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Research Note

Morphologically elite genotype in gymnema TN*GSy*-55-IC-0630558

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Abstract
Sixty-six accessions of *Gymnema sylvestre* R. Br were characterized for morphological, yield and quality traits. Among the accessions,TN*GSy*-55-IC-0630558 was found to be an elite for leaf traits *viz.*, leaf shape and base which is elliptic and obtuse base.

Keywords
Elite genotype, leaf traits, *TNGSy*-55-IC-0630558

Gymnema sylvestre R. Br. (2n=22) is one of the important medicinal plants in India, commonly used for treating *Diabetes mellitus.* It belongs to the family Asclepiadaceae, commonly known as 'The Milk Weed Family'. The plant is called as Gudmar in Hindi, Periploca of the Woods in English, Sarkkaraikolli in Tamil, Madhunashini in Sanskrit, Podapatri in Telugu, Kadhasige in Kanada and Cakkarakkolli in Malayalam.

Various poly herbal formulations with *Gymnema sylvestre* extract are being used for the treatment of *Diabetes mellitus.* Several clinical trials and experimental studies have indicated that, the plant is an invaluable source of bioactive compounds for the treatment of diabetes. The plant is source of gymnemic acid which has been used as molecular targets in drug development. Besides having pharmacological importance, the gymnema extract possesses valuable dietary applications to combat diabetes.

Although the plant has immense prospects in drug development, it faces threat of extinction due to continuous deforestation and indiscriminate collection. Hence, identification of an elite genotype with high yield and alkaloid content is of prime important in this crop besides documenting the variability present in this crop. At present, no descriptors as well as varieties are available in *Gymnema sylvestre*. Identification of morphological marker will help for DUS descriptor development which is important for protecting IPR. Moreover, morphological marker will help for varietal identification.

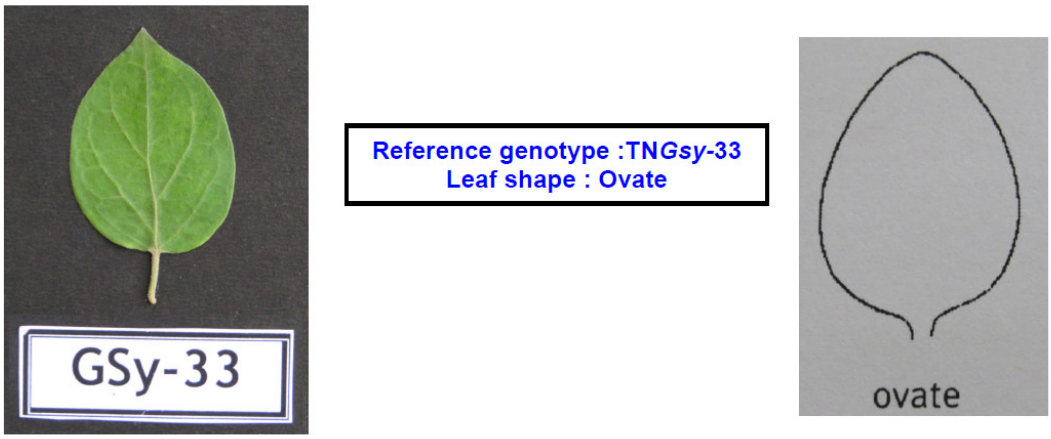
With this objective, sixty-six accessions of Gymnema were collected from different parts of Tamil Nadu. The collected accessions were multiplied and maintained. Passport data was submitted to NBPGR along with germplasm deposition certificate from DMAPR and the IC number was obtained. The characterization of germplasm was made based on the Kew Plant Glossary (Henk Beentje, 2010). Based on the characterization, variations were observed for leaf characters *viz.,* leaf shape, leaf base, leaf tip and leaf pubescence.

Leaf shape varied from ovate, elliptic and lanceolate. 24% of the germplasm had ovate shaped leaves; 15% of the germplasm had elliptic shape and 12% had lanceolate shape. The shape in other entries *i.e.* 48% of the germplasm had shape which is varied from ovate-elliptic, elliptic-ovate, ovate- lanceolate and ovate-oblanceolate.

Of the varied leaf shapes observed, ovate with round base is common and considered as reference or check. The accession TN*GSy* 33–IC-0630536 which is collected from Palani, Dindigul district of Tamil Nadu is the reference genotype which has ovate shaped leaves with round base and acute tip. Pubescence is present in the leaves **(Plate 1.)**

Elite Genotype

TN*GSy*-55-IC-0630558: The accession TN*GSy*55-IC-0630558 is an elite genotype which has elliptic shape with obtuse base and acute tip. Pubescence is absent in the



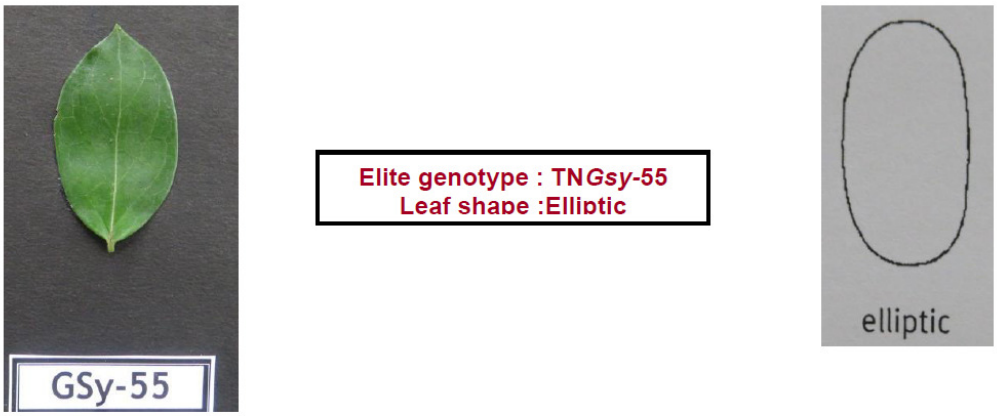
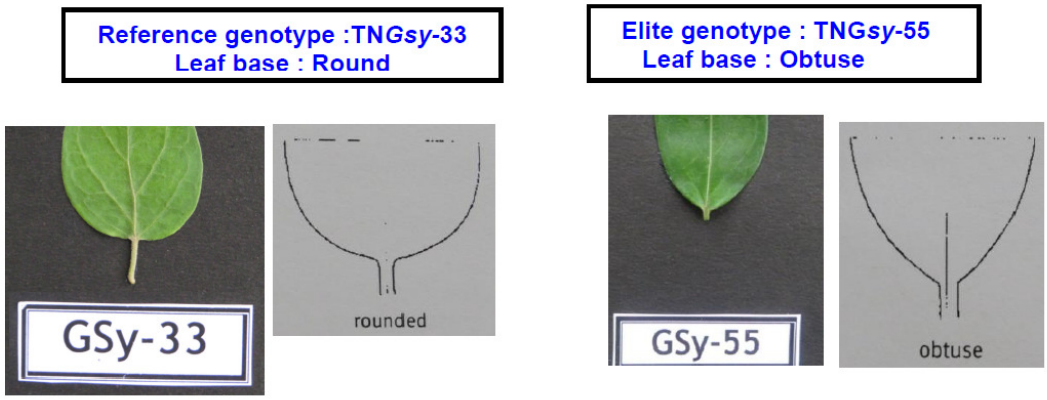


Plate 3b. Comparison of elite genotype TN*Gsy*-55 with reference genotypeTN*Gsy*-33 for leaf base



Reference: Hen kBeentje, 2010. The Kew Plant Glossary. ISBN :978-1-84246-422-9 Royal Botanical Garden, Kew, UK. P.No.133 &134

Plate 1. Comparison of Elite Genotype TNGsy-55 with Reference Genotype- TNGsy-33 for Leaf Traits

leaves. The accession was collected from Mettupalayam taluk of Coimbatore district. **(Plate 1.)**Compared to the reference genotype, the elite genotype TN*GSy*-55–IC-0630558 varied for leaf shape, leaf base and leaf pubescence. **(Plate 1)**

Morphological, Yield and Quality Traits

Observations on morphological and yield characters were recorded for the 66 accessions and the *per se* performance of the genotypes ranged from 2.40-4.58cm for leaf length; 1.57-2.90cm for leaf breadth; 0.47-1.37cm for petiole length and 1.07-2.74cm for inter-nodal length. The *per se* performance for leaf dry weight ranged from 0.08-0.75kg and 0.48-1.54% for gymnemagenin content.

The elite genotype recorded leaf length of 2.57cm; leaf breadth -2.17cm; petiole length-1.14cm; inter-nodal length -1.69cm and leaf dry weight of 0.26kg/plant with gymnemagenin content of 1.07%. **(Table 1)**

Table 1. Characteristics Features of Elite Genotype TN*GSy*-55–IC-0630558

S.No.	Particulars	
1.	Leaf shape	Elliptic
2.	Leaf base	Obtuse
3.	Leaf tip	Acute
4.	Leaf pubescence	Absent
5.	Mid rib pubescence	Present
6.	Leaf length (cm)	2.57 cm
7.	Leaf breadth(cm)	2.17 cm
8.	Petiole length (cm)	1.14 cm
9.	Internodal length (cm)	1.69 cm
10.	Leaf dry weight (kg/plant)	0.26 kg/plant
11.	Gymnemagenin content (%)	1.07%

REFERENCE

HenkBeentje 2010. The Kew Plant Glossary. ISBN :978-1-84246-422-9, Royal Botanical Garden, Kew, UK. P.No.133