

Feasibility of B Fertilization on Canola and Alfalfa in Canadian Prairies

S. S. Malhi¹, R. Karamanos² and S. A. Brandt¹

¹Northeast Agriculture Research Foundation (NARF), Melfort, Saskatchewan; and

²Viterra, Calgary, Alberta

What is Boron?

- Boron (B) is an element essential for plant growth.
- While plant requirements for B are critical, only small amounts are needed to provide adequate growth.
- It is therefore referred to as a micronutrient.
- This makes it different from nitrogen, a macronutrient, which is required in relatively large amounts.

Why is Boron Important?

- Plants require very small quantities of B for normal growth; excess B can be toxic.
- Plants need a steady supply of B, particularly during rapid growth.
- Canola and alfalfa have heavy B requirements compared to cereals.

Where Boron is Found?

- Organic matter is the main source of B in soils.
- Boron is mobile in soil so it can be lost to leaching, especially in sandy soils.
- Boron is highly immobile in plants – it cannot move from older tissue to support newer growth.

How Plants Respond to Boron Deficiency?

Deficiency symptoms include:

- Newer leaves are cupped and/or yellowish or reddish.
- Paler than normal flowers.
- Pod abortion or poor pod development Low Boron vs. Low Sulfur.
- Boron deficiency symptoms are similar to sulfur (S) deficiency symptoms.
- As a result, S deficiency is sometimes misdiagnosed as a boron deficiency.
- One key difference is that terminal buds die under severe and persistent B deficiency and not under S deficiency.

What can be Done to Correct Boron Deficiency?

- Despite low B levels in soil tests, canola response to B fertilizers rarely occurs in the Canadian Prairie region.
- Similarly, alfalfa response to B fertilizer occurs very rarely if at all in the Canadian Prairie region.
- As a result, it is very difficult to predict when an economic response to B fertilizer will occur.
- Where B deficiency is suspected, growers should ensure that visual symptoms are consistent with B deficiency.
- Apply B fertilizer in test strips on suspected B deficient fields to help determine when blanket applications could be cost effective.
- Because B can also be toxic, resulting in yield loss, follow application guidelines very carefully.

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For additional information contact: S. S. Malhi at smalhi@neag.ca or ssmalhica@yahoo.ca
and Stewart Brandt at sbrandt@neag.ca