



## Diversity of pumpkins from Meghalaya, India

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Pumpkins, belonging to the genus *Cucurbita* (Cucurbitaceae), are native to tropical and warm regions of America. They are cultivated as vegetable in tropical, subtropical and temperate regions of the world and have generated tremendous diversity in the regions of cultivation. Pumpkin (*C. moschata*), winter squash (*C. maxima*) and summer squash (*C. pepo*) are the important species cultivated in India, apart from three recently introduced ones – *C. ficifolia*, *C. foetidissima* and *C. argyrosperma*. In the state of Meghalaya, existence of a high level of local diversity in pumpkins demands sincere effort in the collection and documentation of these genetic resources.

**Exploration and collection** : keeping this in view, authors have undertaken an exploration to Khasi and Jaintia Hills of Meghalaya during November 2011. This had resulted in the collection 24 accessions of *Cucurbita* germplasm (15- *moschata*, 5- *maxima*, 3- *pepo* and 1- *ficifolia*) from four districts of Meghalaya – Ri-Bhoi, East Khasi Hills (EKH), West Khasi Hills (WKH) and Jaintia Hills (Fig. 1).

**Pumpkin**: locally known as *pathaw*, was commonly cultivated throughout the explored areas up to 1600 m due to its high productivity, wide adaptability, good storability and long period of availability. Fruits were highly variable with respect to size, shape, ribbing, skin colour (primary/secondary), etc. (Table 1). In general, 3-5 types were noted in a single field/garden, especially in WKH. Incidentally, all the fruits had smooth skin surface; deep ribs were occasionally linked with flat and globose-shaped fruits. Two accessions were noticed with small seeds without seed margin. Morphotypes ‘Cheese’ and ‘Seminole’/ ‘Calabaza’ were commonly observed. A landrace ‘Pathawsaw’ (Fig. 1 *moschata*: 1) was occasionally noticed in high altitudes (1300-1600 m), which had been

characterised by long peduncle (15-18 cm), elongate fruits (30-35x15-20cm) weighing 7-8 kg, possessing predominantly green skin colour with cream coloured spots and streaks notably in the distal/stylar region.

**Winter squash**: It was observed to be frequently cultivated in EKH and WKH between 1300 and 1700 m. Its mature fruits were consumed as vegetable and also fed to animals. Though noted with varying morphology, majority of the observed fruits could fit well in two morphotypes – ‘Banana’ (elongate fruits with soft rind and brown seeds; in EKH) and ‘Show’ (round to elongate

orange coloured fruits with smooth rind and white seeds; in WKH). Apart from the above, an interesting landrace ‘Pathawshimon’ (in Khasi language, *pathaw* means pumpkin, *shimon* means forty; indicating that each fruit normally weighs about 40 kg), probably a variant of ‘Hubbard’ morphotype, was found only in WKH. Its fruits were conspicuously large, weighing between 15 and 45 kg with ashy grey surface and varying shapes and ribbing (Fig. 2). Inside the fruit, there was big hollow; flesh was yellow-orange in colour embedded with few white seeds.

**Summer squash**: It was seldom found cultivated for immature fruits in the areas explored or in markets. One morphotype ‘Vegetable Marrow’ (sometimes connoted as *C. pepo* var. *fastigata*), locally called *pathawrisang* (*pathaw*-pumpkin, *risang*-squirrel; depicting the stripes over fruit like that of squirrel), was noticed in WKH. Its fruits were elongate, widened in distal part with hard rind, orange-yellow in colour with occasional green longitudinal streaks.

**Malabar gourd**: *C. ficifolia*, a perennial species locally known as *pathawthohraw*, introduced and naturalised in



Fig. 1: Diversity in *Cucurbita* germplasm collected from Meghalaya (*moschata*: 1, 2, 5-8, 12-15; *maxima*: 3, 4, 9, 16; *pepo*: 10, 11; *ficifolia*: 17)

Table 1 : Features of pumpkin germplasm collected		
Sr. No.	Characters	Remarks
1.	Fruit shape	Globular, flat, cylindrical, pyriform, and elongate
2.	Fruit skin colour	Predominant being dark-green, green, cream, brown; secondary colours being cream-yellow, orange; in varying patterns viz., speckle/spots/streaks.
3.	Fruit size (cm)	12-50 x 10-20
4.	Fruit weight (kg)	1-8
5.	Peduncle length (cm)	4-18 cm
6.	Seed shape	obovate, elliptic
7.	Seed size (cm)	1.13-2.02 x 0.52-0.89



Fig. 2 : Landrace 'Pathawshimon' belonging to *C. maxima*, collected from WKH depicting the variability generated within the landrace

Khasi Hills, was commonly seen near human habitations in high altitudes of 1400-1700 m, but with no obvious variability. Though local people informed that the immature fruits could be eaten, owing to its insipid taste, fruits were mainly fed to pigs at mature stage after boiling.

**General observations:** Although the three domesticated species (pumpkin, winter squash and summer squash) are reproductively isolated from one another, their cross-pollinated nature and production for self consumption/ sale in local markets has generated great diversity of phenotypes within and between landraces/primitive cultivars/morphotypes. In general, collected germplasm appeared to be ideal source for cold and virus tolerance and desirable flesh traits. Preliminary survey revealed that scope for introduction of new crops like zucchini (*C. pepo* var. *cylindrica*) in these hills.

**Summary:** In an exploration trip to Khasi and Jaintia Hills of Meghalaya, authors have observed good diversity in pumpkin germplasm, belonging to four species. Good diversity, represented in the form of landrace/morphotype with build-up variability within them, was observed in both pumpkin and winter squash in Khasi Hills.

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