

Factsheet: Wheat and canola response to liming on slightly acidic soils after application



Objective:

The objective of this experiment was to determine if an application of SuperCal 98G can provide an economic return to producers in the year following application.

Methodology:

This demonstration was conducted at the AAFC Scott Research Farm in spring 2015, 2016, and 2017. Crop type (canola and wheat) was considered as main plot factor and lime rates as sub-plot factor. The lime product was broadcast prior to seeding in 2015 growing season. In 2015 growing season, both canola and wheat were seeded on wheat stubble and in 2016 the crops were swapped (i.e. canola on 2015 wheat stubble and wheat on 2015 canola stubble) to determine the impact of residual lime applied in 2015 growing season on the yield and net return. In 2017 the crops were swapped again (i.e. canola on 2016 wheat stubble and wheat on 2016 canola stubble). Fertilizer was applied at seeding according to soil test recommendations for each crop during the project. Weeds were controlled using a pre-seed burndown and registered in-crop herbicides.

Table 1: Demonstration treatment list for 2015, 2016, and 2017 growing seasons

Treatment	Crop type	Lime rate (lbs/ac)-SuperCal 98G
1	canola	0
2	canola	300
3	canola	400
4	canola	500
5	canola	600
6	canola	700
7	wheat	0
8	wheat	300
9	wheat	400
10	wheat	500
11	wheat	600
12	wheat	700

Key Findings:

- Soil pH change under both canola and wheat crops were not different due to the varying lime rates during the three growing seasons. There were no significant effects of lime rates on the yield of both crops in 2015, 2016 and 2017 growing seasons and as a combined analysis.
- Although, when a comparison was made among years there were differences. The 2015 canola had the lowest yield with an overall average of 47 bu/ac and had an increase of 32% in 2016 with an average of 62 bu/ac, in 2017 yield decreased to 52 bu/ac but still was 11% higher than 2015.
- However, there is a propensity of increased pH to positively affect yield in subsequent years due to the significant positive correlation between yield and soil pH.
- Though liming in no-till systems may not result necessarily in crop yield responses, especially in the year of application the continued use of NH₄-based fertilizers and projected decline in soil pH suggest some form of pH control may be needed in the future assessing fields periodically and reapplying lime if necessary

The full report is available at www.warc.ca. Project was supported by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canada-Saskatchewan Growing Forward 2 bi-lateral agreement

WARC Project # 17-16

Adopt Project #20150380

- From the economic analysis, application of SuperCal 98G may start yielding a positive return in the year following application relative to the negative returns in the year of application. However, there is no apparent initial benefit after lime application
- Though the net economic gain may not be worthwhile in the year of application and even a year following application, farmers should bear in mind that it is a capital investment rather than an input and expect a net return after few years following application

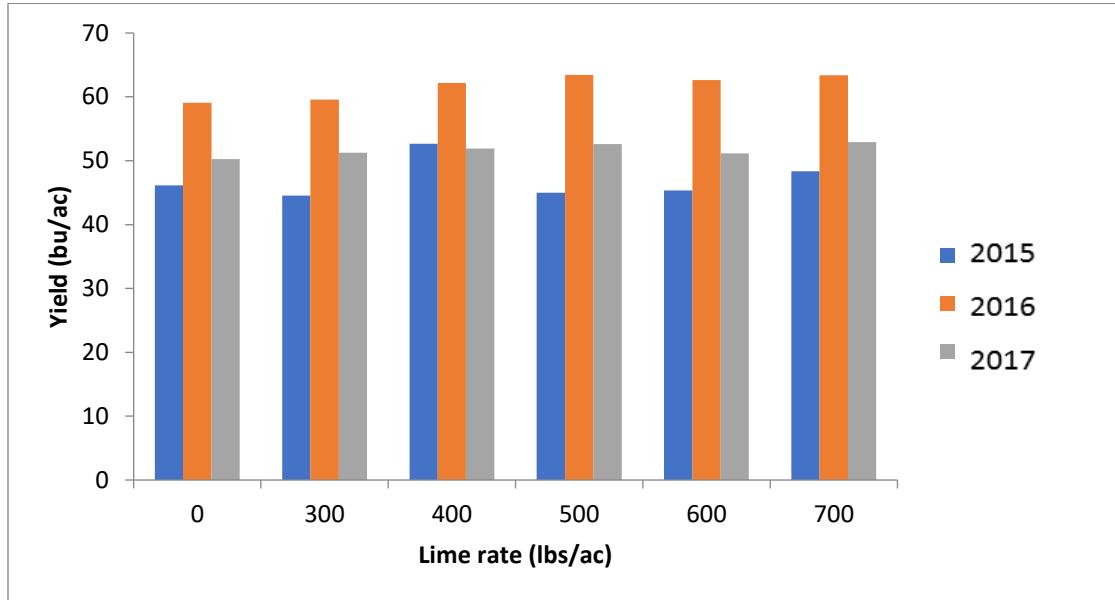


Figure 1. Mean yield of canola under different lime rates in 2015, 2016 and 2017 at Scott, SK.

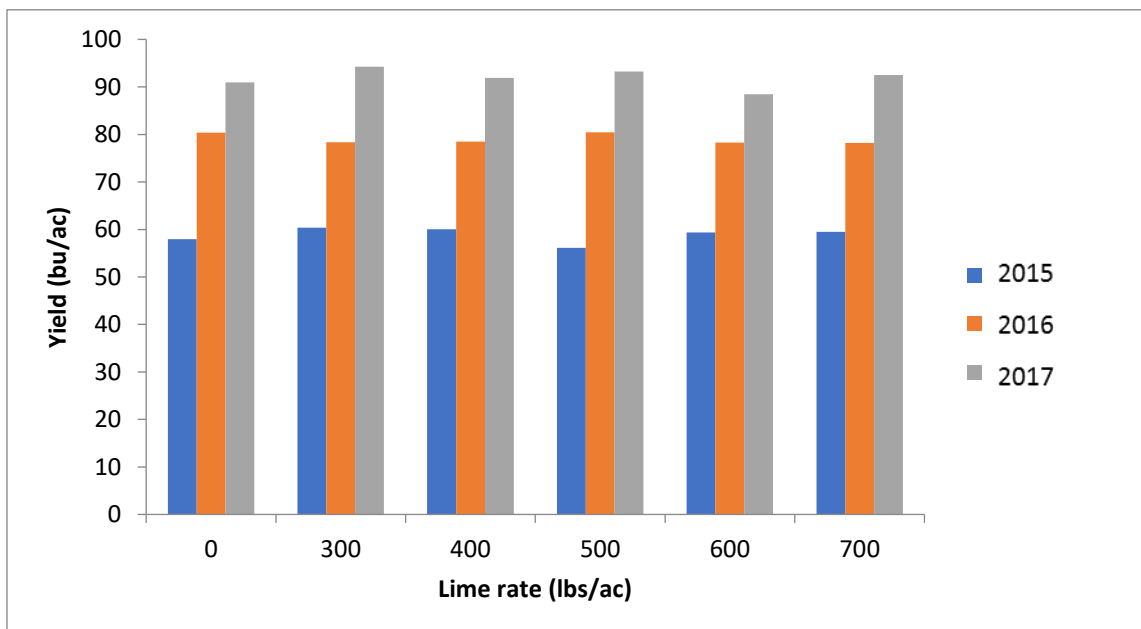


Figure 2. Mean yield of wheat under different lime rates in 2015, 2016 and 2017 at Scott, SK