

ADOPT

Agricultural Demonstration of Practices and Technologies

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Optimum Nitrogen rate for Camelina

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Objectives:

We undertook this project to demonstrate the production of a new oilseed crop called camelina and how it responds to fertilizer nitrogen.

Rationale:

Camelina is a new oilseed crop that is of interest to local producers as it has the potential to provide increased income and diversify existing crop rotations. The shorter growing season requirement of camelina is attractive to producers in more northerly growing regions where the frost free period is rather short. As camelina is a relatively new crop to Saskatchewan it is important for producers to have access to information regarding the basic agronomics of the crop in their growing region. Nitrogen fertilizer is one of the major costs involved in producing high yielding crops; therefore it is essential for producers to know how this crop responds to this nutrient.

Materials and Methods:

The plots were seeded into summerfallow at a rate of 6lbs/acre on May 5th. Nitrogen rates of 0, 40, 80, 120 and 160 kg/ha were applied to one variety (Blaine Creek) of camelina for a total of 5 treatments. This was replicated 2 times for a total of 10 plots.

All plots had emerged by the 24th of May. Heavy rains shortly after seeding caused significant damage to the seedbed, with portions of the seed being washed away. Early weeds were controlled with a litre of glyphosate applied May 12th with emergence complete on the 24th of May. In crop weed control was maintained by hand. With emergence affected from early heavy rains, the stand was very patchy but healthy. The plots were slow to establish with weeds consuming areas where the camelina was washed away. All plots were in full bloom by July 3rd. To ensure better harvest ability, the plots were sprayed with a liter/ac of glyphosate on Aug 28th. By Sept 15th the crop had dried enough to harvest.



Results:

With poor emergence and abundant weed competition where the crop was thin, combined with excess moisture, crop yield overall was very low. In addition, variable emergence resulted in a very weak and variable response to fertilizer nitrogen. Overall it appeared that the best yield was obtained with an N rate of 40 kg/ha although that difference was not statistically significant, and barely offset the cost of the added fertilizer compared with zero N.

Overall there was a fairly consistent trend for crop height and seed size to increase and as N rate increased.

Table 1. Camelina Yield (lb/ac) with 5 Rates of Fertilizer Nitrogen at the Conservation Learning Centre in 2012.

Nitrogen rate kg/ha				Crop Height inches	1000 seed weight g.
	Rep 1	Rep 2	Mean		
0	463	431	447	21	1.1
40	560	463	511	22	1.0
80	431	287	359	26	1.1
120	415	383	399	28	1.2
160	415	415	415	30	1.3

Conclusions:

Due to poor growing conditions associated with heavy rains throughout the growing season and particularly shortly after seeding it is difficult to conclude much about N responsiveness of this crop. Typically we would expect an oilseed crop like Camelina to be quite responsive to N. The fact that this did not happen likely reflects poor establishment and damage from saturated soil, rather than inability to use N. Weeds are known to hoard nutrients like N, and likely also played a role in poor N responses. One thing that did appear to be clear is that a very small seeded crop like camelina is very sensitive to excess moisture shortly after seeding and during emergence. This likely reflects how easily shallow sown seeds can be washed away, and vulnerable tiny seedlings from small seeds can be buried by moving soil and crop residues.

Supporting Information**Acknowledgements:**

We would like to express our gratitude to the Ministry of Agriculture for the funding support and in-kind support with this project. To recognize the ADOPT program and the Ministry we had signage at the sites.

Field Days:



- Conservation Learning Centre – Annual Field Day – July 17th - 45 people
- Conservation Learning Centre – Combine Clinic – Aug 9th – 55 producers
- Report on the project to be posted on our website
www.conservationlearningcentre.com

Abstract

During the 2-12 growing season we demonstrated the nitrogen responsiveness of camelina, a new very small seeded early maturing oilseed crop for the prairies. With heavy rains after seeding, and excess moisture during the early part of the growing season, the crop established poorly. This resulted in extensive weed competition and ultimately poor overall yields in the 350-550 lb/ac range. Responses to fertilizer N were very poor, likely because of flooding damage as well as weed competition. Results did point out how sensitive this crop is to excess rain during the early part of the growing season. Excess moisture at this time can wash away shallowly placed seeds, and reduce early growth providing opportunities for weeds to invade.

