

Effect of Phosphorus and Potassium Foliar Treatment on Seed Yield and Yield Components of Red Clover (*Trifolium pratense* L.) Cultivars

Dalibor Tomić¹, Vladeta Stevović¹, Dragan Đurović¹, Đorđe Lazarević¹ and Rade Stanisavljević²

1. Faculty of Agronomy, University of Kragujevac, Cara Dušana 34, Čačak 32000, Serbia

2. Institute for Plant Protection and Environment, Teodora Drajzera 9, Beograd 11000, Serbia

Abstract: Proper mineral nutrition of red clover especially on the acid soils is a prerequisite for the realization of maximum potential for seed yield. The field experiment with four cultivars of red clover were established on soil having a pH (in H₂O) of 4.8, in order to in conditions of dense planting (20 cm inter row) analyzes the effect of foliar application of phosphorus and potassium (PK) on yield and yield components (number of stems/m², number of inflorescences/m², number of inflorescences/stem, number of flowers/inflorescence, number of seeds/inflorescence and one thousand grain weight). Regardless of foliar treatment with PK, varieties differed in the number of inflorescences/m², number of flowers/inflorescence, number of seeds/inflorescence and seed yield. Foliar application of PK in the phase of intensive growth of red clover had a positive impact on number of stem/m², number of inflorescences/m² and seed yield in all varieties, as well as on the number of flowers/inflorescence, number of seeds/inflorescence in cultivar *Viola*.

Key words: Red clover, phosphorus, potassium, seed yield, yield components.

1. Introduction

Given the economic and agro-technical importance of red clover (*Trifolium pratense* L.), in the combined feed-seed production, it is necessary to implement appropriate cultivation practices, in order to realize the potential for yield of forage and seed to the maximum. Except for the genetic basis of the variety and ecological conditions of the area, red clover seed yield is also determined by the moment of removing the first cut, presence of the insect pollinators as well as the interaction of genotype-environment [1]. Proper mineral nutrition can have a positive effect on seed yield of perennial legumes, especially on acid soils [2]. According to Ref. [3], acid soils are characterized by a high prevalence of easily accessible forms of aluminum, iron and manganese, and a reduced content of available phosphorus, calcium and molybdenum.

On acid soils, Al and H inhibit the growth of the root system, reduce its capacity to adopt mineral nutrients and thereby reduce the resistance of plants to drought [4]. According to Ref. [5], P and K are two very important elements in the process of fixation of N in red clover. Phosphorus is a constituent element of the most important macromolecular and physiologically active compounds in plants, and plays an important role in organogenesis especially in the development of generative organs [6]. Low mobility of phosphorus in the plant [7] and its high content in generative organs indicate the importance of providing this element to the plant. Potassium is not the structural element in plant tissues, but it is very important for normal life processes, plant resistance to drought, pests and diseases [8].

Given the importance of phosphorus and potassium (PK) and their lower availability in acid soils, the aim of the study was to examine the effect of foliar

Corresponding author: Dalibor Tomić, Ph.D., research field: field and forage crops. E-mail: dalibort@kg.ac.rs.

