

# Field evaluation of sunflower hybrids and breeding lines for resistance to Sclerotinia head rot (2011)

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## KEY FINDINGS:

The commercial and experimental sunflower hybrid and breeding lines Seeds 2000 'X9856', Pioneer '63N82', Croplan '343 DMR HO', Genosys '8064', and Pioneer '63ME70' performed well across multiple locations. Relative to the most susceptible entries, these hybrids exhibited sharp, statistically significant reductions in Sclerotinia head rot incidence and/or severity index in three or more of the four individual trials in which they were evaluated and in the combined analysis across screening locations. Disease evaluations were conducted at physiological maturity.

The commercial and experimental sunflower hybrid and breeding lines Triumph 'EXPSCLO5', Mycogen 'E257321', Syngenta '3990 NS/CL/DM', Genosys '1068', Syngenta '3995 NS/SU', Mycogen 'E378947', and Croplan 'EXP1141', which were only screened at a single location, performed well in the Carrington screening nursery where they were evaluated. Relative to the most susceptible entries, these hybrids developed significantly less Sclerotinia head rot. Disease evaluations were conducted at physiological maturity.

## SUMMARY OF KEY RESULTS – Multi-location screening nurseries (Sclerotinia head rot severity index)

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

### Sclerotinia head rot severity index:

0 = no disease,  
1 = 1 to 25% of head diseased,  
2 = 26 to 50% of head diseased,  
3 = 51 to 75% of head diseased,  
4 = 76 to 99% of head diseased,  
5 = 100% of head diseased.

### TREATMENTS LABELED 'NO DATA':

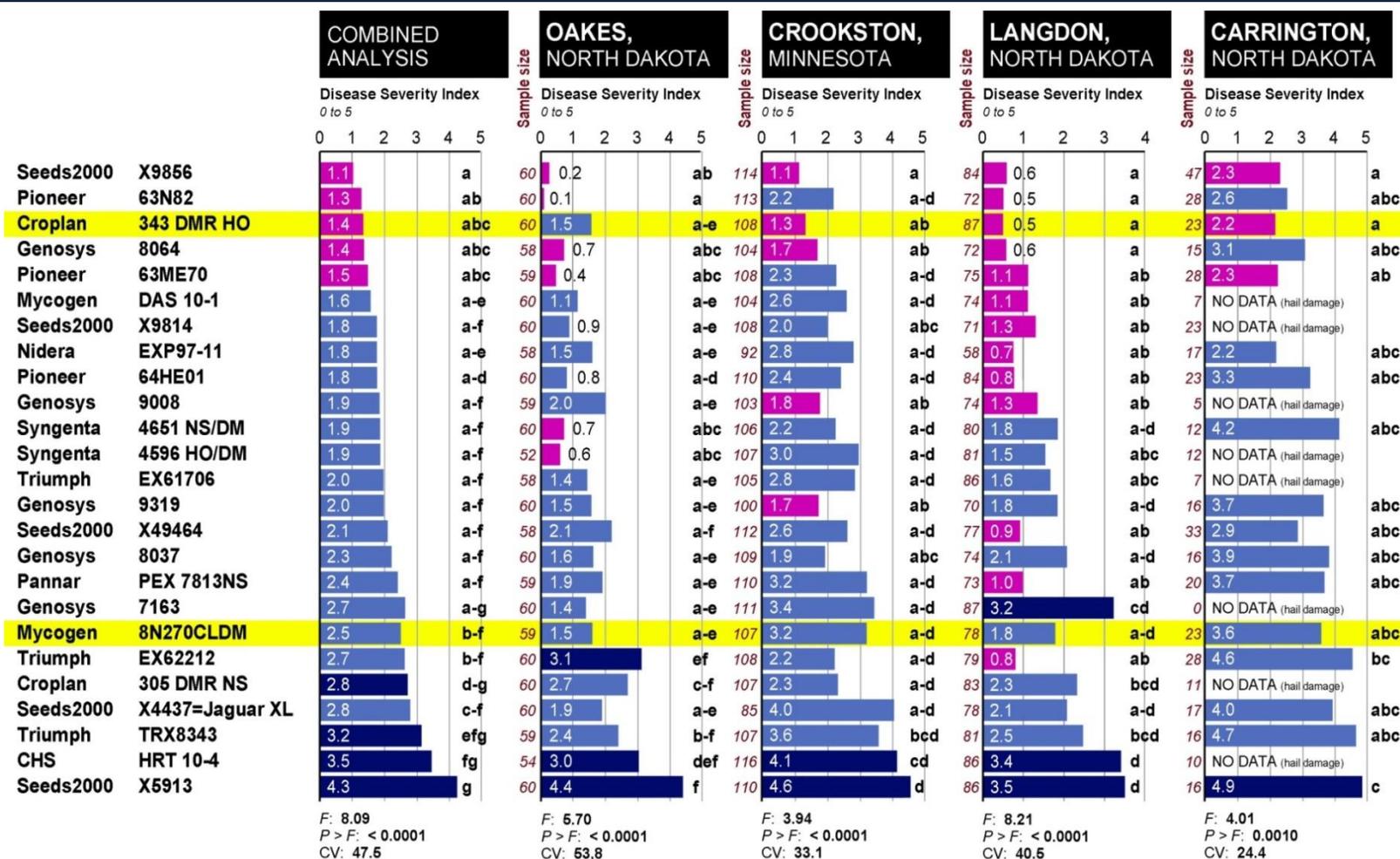
Sample sizes were inadequate; due to hail damage, two or more replicates had samples sizes of 4 plants or fewer

Sample size: Number of plants evaluated for Sclerotinia head rot

Mycogen 8N270CLDM: susceptible check.

Croplan 343 DMR HO: resistant check.

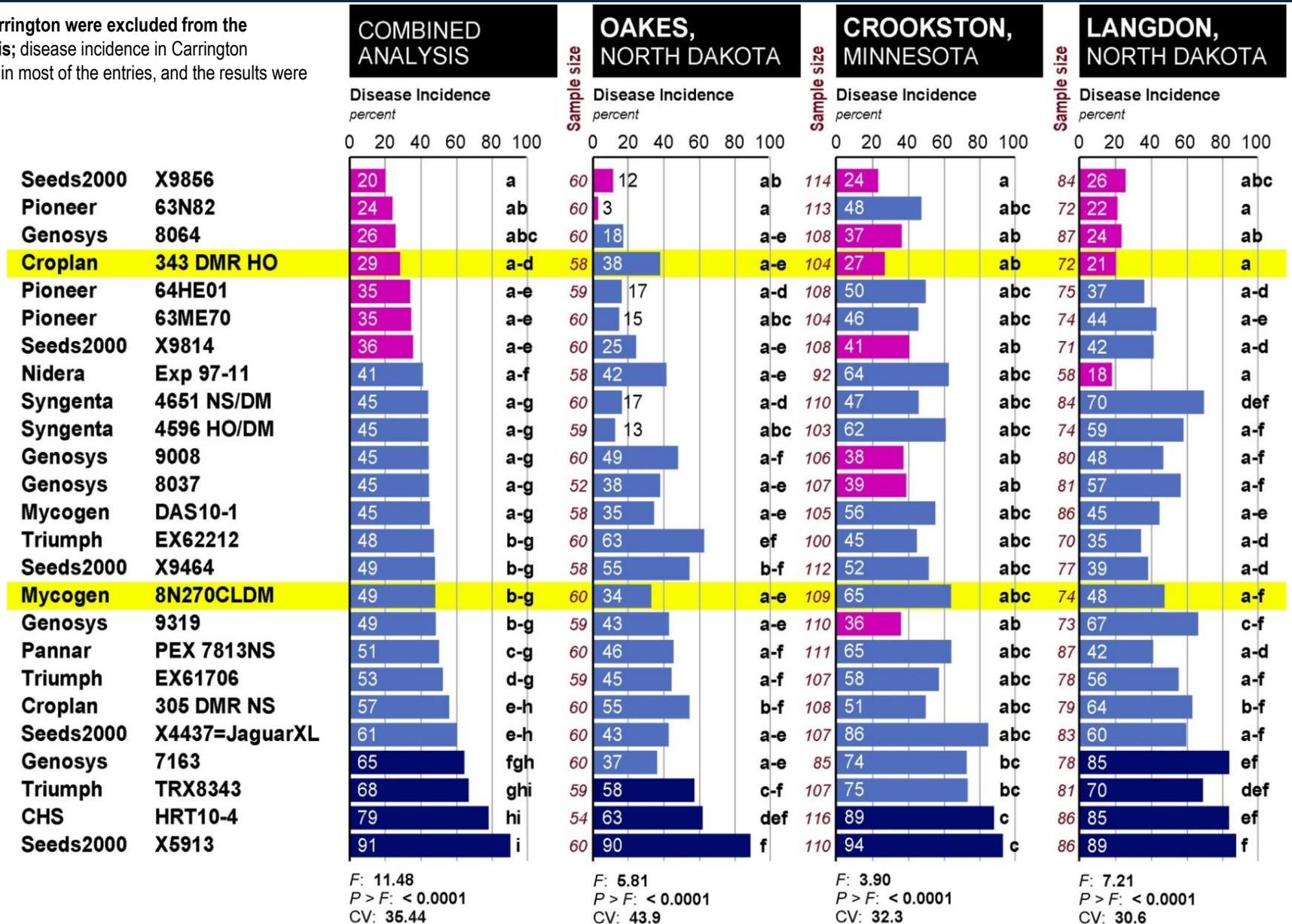
Croplan 305 DMR NS: susceptible check



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The data from Carrington were excluded from the combined analysis; disease incidence in Carrington approached 100% in most of the entries, and the results were not informative.



Within-column means followed by different and non-overlapping ranges of letters are significantly different (P < 0.05; Tukey multiple comparison procedure).

Sample size: Number of plants evaluated for Sclerotinia head rot. **Mycogen 8N270CLDM** and **Croplan 305 DMR NS**: susceptible checks. **Croplan 343 DMR HO**: resistant check..

## Evaluation of sunflower hybrids and breeding lines for resistance to Sclerotinia head rot (2011):

Large screening nursery –  
Carrington, ND

A severe hail storm occurred in Carrington in July 2011, damaging this field experiment and many others.

Hybrids that suffered severe hail damage (fewer than four surviving plants in two or more replicates) were excluded from the analysis.

Disease assessments were conducted at R9 (physiological maturity).

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

**Sample size:** Number of plants evaluated for Sclerotinia head rot. Sample sizes were low due to hail damage.

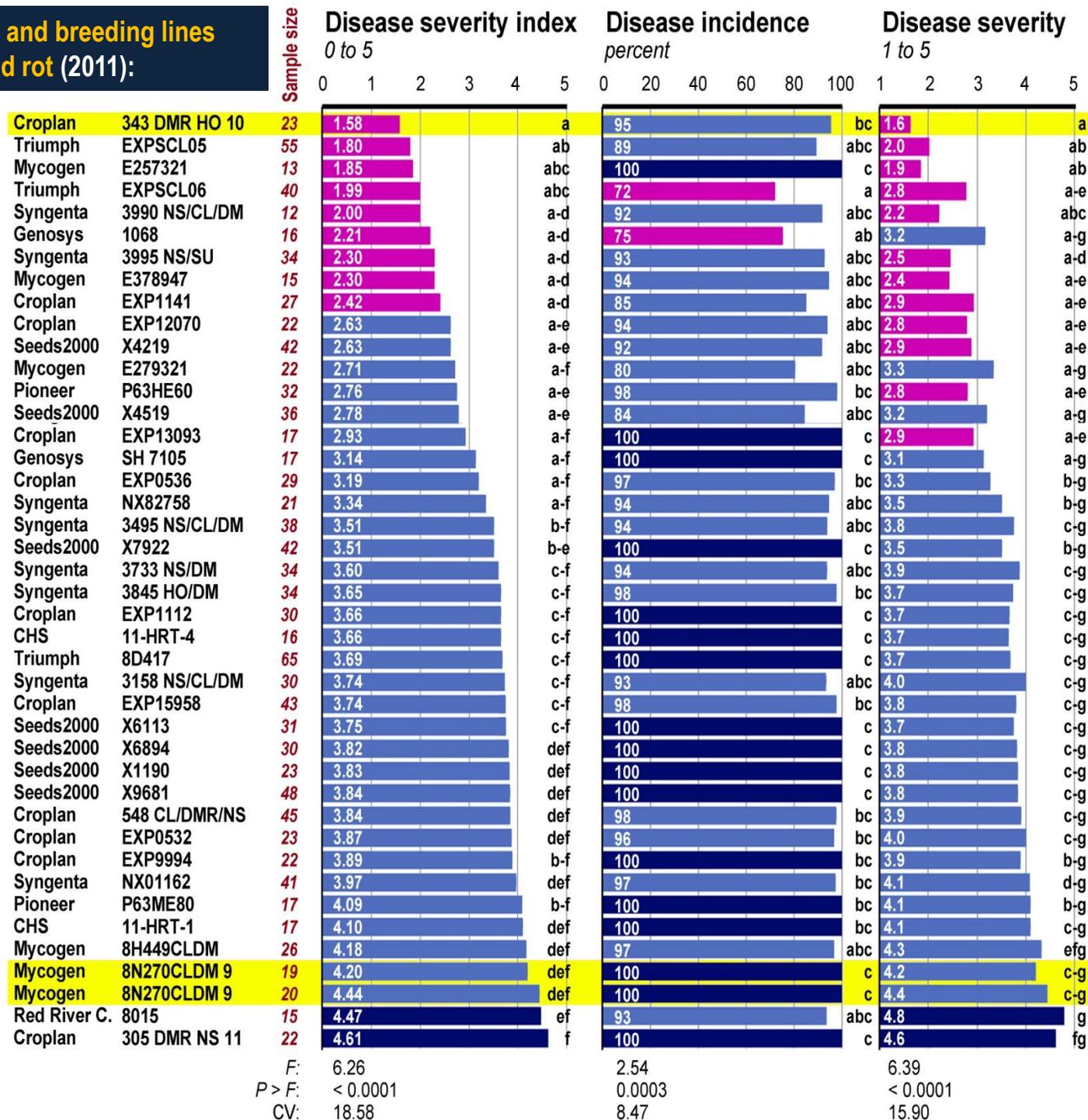
**Sclerotinia head rot severity rating scale:**

- 0 = no disease
- 1 = 1 to 25% of head diseased
- 2 = 26 to 50% of head diseased
- 3 = 51 to 75% of head diseased
- 4 = 76 to 99% of head diseased
- 5 = 100% of head diseased

**Mycogen 8N270CLDM:** susceptible check

**Croplan 343 DMR HO:** resistant check

**Croplan 305 DMR NS:** susceptible check.



F: 6.26  
P > F: < 0.0001  
CV: 18.58

2.54  
0.0003  
8.47

6.39  
< 0.0001  
15.90