

Susceptibility of commercial lentil varieties to anthracnose

Carrington, ND (2011)

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North Dakota State University Carrington Research Extension Center

KEY FINDINGS:

Anthracnose development was delayed by approx. 10 to 14 days in the best-performing varieties.

The large green lentil 'CDC Greenland', the extra-small red lentil 'CDC Rosetown', and the small-red lentils 'CDC Redberry' and 'CDC Rouleau' performed best.

The small green lentil 'CDC Viceroy' exhibited intermediate performance.

The medium-green lentil 'CDC Richlea', large-green lentils 'Pennell' and 'Riveland', small green lentil 'Essex', French green lentil 'CDC LeMay', Spanish brown lentil 'Morena', and small red lentil 'CDC Red Rider' exhibited moderately high to highly susceptible to anthracnose.

The field performance of some of these varieties differed from the resistance levels to race 1 of anthracnose that are advertised for these varieties. Lentil anthracnose is caused by at least two different races of the causal pathogen, and resistance to race 1 does not confer resistance to race 2. Both races of the anthracnose pathogen occur in Saskatchewan and are presumed to occur in North Dakota.

SUMMARY OF KEY RESULTS:

ANTHRACNOSE WAS THE ONLY DISEASE TO OCCUR ABOVE LOW LEVELS IN THIS TRIAL.

Within-column means followed by different letters are significantly different

($P < 0.05$; Tukey multiple comparison procedure).

MARKET CLASSES OF LENTIL

VARIETIES SCREENED IN THIS TRIAL:

CDC Greenland –
LARGE GREEN

CDC Rosetown –
EXTRA SMALL RED

CDC Redberry –
SMALL RED

CDC Rouleau –
SMALL RED

CDC Viceroy –
SMALL GREEN

CDC Richlea –
MEDIUM GREEN

CDC Red Rider –
SMALL RED

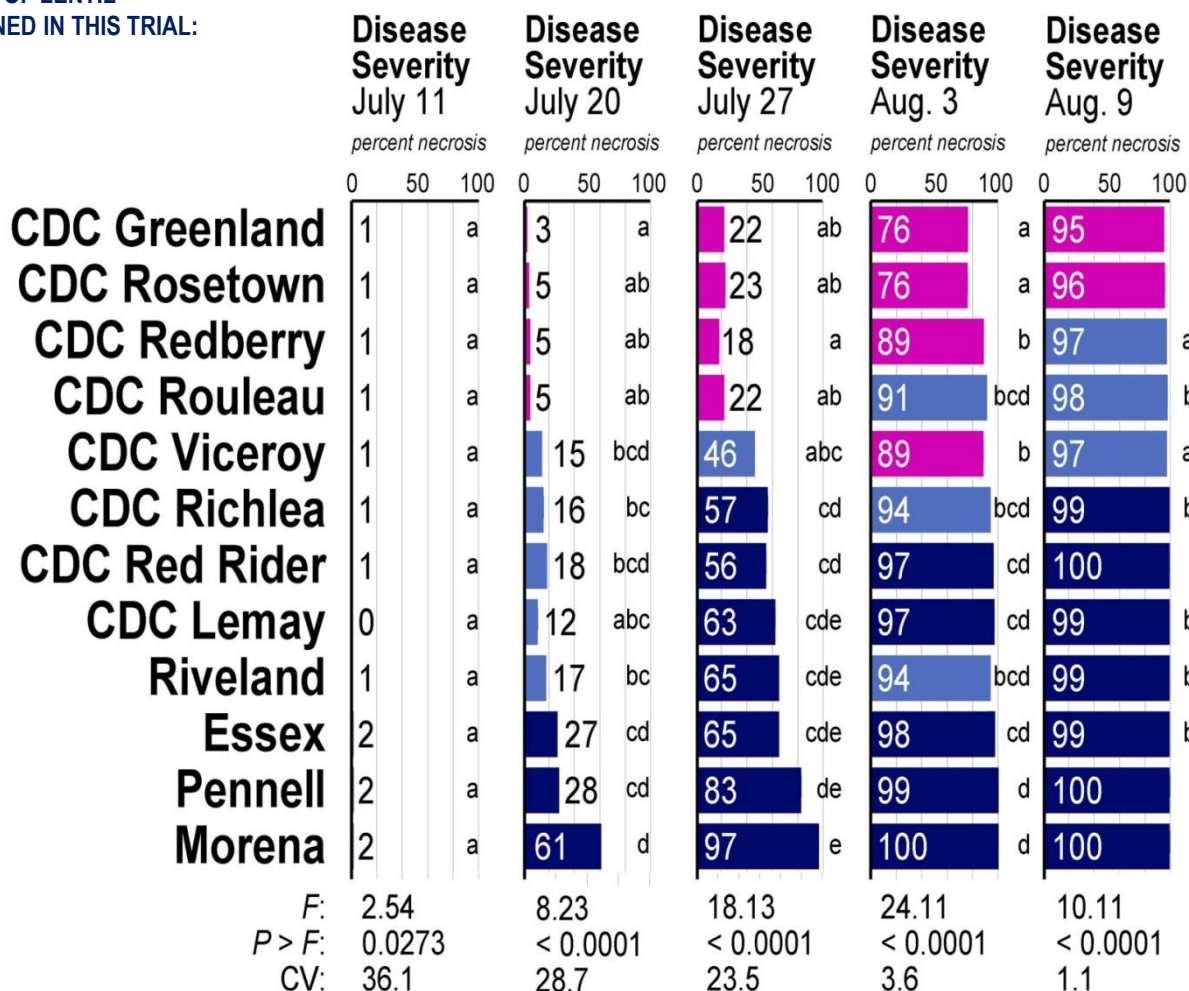
CDC LeMay –
FRENCH GREEN

Riveland –
LARGE GREEN

Essex –
SMALL GREEN

Pennell –
SMALL GREEN

Morena –
SPANISH BROWN



YIELDS WERE NOT EVALUATED. Anthracnose disease pressure was severe: recurrent, torrential rains occurred throughout the bloom and early pod-fill period, and no foliar fungicides were used. Severe lodging resulted from the foliar disease pressure, and the trial was not harvested.

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ANTHRACNOSE WAS THE ONLY DISEASE TO OCCUR ABOVE LOW LEVELS.. Photos were taken July 27, 2011.



CDC GREENLAND



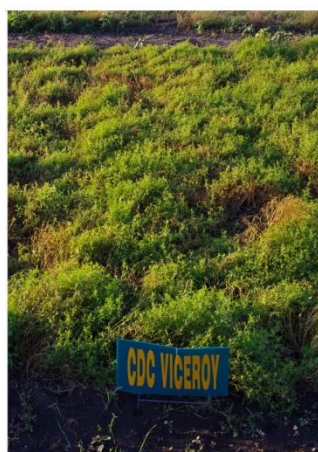
CDC ROSETOWN



CDC REDBERRY



CDC ROULEAU



CDC VICEROY



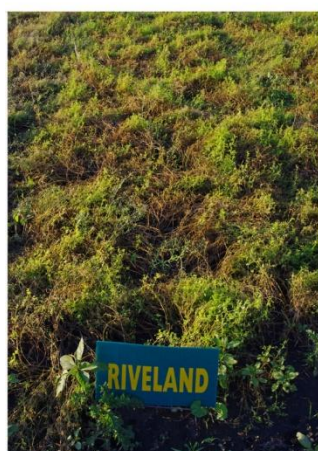
CDC RICHLEA



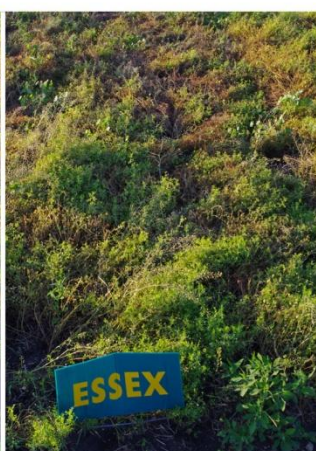
CDC RED RIDER



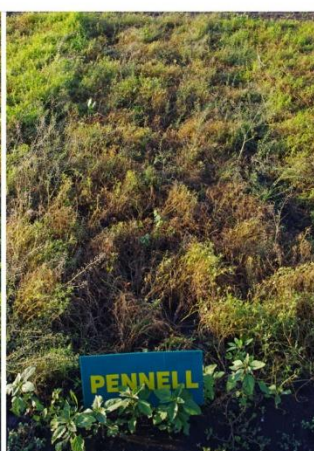
CDC LEMAY



RIVELAND



ESSEX



PENNELL



MORENA

MARKET CLASSES OF LENTIL VARIETIES SCREENED IN THIS TRIAL:

CDC Greenland – LARGE GREEN
CDC Rosetown – EXTRA SMALL RED
CDC Redberry – SMALL RED

CDC Rouleau – SMALL RED
CDC Viceroy – SMALL GREEN
CDC Richlea – MEDIUM GREEN

CDC Red Rider – SMALL RED
CDC LeMay – FRENCH GREEN
Riveland – LARGE GREEN

Essex – SMALL GREEN
Pennell – SMALL GREEN
Morena – SPANISH BROWN

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METHODS:

- **Location of trial:** NDSU Carrington Research Extension Center, Carrington, ND.
- **GPS coordinates of research trial location:** 47.509,-99.133
- **Soil type:** Heimdal-Emrick loam
- **Tillage:** conventional
- **Experimental design:** randomized complete block **Replicates:** 4
- **Seeded plot size:** 5 feet wide (center-to-center) x 25 feet long
- **Harvested plot size:** 5 feet wide (center-to-center) x approx. 19 feet long
- **Row spacing:** 7 inches **Rows per plot:** 7
- **Non-treated buffer plots were established between treatment plots.**
- **Planting date:** May 5, 2012
- **Seeding rate:** 12 pure live seeds per square foot
- **Anthracnose disease development:** This trial was not inoculated; anthracnose originated from ambient inoculum. This was a dryland trial (no supplemental irrigation was applied to promote disease).
- **Disease assessments:** Anthracnose was the only disease to develop above trace levels in this trial. Anthracnose was assessed as the percent of the plot exhibiting each disease. Disease assessments were made every 6 to 9 days from July 11 (initial disease development) until August 9 (when nearly 100% of the canopy was necrotic in all treatments).
- **This trial was not harvested.** Anthracnose disease pressure was severe in this trial: recurrent, torrential rains occurred throughout the bloom and early pod-fill period, and no foliar fungicides were used. Severe lodging resulted from the foliar disease pressure, and the trial was not harvested.
- **Statistical analysis:** 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. All data met model assumptions. 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, Tukey's multiple comparison procedure was employed. Analyses were conducted with replicate and treatment as main factor effects, and they were implemented in PROC GLM of SAS (version 9.2; SAS Institute, Cary, NC).

IMPORTANT NOTICE:

- Variety performance differs in response to environmental conditions, agronomic practices, and biotic and abiotic stresses including diseases.
- This report summarizes variety performance as tested at the NDSU Carrington Research Extension Center in 2012 under the conditions partially summarized in the methods section (above).
- Variety performance may differ under other conditions; when choosing varieties, always evaluate results from multiple trials.
- This report is shared for educational purposes and is not an endorsement of any specific products.