



# Survey and collection of solanaceous indigenous plants in Central Vietnam



Le Hoang Pham<sup>1</sup>, Tran Thi Thu Ha<sup>1</sup> and Michael Henry Böhme<sup>2</sup>

<sup>1</sup> Hue University of Agriculture and Forestry, 102 Phung Hung, Hue City, Vietnam

<sup>2</sup> Humboldt-Universität zu Berlin, Faculty of Life Sciences, ADT Institute, Germany

## Introduction

In Vietnam a erosion of genetic resources and a decline in biodiversity is visible, in particular solanaceous plants are seriously threatened in Vietnam. Therefore, one aim was to conduct an inventory of the distribution of solanaceous species in farms and local households in central Vietnam in order to understand the level of cultivation. In this study were conducted investigations and surveys in central Vietnam, searching for regions and communities with high cultivation of non-indigenous and indigenous solanaceous plants. In general was the aim of the research focused on the collection of various accessions of solanaceous species in different regions and creation of germplasm database based on morphological characterization in order to restrict the loss of solanaceous genetic diversity.

## Material and Methods

### 1. Data collection

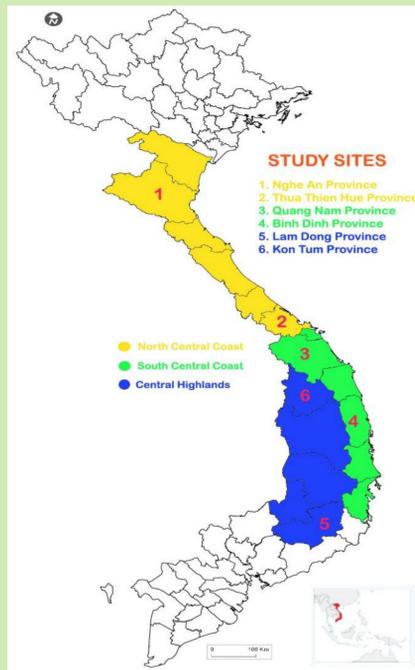
- Collection phenotypes: landraces, local varieties, open pollinated varieties, and wild types were collected in local markets and farmers' backyards or outside the field.
- Survey is conducted in three provinces with 235 surveyed households from 18 districts of 3 different provinces from February 2013 to December 2014.
- The collections include: the first from December 2013 to July 2015 and the second from December 2021 to July 2022.

### 2. Collection objects and methods

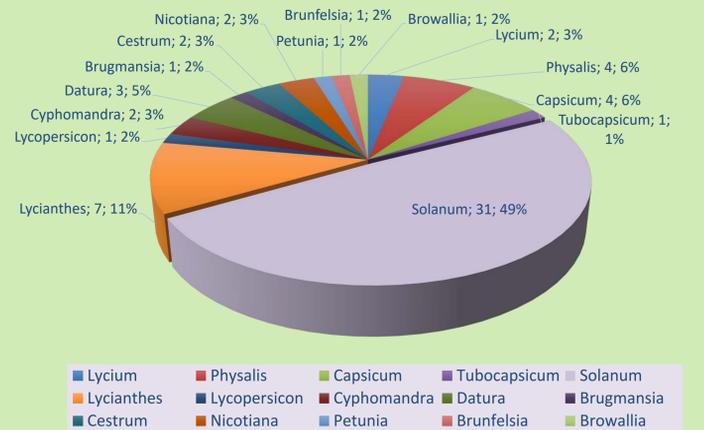
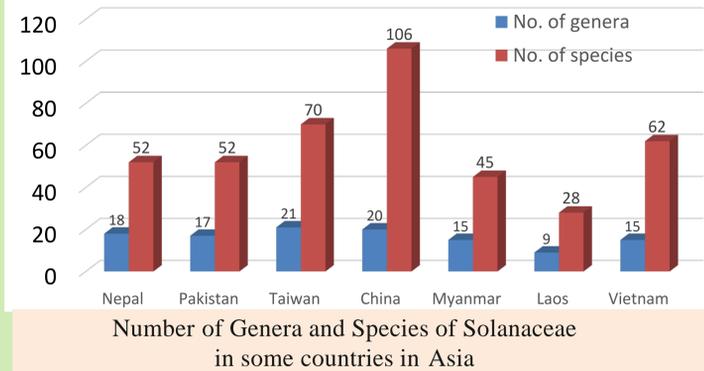
- Ripe fruits, seeds, parts of plants
- Morphological characteristics: Growth form, Leaves, Inflorescences, Flowers, Fruits
- Diversity analysis of wild Solanaceae Species using DNA barcode

### 3. Collected regions base on results of eco-geographic survey according to following criteria:

- High diversity of indigenous solanaceous species
- Ecological crossroads between regions
- Diversity of topography and ecology



Study sites of solanaceous species in Central Vietnam



Genotypes of the plant family Solanaceae in Vietnam

## Results and Comments

Name of plant	Origin of cultivar			Type of cultivar		
	Self-breeding	Buy from company/market	Provided from other farmers	Semi-wild	Local cultivar	Hybrid cultivar
Chili	Y	Y	Y	N	Y	Y
Eggplant	Y	Y	Y	N	Y	Y
Eggplant fruit	Y	Y	Y	Y	Y	Y
Tomato	Y	Y	Y	Y	Y	Y
Devil's trumpet	Y	N	Y	Y	N	N
Tobacco	Y	Y	Y	N	Y	N
Petunia	N	Y	Y	N	N	Y
Yesterday today and tomorrow	Y	N	X	N	N	Y
Brazilian nightshade	Y	N	Y	N	N	N
Angel's tears	Y	Y	Y	Y	N	Y
Night-blooming jasmine	N	N	Y	N	Y	N
Yesterday today and tomorrow	N	Y	Y	N	Y	N
The Jerusalem cherry	N	Y	Y	N	N	Y

The origin of the solanaceous cultivars currently used by the farmers in central Vietnam

Genus	No. Species in this study	No. used as Food	No. used as Medicine	No used as ornamental plant
Lycium	2		2	0
Physalis	3	3	3	3
Capsicum	4	4	4	2
Solanum	18	9	15	4
Lycianthes	1	0	1	0
Lycopersicon	1	1	1	1
Cyphomandra	1	1	1	1
Datura	2	0	2	2
Brugmansia	1	0	1	1
Cestrum	1	0	1	1
Nicotiana	1	0	1	0
Petunia	1	0	0	1
Brunfelsia	1	0	0	1
Browallia	1	0	0	1
<b>Total (species)</b>	<b>38</b>	<b>20</b>	<b>32</b>	<b>18</b>
<b>Percentage (%)</b>		<b>52,63</b>	<b>84,21</b>	<b>47,37</b>

The solanaceous species collected in Vietnam can be classified as plants for food, medicine or ornamental



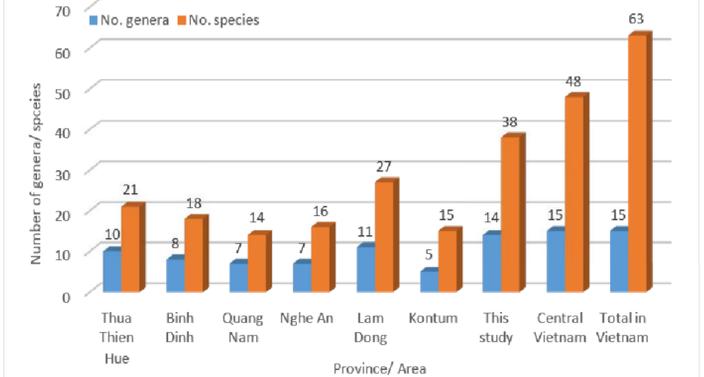
133-NA-200422  
*Solanum capsicoides* All.



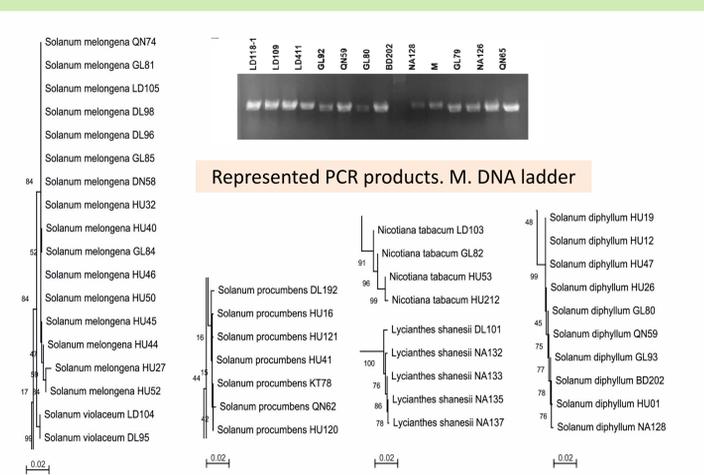
55.HU150322  
*Solanum viarum* DUNAL

## Conclusions

1. Valuable species to local people include 38 species, in which 20 species for fruits, 32 species for medicine, 18 species for ornamentals.
2. Through survey and collection, 280 solanaceous gene sources were collected from 8 provinces of Nghe An, Thua Thien Hue, Quang Nam, Gia Lai, Kon Tum, Dak Lak, Lam Dong, Binh Dinh.
3. Wild solanaceous species have diversity analysis using dna barcode become 14 groups. C14 group maybe a new species/varieties and be identified as *Lycianthes* sp.



Number of genera or species in studied areas in central Vietnam



Phylogenetic tree of solanaceous species collected from Central Vietnam base on the trn fragment sequences