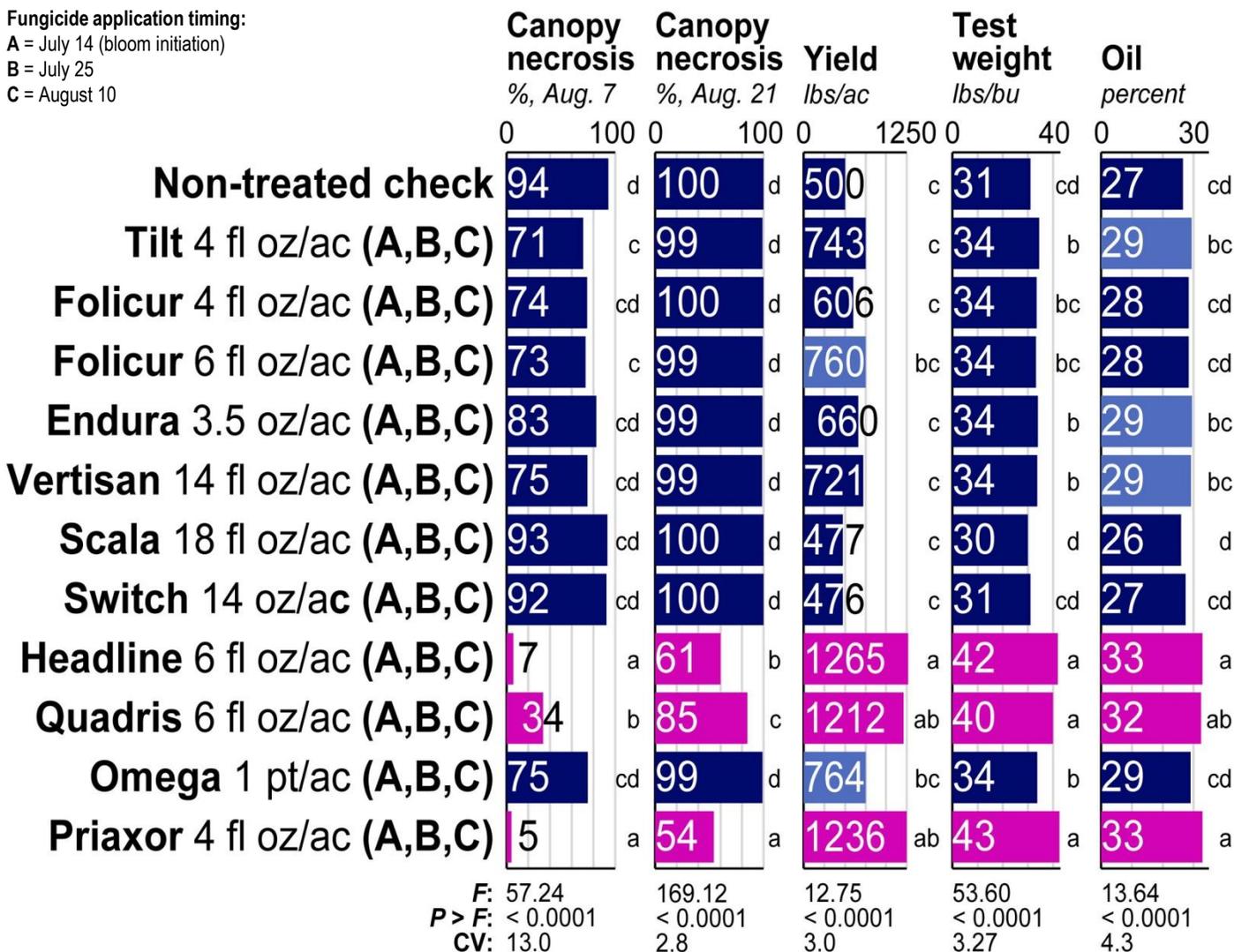
Within-column means followed by different letters are significantly different; ($P < 0.05$; Tukey multiple comparison procedure).

Fungicide application timing:

A = July 14 (bloom initiation)

B = July 25

C = August 10



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Non-treated check	Tilt 4 fl oz/ac (A,B,C)	Folicur 4 fl oz/ac (A,B,C)	Folicur 6 fl oz/ac (A,B,C)	Endura 3.5 oz/ac (A,B,C)	Vertisan 14 fl oz/ac (A,B,C)
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Scala 18 fl oz/ac (A,B,C)	Switch 14 oz/ac (A,B,C)	Headline 6 fl oz/ac (A,B,C)	Quadris 6 fl oz/ac (A,B,C)	Omega 1 pt/ac (A,B,C)	Priaxor 4 fl oz/ac (A,B,C)
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Fungicide application timing: A = July 14 (bloom initiation) B = July 25 C = August 10

Photos were taken August 21

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METHODS:

- **Location of trial:** Williston Research Extension Center Nesson Valley Irrigation Research Site
- **GPS coordinates of research trial location:** 48.167,-103.104
- **Variety:** 'Finch'
- **Experimental design:** randomized complete block **Replicates:** 4
- **Seeded plot size:** 5 feet wide (center-to-center) x 20 feet long **Harvested plot size:** 5 feet wide (center-to-center) x approx. 16 feet long
- **Row spacing:** 7 inches **Rows per plot:** 7
- **Non-treated buffer plots were established between treatment plots.**
- **Planting date:** May 13, 2011
- **Fungicide applications:** Fungicides were applied on July 14, July 25, and Aug. 10. A 56-in hand boom with four equally spaced flared fan 8002 nozzles was used for applications. Applications were made with 20 gal/ac water and 49 psi pressure.
- **Disease assessment:** *Alternaria* severity was assessed on August 7 and 21 by evaluating percent canopy necrosis.
- **Disease establishment:** The trial was not inoculated, and all disease was caused by seed-to-seedling transmission of *Alternaria* from infected seed or other sources. To facilitate high disease pressure, overhead sprinkler irrigation was utilized in this trial.
- **Harvest date:** Sept. 29, 2011.
- **Statistical analysis:** All data were evaluated with analysis of variance. The assumption of constant variance was assessed by plotting residuals against predicted values, and the assumption of normality was assessed with a normal probability plot. The assumption of homoskedasticity was violated for the yield data, and a systematic natural-log transformation was applied to address the problem. Outliers caused violations of both assumptions in the disease severity data, but no systemic transformations could be found to resolve the problem, and no transformations were applied. For all other data, the assumptions were met. Single-degree-of-freedom contrasts were performed for all pairwise comparisons of isolates; to control the Type I error rate at the level of the experiment, the Tukey multiple comparison procedure was employed. Analyses were conducted with replicate and treatment as main factor effects and with interactions included in the model, and they were implemented in PROC GLM of SAS (version 9.2; SAS Institute, Cary, NC).



Replicates 1 and 2 of the safflower fungicide trial (Williston REC Irrigation Research Site; August 21, 2011). Zones of green, flowering safflower correspond to the Headline, Priaxor, and Quadris treatments.

FUNDING:

This project was funded by the **North Dakota Dept. of Agriculture Crop Protection Product Harmonization Board and Registration Board.**

IMPORTANT NOTICE:

- Fungicide performance can differ in response to which diseases are present, levels of disease when products are applied, environmental conditions, plant architecture and the susceptibility to disease of the chickpea variety planted, crop growth stage at the time of fungicide application, and other factors.
- This report summarizes fungicide performance as tested at the NDSU Williston Research Extension Center's Nesson Valley Irrigation Research Site in 2011 under the conditions partially summarized in the methods section (above).
- Fungicide efficacy may differ under other conditions; when choosing fungicides, always evaluate results from multiple trials.
- This report is shared for educational purposes and is not an endorsement of any specific products.