

North-Eastern Ontario Regional Canola Trials - 2006/2007

(2006 Interim Report)

Purpose:

An initial 2005 study into "canola opportunities for N.E. Ontario" indicated a common factor across four districts. Under dry & hot conditions, plant tissue analysis appears to point out a sulphur deficiency in canola (in many locations) during the blooming period. This was similar to complementary soil tests taken at the same time. Unconfirmed canola yields suggested that yield could be improved if sulphur was added to the fertilizer.

The 2006 trials were designed for 2 purposes. First, confirm that increased canola yields could be attained with the addition of sulphur to fertilizer. Second, as recommended by John Rowsell of NLARS, determine the extent of the Sulphur deficiency across the north-east and prove whether it is (or is not) a regional issue.

Methods:

Four co-operators in the Temiskaming and Nipissing Districts agreed to test the value of added sulphur on canola crops. A test of 10# of actual S was to be added to the test plots in replication across the field.

27 individual canola fields (from 19 farmers across the Districts) would have one acre each evaluated for sulphur content of plant tissue (during the blooming period). This would be matched with soil tests from the same site. A 24" soil profile would be broken into samples representing the top 6", the 6" to 24" depth, and an 18" to 24" subsection.

These 27 sites represented a cross-section of soil types within the region.

Note that in a supporting financial agreement with Agri-Food Laboratories, we were able to measure much more than just the sulphur content of the Tissue and the soil. We also measured N, P, K, Mg, Ca, Zn, Mn, Cu, Fe, & B. Also measured were the September levels of Nitrate Nitrogen and Ammonium Nitrogen in 7 soil profiles (3 levels per profile).

Results:

Out of the four co-operator trials, one was lost due to errors in fertilization. Two were lost to extreme damage by flea beetles in May and June, despite the fact that the seed had been coated in "Helix". The fourth site was a major success.

This operator planted the whole field with a broadcast fertilization program of 80# actual N, plus 10# of S. The exception was three widely spaced strips of over 2 acres each, where no sulphur was placed, but the soil still received the full ration of N. Although the yield varied considerably between the sulphur-free strips, it was always lower than the yield obtained to each side of these strips where the sulphur had been added. The co-operator was very pleased with the results, and calculated that he had earned an

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additional \$25 to \$30 /acre yield to balance against an increased fertilizer and application cost for sulphur of \$4 to \$5 per acre

The weather in 2006 was the direct opposite of 2005. The cool and wet conditions seemed to be ideal for sulphur to be drawn out of the atmosphere and deposited into the fields throughout the Region. This was suggested by the results of the mid-season top-soil tests in MOST (but not all) fields, where sulphur was at least marginally adequate. However, sulphur was deficient in the lower levels of the profile in many of the test locations, much to our surprise as it was expected that these lower regions would be the storage area for sulphur.

In contradiction to the apparent sufficiency of sulphur in the soil, every last one of the tissue tests indicated that sulphur was deficient in the plant during the blooming period, the time when the plant needs sulphur most in order to maximize yields. (Note that even in the "successful" strip test area; sulphur in the plant remained deficient, although the content was considerably higher in these tissue tests than in those where no sulphur was added to the soil.)

Also note that the 7 soil tests obtained in September ALL showed sufficient sulphur accumulation throughout the 24" profile. This compares to the fact that many soils showed deficient sulphur in lower parts of the soil profile in mid summer. (Does this indicate that fall soil tests for sulphur may not show the actual availability of soil Sulphur during the growing season?)

Summary:

Next Steps:

In 2007, the project will continue with many more side by side comparisons of growth and yield under the influence of added sulphur, with extensive evaluations of sulphur in the plant tissue and in the soil profile.

Acknowledgements:

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Project Contacts:

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