

## Boron Nutrition of Canola

Canola is known as one of the plants with the highest sensitivity to boron deficiency among the plant species, and therefore boron fertilization is often included in the fertilization program of canola. Depending on the type used and soil conditions, 1.4 to 2 kg ha<sup>-1</sup> of pure boron is applied to canola from the soil. Foliar boron application in canola is also a very common fertilization method, and the foliar application dose generally is 300 ppm. Since the mobility of boron in the plant is limited in canola, it is recommended to repeat the foliar boron application once.

According to the soil and foliar boron fertilization trials, it was found that a higher yield increase in canola boron fertilization made from soil than foliar boron fertilization occurred. It was determined that boron fertilization most affected the number of capsules (pods) per plant and the number of grains in the capsule, among the yield parameters of the plant, and thus improved the yield. It has been reported that seed oil components such as oleic acid and linoleic acid of canola, which is a very important oil crop, are also affected by boron fertilization and show significant increases.

In conditions where boron nutrition is insufficient, deficiency symptoms occur primarily in the fast-growing parts of the plant, and there is a strong decrease and deterioration in the development and functions of the generative organs. Unlike many other plant species, boron deficiency symptoms can be encountered in canola under field conditions. The most observed deficiency symptom is the decrease in the number of seeds in the capsule due to insufficient fertilization. For this reason, the canola plant is more sensitive to boron deficiency in the generative period than the vegetative period. If boron deficiency symptoms are seen in canola in the early vegetative period, it may mean that there will be a very significant loss of yield in the plant during this harvest period. In case of advanced boron deficiency, red-purple color change in the leaves and cracks in the plant body can also be seen.

Studies show that about 30% of the boron is absorbed at the seedling stage and 60% is absorbed during the stem and flowering period in the canola. It is of great benefit to consider this result when planning boron fertilization of plants. Considering that boron fertilizers with high solubility have a serious risk of washing away in rainy regions, a boron fertilization program should be developed. In this context, it is recommended to prefer slow-release boron fertilizers in the fertilization program.



In order to understand the boron nutritional status of the plants, young leaves should be taken into account in the leaf analyzes to be conducted. A value of 25 mg kg<sup>-1</sup> can be considered as the critical boron deficiency concentration in newly developing young leaves. There may be a risk of boron deficiency in canola plants in conditions where the concentration of boron extractable with hot water is 0.5 mg kg<sup>-1</sup> in the soil. If the boron extractable with hot water is 0.25 mg kg<sup>-1</sup> and below, then it is strongly recommended that there is a severe boron deficiency for canola in the soil, and boron fertilization from the soil should be performed and if necessary, this should be considered together with foliar boron fertilization.



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