



## **CanKat** BORON 10 GRANULAR EC FERTILIZER

## **CanKat** BORON 10 POWDER EC FERTILIZER

CanKat Boron 10 fertilizer contains at least 10% Boron (32% B<sub>2</sub>O<sub>3</sub>) and it is put on for sale in two different forms, Granular and Powder, according to producers' preferences. The CanKat Boron 10 Granular fertilizer's solubility and mobility in soil is produced to be slower than CanKat 10 Powder fertilizer's. Since calcium and sulfur have substantial impact on boron fertilizer's behavior in soil and on the uptake by plants, boron in CanKat Boron 10 is in fully uptakable form, and CaO and SO<sub>3</sub> are used as carriers of boron element.

### Guaranteed Content (w/w), Minimum

Total B<sub>2</sub>O<sub>3</sub> : %32 (%15 B)

Total CaO : %13 (%9 Ca)

Total SO<sub>3</sub> : %37 (%18 S)

### Importance of Boron For Plants

Boron is one of the essential nutrients for the growth and development of plants. Boron deficiency condition causes damages to the formation, structural stability and functional integrity of cell walls. Up to 90% of boron in plants is located on cell walls as a structural element and contributes to maintenance of the stability of biological membranes. With these functions, boron plays decisive roles in plant growth, yield and nutrient uptake. Boron, as a cell wall element is associated with the pectin substance, provides a substantial strength and stability to cell walls. Thanks to these functions, boron plays a protective role against the penetration and infection of pathogens into plant tissues and appears to be a substantial nutrient increasing the resistance of plants to diseases. One of the most particular functions of boron in plants is its role in pollination, fertilization and fruit setting. Therefore, in most cases, vegetative growth is not affected in plants by boron deficiency, while generative growth and fruit formation are affected seriously. Among plant mineral nutrients, boron shows the lowest phloem mobility and the deficiency symptoms occur in young leaves and shoots. For this reason, controlled foliar boron fertilization on leaves has great importance, especially during the periods of flowering and fruit/seed formation to ensure high yields. Boron deficiency problem can even occur in plants despite of sufficiently high amounts of boron in soils or in fully-expanded leaves which is usually common under conditions where the humidity is high and the transpiration is low. Boron requirements of plants varies considerably from species to species depending on the composition of the cell wall and the amount of pectin.

### Boron Deficiency Symptoms in Plants

Since boron is an immobile nutrient in most plants, its deficiency first appears in young leaves. Chlorosis and yellow-red color formation in leaves, small and formless leaves, cracking in leaf stem, body and leaf veins, growth regressions, shortening between internodes and growing ends occur. Since boron deficiency primarily cause damage to growing points, the growth of plants slows down. Leaves, shoots and thin branches form a brittle structure that breaks easily. If the deficiency is severe, the growing points die and the growth stops. Flower and fruit formation is prevented. It causes fruit deformations, fungal infections inside and outside fruit, underdeveloped fruit formation, shell cracking, and glue on the fruit stem. It also causes brown stains inside fruit, anhydrous, thick shells.

**Note:** Consult Cankat Fertilizer specialists for proper and balanced fertilizer use.

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## Boron in Soil and the Amounts to be Given According to the Results of Soil Analysis

Boron, unlike many nutrients in soil is very mobile and can be washed out depending on the density of irrigation and the amount of precipitation. Boron deficiency in plants primarily appears in areas having sandy, with lower organic matter, heavily-washed and calcareous acidic soil. Boron is also very low in acid-reacting soils where washing is high. In addition, boron deficiency in plants is also observed in calcareous and clay soils, mainly due to the fact that boron is strongly retained in clay minerals in alkaline reacting soils with high pH.

Boron analysis needs be carried out in soil in order to understand whether boron fertilization of plants is required. Hot water extraction method is the most commonly used method in the determination of boron in soil and the fertilization with "CanKat Boron" should be made according to boron content in soil. It is recommended to use "CanKat Boron 15" fertilizer if the boron content of soils is too low or low, and "CanKat Boron 10" if the boron content of soil is low or medium. Besides, it is recommended to apply "CanKat Boron 15" if soil is acid-reacting and calcified, has low organic matter or is sandy. Granular or powder forms of CanKat boron fertilizers can be preferred according to the applicability.

	Hot water extraction mg kg <sup>-1</sup>	Leguminous plants, kg CanKat Boron 10/da		Plants other than leguminous plants, kg CanKat Boron 10/da	
		pH<6.8	pH>6.8	pH<6.8	pH>6.8
<b>Too Low</b>	<0,40	1,7	2,2	1,2	1,7
<b>Low</b>	0,41-0,60	1,5	1,9	1,1	1,5
	0,61-0,80	1,3	1,7	1,0	1,1
<b>Medium</b>	0,81-1,00	1,2	1,5	0,8	0,9
	1,01-1,20	1,1	1,3	0,6	0,8
	1,21-1,40	1,0	1,1	0,5	0,7
<b>High</b>	1,41-1,60	0,8	0,9	0,0	0,6
	1,61-1,80	0,5	0,7	0,0	0,5
	1,81-2,00	0,3	0,5	0,0	0,0
<b>Too High</b>	>2,01	0,0	0,0	0,0	0,0

Plants with "High" boron needs	Plants with "Medium" boron needs	Plants with "Low" boron needs
Sugar beet	Walnut	Barley
Sunflower	Peach	Bean, Soy Bean
Colza	Carrot	Citrus fruits
Apple	Cotton	Corn
Alfalfa	Tobacco	Strawberry
Crucifers	Tomato	White potato
Celery	Sweet potato	Forage plants

The amount of plants' uptake from soil varies from species to species. Plants are divided into three groups as "Low", "Medium" and "High" according to the need for boron. The amount of CanKat Boron 10 fertilizer required to be given according to boron content in soil, which the table above demonstrates, can be doubled for the plants with higher boron need.

After applying CanKat Boron fertilizers to soil; environmental factors like irrigation and precipitations and certain soil properties like pH and clay and lime content levels of soil will prevent the efficiency of fertilizer. In case of continued boron deficiency or determination of low boron content in leaves after leaf analysis in plants, it is recommend to apply fully water soluble CanKat Ca-Soluboron 15, CanKat Ca-Soluboron 10 or CanKat Soluboron 20 fertilizers to plants.

### Manufacturer



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## Boron Deficiency Symptoms in Certain Plants



Corn



Sunflower



Strawberry



Tomato