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Genetic variation of alfalfa seed yield and its components in the year of establishment

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Abstract: In Serbia, alfalfa is grown on about 140,000 ha, out of which 3-7% are intended for seed production. Climatic factors (amount and distribution of precipitation) are the main determinant of alfalfa seed yield. Average alfalfa seed yield in Serbia is about 250 kg ha^{-1}, and seed production is characterized with huge variation (15-800 kg ha^{-1}). The most challenging is the seed production in the first year of plant life (establishment year). Even if breeding for seed yield is not highlighted, some genetic variation was evidenced. New alfalfa varieties are selected for high forage production, quality of forage and persistence to be successful on the market. However, an outstanding seed-yield potential is needed. In order to examine genetic variation for alfalfa seed yield and its components in the sowing year, a trial with 20 accessions was established at the experimental field of IFVCNS. These accessions, with dormancy ratings 3-6, are representative of the European commercial varieties: 11 from France, 4 from Serbia, 3 from Czech Republic, one from Sweden and one from Denmark. The experiment was established on 21 May 2018. The elementary plot size was 6 m^2. Seed yield (t ha^{-1}), and its components were recorded on each plot. Year of 2018 was not favorable for alfalfa seed production in Serbia. The results clearly demonstrate differences among varieties for total seed yield and its components in the year of establishment. Seed yields varied from 7.6 kg ha^{-1} for the variety Luzelle up to 65 kg ha^{-1} for the variety Etincelle. Higher seed yields were obtained with less dormant varieties (5-6), while lower yields were recorded with more dormant varieties (3-4). Overall analyses showed that even under unfavorable conditions, genetic variation could be important for alfalfa seed production in the year of establishment.

Keywords: alfalfa, seed yield components, *Medicago*, variety

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