

## NATIVE LITCHI AND THEIR WILD RELATIVES: TAXONOMY GAP, *IN SITU* CONSERVATION PLAN IN VIETNAM

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### INTRODUCTION

Litchi was cultivated in Malaysia since the 1500 BC, much earlier than the Chinese (Nguyen Tien Ban, 2000). However, it has been planted in many other countries in the last 400 years, and most of the seed seems to be derived from China. Litchi, which grows wild and is cultivated in northern and central Vietnam, is also found in India and China (Yunnan, Hainan). There is even an ancient saying about the litchi fruit during the Minh Dynasty of Vietnam dating back to the 18<sup>th</sup> century as the saying goes "Litchis are Buddha's fruit, to which no other fruit can be compared". It is an evergreen woody tree, often not higher than 10m and rarely reaches 15-30 m, grows in the forest or on low hills, may be cultivated on all kinds of soil, and well-suited in areas having short, dry and fresh winter (non-frigid) with long and hot summer with high humidity. The flowering season is in spring and fruiting season starts at the beginning of summer.

### MATERIALS & METHODS

#### Materials

70 plant specimens of native litchi and their wild relatives collected from gene management zones (GMZs) in Lang Son province (GMZ Huu Lien Nature Reserves), Cao Bang province (GMZ Tan Tien), Hai Duong province (GMZ Thanh Son) and Ha Tay province (GMZ Ba Vi National Park and GMZ Ba Trai) were classified by morphological methods using microscope.



Guoc Litchi  
(Ké: Dao language)



Tu Hu Litchi

#### Methods

Survey inventories: The modified Braun-Blanquet method was used for the inventory, with several transects set in each study site. The inventory in each study site was obtained in order to complete the selection of the GMZs of target species (Kitiki and Tan, 1998). Herbarium specimens were also collected for the identification of associated species. The physical and ecological description of study sites has been part of the surveys.

### RESULTS & DISCUSSION

#### Taxonomy and diversity

Scientific name: *Litchi chinensis* Sonn.

Synonyms: *Dimocarpus litchi* Lour.; *Scytalia chinensis* Gaertn.; *Sapindus edulis* Ait.; *Euphoria sinensis* Gmel.; *Euphoria litchi* Desf.; *Nephelium litchi* Cambess.; *Nephelium chinense* Druce; Litchi litchi Britt.

Depending on the environment of certain regions, uses, etc. litchi cultivars have developed differently. The origins has been diversified or lost and several litchi cultivars have been renamed of mislabelled, resulting confusion in the nomenclature of litchi cultivars (Aradhya *et al.*, 1995; Degani *et al.*, 1995). Apparently, the same cultivar has been described under different names, and in some locations/regions different cultivars have been given the same name.

Based on agromorphological factors such as origin and source of material; morphology (young plant, flowering stage, maturity of fruit on the plant); environmental/ecological adaptation (type of soil, resistance to pests, earliness, field) and utilization (fresh consumption, as dried fruit, etc.), litchis in Vietnam can be grouped into 4 main groups as given below:

**Group 1:** Tu Hu litchi or sour litchi. This group consists of 6 varieties (U Hong, U Trung, U Tham, Vang Anh, Cui Dua, Duong Phen). The sour Litchi has an annual flowering and fruiting season with sustained yield. Maturity period is at the end of April- early May.

**Group 2:** Thieu litchi. Thieu Litchi Tree is round shaped with small leaflet and thick lamina. Small fruit with sweet flavour. The maturity time is later than other litchi fruits. Thieu litchi fruit is subspherical, ripens in July - August, the seed is subglobose and smaller, and the flesh is thick and sweeter.

**Group 3 or Intermediate Litchi** (hybrid Litchi): The tree has intermediate height, the fruit size is smaller than the sour litchi. The fruit is less sour but of

lower quality compared to Thieu litchi. The maturity time is mid May- beginning of June.

As noted earlier, there some taxonomic confusion with regard to litchi, as little attention has been given to this topic to date. Many varieties bearing local names have not been classified well. It is very difficult to develop effective conservation strategies for these species without a thorough understanding the differences with the species, varieties, etc.

**Group 4:** Litchi wild relatives (Genus *Litchi sp.*, *Nephelium sp.* and *Litchi (*Xerospermum*) noronhianum*)



*Xerospermum noronhianum*  
(Blume) Blume (Sapindaceae)



GMZ in Lang Son prov.

#### Conservation status

Local communities used to plant litchi not only for the fruits but also for timber. Litchi wood generally has little value as timber in Vietnam as compared to hardwoods. The farmers in Cao Bang logged natural forests of *L. chinensis* and their wild relatives. Their wood was used to make furniture, coffin, etc. The mature old litchi trees are cut down for wood but not for fruits. Therefore, the status of wild litchi conservation and development in Vietnam is becoming more complicated.

#### Gene management zones (GMZs)

This study includes sites in 6 provinces of Vietnam representing original and diversity of the species as litchi. The selection of study sites proceeded in two steps. The first step was to identify genetically important areas (henceforth, referred to as "genetic management zones" - GMZs) or "hot spots" So far, three GMZs have been selected. In the GMZ in Lang Son, there is more than one project site within the larger GMZ - one in a cultivated ecosystem, and an associated site in an adjoining natural ecosystem contained within a protected area. The two remaining GMZ's consist only of cultivated ecosystems.

The stakeholder consultations recommended that, where possible and consistent with the principles of agrobiodiversity conservation, protected areas (PAs) with natural ecosystems containing wild relatives of crops should be included.

#### Conservation plan of litchi and their wild relatives

Assessment of diversity of the target species

Identification of taxonomy gap including local names

Determination of conservation status of the target species

Selection of pilot conservation project for each GMZ

*In situ* conservation or conservation in use

### CONCLUSIONS

Vietnam has diversity of local "vai or litchi" with at least 8 varieties and their wild relatives. Local litchi taxonomy is a gap in Vietnam underpin decision making in conservation of biological diversity, sustainable use of its components and equitable sharing of the benefits derived from the utilization of genetic resources. It is necessary to further research to make evidence that these problems can be overcome, in particular through the management, development and use of genetic diversity. It is recommended that litchi and their wild relatives conserved in GMZs (*for local/native litchi*) and protected areas (*for litchi wild relatives*).

### REFERENCES

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