Feasibility of B Fertilization on Canola and Alfalfa in Canadian Prairies

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What is Boron?

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

Why is Boron Important?

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

Where Boron is Found?

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

How Plants Respond to Boron Deficiency?

Deficiency symptoms include:

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

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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