

Short Communication

Variability in Clusterbean Germplasm with Foliaceous Bracts

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Clusterbean (*Cyamopsis tetragonoloba* (L.) Taubert) has assumed considerable importance in the arid and semi-arid regions of

linear subulate bracts (Bhandari, 1990). Though morphological abnormalities have been reported in clusterbean (Vig, 1965; Staf-

Table 1. Variability in clusterbean lines with foliaceous bracts

Character	Range		Mean	SEm \pm
	Minimum	Maximum		
Plant height (cm)	40.00	91.00	58.20	3.82
Branches plant ⁻¹	0.00	9.00	1.72	0.27
Stomata per unit area of foliaceous bract (μm^2)	34.00	52.00	40.00	1.34
First flowering (days)	34.00	47.00	39.20	0.54
Mean flowering (days)	39.00	59.00	45.00	0.88
First maturity (days)	67.00	78.00	71.91	0.55
Mean maturity (days)	73.00	94.00	84.71	1.37
Cluster plant ⁻¹	2.00	18.00	7.25	0.34
Pods cluster ⁻¹	1.00	11.00	5.96	0.35
Pods plant ⁻¹	8.00	99.00	27.47	1.36
Pod length (cm)	2.40	8.10	5.95	0.28
Seeds pod ⁻¹	4.00	13.00	8.38	0.16
Seeds plant ⁻¹	64.00	891.00	237.85	9.99
Pod weight plant ⁻¹ (g)	2.50	26.50	11.64	0.48
Pod husk weight (g)	1.61	7.77	4.87	0.26
100 seed weight (g)	2.70	4.00	3.39	0.04
Seed germination (%)	80.50	100.00	92.75	1.47
Pollen fertility (%)	73.00	98.33	83.76	7.77

the country due to its drought hardiness and wide usage of seed as a source of gum and proteionaceous feed. Generally, flowers of clusterbean are bisexual, typically papilionaceous and arranged in raceme with

ford, 1988), there is no report on the occurrence of foliaceous bracts. During the course of characterization of clusterbean germplasm consisting of 521 collections, twenty four collections were found to possess foliaceous bracts. Present paper deals with

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the occurrence of foliaceous bracts and variability in various qualitative and quantitative traits in these lines.

All the collections from different sites in Gujarat and Rajasthan were grown during *kharif* seasons of 1988-1989 and 1989-90 at National Bureau of Plant Genetic Resources, Regional Station, Jodhpur, in an augmented block design. Each line was grown in single row of 3 m length with inter and intra-row spacing of 60 and 15 cm, respectively. The observations were recorded on five competi-

tive plants from each of the accessions on plant height, number of branches, plant type, days to flowering and maturity, cluster, pods and seeds per plant, pods per cluster, pod and pod beak length, seeds per pod, pod and seed weight per plant, pod husk weight per plant, 100-seed weight, seed germination, pollen fertility, and gum and protein contents. Size of foliaceous bract was recorded at the stage of first maturity of pods. For stomatal and trichome study, abaxial epidermal layer of foliaceous bract was peeled off and mounted on a glass slide in a drop of water. Pollen

Table 2. Gum, protein content and seed yield in clusterbean with foliaceous bracts

Germplasm	Gum content (%)	Protein content (%)	Seed yield (g plant ⁻¹)
IC 103315	29.1	27.3	5.43
IC 103338	29.9	27.1	4.98
IC 103339	30.9	27.1	5.85
CH 15-1	30.4	27.2	7.01
CH 16-1	29.8	27.1	7.50
CH 17-1	30.0	27.3	6.80
CH 17-2	29.1	27.9	7.10
CH 19-1	29.7	27.7	6.41
CH 19-2	29.7	27.7	5.65
CH 20-1	29.3	27.2	3.30
CH 55-1	28.6	26.9	6.01
CH 55-2	28.6	26.9	6.47
CH 56-1	30.3	26.8	7.01
Ch 57-1	27.3	26.1	4.95
CH 16/2	31.4	26.5	9.58
CH 17/1	29.6	27.2	8.22
CH 17/2	30.0	27.6	5.40
CH 18/1	30.1	27.8	6.81
CH 18/2	31.4	27.5	5.39
CH 19/1	30.6	27.5	5.45
CH 19/2	31.5	26.5	5.13
CH 55/1	31.3	27.9	7.10
CH 55/2	31.6	26.8	6.78
CH 56/1	30.5	27.6	9.13

fertility was studied by using 1% acetocarmine. The seeds were analysed for gum and protein contents following standard procedures. The results in Tables 1 and 2 pertain to mean of both the years.

Most of the collections had normal, linear, subulate and hair like bracts, whereas, twenty four collections from Mehsana district of Gujarat had leaf like bracts on all the inflorescences. These bracts were green initially, but later on they turned into yellowish brown on maturity. The surface of these bracts were rough due to presence of 2-armed non-glandular trichomes. These remained persistent until plants matured. Notable variability was observed in size (4.0 x 3.9 to 5.5 x 5.4 mm) and the number of stomata (34-52) per unit area (mm²) in the bracts. The plant habit varied from single stemmed to partially branched to sparsely branched and branched type. Out of twenty four collections, one (CH 57-1) was smooth. Variability was also observed in the shape, size and colour of pods and seeds. Twenty three collections were of grain type, whereas, CH-57-1 was of vegetable type. Variation was also observed in pod bear-

ing. Five collections bore clusters at all nodes. Seeds were grey, light grey, light pink or purple coloured. Seed size varied from 3.0 x 2.0 to 4.5 x 3.5 mm. Pollen fertility was 73.00 to 98.33% (Table 1). The gum and protein contents and seed yield per plant in all the collections are presented in Table 2.

The collection of these twenty four lines with foliaceous bracts from Mehsana district of Gujarat suggests the site specificity of this character which is confined to a very limited area. Although the positive contributions of foliaceous bracts to the yield of plants is not clear, but genetic associations between morphological characters and yield may be of interest to the plant breeders and plant physiologists.

References

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