

SOLANUM GILO RADDI — A LESS KNOWN VEGETABLE OF NORTH-EASTERN INDIA

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The family Solanaceae has provided about 185 edible plants and 40 cultivated and 18 commercially grown crops (Harlan, 1975) which have contributed much to the human nutrition the world over. In India, the north-eastern region is the home for several solanaceous plants. It is estimated that at least 35 species belonging to family Solanaceae occur in the region (Rao, 1982). Out of these, 15-16 species are consumed as vegetable by the inhabitants, particularly by tribal population. Important but less known edible species among these are - tree tomato (*Cyphomandra betacea* (Cav.) Sendt., *Solanum torvum* Sw., *S. indicum* L., *S. integerifolium* Poir., *S. kurzii* Br., *S. spirale* Roxb., *S. barbisetum* Nees, *S. macrocarpon* L., *S. xanthocarpum* Schrad. & Wendl., *S. straminifolium* Jacq. (= *S. ferox* Clarke) and *S. gilo* Raddi.

Among various solanaceous vegetables, the fruits of *Solanum gilo*, *S. integerifolium* and *S. torvum* inspite of their bitter taste, are boiled, cooked and consumed as vegetable with rice. (Arora and Hardas, 1977). *S. gilo* is important among these as it is grown in the kitchen garden by tribals of NE Region. Still no published report is available on the nutritional value of this species. This communication is an attempt to throw light on distribution, botanical plant characters, nutritional value as well as other related information on *Solanum gilo*.

During survey undertaken in NE states from 1986 to 1992 for the collection of genetic resources of agri-horticultural crops, 65 accessions of *Solanum gilo* were sampled. Out of these, 30 accessions were grown at NBPGR Experimental Farm, Barapani, Meghalaya and the rest were supplied to the Gene Bank at NBPGR, New Delhi. Various plant and fruit characters were recorded to depict

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the botanical characters in details. The unripe fruits were collected, dried at 40-50°C in the slice form and were used to determine the nutritional value following the methods given by Nicholas and Nason (1957), Bailey (1967), Wistler (1962-71), Kates (1972), and Swain *et al.* (1979).

The bitter brinjal (*S. gilo*) is a prized vegetable particularly of Khasi and Mizo tribals. *Solanum gilo* Raddi. - a small thornless shrub growing up to 150 cm height stem with 4-5 branches and petioles are adpressedly pubescent. Petiole 2.5 to 3.0 cm long, leaf oblique, lobed (3 on left and 2 on right half of lamina), mid rib and secondary nerves raised on lower surface; apex acute, upper surface green and lower whitish, glabrescent, of size 15-20 cm long x 10-12 cm wide. Inflorescence axillary, 3-flowers at each node; flower white, gamopetalous at base, calyx-5, whitish, firmly attached. Fruit peduncled, peduncle 2.0 to 2.5 cm, globose, smooth or grooved, greenish-yellow shining or pale-green 2.5 to 3.0 cm in diameter and on ripening turns golden yellow or orange red; 4-locular, centre pithy, flesh less juicy and bitter. Seeds kidney shaped, smooth, surface white, creamy or brown.

The taxonomic confusion and nomenclature complexities had prevailed for long to reveal relationship between cultivated and related wild species of brinjal. Recently Lester *et al.* (1990) made large collection from the African countries and on the basis of *inter se* crossability classified them under *Solanum aethiopicum* L. and remarked that they must have been derived from *S. anguivi* Lam. (= *S. indicum* auct. non L). According to him *Solanum aethiopicum* L. contains four groups viz., *Aculeatum*, *Gilo*, *Shum* and *Kumba*. The species *S. gilo* Raddi. was included under *S. aethiopicum* L. (*Gilo* group). The fruits in *S. aethiopicum* (*Kumba* group) are bigger and have more locules and no star-hair pubescence. Young leafy tops and green immature fruits are cooked as vegetable. Similarly, *Shum* group (= *S. zuccagnianum* Dun.) have small glabrous leaves and small fruits and are not grown extensively. The group *Aculeatum* is found in Europe and have bitter, multilocular fruits.

In NE India, the wide occurrence of this and other related species, especially *S. indicum* L. is suggestive of an independent evolution and domestication of *S. gilo* in the region. More so, in the absence of any evidence for its introduction across the country. The species is being grown in hilly areas of Meghalaya, Mizoram, Arunachal Pradesh, Assam, Tripura and Nagaland. The tribals of these states consume the immature green fruits which is bitter in taste. In African countries, these bitter fruits are liked for flavour and are believed to confer various medicinal properties such as prevention of malaria or increasing lactation (Lester *et al.*, 1990).

The analysis of nutritive value of green fruits of bitter brinjal (Scarlet brinjal) on dry weight basis gave the following results - moisture 28 per cent; protein 5 per cent; total sugar 13 per cent; starch 4 per cent; free amino acids

0.92 per cent; phenolics 2.8 per cent. The green fruits of *S. gilo* are a good source of protein. The high phenolics content is beneficial in the diet as they are known to minimise the toxicity and also have antiseptic and bacteriostatic action and regulate the pH in the intestine (West *et al.*, 1966).

The *S. aethiopicum* (*Gilo* group) can withstand adverse weather and irrigation and is less prone to insect and fungal attack. This character could be profitably used to evolve hardy brinjal varieties. Moreover, other taxa such as *S. indicum*, *S. aethiopicum*, *S. integrifolium*, *S. olivare* are closely related to *S. melongena* (Pearce and Lester, 1979), and, therefore, transfer of useful genes will be simple and easy. Further research is required to reveal more about the usefulness of this vegetable in tribal diet. There is also need to improve it genetically and to work out better cultural practices, for its large scale cultivation.

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