CHAPTER II

LITERATURE REVIEW

This chapter starts with an overview of indigenous knowledge. It then presented the importance of non-wood forest products (NWFPs) for people and how non wood forest products (NWFPs) have played significant roles for household consumption. This chapter would describe method to evaluate the value of wild plants that were gathered from the forests.

2.1. Indigenous knowledge

Indigenous knowledge can play a key role in the design of sustainable agricultural systems. It can be defined as a sum of the experience and knowledge of a given ethnic group that forms the basis for decision making in the face of familiar and unfamiliar problem and challenges (Warren and Cashman, n.d.).

Indigenous knowledge is the knowledge used by local people to make a living in changing environment. Knowledge production should be seen as a process of social negotiation involving multiple actors and complex power relations and must therefore be understood in terms of change, adaptation, and dynamism. The knowledge should be views as a continuous process of change, adaptation, and coexistence, in which traditional and modern, local and global, are mingled together to create a complicated local life (Nygren, 1999). The knowledge as local knowledge is situated and based open an intimate understanding and appreciation of local ecosystems. It is developed and passed on from generation to another in the process within which the people adapted themselves to a particular set of conditions in an

ecosystem. Through time, local knowledge is accumulated and developed within an ever-changing environment (Yos, 2003).

Farmers, as well as industrialized societies have sophisticated ways of looking at the world. They have names for many different kinds of plants, ways to diagnoses, and methods to crop fertile and infertile soils. This knowledge has occurred over many centuries, and is a critical and substantial aspect of the culture and technology of any society. Indigenous knowledge functions within the given socio-economic and spatial boundaries of the society and plays an active part in the culture of the population concerned, being preserved, communicated, and used by its members to serve some purpose in relation to productive activity within the society. It can be transferred by quite elaborate systems, often involving oral transmission using stories and myths. Yet few examples have been methodically recorded, and fewer still have been studied with the purpose of developing an integrated approach to solving agricultural and rural problems (Warren and Cashman, n.d.) Indigenous knowledge is knowledge of villagers which is accumulated for along time (Pongpit, 1993). According to Poonnotok (1989), indigenous knowledge is knowledge that villagers learn and inherit experiences.

Nantanavanich (1996) reported about personal characteristics, socio-economic factors of the community in San Mun Highland Development Project by the use of indigenous knowledge and the participation of people organization in natural resource management. They also investigated farmers' problems, needs, and the recommendation for improving natural resources management. It was found that the major causes leading to the community behavior causing destruction of natural resources, e.g. forest, soil and water, that is, lack of three major indigenous knowledge, namely, lack of community consciousness, lack of community administration and lack of appropriate technology. The community consciousness and indigenous knowledge are the operational strategies in natural resources

management in the project. Chaveepak (1998) studied indigenous knowledge in forest resource conservation in Lumpang province. The result of the study found that most of villagers used their indigenous knowledge in forest resource conservation because the villagers relied on the forest. However, they did not have land holding and they lived in conservation areas. Thus, they extended agricultural areas to forest areas and this was a cause of deforestation.

In Akha tribe community, Uraiwan (1999) reported that the community would have a traditional doctor to cure patients in their village. The doctor was someone who had as much knowledge about the treatment of illness in their village that they were chosen by their ancestors. The knowledge was based on the principle that not any person did own the knowledge. When Akha patients visited the traditional doctor for treatment, the doctor would cure the patient completely and the patient would pay for the treatment one year after treatment to ensure that the disease would not return. Then, the doctor gave advice on the medicinal ingredients to be used and the method for treating the illness. The patient would know how to make the treatment and take care himself. When they went to Akgha healers or the doctor for treatment, they must bring one boiled egg with roasted and ground rice, mixed with oil made into six balls where three were rolled on salt mixed with white sesame seeds and three with black sesame seeds with a bowl each of tea, liquor, and pork. The patient placed all these items on a raised tray. Then, he removed the shell from the egg and placed it on the rice mixed with black and white sesame seeds with one third of the boiled egg on the palms of medicine man for him to eat. This ritual was repeated three times until all the rice mixed with black and white sesame seeds were finished. This ritual shows how elaborate is a treatment of an illness by a traditional doctor.

2.2. Importance of Wild Plants

FAO (1996) emphasized that non-wood forest products (NWFPs) are very important for people in upland areas. Most upland households relies on non-wood forest products for food, nutrition, medicine, fodder, fuelwood, and mulch. Poor households depend on non-wood forest products (NWFPs) because they usually have easier access to forests than other resources in market.

Canadian international development agency (1993) emphasized that non – wood forest products include all the non – industrial forest products that are harvested from the trees, shrubs and other plants in the forests. This includes latexes and resins, fruits and nuts, spices and oils as well as countless traditional and modern medicines. Some trees produce a single product while others yield a multitude of different products used every day. For example, the Central American kerosene tree is a source of traditional medicine for skin disorders. The African baobab tree, on the other hand, provides ropes and fibres from the bark, water storage containers from its hollow trunks, a lotion from its leaves and a variety of foods from its shoots, leaves and fruits. Baobab fruits husks are burned as fuel and the ashes made into soap. In the other hand, non – wood forest products offers diverse benefits to communities around the forests as source of food, household products (such as ruttan, baskets, art works and woven items), latexes, resins and colorants, and medicine.

With regard to food and nutrition, forest foods include fruits, leaves, seeds and nuts, tubers and roots, fungi, gum, honey and sap, and forest wildlife are important source of food, particularly in Africa (1996). Besides direct nutritional contributions, they lend variety and taste to a diet and can be particularly important for children's diets. Poor and landless people often depend more heavily on forest foods than other groups. In medicines and other products, most upland villages rely on forests for

traditional medicines. The use and local processing of medicines near their forest source depend on local knowledge that has been developed over generation. For cultural beliefs, certain non-wood forest products (NWFPs) and forest values often reinforce a group's identity and help build the cohesion needed for local forest management. In many cases, these beliefs directly promote soil and water conservation and sustainable forest use.

2.3. Women and the Utilization of Wild Plants

In developing countries, it has been accepted that women plays important roles and have potentials in agricultural production and in rural development. This would include their roles in the household, either herding, firewood collecting, seeking for fresh water, or taking care of the children's education (Green Earth Foundation, 1996).

Shiva (1989) states that in local agricultural system, women play an important role in keeping the richness of soil and agricultural system. This is because women are considered as organizers of mixed planting and intensive cultivation system. Moreover, women are also in charge in developing agricultural technology such as keeping, maintaining, and selection of seeds, and reproduction techniques. In the process of production and preparation of food from wild plants, women are required to be knowledgeable and skillful in doing various works. This includes the selection and searching for the seeds. They are also needed to have knowledge on preparation and planting of seeds. They also have to have skills in sorting, and selection of seeds, characteristics of plants, and various geographical factors (Panyakul, 1997). In local production, women are responsible in various tasks. From the analysis of women's

role, it was found that they are working in the field that related directly to food cycle. This responsibility is directly related to the way of life and well being of the family. In India and China, women do the processing of agricultural products. The knowledge compiled for generations make women flexible in agricultural works (Anucha and Surapol, 1996).

The study on wild plant food in agricultural environments in Northeast Thailand reveals that women are the primary selectors, gatherers, propagators, and marketers of wild food resources. Their on – farm conservation of plant food resources is important for ensuring continuation and survival of the diversity of food supply. This is similar to the study done by Kunstadater (1978) reported about the Lua and Karen hill farmers in Northwestern Thailand, where women gathered wild plants from nearly forest and their fields for consumption and translated from the forest to their home gardens and fields. Navichai (1999) focused on forest utilization by Karen women in northern Thailand, especially wild plants which are gathered for daily consumption and used for many other proposes as part of their indigenous knowledge. This study described how Karen women collect wild plants near their village, particularly near streams and they propagate them in home gardens. The main groups include food, fodder, dyes, medicine, and fuelwood utilized more by women than men.

The study Bangladesh by Akhter and Sarker (1998) found that women did housework and other work such as work in home gardens, poultry, and agricultural crop management and also work in fuelwood collection and grass cutting. Wild plant gathering from many areas is one activity that very important for daily food consumption. The processing of forest and tree foods is specialized by gender. All family members help with forest product collection, but women are usually responsible for processing these items. Women produce, process and sell up to 80 percent of Andean countries' food produce (FAO, 1996).

In developing countries, women are the largest collectors of fuelwood, often spending hours and traveling great distance in the process. Mindful of the need to preserve such a valuable resource, the wood collected is nearly always dead because it is easier to chop and gather (Rodda, 1993). In Nepal, women work more within the household and their fields. Women have to spend time to do other activities such as water and fuelwood collection (Quisumbing, 1996). Women have a leading role in caring and using forests. They gather food and fuelwood for cooking, fodder for livestock and collecting bark, roots, and herbs to use for medicines. They manage plant trees to prevent soil erosion and help to preserve forest ecosystems (FAO, 1998).

2.4. Indigenous Knowledge in the use of Wild Plants by Women

The indigenous knowledge in selecting and conserving the species of plants is clearly apparent in the role of women as organizers for food producing system. In the ethnic groups in the Upper Northern Region, women take a very important role in keeping of the species as well as a role as a person who drops the seeds in planting hole when planting. Keeping and maintaining the crop fields from pests, along with selecting and maintaining the seeds for harvesting in the next season are also considered as a role of women (Santasombat, 1999). In the case of Karen tribe, besides being well acknowledged on the seeds, women are also skilled in arranging planting system. They know well about the kinds of soil that their plants like in particular, and the place where they should be planted that they will not interfere other kind of plants growing in the intensive field. This is done in order to create convenience in maintaining and harvesting in the different period of time. Moreover, women are also responsible in using of resource from the forest, such as gathering of

vegetable and edible plants, bamboo shoots, mushrooms, firewood, and other forest products to be used as their food without relying on external production factors (Prasert, 1997).

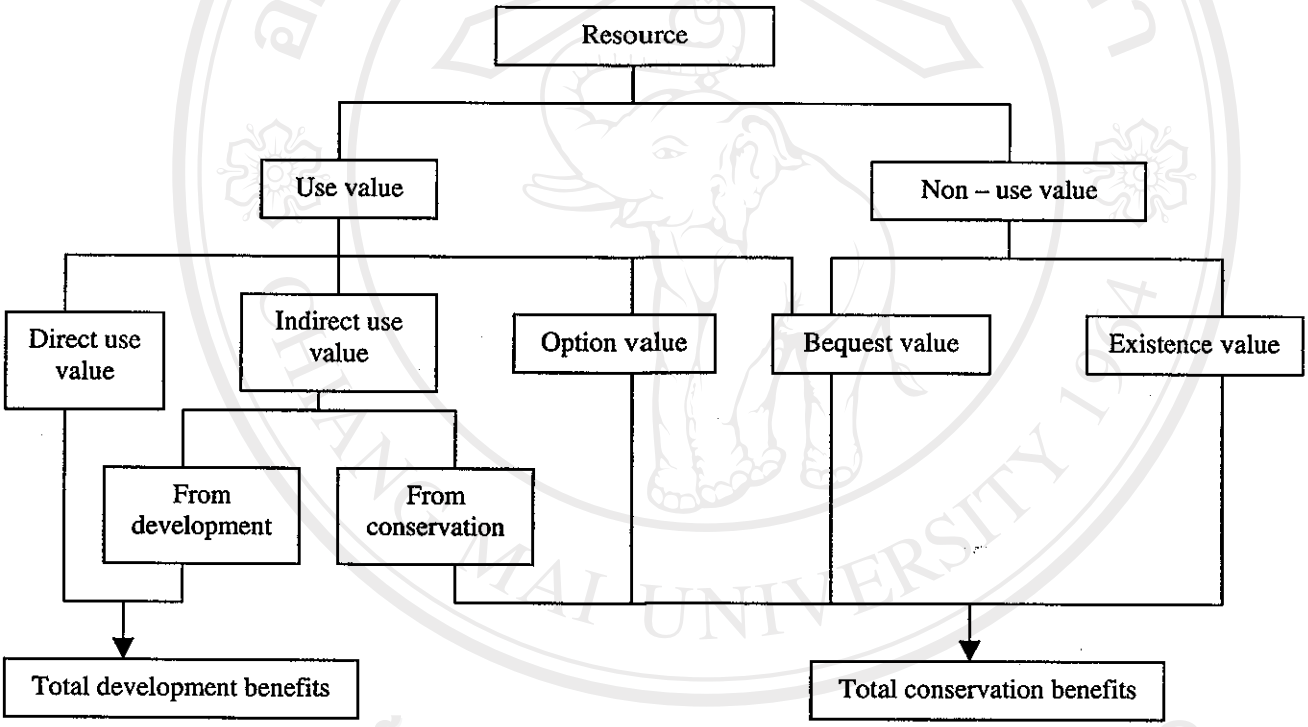
Tongsiri and Choavalit (1999) conducted study on roles and indigenous knowledge of men and women in utilization of biodiversity in lowland village in northern Thailand. It is found that the villagers in Northern Thailand relied heavily on the forest products for their livelihood. They utilized the products for food, raw material for home use, making handicrafts for sale. Men and women possess different knowledge according to their different social and family roles. The knowledge was found similar between men and women. The older generation has more knowledge than younger ones. The women has indigenous knowledge, which is different from men, thus women are potentially key counterpart in ecology conservation.

Price (1997) pointed out that village women northeast in Thailand were heavily engaged in gathering and marketing wild food products including plants, insects, rats, paddy, crabs, frogs, and fish, because women know about indigenous species. In Kalasin, women were the gatherers who collected edible plant from woodlands, upland, paddy fields, swamps and ponds, canals, and fence borders. They also cultivated wild plants that included trees, palms, shrubs, vines, bamboo, herbs, aquatic plants, and fungi on their private agricultural area.

2.5. Economic Valuation and the Use Value of Wild Plants

Economic valuation is a method to evaluate the value of forests. Total economic value includes use value, non-use value, and option value as seen in figure2.

Economic evaluation of forest resource can be evaluated by using direct method and indirect method. For forest product valuation, available products in the market can be evaluated by obtaining market price of the products or market price of substitution products.



Source : Kerry Turner, David Pearce and Ian Bateman.1993

Figure 2 Total economic value of forest resource

In Tanzania, Tanzania exports of non-wood forest products including tourism to wild areas accounted for an estimated US$ 104 million in 1991, with tourism alone comprising over US$ 94 million. This is approximately equal to economic contribution of wood products. The main non-wood forest products export counted in the national figure were beeswax (US$ 2.45 million) and wattle extract (US$ 2.86 million) with gum arabic and raw rubber from eastern mountains each just under US$ 1 million, chincona bark from upland at US$ 258,000, and wildlife activities amounting to US$ 1.3 million. But these picture do not reflect the economic significance of upland forest fruits and nuts, mountain bamboo, palm for mat manufacturing, medicinal plants, gums, natural dyes and oleoresin. Survey of local use show that fruits are more important in nutritional contribution than their economic significance (FAO, 1996).

In China, non-wood forest products can make important contributions to national income. The annual export estimation of non-wood forest products in 1994 includes chestnut (US$ 50 million), walnut (US$ 30-50 million), gingko (US$ 7 million), tung oil (US$ 15 million), rosin and turpentine US$ 100 million), and edible fungus (US$ 200 million). In Pakistan, the dry mountain forests of Pakistan are home to a variety of food and medicinal products, as well as commercial resins, fibers and silk. Non-wood forest product important to Pakistan includes dwarf palm. The leaves are used in many woven materials, with annual values at just over US$ 25 million. Mulberry silk is an established cottage industry in Pakistan, and values at an estimated US$ 1.8 million annually. In addition, there are many non-wood forest products that can make income for people involved in collection include walnuts (US$ 8 million), morels (US$ 6million), pine nuts (US$ 1.5 million), soap nuts (US$ 0.1 million), and baskets (US$ 0.12 million). For medicine, Pakistan's varied climate is home to at least 320 medicinal plants (FAO, 1996).

In Thailand, there was few researches on wild plants and their economic evaluation but more research on the evaluation of forest products. The valuation of wild plants or non-timber forest products was made from available market prices and quantities of use. An example of the study was by Navichai (2000), this research was study about the livelihood systems of Karen tribes in Northern Thailand. This study found that wild plants are gathered for household use and some household interviewed sold the surplus. In 1998, villagers earned income from selling wild food plants and flowers valued about 148 and 391 baht per year, respectively. The total income from selling wild food plants depended on quantities that they could collect. On the other hand, this study found that almost all wild plants sold were done by women.

The Southeast Asia Sustainable Forest Management Network (1993) had a study on about the community forest management in Southeast Asia. In the case of Dong Yai village in which there was a community forest management in Thailand, villagers in Dong Yai had relied on the forests because about 80 percent of the average Dong Yai household diet was derived from the forest. Estimates in 1992 of annual food product extractions from Dong Yai included 260,000 kilograms of edible plants, 104,458 kilograms of mushrooms, and 17,676 kilograms of bamboo shoots. The study found that mushrooms are among the highest value and most important foods from Dong Yai. Every household was involved in mushroom collection for subsistence use, and majority for their sale. Each family could collect an average of one kilogram of nutrition a day for fifteen days each month through the four months of abundance during the rainy season. Normally, over a four-month period a family can earn 450 baht ($US 18) in the mushroom market. If there were adequate supply of consumers, the four-month collection activity would generate 1,500 baht ($US 60).