

Phenotypical Research Concerning Climbing Bean Pods Belonging to the Germplasm Collection from Vegetable Research – Development Station Buzău

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Abstract. At the Vegetable Research - Development Station (V.R.D.S.) Buzău was made a climbing bean collection (*Phaseolus vulgaris* var. *communis*), containing over 50 local populations deriving from S - E Romania. The collection realization has as a main purpose the conservation and valorisation of the germplasm resources from *Phaseolus vulgaris* species. The results of the experiment refer to the culture compartment, in open field, of 23 local populations. The researches dignified a great variability in what it concerns pods characteristics (weight, colour, length, width, thickness, stringiness, curvature degree, distal part etc.). The results obtained confirm the value of the biological material collected as germplasm sources for breeding and justifies the conservation works of the biodiversity for this species.

Keywords: biodiversity, breeding, germplasm collection, local population, *Phaseolus vulgaris* var. *communis*

Introduction. For many vegetables the climatic changes determined production losses regarding the yields obtained per surface unit. Because of this appeared the need to create new vegetable varieties and hybrids adapted to the nowadays vegetation conditions. Enriching the germplasm conditions by means of collecting local populations, represents the first step in order to realize a breeding program (Munteanu and Fălticeanu, 2008).

Aims and objectives. Starting 2010, at the Vegetable Research - Development Station (V.R.D.S.) Buzău was develop a climbing bean collection (*Phaseolus vulgaris* var. *communis*), containing over 50 local populations deriving from S - E Romania. The collection has as a main purpose the conservation and valorisation of the germplasm resources from *Phaseolus vulgaris* species. The researches objective was identifying the phenotypical stable proveniences with valuable characteristics which correspond to the breeding objectives proposed (productivity, earliness, acclimatization etc.).

Materials and methods. During 2010 - 2011, the bean local populations were sowed in open field conditions and cultivated according to the culture technology described in the specialty literature (Ruști and Munteanu, 2008). Twenty-three local populations presented phenotypical stability and characteristics that presents a great interest to the breeding works. The phenotypical determinations and the biometrical measurements were made according to the *Guideline for DUS* (UPOV, 2005) and *Color Scale for identification characters of common bean* (Genchev and Kiryakov, 2005). The length of the pods beak was not included in the pods length, being separately determined.

Results and Discussion. The pods mean length was 13.86 cm. The maximum value (20.6 cm) was registered at V₁₉, and the minimum (8.3 cm) at V₂₀ (Tab. 1). The proportion thickness/width shows that most of the local populations taken into study had broad pods, except V₇ (0.88), V₉ (0.95), V₁₀ (0.86) and V₂₃ (1.0). The number of seeds/pod varied between 3.33 at V₆ and 8.33 at V₁₀, the experiment average being 6.08. The maximum length

of beak was registered at V₁₃ (1.77 cm), and the minimum one was registered at V₇ (0.4 cm). Pods weight varied between 17.7 g (V₁₉) and 3.67 g (V₇). The plants had an average of 66.79 pods/plant, the maximum value being registered at V₇ (211 pods/plant), and the minimum one (20 pods/plant) was registered at V₆. V₁₈ had a small number of pods (27 pods/plant). The stringiness on ventral suture presence was observed at 8 variants (V₁, V₃, V₅, V₇, V₁₂, V₁₃, V₁₆ and V₂₀). Most pods had a green ground colour, except V₂ and V₁₀ variants which had a violet colour and V₁₁, V₁₄, V₁₅ and V₁₉ variants which had a yellow ground colour.

Tab. 1

Main characteristics of climbing bean pods

Variants*	Length (cm)	Width (cm)	Thickness (cm)	Thickness /width	N° of seeds/pod	Weight (g)	N° of pods/plant	Beak's length (cm)
V ₁ Bc	11.23	1.33	0.73	0.55	4.67	6.73	53.00	0.90
V ₂ Bz	17.30	1.20	0.90	0.75	6.67	12.30	62.00	0.56
V ₃ Bc	15.97	1.37	0.63	0.46	7.00	10.03	57.00	0.93
V ₄ Bc	12.20	1.33	0.37	0.28	4.33	4.50	46.00	1.57
V ₅ Is	10.20	1.50	0.67	0.45	6.00	6.30	51.00	1.03
V ₆ Vs	11.37	1.77	0.70	0.40	3.33	9.43	20.00	0.83
V ₇ Bz	11.23	0.77	0.67	0.88	5.33	3.67	211.00	0.40
V ₈ Bc	15.50	1.67	0.60	0.36	6.33	9.83	30.00	0.77
V ₉ Bz	17.17	1.07	1.00	0.95	7.67	11.80	94.50	1.07
V ₁₀ Bz	19.20	1.17	1.00	0.86	8.33	13.50	60.00	0.97
V ₁₁ Bz	17.90	1.63	0.77	0.47	6.33	13.33	37.00	0.77
V ₁₂ Bz	15.27	1.30	0.80	0.62	5.67	11.17	121.00	0.90
V ₁₃ Vs	9.33	1.53	1.00	0.65	5.33	7.17	40.00	1.77
V ₁₄ Bz	16.93	1.57	0.50	0.87	7.67	9.20	85.00	0.87
V ₁₅ Bc	10.60	1.40	0.67	0.48	5.33	8.10	49.67	1.60
V ₁₆ Bz	10.75	1.20	0.65	0.54	6.00	5.10	130.00	1.00
V ₁₇ Bc	15.23	1.10	0.63	0.58	7.00	6.53	48.00	0.63
V ₁₈ Bc	12.13	1.63	0.83	0.51	5.00	11.03	27.00	1.43
V ₁₉ Is	20.60	1.90	0.73	0.39	8.00	17.70	75.00	0.73
V ₂₀ Vs	8.30	1.43	0.60	0.42	3.67	4.27	32.00	0.70
V ₂₁ Vs	14.63	1.37	0.57	0.41	6.67	7.70	59.00	1.23
V ₂₂ Vs	11.35	1.50	0.75	0.50	5.50	8.90	68.00	1.35
V ₂₃ Bz	14.40	0.80	0.80	1.00	8.00	8.70	80.00	0.50
Mean	1386	1.37	0.72	0.58	6.08	9.00	66.79	0.98

* Traditional vegetable areas: Bc – Bacău; Bz – Buzău; Is – Iași; Vs - Vaslui

Conclusion. The researches dignified a great variability in what it concerns pods characteristics (weight, color, length, width, thickness, stringiness on ventral suture presence, beak's length). The results obtained confirm the value of the biological material collected as germplasm sources for breeding and justifies the conservation works of the biodiversity for this species.

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