

## Morphological variations of phenotypic and genetic characterization of qualitative traits to yield in country bean.

Mihret Yirgu\*

Department of Applied Biology, University of Adama Science and Technology, Bangladesh

### Introduction

Understanding genetic diversity is essential for protecting and exploiting rare crop germ plasma. Information on the collection of cowpea germ plasma resources and their characterization and conservation in Ethiopia is limited. The aim of this study was to determine the extent of genetic diversity within cowpea genotypes, assess diversity patterns based on regions of origin, and identify areas for future cowpea collection and conservation. A total of 324 cowpea genotypes were evaluated using a simple. Data on qualitative characteristics were collected and subjected to shannon-weaver diversity index and statistical method. A high degree of diversity was evident among genotypes supported the distribution of phenotypical traits. Individual phenotypical categories weren't equally distributed. Estimates of ranged from zero. The very best and lowest diversity values were obtained from the unknown class and also the International Institute of Tropical Agriculture (IITA), severally eighty two of the full variation was thanks to populations inside their origin. Cluster analysis discovered distinct teams. Seed color and plant vigour contributed eighty four.9% to the variation of the primary principal element between regions. In general, the traits that is best in characteristic cowpea genotypes from cowpea genotypes are eye pattern, tendency to moving, plant vigour, pod wall thickness, seed color, and episperm thickness texture seed density, pod attachment to the stem, and immature pod pigmentation. is used as choice criteria for improvement. This genetic diversity ought to be exploited through a comprehensive development program of cowpea varieties [1,2].

Collecting and preserving for genetic improvement and reducing erosion of genetic resources. Diversity was evident among genotypes based on the frequency distribution of phenotypic traits. Estimates of ranged from to clustering analysis grouped regions into five clusters according to their proximity-based trends. The geographic distribution of diversity greatly influences genetic polymorphisms in cowpea. Broad bean is one of the most popular vegetables in bangladesh. The crop is grown in all homestead garden districts and almost all villages in Bangladesh. Kidney beans are grown in winter, but become a perennial crop due to their high light tolerance and the availability of summer varieties the yield potential of broad bean cultivars is relatively low and traits associated with yield have been poorly studied and thus remain undeveloped [3].

Bangladesh is an important geographical location with rich biodiversity such as plants, animals. The characteristics of germplasm plants, seeds, flowers and pods grown in bangladesh very greatly. The success of general and specific breeding programs to improve traits is highly dependent on the diversity and variation that exists among germplasm. Increasing yield and resistance to biotic and abiotic stresses are important directions for crop improvement programs. A significant number of landrace strains of lablab beans are available in Bangladesh, and researchers at the Plant Genetic Resources Center (PGRC) of the Bangladesh Agricultural Research Institute (BARI) have identified reproductive strains of lablab beans from various locations in Bangladesh. Few previous studies have been performed to characterize some germplasm [4].

Molecular marker approaches to genotypic characterization are also effective but are expensive and require identification with marker-associated trait data. In contrast characterization of various morphological features is the first step to describe and classify the germplasm of different crops. Selection of parents and their offspring requires documentation containing morphological features for germplasm characterization and classification. Understanding the phenotypic diversity provided by various morphological and agronomic traits, such as seed-, leaf, plant, and fruit-related traits, is critical for conservation, breeding strategies, development, and commercialization of new cultivars. High yield selection of appropriate morphological traits is also necessary for the conservation and utilization of genetic resources

### Morphological characterization

Morphological characterization of germplasm was based on qualitative and quantitative characteristics of lablab bean leaves, flowers, pods and seeds. Data on various qualitative and quantitative characteristics were collected according to a previous report on Dolichos bean descriptors Cotyledon Color (CC), Leaf Color (LC), Leaf Shape (LS), Vein Color, Seed Shape (SS), Seed Color (Sec), Stem Color (StC), Growth Habit (GH), pod color (PC), pod beak (PB). Leaves and leaflets were sampled at the vegetative developmental stage of lablab plants. Seed volume was measured by the water displacement method placed in graduated cylinders during overnight soaking prior to germination. Plant height was measured by measuring the length of the highest leaf vein at the last harvest [5].

\*Correspondence to: Mihret Yirgu, Department of Applied Biology, University of Adama Science and Technology, Bangladesh. E-mail: ymihret@gmail.com

Received: 26-Oct-2022, Manuscript No. AARRGS-22-77622; Editor assigned: 31-Oct-2022, PreQC No. AARRGS-22-77622 (PQ); Reviewed: 15-Nov-2022, QC No. AARRGS-22-77622; Revised: 21-Nov-2022, Manuscript No. AARRGS-22-77622(R); Published: 25-Nov-2022, DOI: 10.35841/aarrgs-4.6.129

## References

1. Kumar S, Layek S. Genetic Characterization for Quantitative and Qualitative Traits and Its Relationship in Faba Bean. *Indian J Agric Res.* 2021;11(1):1-21.
2. Sajid MB. Assessing the genetic diversity of squash genotypes based on agro-morphological traits and genetic analysis. *JHS.* 2022;17(1):51-62.
3. Vargas Y. Physiological and genetic characterization of heat stress effects in a common bean RIL population. *PLoS One.* 2021;16(4):e0249859.
4. Aguilar-Benitez. Genetic analysis reveals PDH1 as a candidate gene for control of pod dehiscence in chickpea. *Mol Breed.* 2020;40(4):1-2.
5. Ochoa IE. QTL analysis of adventitious root formation in common bean under contrasting phosphorus availability. *Crop Sci.* 2001;46(4):1609-21