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VARIATION FOR SEED SIZE IN THE CULTIVATED POPULATION OF GRASSPEA (*LATHYRUS SATIVUS* L.)

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In Bangladesh, grasspea is cultivated since times immemorial. No improved variety so far has been released in Bangladesh and farmers use their own seed for cultivation. It is obvious that the evolutionary forces and human selection are the only factors causing variation in the cultivated populations. From plant breeding point of view, naturally created variability is of great importance in the improvement of any crop. With this view in mind, the present study has been undertaken to evaluate the extent of variation in seed size of grasspea from the drought prone and coastal area of Bangladesh.

A collection programme of pulses was initiated in March 1992 by the Pulses Research Centre (PRC) and the Genetic Resources Centre (GRC) from the drought prone area in the Rajshahi Division (northern part of Bangladesh), which has been designated in Rajshahi population. Another collection program was carried out in April, 1993 by the scientists of PRC from the thirteen districts of coastal area (southern part of Bangladesh). This germplasm has been designated as coastal population. Total 578 and 535 germplasm accessions comprise the Rajshahi and coastal populations. Thousand-grain weight for each sample was recorded and analyzed statistically. The range, mean and standard deviation of 1000-seed weight are presented in Table 1. The lowest 1000-seed weight (30.0 g) was observed in the materials collected from Dinajpur district, while the highest (66.4 g) was observed in the Natore materials in the Rajshahi population. The range was widest (27.8) in the Natore material, followed by Rajshahi population. The range was widest (27.8) in the Natore material, followed by Rajshahi, Pabna, Bogra, and Nogaon materials. The highest coefficient of variation (CV) was observed in the materials from Natore district followed by Bogra and Sirajgonj materials. The lowest CV was observed in the Thakurgaon material followed by Lalmonirhat and Gaibandha collections.

In the coastal population the lowest 1000-seed weight (32.2 g) was observed in the Sathkira collection, followed by Laksmipur and Khulna materials (Table 1). The boldest seed

Table 1. Range, mean and coefficient of variation of germplasms accessions for 1000-grain weight in Bangladesh grasspea

District	No. of samples	Range (g)		Span of variation (g)	Mean ± SD (g)	CV (%)
		minimum	maximum			
Rajshahi population						
Rajshahi	113	35.5	61.2	25.7	49.4 ± 5.5	11.2
Nawabganj	43	42.5	57.7	15.2	50.0 ± 4.1	8.1
Natore	23	38.6	66.4	27.8	50.0 ± 7.9	15.8
Nogaon	45	39.8	60.2	20.4	48.8 ± 5.0	10.3
Bogra	34	29.5	50.0	20.5	40.8 ± 5.3	12.9
Joypurhat	14	37.1	55.0	17.9	45.8 ± 5.0	10.8
Pabna	67	36.5	57.7	21.2	43.3 ± 3.9	9.1
Sirajgonj	30	33.4	52.6	19.2	44.3 ± 5.5	12.4
Kurigram	11	31.1	43.7	12.6	40.4 ± 3.8	9.5
Lalmonirhat	19	33.0	45.1	12.1	41.6 ± 3.1	7.5
Rangpur	37	33.1	46.4	13.3	40.9 ± 3.6	8.8
Gaibandha	20	37.0	49.2	12.2	41.6 ± 3.2	7.6
Nilphamari	38	32.3	46.2	13.9	40.4 ± 3.3	8.2
Dinjapur	60	30.0	45.3	15.3	38.7 ± 3.3	8.5
Thakurgaon	8	35.1	43.9	8.8	39.4 ± 2.7	7.0
Coastal population						
Stakhira	60	32.2	53.3	21.1	44.2 ± 4.8	10.8
Khulna	39	33.2	62.1	28.9	47.1 ± 7.5	16.0
Bagerhat	51	38.3	67.6	29.3	54.0 ± 6.8	12.5
Pirojpur	39	47.6	66.0	18.4	56.6 ± 6.1	10.7
Jhalokati	21	47.7	63.0	15.3	55.1 ± 4.3	7.7
Barisal	83	41.4	65.0	23.6	55.1 ± 3.9	7.0
Patuakhali	61	47.4	67.5	19.8	56.6 ± 4.6	8.2
Bhola	42	41.4	59.2	17.8	53.1 ± 3.5	6.6
Laksmipur	30	32.3	54.6	22.3	47.1 ± 4.7	10.0
Noakhali	31	44.4	57.6	13.2	50.4 ± 3.0	6.0
Feni	17	44.5	59.9	15.4	51.8 ± 3.3	5.3
Chittagong	21	38.8	62.2	23.4	50.6 ± 5.5	10.8

(67.6 g/1000) was found in the material collected from Bagerhat and Patuakhali districts. The widest range was observed in the Bagerhat material, followed by Khulna, Barisal and Chittagong collections. The highest CV was recorded at the Khulna collection, followed by those from Bagerhat, Satkhira and Chittagong districts.

It has been found that seed from 10 out of 15 districts in the drought prone area of north Bangladesh had mean 1000-grain weight below 46 g. Five districts provided seed with

1000-grain weight 46–50 g. On the other hand seed from the coastal area was much larger, where only one out of twelve districts showed 1000-grain weight below 46 g, mean three 46–50 g and eight had still bolder seed (51 g or more). Taking ≤45, 46–50 and ≥51 g 1000-grain weight to be small, medium and bold, respectively, the small seeded germplasm was mainly distributed in the Pabna, Sirajgonj, Bogra, Gaibandha, Rangpur, Lalmonirhat, Kurigram, Nilphamari, Dinajpur and Thakurgaon districts of Rajshahi Division and Stakhira district of coastal area. Medium sized seed was mostly collected from the Rajshahi, Natore, Nawabganj, and Joypurhat districts of Rajshahi Division and Khulna, Laksmipur, Noakhali districts of coastal area. Bold seed germplasm is primarily concentrated in the coastal districts of Bagerhat Pirojpur, Jhalokathi, Barisal, Patuakhali, Bhola, Feni and Chittagong.

From the above observation it is clear that under the environment of Rajshahi Division the seed size of *Lathyrus* is reduced while the environment of coastal area is favorable for normal seed development, assuming that basically the germplasm in both areas is common. The natural factor like less rainfall, resulting low soil moisture during the growing period and high temperature during maturity lead to formation of smaller seed in the northern part of the country (Rajshahi Division). The farmers grow their own seed without selection for seed size year after year. A long- term effect of natural selection could be directed toward the reduction in seed size under these semiarid conditions. Similar observation on smaller seed in north are also found in mungbean. But scientific data are not available in Bangladesh. It will therefore, be interesting go for further studies to find out the reasons for reduced seed size in the northern part of Bangladesh.