

Effect of row spacing on seed and forage yield in sainfoin (*Onobrychis viciifolia* Scop.) cultivars

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Abstract: A field experiment including 3 sainfoin cultivars (Makedonka, EG Norm, and the Sokobanja population) was set up in a seed production trial with the aim of determining adequate row spacing for seed and forage yield. The cultivars were sown at 3 different row spacings (20 cm, 50 cm, and 80 cm) and at a within-row spacing of 1 cm. Seed yield was determined over a 3-year period, whereas forage yield and quality were evaluated from the 2nd cut in the 2nd and 3rd years. Crop thinning through the years, distinct competitive ability of sainfoin, and a large impact of weather conditions induced significant differences in seed yield among years. All cultivars gave considerably higher yields at wider row spacings in the 2nd and 3rd years of the experiment. The cultivars responded differently to variable row spacings across years, which was due to differences in seed yield performance under different growing spaces and available moisture conditions. Owing to the low profitability of seed yield, in respect of both seed and forage yield, the use of wider row spacings (about 50 cm) for vigorous cultivars and narrower row spacing (below 50 cm) for less vigorous cultivars for seed yield may become feasible.

Key words: Forage yield and quality, row spacing, sainfoin, seed yield

Introduction

Sainfoin (*Onobrychis viciifolia* Scop.) is a perennial forage legume grown in warm-temperate and dryland areas of Europe, Asia, and western North America (Frame 2005). It is tolerant of high levels of active lime in the soil (DeFalco et al. 2000) as well as of lower phosphorus levels. Although it is characterised by low nitrogen fixation as compared to major perennial legumes, its well-developed root system ensures its good tolerance to soil moisture deficiency (Cash and Ditterline 1996). Sainfoin can also be used for soil organic matter improvement in

vineyards and orchards (Porqueddu et al. 2000), as well as for control of wind and water erosion (Xu et al. 2006).

The recent decrease in the acreage of sainfoin and other legumes in Europe has been generally induced by the expansion of forage production in grasslands resulting from the use of more inexpensive mineral fertilisers (Rochon et al. 2004). Borreani et al. (2003) imply that this is due to both structural changes in agricultural ecosystems and a gradual decline in livestock population in Mediterranean upland regions.

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