



ISSN Print: 2618-060X
 ISSN Online: 2618-0618
 NAAS Rating (2026): 5.20
 IJRA 2026; 9(9): 1581-1584
www.agronomyjournals.com
 Received: 03-07-2026
 Accepted: 10-08-2026
 Published: 30-09-2026

Makam Pradeep Babu
 Research Scholar, Department
 of Vegetable Science, Post
 Graduate Institute for
 Horticultural Sciences
 (PGIHS), Sri Konda Laxman
 Telangana Horticultural
 University (SKLTGHU),
 Mulugu, India

M Rajasekhar
 Professional (Hort.), PGIHS,
 Mulugu, Telangana, India

P Saidaiah
 Professor (GPBR) & Seed
 Officer, University Seed Cell,
 SKLTGHU Campus at College
 of Horticulture,
 Rajendranagar, Telangana,
 India

J Srinivas
 Scientist (Sr scale), Vegetable
 Research Station, Hyderabad,
 SKLTGHU, Telangana, India

S Mallesh
 Scientist & Head, Horticultural
 Research Station, Adilabad,
 SKLTGHU, Telangana, India

Corresponding Author:
Makam Pradeep Babu
 Research Scholar,
 Department of Vegetable
 Science, Post Graduate
 Institute for Horticultural
 Sciences (PGIHS), Sri
 Konda Laxman Telangana
 Horticultural University
 (SKLTGHU), Mulugu, India

Assessment of Yard Long Bean (*Vigna unguiculata* (L.) Walp. subsp. *sesquipedalis* (L.) Verdc.) Accessions Using Minimal Descriptors

Makam Pradeep Babu¹, M Rajasekhar², P Saidaiah³, J Srinivas⁴, S Mallesh⁵

DOI: <https://www.doi.org/10.33545/2618060X.2026.v9.i9u.6734>

ABSTRACT

Yard long bean [*Vigna unguiculata* (L.) Walp. subsp. *sesquipedalis* (L.) Verdc.] is an important leguminous vegetable crop with considerable potential for genetic improvement. Characterization of germplasm using standardized morphological descriptors is essential for effective identification, documentation, conservation and utilization of genetic resources. The present investigation was undertaken to characterize 42 diverse yard long bean genotypes using selected qualitative descriptors based on the ICAR-NBPGR minimal descriptor approach. The field experiment was conducted during Kharif 2025 at the PG Research Block, College of Horticulture, Sri Konda Laxman Telangana Horticultural University, Mojerla, Wanaparthi, Telangana. The genotypes were evaluated for six qualitative traits, namely plant growth habit, flower colour, pod colour, seed colour, seed shape and seed-eye pattern. Considerable phenotypic variation was observed among the genotypes. Purple flower colour was predominant, occurring in 17 genotypes, while light green pod colour was recorded in 25 genotypes. Red seed colour was the most frequent seed colour, occurring in 17 genotypes, whereas kidney-shaped seeds predominated in 33 genotypes. The medium seed-eye pattern was observed in 31 genotypes, while pole type observed in 41 genotypes and bushy plant growth habits was represented in one accession. Distinct phenotypes were identified for flower, pod, seed colour and seed morphology, demonstrating appreciable qualitative diversity within the germplasm. The results indicate that ICAR-NBPGR minimal descriptors are effective for rapid morphological characterization and discrimination of yard long bean germplasm.

Keywords: *Vigna unguiculata* subsp. *sesquipedalis*, Yard long bean, Germplasm characterization, ICAR-NBPGR, Morphological descriptors, Phenotypic diversity, Genetic resources

Introduction

Yard long bean [*Vigna unguiculata* (L.) Walp. subsp. *sesquipedalis* (L.) Verdc.] is an important leguminous vegetable crop widely known as Chinese long bean, string bean, snake bean, snake pea, pea bean and asparagus bean. The chromosome number is ($2n = 2x = 22$) and it is primarily grown for its edible green pods (Ano *et al.*, 2008) [1]. Unlike other *Vigna* species, yard long bean is cultivated mainly for its crisp, tender pods, which are consumed either fresh or after cooking. It is distinguished by its exceptionally long and succulent pods, generally measuring 30-90 cm in length, with seeds typically ranging from 8-12 mm. In comparison with cowpea produces relatively shorter pods, usually about 20-30 cm long (Verdcourt, 1970) [2]. The characterization and conservation of plant genetic resources are fundamental components of modern crop improvement. Germplasm collections frequently contain accessions that differ in agronomic performance, morphology, adaptation and quality attributes. However, efficient utilization of such collections requires reliable characterization systems capable of distinguishing accessions and identifying potentially valuable phenotypes. Morphological characterization remains an important first step because qualitative descriptors are generally simple to record, inexpensive and directly applicable to accession identification and preliminary classification (Belko *et al.*, 2013) [3].

ICAR-NBPGR has undertaken systematic characterization and preliminary evaluation of vegetable and legume germplasm to document agro-morphological variation and facilitate the identification of useful accessions. Recent large-scale characterization of yard long bean germplasm conserved in the Indian National Gene bank also demonstrated considerable diversity for plant growth habit, flower colour, pod colour and seed colour, emphasizing the usefulness of morphological characterization for this crop.

Materials and Methods

A field experiment was conducted during Kharif 2025 at the PG Research Block, College of Horticulture, Sri Konda Laxman Telangana Horticultural University, Mojerla, Wanaparthi, Telangana. The experimental material comprised 42 diverse yard long bean [*Vigna unguiculata* (L.) Walp. subsp. *sesquipedalis* Verdc.]

germplasm, including 40 germplasm sourced from ICAR-NBPGR, New Delhi and two commercial checks, Sushanth and Sahashra. A total of 42 yard long bean [*Vigna unguiculata* (L.) Walp. subsp. *sesquipedalis* (L.) Verdc.] germplasm were evaluated. The germplasm comprised IC and EC accessions, breeding lines and locally identified cultivars. The germplasm evaluated were IC

206558, IC202647, IC259058, IC420591, IC420663, IC420664, IC419680, IC417946, IC488068, IC546883, IC586952, IC586954, IC622567, IC622570, IC622571, IC622573, IC622580, IC622585, IC622587, IC622601, IC622595, IC626147, IC626153, IC630413, IC91071, IC91428, IC91515, EC724295, EC725068, EC738116, HJ/19-36, HJ/19-76, TCR-60, REJI-2018-01, TCR-77, TCR-79, JPJN/19-

013, JPJN/19-035, Kollam/2018-1, EC724293, Sushanth and Sahashra.

The experiment was laid out in a Completely Randomized Block Design (CRBD) with two replications. The genotypes were sown by dibbling at a spacing of 60 × 40 cm, maintaining ten plants per genotype. Recommended agronomic practices were followed throughout the crop period.

Plant growth habit was classified as pole or bushy. Flower colour was categorized as light purple, purple, dark purple and white, while pod colour was classified as light green, dark green, green, red, green with purple tip and light green with purple splashes. Seed colour included red, buff, mottled brown, black, mottled red, mottled grey, deep red, light red, white and brown. Seed shape was classified as kidney, rhomboid and ovoid, whereas seed-eye pattern was recorded as medium or small eye listed in (Table 1)

Results And Discussion

The evaluated germplasm was predominantly characterized by a pole-type growth habit, indicating the dominance of climbing forms within the collection. Bushy growth habit was also observed in the collection, demonstrating that contrasting plant architectures were represented among the germplasm. The occurrence of both pole and bushy forms is of particular interest because plant style has suggestions for crop management, staking requirements, plant density and suitability for different production systems.

Based on flower colour the accessions are classified into Light purple, Purple, Dark purple, White colour types. Light purple colour flower were observed in 14 genotypes, dark purple were recorded in 9 genotypes, white colour observed in IC 488068 and JPJN/19-035. Purple colour were recorded in 17 and predominant in the studied germplasm. Similar observations were reported by Saidaiah *et al.* (2019) in yard long bean.

Based on pod colour, the genotypes were classified into light green, dark green, red, green, light green with purple splashes and green with purple tip types. Light green pods were recorded in 25 genotypes, indicating that this was the predominant pod colour. Dark green pods were observed in 6 genotypes, while red and green pods were recorded in 4 genotypes each. Light green pods with purple splashes and green pods with purple tip were observed in one genotype each.

Similar findings were reported in Rambabu *et al.* (2016) [4], Devan *et al.* (2021) [5] In yard long bean

Based on seed colour, the genotypes exhibited considerable variation, with red, buff, mottled brown, mottled red, mottled grey, deep red, black, light red, white, brown and mottled seed colours. Red seed colour was recorded in 17 genotypes, indicating that it was the predominant seed colour among the genotypes evaluated. Buff seed colour was observed in five genotypes, while mottled brown and black seed colours were recorded in four genotypes each. Mottled red seed colour was observed in three genotypes, whereas deep red, mottled grey and light red seed colours were recorded in two genotypes each. White, brown and mottled seed colours were observed in one genotype each, indicating the presence of considerable diversity for seed colour among the yard long bean germplasm. Similar findings earlier were reported in Tantasawat *et al.* (2010) [6] in Yardlong bean. Considerable variation was observed among the genotypes with respect to seed shape, which included kidney, rhomboid and ovoid types. The kidney shape was predominant, being recorded in 33 genotypes. Rhomboid-shaped seeds were observed in IC202647, IC622601, IC259058, IC622580 and IC622585. Ovoid-shaped seeds were recorded in IC586952, IC586954, TCR-60 and TCR-77. The predominance of kidney-shaped seeds indicated that this was the most common seed shape among the evaluated yard long bean genotypes. The present findings are in accordance with those reported by Nasrin *et al.* (2024).

Considerable diversity was observed among the evaluated genotypes with respect to seed-eye pattern, which was categorized into medium and small eye types. The medium seed-eye pattern was predominant, occurring in 31 genotypes, whereas the small seed-eye pattern was recorded in 11 genotypes. The higher frequency of the medium type indicates its wider distribution within the germplasm studied. Overall, the variation in seed-eye pattern provides useful information for the morphological characterization and identification of yard long bean genotypes.

Conclusion

The present investigation revealed considerable variation in the qualitative morphological characters of the 42 yard long bean (*Vigna unguiculata* subsp. *sesquipedalis* Verdc.) genotypes. Pole growth habit, purple flowers, light green pods, red seeds, kidney-shaped seeds and medium seed-eye pattern were predominant, while contrasting types were also observed for the characters studied, indicating appreciable phenotypic diversity within the germplasm.

The presence of bushy types and diverse flower colour, pod and seed characteristics provides useful variation for selection in breeding programmes. The observed morphological differences can also aid in the identification and characterization of individual genotypes. Standardized descriptors proved effective for documenting the existing diversity within the germplasm collection. The information made will be useful for germplasm identification, classification, conservation and future utilization in yard long bean improvement programmes.

Table 1. Qualitative descriptor states recorded in yard long bean germplasm

Character	Descriptor/Classification
Plant growth habit	Pole type; Bushy type
Flower colour	Light purple; Purple; Dark purple; White; Yellow; Pink
Pod colour	Light green; Dark green; Green; Red; Green with purple tip; Light green with purple splashes
Seed colour	Red; Buff; Mottled brown; Black; Mottled red; Mottled grey; Deep red; Light red; White; Brown
Seed shape	Kidney; Rhomboid; Ovoid; Globose
Seed-eye pattern	Medium eye; Small eye

(continued on next page)

Table 2. Characterization of Yard long bean germplasm based on ICAR-NBPGR based on minimal descriptors.

Sl. No.	Germplasm	Plant Growth habit	Flower colour	Pod colour	Seed colour	Seed shape	Seed-eye pattern
1	IC206558	Pole	Purple	Red	Mottled brown	Kidney	Medium
2	IC202647	Pole	Light purple	Dark green	Buff	Rhomboid	Small
3	IC259058	Pole	Dark purple	Light green	Red	Rhomboid	Small
4	IC420591	Pole	Light purple	Dark green	Red	Kidney	Medium
5	IC420663	Pole	Light purple	Light green	Red	Kidney	Medium
6	IC420664	Pole	Light purple	Light green	Deep red	Kidney	Medium
7	IC419680	Pole	Light purple	Light green	Red	Kidney	Medium
8	IC417946	Pole	Purple	Light green	Red	Kidney	Medium
9	IC488068	Bushy	White	Light green	Red	Kidney	Medium
10	IC546883	Pole	Purple	Light green	Mottled	Kidney	Medium
11	IC586952	Pole	Dark purple	Light green	Mottled grey	Ovoid	Small
12	IC586954	Pole	Dark purple	Light green	Mottled grey	Ovoid	Small
13	IC622567	Pole	Dark purple	Dark green	Mottled red	Kidney	Medium
14	IC622570	Pole	Dark purple	Light green with purple splashes	White	Kidney	Medium
15	IC622571	Pole	Purple	Dark green	Mottled red	Kidney	Medium
16	IC622573	Pole	Dark purple	Light green	Red	Kidney	Medium
17	IC622580	Pole	Purple	Dark green	Buff	Rhomboid	Small
18	IC622585	Pole	Purple	Dark green	Buff	Rhomboid	Small
19	IC622587	Pole	Purple	Light green	Red	Kidney	Medium
20	IC622601	Pole	Dark purple	Light green	Black	Rhomboid	Small
21	IC622595	Pole	Purple	Light green	Red	Kidney	Medium
22	IC626147	Pole	Light purple	Light green	Red	Kidney	Medium
23	IC626153	Pole	Light purple	Light green	Red	Kidney	Medium
24	IC630413	Pole	Dark purple	Light green	Buff	Kidney	Medium
25	IC91071	Pole	Light purple	Light green	Red	Kidney	Medium
26	IC91428	Pole	Purple	Red	Mottled brown	Kidney	Medium
27	IC91515	Pole	Purple	Light green	Red	Kidney	Medium
28	EC724295	Pole	Purple	Light green	Mottled red	Kidney	Medium
29	EC725068	Pole	Purple	Red	Mottled brown	Kidney	Medium
30	EC738116	Pole	Light purple	Green	Light red	Kidney	Medium
31	HJ/19-36	Pole	Light purple	Red	Red	Kidney	Medium
32	HJ/19-76	Pole	Light purple	Light green	Light red	Kidney	Medium
33	TCR-60	Pole	Dark purple	Light green	Buff	Ovoid	Small
34	REJI-2018-01	Pole	Purple	Light green	Mottled brown	Kidney	Medium
35	TCR-77	Pole	Purple	Light green	Deep red	Ovoid	Small
36	TCR-79	Pole	Purple	Green	Black	Kidney	Medium
37	JPJN/19-013	Pole	Light purple	Light green	Red	Kidney	Medium
38	JPJN/19-035	Pole	White	Light green	Red	Kidney	Medium
39	Kollam/2018-1	Pole	Light purple	Green	Black	Kidney	Medium
40	EC724293	Pole	Purple	Green with purple tip	Black	Kidney	Medium
41	Sushanth	Pole	Purple	Dark green	Brown	Kidney	Small
42	Sahashra	Pole	Light purple	Green	Red	Kidney	Medium

References

- Ano AO, CIUbochi. Nutrient composition of climbing and prostrate vegetable cowpea accessions. *African J. Biotech.* 2008;7(20):3795-3798.
- Verdcourt B. Studies in the leguminosae-Papilionoideae for the flora of tropical East Africa: IV. *Kew Bulletin.* 1970;24(3):507-569.
- Belko N, Zaman AM, Diop NN, Cisse N, Zombre G, Ehlers JD, Vadez V. Restriction of transpiration rate under high vapour pressure deficit and non-limiting water conditions is important for terminal drought tolerance in cowpea. *Plant Biology.* 2013;15(2):304-316.
- Rambabu E, Reddy KR, Kamala V, Saidaiah P, Pandravada SR. Genetic divergence for quality, yield and yield components in yard long bean [*Vigna unguiculata* (L.) Walp. ssp. *sesquipedalis* Verdc.]. *Legume Research.* 2016;39(6):900-904.

5. Devan SR, Rathod V, Chinthan KN, Lakshmiddevamma TN, Deepashree G, Shilpashree N, Manjunathagowda DC. Morphological Characterization, Trait Variability and their Association, and Diversity Analysis Among Yard Long Bean (*Vigna unguiculata* (L.) Walp. subsp. *Sesquipedalis* (L.) Verdc.) Genotypes. 2021.
6. Tantasawat P, Trongchuen J, Prajongjai T, Seehalak W, Jittayasothorn Y. Variety identification and comparative analysis of genetic diversity in yardlong bean (*Vigna unguiculata* spp. *sesquipedalis*) using morphological characters, SSR and ISSR analysis. *Scientia Horticulturae*. 2010;124(2):204-216.
7. Pidigam S, Munnam SB, Nimmarajula S, Gonela N, Adimulam SS, Yadla H, Bandari L, Amarapalli G. Assessment of genetic diversity in yard long bean (*Vigna unguiculata* (L.) Walp subsp. *sesquipedalis* Verdc.) germplasm from India using RAPD markers. *Genetic Resources and Crop Evolution*. 2019;66(6):1231-1242.
8. Sultana NJ, Das KR, Al Masum MA, Ahmad M. Morphological Characterization of Yardlong Bean for Pod Borer Infestation. *Fundamental and Applied Agriculture*. 2024;9(4):277-282.

How to cite this article: Babu MP, Rajasekhar M, Saidaiiah P, Srinivas J, Mallesh S. Assessment of Yard Long Bean (*Vigna unguiculata* (L.) Walp. subsp. *sesquipedalis* (L.) Verdc.) Accessions Using Minimal Descriptors. *International Journal of Research in Agronomy*. 2026;9(9):1581-1584. doi: <https://www.doi.org/10.33545/2618060X.2026.v9.i9u.6734>