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# COLLECTING TARO AND OTHER TUBER CROPS FROM NORTH EASTERN HILL REGION OF INDIA

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**A germplasm collection mission to North Eastern hill region of India was undertaken to collect taro and other tuber crops during 1996. The area showed wide distribution of taro. This supports the theory that this region is the Centre of Origin of taro. In all, 42 accessions of taro and 50 accessions of other tuber crops were assembled from Garo hills, Khasi hills and Jawai hills of Meghalaya. The collection contains high yielding varieties, acid free cultivars and leaf blight free types. The collected germplasm will be very useful in the breeding programme.**

Key words: Taro, collection, tuber crops, leaf blight

Taro (*Colocasia esculenta* L. Schott) is a tuber bearing herbaceous plant belonging to the family Araceae of Monocotyledons. It is a large family of about 110 genera and over 2000 species widely distributed in tropical and subtropical regions of the world. Taro is estimated to be cultivated in an area of 1.07 million hectares producing 6.5 million tons of tubers (FAO, 1997). However, it is an underestimate, as taro is a backyard crop and estimates are not available from many countries including India. Eventhough taro is cultivated in many countries of Asia, and South America it is in the South Pacific that the crop has gained economic, social and national importance (Pena, 1970). Taro is a staple food in most of the pacific Islands and in many countries such as Tonga, Western Samoa and Papua New Guinea, it is a prestigious crop playing an important role in the gift giving ceremonies (Clark, 1977; Thaman, 1977).

Taro is considered to be one of the most ancient tuber crops domesticated by man, perhaps much before grains. It is believed to have originated in the South East Asia including India and Malaysia (Watt, 1889; Chang, 1958; Keleny, 1962). From there it has spread to Taiwan. The Solomon Islands and to Japan (Spencer, 1966; Kumasava *et al.*, 1966). Later work of Kuruvilla and Singh (1981), Velayudhan *et al.* (1991), Medi *et al.* (1994) and Pandey *et al.* (1993) have confirmed the assumption that North Eastern India is the primary centre of origin of taro.

## MATERIALS AND METHODS

Considering the importance of the collection of taro from the North Eastern hill region of India, a germplasm collection trip was arranged under the aegis of an ICAR sponsored Ad hoc scheme on taro and the Crop Improvement Division of the Central Tuber Crops Research Institute (CTCRI), Thiruvananthapuram, India. This trip was taken up during October-November 1996 in collaboration with the regional centre of the National Bureau of Plant Genetic Resources, Umiam (Barapani), Meghalaya.

The state of Meghalaya represents two distinct agro-climatic zones, namely mild tropical hill zone and sub-tropical hill zone. Similarly different soil types also are available; black, red and laterite. The collections were made mostly from cultivated fields, market places and road sides. Taro is mostly found as mixed crop along with rice, legume, ginger etc. in a typical jhum cultivation system of the region (Jhum is an old traditional way of cultivation by the hill tribes, where an area of the forest is cleared, burned and mixed cultivation is done there for a few years till the soil fertility lasts. Thereafter they look for other pasture/forest area.

## RESULTS AND DISCUSSION

Forty two accessions of taro and more than 50 accessions of other tuber crops like cassava (12), sweet potato (5), yams (5), swamp taro (4), tannia (9), elephant foot yam (4) and other minor tuber crops (22) were collected (Fig. 1-2). Most of the collections of taro were obtained from Garo hills, Khasi hills and Jowai hills. Details regarding the collections made from each region along with their soil type and agro-climatic conditions are given in table 1. Wide variability with regard to colour, shape and size of tubers was noticed (Fig. 1-4). This great diversity is in conformity with the assumption that North Eastern India is the centre of origin of taro.

Majority of the collections were dasheen type, consisting of corm only (Fig. 3-4). This is in contrast to the situation in South India where majority of the accessions are eddoe or mixed type. Flowering and seed setting are rarely noticed in this region. Out of 42 collections, only one was found to flower whereas in South India a good number of diploid accessions flower and set seed (Thankamma Pillai and Unnikrishnan, 1993; Sreekumari, 1992).

Taro is a popular crop in Meghalaya and as such it forms an inevitable item of daily food. Cultivars like "Garokatchu" and "Tha'h" are known for their high yield, early maturity, low acridity and good cooking quality. One particular cultivar "Wang Panaii" is said to be non-acrid and it is eaten fresh as salad with lime juice added for flavour. However, other tuber crops did not show much variability in this region. Swamp taro is favourite dish here. Cassava might have infiltrated into this area from Burma. Amorphophallus (elephant foot yams) are of two distinct type, the big commercial type and a small type, as small as potato. Minor tuber crops belonging to Zingiberaceae family also are found. "Saflong" a minor tuber crop, the small tubers of which are eaten fresh, is a speaciality of this area.

**Table 1. Two collection from North Eastern Hill region**

| Place of collection | No acce-ssions | Soil type | Zone |
|---|---|---|---|
| Garo hills | 6 | Black | NEH-5 (mild tropical hill zone) |
| Tura | 3 | Black | NEH-5 |
| Bhagmara | 3 | Black | NEH-5 |
| Bhalphakrum | 3 | Black | NEH-5 |
| Khasi hills | 1 | Red + Laterite | NEH-3 (tropical hill zone) |
| Barapani | 6 | Red | NEH-3 |
| Umroi | 3 | Red | NEH-3 |
| Jawai | 4 | Laterite | NEH-3 |
| Kanduli | 2 | Laterite | NEH-3 |
| Laitkore | 5 | laterite | NEH03 |
| NBPGR (R.S.) | 2 | Red | NEH-3 |
| Konjoi | 4 | Red | NEH-3 |

### Utility

Acridity is a major problem in the breeding of taro. Even when low acrid varieties are hybridized a number of high acrid progenies are thrown out. Cultivars like "Wang panaii" should be a great significance in breeding low acrid varieties as well as for basic studies on the pattern of inheritance of acridity.

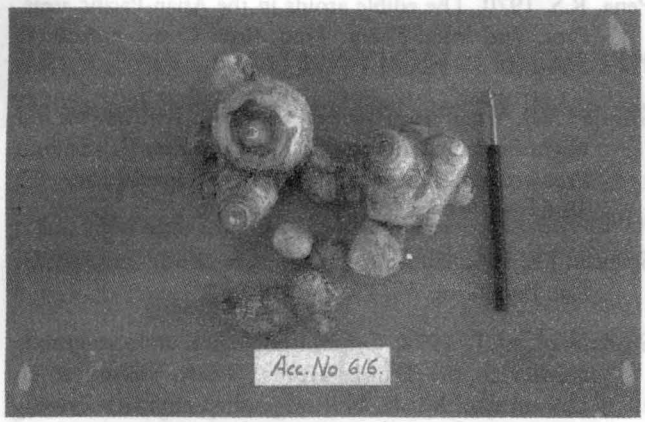


Fig. 1. Round corm and many cormels

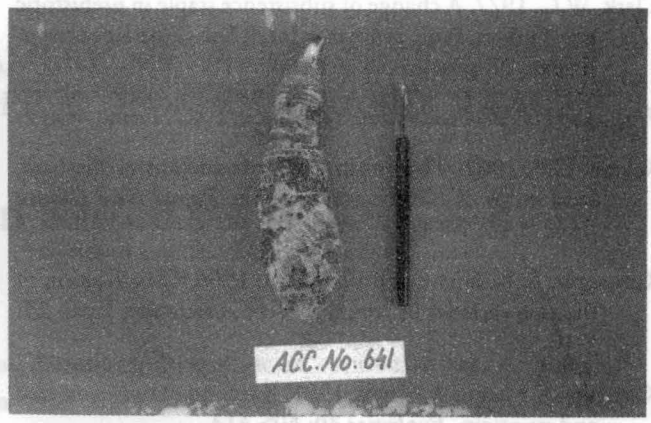


Fig. 3. Oblong corm only (dasheen type)

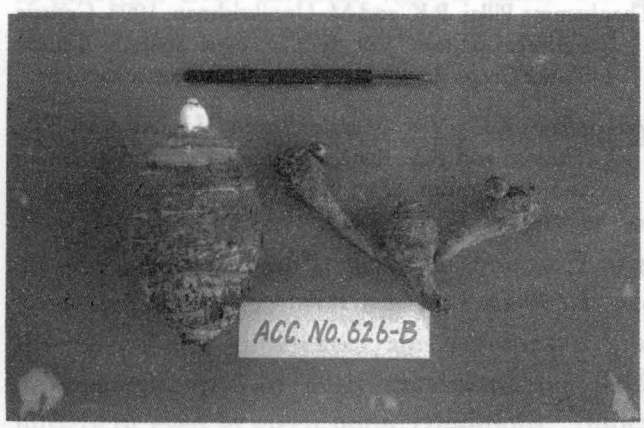


Fig. 2. Conical corm and few cormels

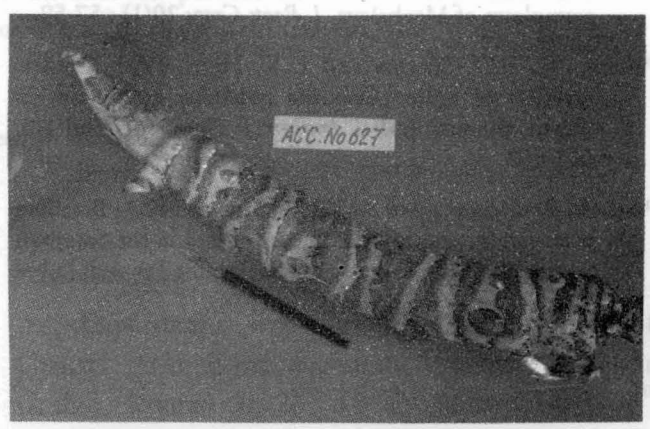


Fig. 4. Oblong, large corm only (dasheen type)

Leaf blight disease was not apparent in this region. Blight caused by *Phytophthora colocasiae* is one of the serious diseases of taro in all taro growing countries including India (Santha Pillai *et al.*, 1991). Taro plantations in a number of Pacific Islands were completely damaged by leaf blight. Recently 90 per cent of the taro plantations in Western Samoa was destroyed by the epidemic of leaf blight. Patel *et al.* (1993) have suggested that leaf blight resistant varieties from India, the center of origin of taro, should be used in resistance breeding. So far no cultivar was found to be completely resistant to leaf blight. The leaf blight free cultivars can be screened in hot spots and tolerant ones can be used in the resistance breeding program.

It is expected that cultivars collected from NEH region will be of immense use is genetic studies and breeding of tuber crops.

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