

CHAPTER 1

INTRODUCTION

Geography provides Thailand of large diversities of plants since the country is located on a junction of 3 bio-geography regions, i.e. Indo-Burmese in the North and the West, Indo-Chinese in the North, the Northeast and some part of the East, and Malaysian in the South. Due to geographical distinctiveness of such regions 16 types of forests thus exist in Thailand. The forests originating in different parts of the country hold various geographical and climatic status resulting in abundant diversity of vegetations capable of being utilized inclusively (Kaosa-ard, 1994).

Utilizing cultures of forest crops and domesticated indigenous vegetables vary in different parts of Thailand. As for the latter, consumers are mostly the locals having comfortable accesses of reaching the plant sources. Collecting and harvesting forest crops for food is no less unusual in villages surrounding the woods. Some perennials as well as annuals were often taken from their natural habitats for domestication and consequently evolved into cultivated varieties, with no improvement processes involved. Indigenous and local variety vegetables generally grow well in rural areas. Cultivating problems are less found, comparing to those of modern varieties, due to the plants' adapting capacities to domesticating conditions. Chemicals are least necessary in productions of those vegetables since the plants had already been through the process of natural hardening thus developed tolerance towards insects and pests. Being chemical free, indigenous and local vegetables, such as Phak Siao (*Andenia viridiflora* Craib.), Sa Lae (*Broussonetia kurzii* (Hook.f.) Coner), Phak Kan Thueng (*Colubrina asiatica* L. ex Brongn.), Fak Khao (*Momordica cochinchinensis* (Lour.) Spreng.) and Phak Wan Ban (*Sauropus androgynus* (L.) Merr.) (Smitinand, 2001) had gained increasing popularities as alternative vegetables among the towners, resulting in increasing prices in the markets (Poungmanee, 2007; Sapcharoen, 2005).

In Upper-Northern parts of Thailand, 2 species of indigenous vegetables, i.e. Phak Chiang Da (*Gymnema inodorum* Decne.) and Nang Laeo (*Peliosanthes teta* Andr.) (Smitinand, 2001) and a local vegetable, Phak Plang, Ceylon Spinach, Indian Spinach, Malabar Spinach or Malayan Nightshade (*Basella alba* L.) (Eriksson, 2007; Larsen, 1992; Smitinand, 2001) are widely consumed. Among the 3 species Nang Laeo is the highest in demand, though not very well-known. The edible part of this plant is the inflorescence, raw or cooked. The other 2 species obtain more identities. Ceylon Spinach is an annual with climbing stems and fleshy leaves. In villages of the North and the Northeast it is usually grown, trailing on the fences. The inflorescences, also young shoots and young leaves, are used as vegetable. Medically, the roots are an ingredient of folklore medicinal mixtures capable of curing particular skin diseases and eradicating the dandruff. The vines are used to relieve smallpox inflammation while the leaves and flowers are good for dermatophytosis. Extract from mature fruits is used as food colouring. Phak Chiang Da, also a climber is a perennial. Every part of the plant produces milky latex. This plant is considered drought tolerant. It has the habit of flushing all year round. The young shoots and leaves are the edible parts (Deewiset, 1999; Pookajorn, 2000).

Non-chemical contaminated indigenous and local vegetables are favourable these days and classified as healthy food. They contain certain nutrients, rarely found in improved varieties (Sapcharoen, 2005). Quite a number of these plants are used not only for food but also for other purposes, especially for fabrication and household utensils. Literally, exploitation of indigenous plants especially from their natural habitats has outbalanced the *in situ* multiplication, resulting in increasing risks of being extincted. Those with flowers, fruits, seeds or bulbs taken as food are of higher risks since such organs are natural propagating parts of the plants (Trisonthi and Trisonthi, 1999). To cope with such risk assessments, indigenous plants as well as local vegetables are needed to be conserved, especially those facing heavy exploitation with no retaining management, to sustain their species diversity (Baimai, 1989).

Currently, conservation of plant genetic resources has been well acknowledged and, considerably, management as such has been conducted by various institutions (Withers, 1990). Genetical studies of the plant species has been systematically schemed, and plant characterization plays important roles in these studies. Plant characterization, including those of morphological, anatomical, cytogenetical, chemical, bio-chemical and molecular provide not only specific data supportive for taxonomical works (Kaset Research, 2008; Phooyanan, 2003; Ramanatha and Riley, 1994) but also the basic information accountable for proper utilization of the plants.

This study is a part of Indigenous and Local Vegetable Conservation Programme carried out in some areas of 8 provinces in the Upper-North of Thailand, supporting by Conservation of Plant Genetic Resources Project under Her Royal Highness Princess Maha Chakree Sirindorn's Initiatives and Huai Hong Khrai Royal Development Study Centre. The plant species being studied are *Peliosanthes tetra* Andr., *Basella alba* L. and *Gymnema inodorum* Decne. The research focused on preliminary surveys, collection and characterization of adequate accessions of targeted species. The data obtained from the studies would be valuable for the species conservation and their sustainable utilization.