

## EFFECT OF RAINFALL AMOUNTS ON FORAGE YIELD AND WATER CONTENT IN RED CLOVER (*TRIFOLIUM PRATENSE* L.) GROWN FOR COMBINED FORAGE AND SEED PRODUCTION

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**Abstract:** The impact of rainfall amounts on forage yield, hay yield and water content in the green forage of red clover (*Trifolium pratense* L.) was examined in field trials. The crop was grown for combined forage and seed production. The experiment was established on alluvium soil in a randomized block design. Four red clover cultivars (K-39, K-17, Una, and Viola) were analyzed for first cut in their second year. Significant differences between cultivars were observed for green forage yield, hay yield, and water content in the green forage, regardless of rainfall amounts in the production year. A significantly higher green forage yield in K-39 and K-17 and a larger water proportion in the green forage of all varieties were found in the first year as compared to the second year. Hay yield was not significantly different over years. Green forage yield was positively correlated with both hay yield and the water content of green forage.

**Keywords:** red clover, forage yield, water content.

### Introduction

In order to reduce energy consumption and environmental pollution, intensify sustainable agricultural systems and conserve biodiversity, Rochon et al. (2003) proposed increases in forage legume acreage. Being nitrogen fixers, these plants are minimally treated with nitrogen fertilizers, whose residues easily leach from the soil, causing contamination of ground waters, local streams and ponds (Janzen and McGinn, 1991). One such plant is red clover (*Trifolium pratense* L.) which due to its high stable yields, varied use, relatively modest growing requirements and good forage quality plays an important part in the production of protein-rich livestock feed. Red clover has a high ability to regenerate; therefore, depending on growing conditions, it can produce up to even three cuttings per year. Under natural water supply conditions, with adequate cultural practices used, green forage yields of up to 147.7 t ha<sup>-1</sup> can be achieved during the utilization period (mostly three years) (Vasiljevic et al., 2010). Green forage yields of red clover (containing up to 85% of green water) vary widely depending on weather conditions, most notably the amount and distribution of rainfall during the year. In the Republic of Serbia, the combined production of red clover for both forage and seed has proved to be the most cost-effective production method (Lugić et al., 1996), with the first and second cuttings in the second year stand being used to produce forage and seed, respectively (Duronić, 2010). This manner of production involves harvesting the first-cut material at the stage of budding or at the beginning of flowering. The objective of this study was to determine green forage yield, dry matter yield, water content of green forage as well as their interdependence, in the combined forage-and-seed production of red clover cultivars.





