



Liquibor®

11% B (w/w)

Derived from boric acid $C_2H_7NO \cdot xBH_3O_3$

Reaction products of monoethanolamine and boric acid (1:3)

CAS Number: 10377-81-8

Boron, an essential plant nutrient

Boron is one of seven micronutrients essential to all plant growth. Its role was recognized first in the 1920s and since that time, boron deficiency has been recognized in a wide range of crops.

Correcting boron deficiency

Boron deficiency can be remedied by the correct application of a borate containing material in solid or liquid fertilizers, to the seedbed in annual crops or under the foliar canopy of perennial crops.

Detecting boron deficiency

Boron deficiency shows in clearly defined ways in certain crops. Generally, by the time visible symptoms are seen, yields will already have been adversely affected. The best way to establish need is either through soil testing or through tissue analysis. In this way, boron supplementation can form part of a 'balanced nutrition' approach to crop fertilization.

Predicting boron deficiency

Certain crops worldwide are known to be more susceptible to boron deficiency than others. These are shown in the tables.

There are several factors which need to be taken into account when boron deficiency may be suspected:

- High rainfall
- Recent liming (pH over 6.6)
- Previous cropping
- Boron removal by previous crops
- No boron nutrition
- Sandy soils
- High organic matter

Susceptible to B deficiency		
Alfalfa (Lucerne)	Coffee	Peanuts
Apple	Cotton	Pine
Broccoli	Eucalyptus	Red beet
Carnation	Grape	Rutabaga
Cauliflower	Mangold	Sugar beet
Carrot	Oil palm	Sunflower
Celery	Oilseed rape	Swede
Chrysanthemum	Olive	Turnip

Moderately susceptible to B deficiency		
Banana	Cocoa	Pear
Brussels sprout	Coconut	Poppy
Cabbage	Flax linseed	Potato
Chinese cabbage	Hop	Tea
Citrus	Maize Corn	Tobacco
Clover	Papaya	Tomato

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Advantages of *Liquibor*

Natural product

Liquibor is a liquid boron fertilizer derived from boric acid.

Ease of handling

Liquibor delivers the convenience of liquid boron fertilizer straight to your farm with no measuring or mixing required.

Product quality

When it comes to boron supplementation, quality matters. Like all U.S. Borax refined boron products, *Liquibor* is made from only high-quality borates, with no intentionally added impurities, fillers, coatings, or added ingredients.

Dispersion

Liquibor disperses easily in water.

pH neutral

The product's pH is about neutral (between 7 and 8).

Other technical information

- Solubility: *Liquibor* is a true solution
- Density: The product density is 1.35 kg/L

Main uses

Liquibor can be used in the following agriculture applications:

- Foliar application: *Liquibor* is ideal for foliar application of boron. Already in liquid form, *Liquibor* provides the convenience for direct spraying on crops. In addition, it can be added to a tank mix with other fertilizers or crop protection chemicals.
- Fertigation: *Liquibor* can be applied through irrigation systems with other liquids or water-soluble fertilizers.

Additional reading

Boron Deficiency—Its Prevention and Cure, by V.M. Shorrocks (available from U.S. Borax on request)

Mineral Nutrition of Higher Plants, by Horst Marschner, Academic Press.

Boron and its Role in Crop Production, by Umesh C. Gupta. CRC Press



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