

Objective:

The objective of this project is to demonstrate the response of three modern, high yielding flax varieties to varying application rates of sulphur (S) fertilizer and assess whether S fertility is a potential limiting factor for regional flax yields.

Methodology:

The demonstration was arranged as a randomized complete block design (RCBD) with four replicates at Scott, SK 2016. The demonstration consisted of four S fertilizer rates (0, 15, 30 and 45 kg S/ha) and three varieties (CDC Bethune, CDC Neela, and CDC Glas), resulting in a total of 12 treatments. Prior to seeding, soil samples were collected at three depth increments (0-15 cm, 15-30 cm and 30-60 cm) in order to determine fertilizer rates recommendations. The trial was sown on wheat stubble using an R-tech drill with 10-inch row spacing. All N (urea; 46-0-0) and S (ammonium sulphate; 21-0-0-24) was side-banded while P (monoammonium phosphate) was seed-placed.

Table 1. Flax variety and Sulphur application rate for determining the merit of sulphur in flax

Trt #	Variety	Sulphur Rate kg S/ha
1	CDC Bethune	0
2	CDC Bethune	15
3	CDC Bethune	30
4	CDC Bethune	45
5	CDC Glas	0
6	CDC Glas	15
7	CDC Glas	30
8	CDC Glas	45
9	CDC Neela	0
10	CDC Neela	15
11	CDC Neela	30
12	CDC Neela	45

Key Findings:

- The results of this trial have provided insights to improve flax production by demonstrating the effect of varietal selection on yield production.
- Varietal selection largely influenced overall plant density, maturity, and seed yield production. CDC Glas and CDC Neela consistently resulted in a 4 bu ac⁻¹ yield increase compared to CDC Bethune will having a shorter day to maturity.
- Sulphur applications had negligible effects on plant density, maturity, and seed yield.
- Although sulphur deficiencies are not common on the Canadian prairies, the continuous use of high demanding S crops, such as canola, may result in the depletion of S and thus effect of S on flax yields.
- Consistently high yielding flax crops may have the potential to be a large user of sulphur and therefore may require sulphur fertilization in the future.
- A conservative fertility management approach should be utilized to ensure that S deficiencies do not impact future yields.

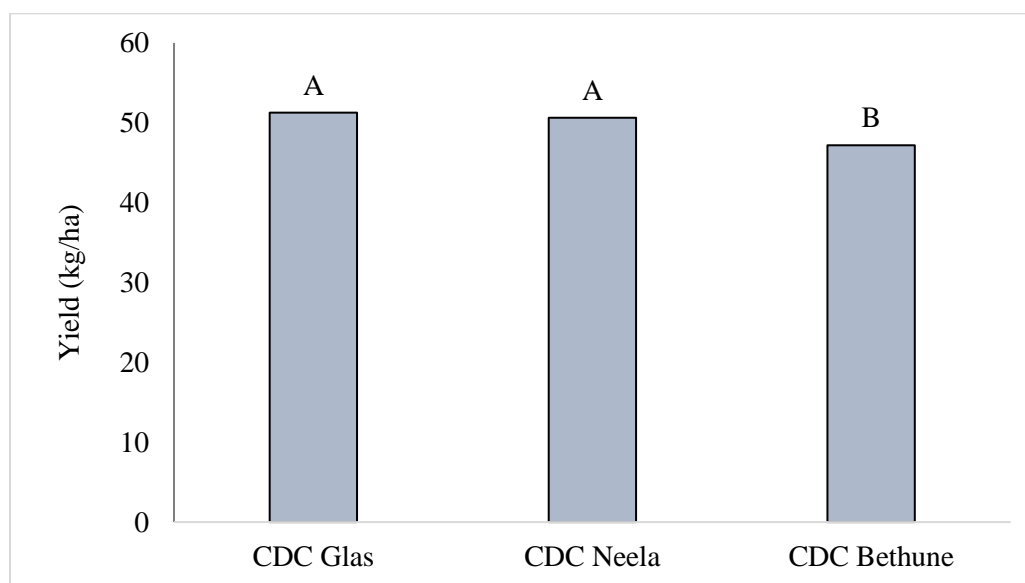


Figure 1. The effect of variety on flax yield (bu/ac) at Scott, SK in 2016 growing season. Different lettering indicates significant difference between treatments, respectively.