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# BORON REQUIREMENTS OF CANOLA

*Soils of the canola-producing regions in the Western Cape often exhibit low boron contents (<5mg kg$^{-1}$ hot water extraction), and since boron is one of the eight essential micronutrients required for normal growth and development of most plants and canola (Brassica napus) has a high demand for it, boron may be a yield-limiting factor in these areas.*

For this reason, a field study was conducted during the period from 2012 to 2014 at Altona and Langgewens in the Swartland and Roobebloem in the Southern Cape. Foliar applications of 0,5, 1,0 and 1,5kg Solubor® (20,5% boron) were applied per hectare, at either 40 or 60, or at 40 and 60 days after planting and compared to control plots where no boron was applied.

Applications at 40 and 60 days after planting coincide in most years with the period from the start of stem elongation, until before the start of flowering.

## Responses observed

In this study, conducted on sandy loam soil, plants did not indicate boron deficiencies during the flowering stage, despite low or even deficient boron levels in the soil. Although increases in plant boron content with boron applications were found on all localities, responses were variable and did not indicate a clear trend with increasing application rates or correlation with the boron content of the soil.

A possible explanation for this tendency may be because even the highest application rate of 1,5kg Solubor®, at both 40 and 60 days after planting, adds up to only 0,62kg B ha$^{-1}$, which is low when compared to rates recommended in countries such as Canada and may also explain why no toxicity symptoms were reported on vegetative plants.

**Foliar boron applications will aid in increasing the grain yield and oil content of canola produced in the Western Cape, on soil with low boron contents.**

Boron (Solubor®) applications resulted in increased grain yields and grain oil content of canola, and optimum application rates varied between 0,5 and 1,5kg Solubor® ha$^{-1}$ for different years at the same locality.

Although rates of 2,0 and 3,0kg Solubor® (applications of 1,0 and 1,5kg at both 40 and 60 days after planting) did not indicate clear signs of toxicity on the canola plants, it also did not consistently result in increased yields, and in some years even resulted in decreases. For this reason, an application rate of 1,0kg ha$^{-1}$ is generally recommended. Foliar applications should be done between 40 and 60 days after planting, but not later than the start of flowering.

## Future research

Although these results clearly indicate that foliar boron applications will aid in increasing the grain yield and oil content of canola produced in the Western Cape on soil with low boron contents, future research may include soil applications at time of planting and higher application rates – as recommended in certain countries abroad.

Results of this study have already been presented at several farmers' days and contributed to the increased production of canola in the Western Cape, due to increased yields obtained by the use of boron. Results will also be submitted to the *South African Journal of Plant and Soil* as a scientific article.

For the full report, contact Prof Agenbag on gaa@sun.ac.za.