Genetic Variability in Different Lucerne (*Medicago Sativa*) Genotypes

V. Mikić
Institute Serbia, Centre for Forage Crops, Serbia and Montenegro

J. Radović
Institute Serbia, Centre for Forage Crops, Serbia and Montenegro

Z. Lugić
Institute Serbia, Centre for Forage Crops, Serbia and Montenegro

D. Lazarević
Institute Serbia, Centre for Forage Crops, Serbia and Montenegro

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V. Mikić, J. Radović, Z. Lugić and D. Lazarević
Institute Serbia,Centre for Forage Crops, Trg Rasinskih partizana 50, 37000 Kruševac, Serbia and Montenegro, Email: vajap@hotmail.com

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Introduction One of the basic goals of modern lucerne breeding programmes is creation of new cultivars with a great potential for high quality and stable yields of both forage and hay (Riday & Brummer, 2002). Such cultivars meet increased needs of animal husbandry and must contribute to diverse farming systems (Lukić, 2000). Our trial was aimed at determining genetic variability of yield components in 7 lucerne genotypes, as well as at evaluation of their breeding potential as gene donors to new lucerne cultivars.

Materials and methods A trial was conducted between 2001 and 2003 at the Forage Crops Centre Experiment Field in Mačkovac. It included 7 lucerne genotypes selected from hybrid populations. Since morphological traits often represent yield components, plant height (cm), number of tillers per plant, number of lateral branches per plant, leaf length (mm), leaf width (mm) and plant mass (g) were monitored.

Results The greatest plant height was found in genotype 7 and the smallest in genotype 6 (Table 1), which was in accordance with Urbano & Davilla (2003). There was a positive correlation between number of tillers per plant and plant mass and a negative correlation between these two traits and number of lateral branches. Genotype 1 had the largest number of tillers per plant and the largest plant mass, but the smallest number of lateral branches per plant as well. On the other hand, genotype 7 had the smallest number of tillers per plant and the smallest plant mass, but also the largest number of lateral branches per plant. The greatest leaf length was measured in the genotype 6 and the smallest in genotype 4. Genotype 5 had the widest leaves and genotype 1 the narrowest.

Table 1 Genetic variability of seven lucerne genotypes during 2002-2004

Genotype	Plant height (cm)	No. of tillers per plant	No. of lateral branches per plant	Leaf length (mm)	Leaf width (mm)	Plant mass (g)
1	68.1	57.7	11.3	24.3	7.8	294.60
2	63.3	45.5	11.7	23.3	8.6	214.41
3	71.0	49.4	11.7	24.9	9.0	276.05
4	69.0	53.7	12.3	22.8	7.9	232.69
5	64.6	51.3	12.0	25.0	9.8	257.08
6	61.5	41.3	12.0	26.1	8.9	199.97
7	72.8	35.1	13.6	21.7	9.5	194.21
LSD 0.05	3.2	3.8	0.7	1.6	1.0	32.30
0.01	4.2	5.0	0.9	2.1	1.4	42.66

Conclusions Although the trial will be continued in the years to come, enriched by introducing new genotypes and monitoring more traits, it is obvious that a certain genetic variability of 7 examined lucerne genotypes can be successfully used in future breeding work. This should lead to the creation of new cultivars with an optimal relationship between yield components, resulting in high adaptability to the prevailing environmental conditions and high yield and quality of forage and hay.

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