

Genetic variability of yield and its components in winter forage pea cultivars

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Introduction The genus *Pisum* (peas) is rich in variability of morphological traits. It provides an excellent basis for breeding, but is also one of the reasons for the still undefined status of *Pisum* taxons (Mihailović *et al.*, 2004a). The majority of forage pea cultivars used belongs to subspecies *sativum* and variety *arvense* (Maxted & Ambrose, 2000). The objective of our study was to determine genetic variability of yield and its components in six winter forage pea cultivars of different origin and to evaluate their breeding potential.

Materials and methods A trial was conducted between 2002 and 2004 at the Experimental Field Institute in Rimski Šančevi. It included six winter forage pea cultivars, i.e. accessions from the Annual Forage Legumes Genetic Collection (AFLGC) of the Forage Crops Department. All of them were sown in early October, at a density of 120 viable seeds/m², and were cut in May, when the first pods began to appear (Đukić, 2002). A study on genetic variability of these cultivars was carried out, on the basis of yield of fresh weight and hay and its main components.

Results The greatest plant height was found in the Serbian NS Pionir, while the smallest was in the Bulgarian Mir (Table 1). Thanks to the smallest number of plants at the time of cutting, caused by low winter hardiness, the Ukrainian Odesskiy 58 had the greatest number of stems per plant and the largest plant mass, as well as the lowest yield of both fresh weight and hay. Novi Sad cultivars NS Pionir and NS Dunav had the greatest number of plants per m² before cutting and of internodes and the smallest number of stems per plant. The smallest values of number of internodes and plant mass were found in Mir. NS Pionir and Bulgarian Pleven 10 had the highest yield of fresh weight and of hay.

Table 1 Agronomic characteristics of winter forage pea cultivars during 2002-2004

Accession number in AFLGC	Accession name	No. of plants per m ² before cutting	Plant height (cm)	No. of stems per plant	No. of inter-nodes	Plant mass (g/plant)	Yield of fresh weight (t/ha)	Yield of hay (t/ha)
PIS 001	NS Pionir	110	204	1.0	24.5	65.72	42.7	8.5
PIS 005	Odesskiy 58	30	160	2.6	21.8	116.51	16.3	3.5
PIS 015	Pleven 10	103	134	1.1	18.9	56.47	42.0	8.3
PIS 016	Champagne	92	137	1.6	18.9	58.23	38.7	7.8
PIS 018	Mir	83	129	1.3	14.9	39.36	31.7	7.3
PIS 020	NS Dunav	105	178	1.0	23.7	59.52	37.7	7.4
LSD	0.05	24	27	1.8	3.8	11.20	3.1	1.1
	0.01	29	39	2.6	4.6	14.67	6.2	2.4

Conclusions There were significant differences in most yield components between six winter forage pea cultivars, as well as between yields of fresh weight and hay. The winter hardy domestic cultivars, such as NS Pionir, and the introduced ones with good relationship between yield components and small yield variation, like the French Champagne or the Bulgarian Pleven 10, can be considered good gene donors for new winter forage pea cultivars.

References

- Đukić, D (2002). Biljke za proizvodnju stočne hrane. Faculty of Agriculture, Novi Sad, 283-294.
- Maxted, N. & M. Ambrose (2000). Peas (*Pisum* L.). In: N. Maxted N & S. Bennet (eds.) Plant genetic resources of legumes in the Mediterranean. Kluwer.
- Mihailović, V., A. Mikić & B. Čupina (2004a). Botanical and agronomic classification of fodder pea (*Pisum sativum* L.). *Acta Agriculturae Serbica*, IX:17, 61-65.
- Mihailović, V., P. Erić & A. Mikić (2004b). Growing pea and vetches for forage in Serbia and Montenegro. *Grassland Science in Europe*, 9, 457-459.