

Effect of boron on seed yield and yield components of red clover (*Trifolium pratense* L.) cultivars grown under dense planting conditions

Vladeta STEVOVIĆ¹, Dalibor TOMIĆ¹, Dragan ĐUROVIĆ¹, Nikola BOKAN¹,
Rade STANISAVLJEVIĆ²

¹University in Kragujevac, Faculty of Agronomy, Cara Dušana 34, 32000 Čačak, Srbija
(e-mail: dalibor@tfc.kg.ac.rs)

²Institute of Forage Crops Kruševac, 37251 Globoder, Kruševac, Srbija

Abstract

Field experiments with red clover cultivars: 'K-39', 'K-17', 'Una' and 'Viola' were established on soil having a pH_{H2O} of 4.8, in order to analyze the impact of foliar boron application on seed yield and yield components. Significant differences between cultivars, regardless of foliar boron application, were determined for: number of inflorescences m⁻², number of flowers per inflorescence, number of seeds per inflorescence, thousand seed weight and seed yield. Foliar fertilization with boron during intensive shoot growth had a positive effect on number of flowers per inflorescence, number of seeds per inflorescence and seed yield.

Key words: red clover, boron, seed yield, yield components

Introduction

High variability, adaptability and genetic plasticity of red clover (*Trifolium pratense* L.) are the result of the extremely xenogamous character of fertilization. This has contributed to the development, through natural selection, of a large number of local ecotypes that show superiority under particular growing conditions (Helgadottir, 1996). As seed crops of red clover are frequently established on acid soils where the availability of certain nutrients is reduced, particular attention should be given to adequate mineral nutrition (Dear and Lipsett, 1987). The objective of this study was to evaluate the effect of foliar treatment with boron, a micronutrient whose availability in acid soils is reduced, on seed yield and yield components of selected red clover genotypes.

Materials and methods

The experiment was established in 2009 in Čačak (43°54'39.06" N, 20°19'10.21" E, 246m a.s.l.), on alluvial soil, pH_{H2O} 4.8, poor in nutrients and low in organic matter. Along with tillage, 300 kg ha⁻¹ N₁₅P₁₅K₁₅ was incorporated into the soil. A two factor experiment involving four red clover cultivars and two treatments with boron (B) (control, foliar B) was conducted as a randomized block design with four replications and a plot size of 5m² (5x1m). Red clover cvs. 'K-17', 'K-39' (Institute of Forage Crops Kruševac), 'Una' (Institute of Field and Vegetable Crops Novi Sad) and 'Viola' (Poland cultivar) were planted at 20 cm row spacing, at a seed rate of 18 kg seed ha⁻¹. The crop was foliarly treated with B (Bor-feed, Haifa, Izrael, at a concentration of 0.1% and water rate of 1000 L ha⁻¹), only during the second growth of the second year, at two applications, the first being during intensive growth, the second before the onset of flowering. Mechanical weed control was employed on two occasions. The crop was grown without irrigation.

Mean air temperatures during the 2009 growing season (April through September) were 1.33°C above the ten-year average, whereas total rainfall was 351 mm below average (Table 1). Mean monthly temperatures and

