

Seed yield and yield components of red clover (*Trifolium pratense* L.) genotypes

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Abstract

The objective of this study was to evaluate seed yield and yield components (stem number per plant, inflorescence number per stem, inflorescence number per plant, flower number per inflorescence, seed number per inflorescence and seed fertility) in individual plants of ten genotypes of red clover grown at low plant density (70 x 40 cm) in order to single out genotypes that have a higher seed yield potential. Significant differences among genotypes were determined for flower number per inflorescence, seed number per inflorescence, flower fertility and seed yield. The results obtained suggest that certain genotypes may be used for further selection work.

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

Introduction

Seed yield of red clover (*Trifolium pratense* L.) is mostly dependent upon the genetic background of cultivar, environmental conditions, first cut date, presence of insect pollinators, and genotype/environment interaction (Steiner et al., 1995). The high variability and genetic plasticity of the species are the result of the extremely xenogamous character of fertilisation and entomophilous pollination (Taylor and Smith, 1979). The high variability and adaptability to diverse environmental conditions have contributed to the development, through natural selection, of a large number of local ecotypes that show superiority under particular growing conditions (Helgadottir, 1996).

Given the high genetic potential for biomass yield in the species herewith studied, selection work should involve monitoring of major traits of seed yield and yield components. Improvement of the seed yield production potential is rarely seen as an important criterion during the early stages of red clover selection. Breeding for increased seed yield potential has also been further hampered by the absence of clearly defined interrelation between seed yield and yield components. However, the significant genotype-specific correlation between harvest index and seed yield suggests the possibility of an increase in seed yield without any adverse effects on forage yield (Elgersma and Van Wijk, 1997).

The objective of this study was to analyse seed yield and yield components in red clover genotypes in order to select genotypes that have higher seed yield potential. The genotypes would serve as a good basis for further hybridisation and development of cultivars that would exhibit higher seed yield, apart from higher forage yield potential.

Materials and methods

This experiment was set up on 4 June 2009 as an on-field trial at the Veterinary Extension Service in Čačak (43°54'39.06" N, 20°19'10.21" E, 246 m a.s.l.) on alluvial soil acid in reaction ($\text{pH}_{\text{H}_2\text{O}}$ 4.8), poor in nutrients and low in organic matter. Primary tillage was coupled with incorporation of 300 kg ha⁻¹ N₁₅P₁₅K₁₅ into the soil. The factorial trial was established as a completely randomised block design in five replications with 20 plants per 4x1.4 m plot. Plants were grown under low density at a spacing of 70x40 cm. A total of ten red clover genotypes, including nine diploid genotypes (G1, G2, G4, G8, G9 and G10 selected from cvs. Viola, Una, Kolubara, Avala, K-17 and K-39, respectively, and G3, G6 and G7 selected from local populations found

