

Momordica cymbalaria: an untapped hidden nutritional treasure of semi-arid Vertisols

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Hot arid and semi-arid regions are often characterised by scarcity of food resources, and the need for characterising climate-resilient crops is paramount. In such environments, the cultivation of underutilised crops can offer a sustainable solution to enhance food security and build resilience against climate variability. The *Momordica cymbalaria* Hook f. is one such least concerned, minor and underexploited tuber-forming cucurbit member of the family Cucurbitaceae, native to the Western and Eastern Ghats of India. The fruits have good medicinal and nutritional values. The fruits and tubers are used in traditional medicine and as a vegetable food by the tribal farmers. Plants are propagated by round, oval seeds with hypogeal germination, and tubers are also used for the multiplication of plants. This crop is well suited to the semi-arid soil types prevalent in many regions of India and has natural adaptations to survive and thrive in such challenging conditions, making it an ideal candidate for cultivation in these areas under a climate change scenario. Hence, this underutilised vegetable needs to be conserved and popularised among farmers for sustainability and nutritional security.

Keywords: Crop production, karchikai, semi-arid Vertisols, sustainability, underutilised vegetable.

home provinces of the north Karnataka region². There is having a greater demand in the local markets of eastern India as a high-value seasonal vegetable, due to the lack of agronomical knowledge about cultivation, the nutritional and economic relevance of this species is not explored². Therefore, in the present study, we have tried to identify knowledge gaps and researchable issues with respect to commercial cultivation and popularisation of the crop.

Taxonomy and genetic variability

Taxonomically the species belongs to the genus *Momordica*, which comes under the Cucurbitaceae family. There are 59 species, 10 of which occur in Asia and 7 in India. Each species is taxonomically well defined and are distinct from one another, and a majority of them are edible. They also have a variety of medicinal and nutritional properties. However, taxonomic confusion persists due to a lack of familiarity with taxa, referring to region-specific common names and poor representative herbaria³. Within the species, there is a considerable morphological variation and thus it is important to collect both cultivated and wild sources of germplasm for further evaluation of genetic variability under breeding programmes for crop improvement and to make recommendations for commercial cultivation.

Morphological and genetic relationships of *M. cymbalaria*