

## Study on Lotus Fiber Production in Sunn Ye Inn, Sintgaing Township

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### Abstract

The lotus, *Nelumbo nucifera* Gaertn. is grown naturally in Sunn Ye Inn in Sintgaing Township, Mandalay Region. The lotus stem especially leaf petiole is being extensively used in the extraction of lotus fibers. It can be weaved to make the famous of lotus robe (Kyathingan) and other cloth materials. The raw material mainly lotus fibers are obtained from Inn Khone Village in Sunn Ye Inn. The Sunn Ye Inn is the sources of lotus fiber production and foods for people. The *N.nucifera* Gaertn. is influenced on ecological impact of Sunn Ye Inn and eco-social impact of local people.

**Key words:** Lotus, *Nelumbo nucifera* Gaertn, ecological impact, eco-social impact.

### Introduction

Lotus plant has symbol of religion and spiritual power in history of Myanmar. Buddhists considered lotus flower represents the success, peaceful, fresh, graceful and pure mind. Because of its pristine value, Padonma Kya is also known as the sacred lotus. Ancient Myanmar Kings used lotus flower, bud, stems and petals in wall painting and statue (SK Myanmar Cultural Heritage 2016). All parts of lotus plant are useful, stem for producing lotus fiber, flower for offering to Buddha, leaves for packing food, meat etc. Lotus leaves are also used as plate to decorate food. Lotus root and seed are also edible (Hlaing 2016).

*Nelumbo nucifera* Gaertn. is an aquatic perennial belonging to the family of Nelumbonaceae, which has several common names (e.g. Indian lotus, Chinese water lily, and sacred lotus), lotus is a large and rhizomatous aquatic herb with slender, elongated, branched, creeping stem consisting of nodal roots; leaves are large, peltate; petioles are long, rough with small distinct prickles; flowers are white to rosy, sweet-scented, solitary, hermaphrodite, 10-25 cm diameter; ripe carpel are 12mm long, ovoid and glabrous; fruits are ovoid having nut like achene; seeds are black, hard and ovoid (Sridhar and Rajeev 2007).The lotus, *N. nucifera* Gaertn. is a perennial aquatic crop grown and consumed throughout Asia. Young flower stalks, seeds and rhizomes are all edible and are used in religious ceremonies. The largest market exists for the rhizomes, which have enormous potential for large-scale production and export in Australia (Nguyen and Hicks 2001).

Lotus fiber is extracted from lotus stems since 1910. Later during the 1990's Japan set up workshops to create a foreign market for their handmade textile and that fabric remained exceptional. Lotus plant is also having healing abilities and wearing a fabric made from lotus fibers. By wearing lotus fiber fabrics, wearer feels calm, peaceful and meditative. It also cures the wearer from headaches, heart ailments, asthma, and lung issue. The fiber made from lotus fiber is 100 percent organic and hence are environmental friendly (Patil 2018).

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Lotus weaving started in Inn Paw Khon Village 20 year ago. In the past years, the weavers only produced lotus robe. They started to produce lotus scarf, shirts and hat to attract tourists. Lotus products are either pure lotus or mixed with silk or cotton. Some villagers are growing lotus plant but is still enough to meet the market demand of lotus fiber production. Lotus fiber industry is increasingly promoted by the demand international visitors and local users in Innlay which is high economic impact for women especially in rural area where lotus is naturally available in Myanmar nowadays. Lotus fiber industry is one of the sectors which involve promotion of conservation of biodiversity through sustainable trade in natural ingredients that increase the competitiveness of local community via economic and social benefit in Myanmar (Thein Myint *et.al* 2018).

Innhar nationals produce lotus-fiber, woven robes by using natural resources available in Innlay region. The Innhar are proud of weaving lotus robe because they are spiritually delighted when offering it as a monastic requisite to the monks. It is found out that the Innhar nationals at Kyaing Khan are proud of how they earn their living while trying to hand over the traditional customs of heritage to the next generation (Chaw Su Hlaing 2016).

### **Aims and objectives**

The aim of this present study is to provide information about the more knowledge of lotus fiber production because this is new upcoming fiber in the word textiles and fashion.

### **Materials and Methods**

#### **Study Design**

Field research was conducted by using descriptive study design.

#### **Study area**

Sunn Ye Inn or Lake in Inn Kone Village and Sunn Ye Village, Sintgaing Township, Mandalay Region were selected as study area. Sunn Ye Inn is located 21° 40.890' N latitude and 96° 13.091' E longitude at 70 m above sea level. Its area is 4 square miles and Shan Yoma mountain ranges are located at the east of the lake.

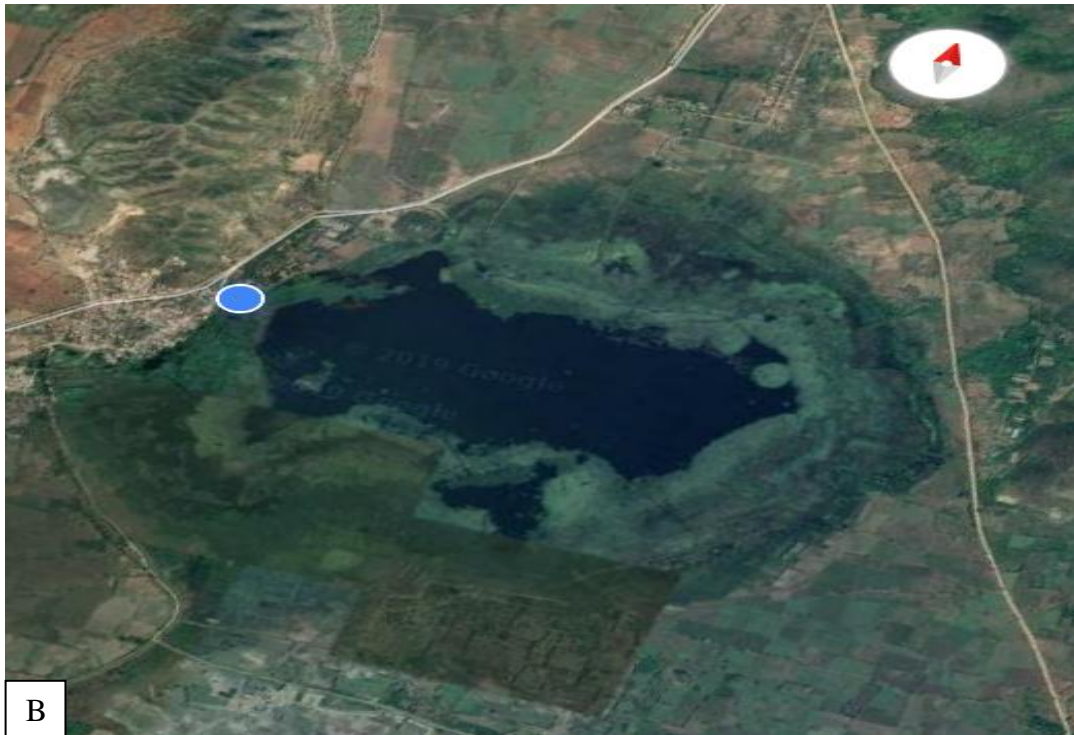
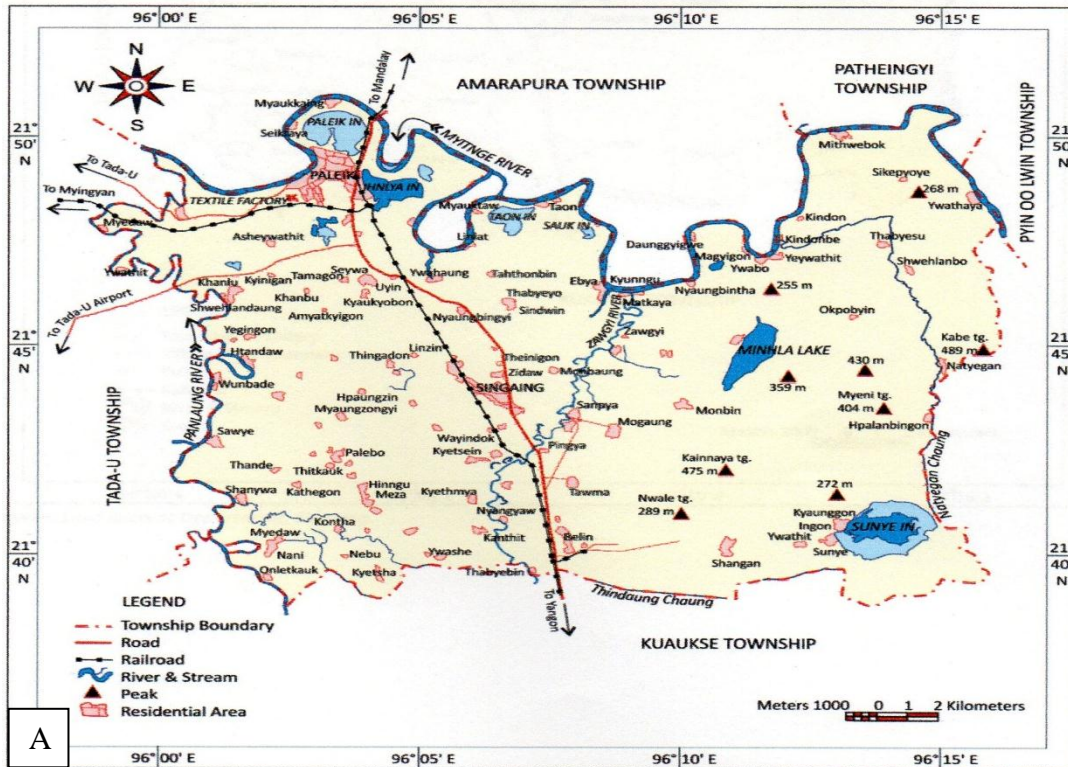
#### **Study Population**

The study population is 10 respondents from Inn Kone Village and Sunn Ye Village especially the women who are extracted the lotus fiber and market seller the parts of lotus plant and boatman from Sunn Ye Inn.

#### **Data collection**

The lotus specimen was collected from Sunn Ye Inn. Qualitative method was used in data collection. In terms of data collection techniques, available information was gathered and other information relevant to the lotus fiber value chain and products (evaluations, report, value chain analysis etc.). Key informant Interview (KII), Direct Observation (DO), Indirect Observation (IDO), and Focus Group Discussion (FGD) were used. For Key Informant Interview (KII), teen people who are well- informed in lotus weaving were interviewed. In the interview, they were asked how they got lotus fiber and how they wove it into lotus cloth and

robe. In Focus Group Discussion, both male and female lotus fiber extractors were interviewed who live together in the surrounding area of Sunn Ye Inn.



**Figure 1. Location map of study area**  
 A. Map of study area in Sintgaing Township  
 B. Google map of study site, Sunn Ye Inn

## Results

The lotus plants *Nelumbo nucifera* Gaertn. (Padonma kya) are found abundantly at Sunn Ye Inn in Sintgaing Township. Padon-ma-kya has three types or three colors: white, red, and pink lotus. Among them the pink lotus is the most abundant one in Sunn Ye Inn. The villagers from Inn Kone Village are extracting lotus fiber from Sunn Ye Inn. Local people sold the products of lotus such as flower, fruit of seeds and lotus roots (rhizome) at this lake.

### Morphological Characteristics and Description

*Nelumbo nucifera* Gaertn. is a large aquatic rhizomatous herb consisting of slender, elongated, creeping stem with nodal roots. Lotus is perennial plant with both aerial and floating orbicular leaves. Aerial leaves are cup shaped and floating leaves have flat shape. Its petioles are long and rough with distinct prickles. Flower very in color from white to rosy, 10-25 cm in diameter and are pleasantly sweet-scented, solitary, and hermaphrodite. Fruit which contain seeds are black in color in ripen and are hard and ovoid are arranged in whorls. The rhizomes are 60-140 cm long 0.5-25 cm in diameter.

### Lotus Harvesting

The lotus harvesting is mainly from lotus flower and occurs in Sunn Ye Lake in Sintgaing Township. The lotus flowers (pink and white) of the aquatic perennial spread through the bodies of water in Sunn Ye Lake and are harvested during the rainy season from June to November. Based on their growth, the villagers' proceeds with the harvest of the most suitable stems by boat, four times a day; this amounts to a weekly crop that weight one tons.

### Lotus Fiber Production

The extraction of lotus fiber was brought to village of Inn Kone in near of the Synn Ye Lake. Women are mostly participating in the lotus fiber production in Inn Khone, Sunn Ye Inn. All the stages are made by hand. Spinning or extracting is the stage during which the fiber is transformed into thread. Lotus stems are clean with water after picking up. All the stems are wrapped with water soaked cloth for the whole day to prevent from drying. One lotus stem is around 2 feet. Each stem is cut into 4 inches long pieces with shallow knife to hand pull the fiber. Four to five pieces of stems are put together on small table and cut with small knife to extract lotus fiber which reveals 20-30 fine while filaments of fiber. These filaments are drawn out of the stem, hung to dry, and then rolled into single thread of 100-yards in length. In order to produce high-quality thread, twelve layers of fiber need to be placed on top of each other and rolled with caution and precision. Extract fibers are placed in the plastic basket to prepare yarns. A lotus extractor produces 250 m of thread daily and they can get to earn 10000 kyats per day. All the fiber are gathered by loom and tied together as a pack. One pack weight is 8-10 grams. Raw fiber is dry under the sun to maintain the natural color; they can be sold to the village collectors. They are continuously transported to Taunggyi and Innlay in Shan State.



**Figure 2. Habitat of *Nelumbo nucifera* Gaertn.**

**A. Sunn Ye Inn**

**B. *Nelumbo nucifera***

**C. Harvested of lotus stem**

**D. Lotus stems packs**



**Figure 3. The fiber production process.**

**A. Lotus stems**

**C. Pull out of fiber**

**E. Lotus fiber strand**

**B. Cut of lotus stems**

**D. Rolling of fiber**

**F. Dry fibers**

### Discussion and conclusion

Lotus with long stem is the best for lotus weaving. *Nelumbo nucifera* Gaertn. (Padonma kyar) also known as Sacra Lotus or Chinese water-lily or Indian lotus is the major type of lotus used for weaving in Inle, Myanmar. The lotus plants, *N. nucifera* Gaertn. (Padonma kyar) are grown naturally in Sunn Ye Inn. Therefore, the Sunn Ye Inn is the source of lotus fiber production in Myanmar.

According to literature, *N. nucifera* Gaertn. has also been extensively used for nutritional and traditional medicinal purpose by people in many parts of the world. Therefore further studies can be done on lotus seeds to evaluate its nutritional and pharmacological significance. The lotus plants should be grown in the cultivation of large scale. Hence, the production of lotus food and fiber rate will be increasing in future. Scientific cultivation and harvesting can definitely enhance the productivity and, hence can generate more income.

In Kone Village and Sunn Ye Village in Sunn Ye Inn area, the lotus gives the providing job opportunities and better income for the villagers. In general, the income from the lotus fiber production is more than daily wages. Lotus fiber production is a small family business that all family members can work together at home and can earn stable income for the whole year. Therefore, the lotus *N. nucifera* Gaertn. is attractive plant for visitors to Sunn Ye Inn and it provides the opportunities of jobs and can high income of local people.

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