

## MARKETING OF WILD LOTUS PLANT OF SINDH PROVINCE

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### ABSTRACT

This study is focused on the marketing of wild Lotus plants of Sindh province. The main objective of this research paper is to develop the marketing plan to export the products of wild Lotus plants in overseas and domestic markets. This export will also support to protect the natural environment and develop an image of clean and green Pakistan. It will further create awareness among people about economic benefits of Lotus Plants. Small & Medium Enterprises (SMEDA) Pakistan can play an effective role to motivate the investors by offering valuable information of market and export of Lotus products. It will open new employment opportunities especially for rural people and will support the economy.

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**Key Words:** Nelumbo Nucifera, Lotus, Rhizomes.

### INTRODUCTION

The term Lotus botanically refers as *Nelumbo Nucifera* (GAERTEN: Syn. *Nelumbium Speciosum* wild), is known as Sacred Lotus in some Asian countries (Makino, 1979). This is an aquatic plant which is cultivated and used across the Asian countries. All the parts of Lotus Plants are edible. Specifically the flowers of Lotus are essential in some religious events of Buddhists and Hindus. In Hinduism the creator of this universe Brahma has often been pictured sitting on the Lotus flower. Lord Krishna compares the virtuosity of a man in the *Baghvat Geeta*. In verse 4, chapter 20, it says:

"Man must emulate the Lotus's way - the water on a Lotus leaf just rolls away. Thus, man should work without attachments, dedicate his actions to the Almighty."

It is the symbol of purity and most of the scriptures of god and goddess in Hinduism like Vishnu, Ganesh Devi Ambika, Devi Luxmi, and Sarswati either sit on the Lotus or possess it in their hands. In Buddhism it is the symbol of pure conscience, peace and

tranquility. Most of the Buddha statues are found by sitting over Lotus flower.

In 1972 Chinese archaeologists found 5000 years old Lotus seeds in lagoons in Yunan Province. In 1973 some 7000 years old Lotus seeds were discovered in Xinjiang Province. Another large number of Lotus seeds with the age of almost 1000 years old were found at Pulatien Shan-Tung, Liaoning Province, China in the years of 1923-51. These seeds were successfully germinated (Shen-Miller *et. al.*, 1995:1367-80). The major objectives of this study are as under:

- To earn sufficient foreign exchange by exporting the products of Lotus plants in overseas market and to introduce the domestic markets of the same.
- To protect the natural environment.
- To create awareness among people about economic benefits of Lotus Plants.
- To invite the small entrepreneurs to invest in this new crop and support the rural economy.
- Developing a marketing strategy for Lotus plant.

## LITERATURE REVIEW

Unluckily Lotus plant had never been addressed by social scientists especially in Pakistan as the compact disc (CD) of economic literature installed at Applied Economics Research Center (AERC), University of Karachi shows zero research paper on it. However about 100 records were present on "Lotus Software" in the same. Moreover, "the Ph.D. dissertation abstract" at Dr. Mohammad Hassan library, University of Karachi, Central Library University of Sindh, Seminar Library, Department of Botany, Sindh University, Jamshoro, and the magazine sections show that no Ph.D. in the social sciences has yet been done on the Lotus plant. However, couple of botanical and medicinal aspects of this plant has been explored in doctoral dissertation of life sciences. Dharmananda has also discussed that Lotus can be used for food consumption (Dharmananda, 2002). The biodiversity and conservation of Lotus plant have been addressed by Anil Goel (2001), while Qaiser (1993) has worked on the taxonomy of Lotus plant. According the Qaiser (1993) there are 6 species of Lotus

plants distributed in Pakistan (Qaiser and Ali, 1993). Further Australian Agriculture Research Center and Business Community is looking to produce Lotus to meet their domestic needs and may export the surplus in overseas market (Nguyen, 2001).

### Reporting of Lotus Production in Sindh

Sindh is the second thickly populated province of Pakistan with the total population 30,439,893 (Pakistan Economic Survey 2006-2007). The climate of entire province is ideal for Lotus production. Mainly it is found in Dreha, Goth Jahan Khan, Abdu, Napar and Chak in district Sukkur; Lakhi and Wazirabad in Shikarpur; Daro, Madeji Shahdad Kot, and Qambar in district Qambar-Shahdadkot; Jhampir, Sajawal and Belo in district Thatta; while districts Hyderabad and Dadu are other areas of Lotus plants' cultivation (Qaiser and Ali, 1993). The people of Sindh are well familiar with Lotus and its products since olden times. Its fruits (*pabbun*, *kum*), roots (*beh*), stems (*komi*) and other products like *pabora* and *boorani* had a good market in the towns of Sindh as people eat them raw or cook them to make a delicious dish. But its flower is not used in Sindh in the way Vietnam, South Korea, Japan, China and other Buddhist and Hindu Majority areas do. Lotus Plant has following three different kinds:

#### (i) Lotus for flowers



This variety is famous to produce large number of flowers but it does not produce rhizomes. It is found in various colors like

yellow, pink, white and red. The quality of seeds is very poor (Nguyen, 2001).

**(ii) Lotus for Rhizomes**



This quality of Lotus produces high yield and good quality of rhizomes but it is poor in flower production. This variety mostly produces white flowers, and is abundantly available.

### (iii) Lotus for Seeds



This variety is good for the production of large size and good quality of seeds. This variety is often in red color of flowers. In Gharo, district Thatta, this variety is abundantly available.

### MORPHOLOGICAL & PHYSIOLOGICAL CHARACTERISTICS OF LOTUS PLANT

Lotus Plant has tremendous usage in the field of medicine. Nearly, every component of Lotus plant is used to cure certain diseases. High fever and diarrhea can be cured by the leaves of Lotus Plant. Moreover, leaves can benefit leprosy and strangury diseases too. Seeds Lotus Plants are highly beneficial in treating digestive disorders such as vomiting or hiccups. Once Lotus seed ripens, it can be used to cure heart diseases and also to certain psychological fault since ripened seeds carry sedative effect. The embryo of Lotus has been producing effective efficacy in nervous insomnia malfunctions and male sexual disorders. Use of Lotus Stamens filter kidneys and streamline them to function properly. Flower Pods of Lotus are rich in proteins and carbohydrates which medically benefit human body. Consequently it is evident that Lotus plant is rich in morphological and physiological characteristics (Omata, *et. al.*, 1989: 43-48), therefore its production will result in economically and physically healthy society.



## **RESEARCH METHODOLOGY**

This qualitative research is based upon both primary and secondary data. The primary data has been collected through personal visits, observations, and interviews from local people of the area where the product is abundantly available. Secondary data was obtained from the different research journals of botany, newspapers, magazines, books, articles, etc. In this study the author has first estimated the crop area of Lotus plants through Google earth and then explored the flowering season of Lotus plants through botanical literature.

### **Markets for Lotus Products**

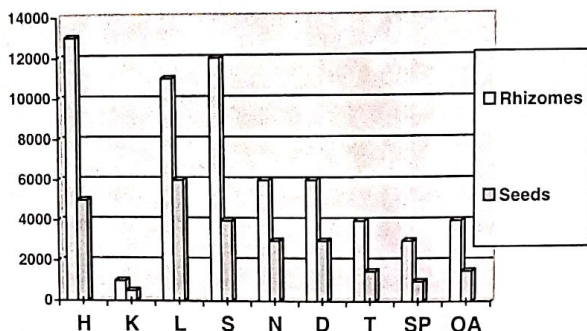
The demand of Lotus products is growing rapidly. People especially in Japan, China, Vietnam, India, and other vegetable lovers across the world like to have Lotus rhizomes and it is part of their routine food. Its flowers and leaves are being used for religious, ornamental and home decoration purposes. At present China is taking the lions' share in export of Lotus products but unable to fulfill the needs of all markets. In Pakistan Lotus is wildly available, especially in Sindh Province. Sufficient revenue can be generated by exporting the Lotus products in world market while the demand in domestic market is growing rapidly. This report is mainly focused on Lotus rhizomes used as vegetable and has high demand in domestic and overseas market. Other products are partially reported in this study.

### **Model to Estimate the Demand of Lotus Products (rhizomes) in Sindh**

- The current Human population of Sindh province is 30,439,893;
- Based upon primary research it is assumed that 60% population of Sindh province consumes Lotus rhizomes at 100 g/capita/month
- Estimated total monthly consumption is 60% of Sindh's Population  
 $= 18263935 \times 0.1\text{Kg} = 1826393.5 \text{ kg/month or } 1630 \text{ tons per month.}$

The demand of Lotus rhizomes in different areas of Sindh is presented in the following graph.

# Demand of Lotus Products in Sindh



## Legend

H Hyderabad

N Nawabshah

K Karachi

D Dadu

L Larkana

T Thatta

S Sukkur

SP Shikarpur

OA Other Areas

The demand of Lotus rhizomes can be calculated for other provinces by assuming that only 10% population of each province may consume Lotus rhizomes just 100 gram per month, so the total estimated monthly consumption in domestic markets are as under:

Table No. 1

## Estimated Demand in Domestic Markets

Areas	Quantity (kg/ per annum)
Sindh	21,916,722
Punjab	8,834,554.8
NWFP	2,129,237.4
Balochistan	787,906.2
Total	33,668,420.4 kg per annum

Source: This study

## CALCULATION OF QUANTUM OF LOTUS PLANTS AVAILABLE IN SINDH

To find out the available quantity of Lotus products in Sindh twenty three different sites of Sindh province were personally visited. Lotus distribution is noted on per 5 square feet and taken three samples from each reservoir to calculate the total average distributed on thickly, semi-thickly, and scattered populated areas. The methodology to calculate the average Lotus plant on each reservoir of all twenty three samples is followed as under:

**Table 2**  
**Reservoir 1 (Gharo, Thatta)**  
**Lotus Plants distribution per 5 square feet**

Products	Total
Flowers	14,089,795,068 (nos.)
Dodi	14,089,795,068 (nos.)
Rhizomes	2,475,234,268.4 kg
Raw leaf	3,427,247,448.2 (nos.)

**Source:** Personal Visit

Calculation of average population of Lotus in reservoir 1 Gharo Thatta=  $21+13+9 = 43$

### Per Acre Distribution of Lotus Plants

- 1 acre = 43560 sq. ft
- 43 flowers in 5 sq. ft
- flowers in 1 acre =  $43 \times 43560 = 1873080$
- flowers in reservoir (Gharo 1) 2 acres =  $1873080 \times 2 = 3746160$

Hence reservoir 1 (Gharo, Thatta) contains 3746160 Lotus plants.



**Table 3**  
**Total Quantity Available for Sale**  
**(Obtained from selected 23 samples)**

	Thickly	Semi Thickly	Scattered	Total
Sample 1	20	14	08	42/3=14
Sample 2	22	12	09	43/3=14.3
Sample 3	21	13	10	44/3=14.6
Average	63/3=21	39/3=13	27/3=9	129/3=43

Source: This study.

Based upon the calculation of twenty three samples the total quantum of Lotus products available for sale is as under:

- Total quantity of Lotus rhizomes available in Sindh is 2,475,234,268.4 kg per season or 2,210,030 tons
- Domestic estimated demand is 33,668,420.4 Kg per annum or 30061tons
- Surplus Quantity of Lotus rhizomes is 2441565848 Kg. This can be exported to international market.

### Marketing of Lotus Plant

Marketing plan is a guide for implementing marketing decision making (Hisrich and Michael, 2005). This plan will help the cultivators/exporters of Lotus products.

### TOWS ANALYSIS

TOWS matrix describes the Threats, Opportunities, Weaknesses, and Strengths of a product or business. This matrix is used to accomplish the marketing plan of Lotus products. This methodology is focused on the export of Sindh's Lotus plant that have had a significant impact either positively or negatively on Pakistan's economy and its position in the national and international markets. In this research the framework is used to analyze Lotus plant's cultivation and export and to identify the competitive advantage of Sindh. The model is enclosed in long report as the large size cannot fit in this format.

The conceptual TOWS matrix will now be used for analysis of Lotus plant to illustrate the practical application of the matrix.

### **Threats for Lotus Plant's Cultivation**

- Competitors may take market share by offering the product with better packaging and storage facilities
- Continuous drought may not motivate the growers to cultivate this crop.

### **Opportunities of Lotus Plants' Cultivation**

- The demand of Lotus products is rapidly growing in Asian, Australian, and African countries. It can further be established in European, American and Middle East countries as the products possess very good medicinal and nutritious values. Therefore entrepreneurs can earn sufficient revenue by exporting this low cost widely available crop to the world market.
- The demand within Pakistan can further enhance by adopting better marketing and promotional strategies.
- Entrepreneurs have good opportunity to provide an opportunity to entrepreneurs in small scale businesses.
- It will help to reduce the pollution and develop green & clean environment.

### **Weaknesses for Lotus Plant's Cultivation**

- The fragility and perish-ability of the product like flowers cannot be preserved for the long period.
- Low awareness about its consumption and usage within domestic market.
- Lack of product's information for trade or consumption.
- Improper infrastructure specially roads from rural to urban markets restrict the growers.
- No government support and patronage to export the product.

### **Strength for Lotus Plant's Cultivation**

- Lotus is an aquatic plant, it needs plenty of water. Sindh province is largely irrigated by river Indus and has many natural lakes, therefore, plenty of water is available throughout the province. Hence, Lotus plant can largely be cultivated here.
- Sindh or Indus valley has been one among the oldest civilizations of the world. Ruins of Moen-job Daro almost 5000 years old describes

the maturity, skills and awareness of agriculture among the residents of the great city. So the people of this province have good awareness of agriculture. At present the contribution of this province in agricultural products in Pakistan is substantial.

- It is a low investment crop. It helps rural people to increase their per capita income by cultivating and exporting of Lotus.
- Lotus can play a vital role to protect the natural environmental. It helps to develop a clean and green image.
- The ideal climate for Lotus cultivation in Sindh Province is another great strength for Lotus production.

### MARKETING MIX

Marketing Mix is the crux of every marketing activity. It is the combination of Product, Price, Promotion and Placement. This model works for Lotus plant as under:

**Product:** The products of Lotus plant are Lotus rhizomes, Lotus seeds, Lotus flowers, and *lod*. These products especially rhizomes and seeds are widely used as vegetable. The leaves can be used to wrap up the wet products. This can replace the plastic material which is harmful for environment and can reduce the pollution. Lotus leaves can further be used in decoration process in a dried form. The sale of flowers can also generate sufficient revenue by using in decoration purposes.

**Price:** At present the average price of Lotus rhizomes is Rs.20 per kg, Lotus seeds Rs.10 per dozen, and Lotus *lod* is Rs 50 per kg. In future this price may further be reduced by establishing appropriate distribution facilities and government support.

**Promotion:** To sale out the Lotus products in domestic and international markets, a very effective promotional mix is required. Television is a powerful medium; it can used to educate the people about the cooking methods of Lotus rhizomes. Various cooking programs on different TV channels can create the demand in other domestic markets. It can also be included in the curriculum of school students in order to aware them from its benefits. Different seminars and workshops organized by NGOs and Small and

Medium Development Authority (SMEDA) can also motivate the growers and entrepreneurs to make revenue.

**Placement:** Lotus products like rhizomes and seeds can transport to other domestic markets through trucks and via ship in international markets. Refrigerator is required for Lotus flower. But Lotus rhizomes, seeds, and *lod* can be transported without refrigerator. Air freight is another option for the transportation of Lotus products but it may be more expensive.

## FINDINGS & DISCUSSIONS

The main objective of this study is to write the marketing plan of wild Lotus plant. So the findings of this research study are as under:

1. In Sindh, the author observed that the Lotus for Rhizomes is largely available in districts Larkana, Sukkur, Dadu and Thatta (Mirpur Bathoro, and Haleji lake), while Lotus for Seeds are abundantly available in Thatta, Gharo (Thatta), Shikarpur, Ghouspur near Jacobabad. Sindh province can generate sufficient revenue by adopting appropriate marketing strategies to export the Lotus products in domestic and overseas market. The roots of Sindhi rural people are connected with agriculture, therefore, they don't require more training to cultivate and grow this crop. The province has the required temperature and suitable climatic conditions for the Lotus production. Lotus has great religious values especially among Buddhists and Hindus, a significant section of population of Sindh. The demand for Lotus products is rapidly growing in these markets and among other vege-lover people. Japanese are very much fond of Lotus rhizomes and seeds. Australia, Taiwan, Vietnam, India, Thailand, China, and in some other European countries the demand of Lotus products are growing. Therefore, Pakistan can take sufficient market by exporting the Lotus products.
2. It has been observed that Lotus Plant contains high volume of morphological and physiological characteristics which are applicable in medicine in order to cure many diseases such as diarrhea, high fever, vomiting, heartbeat, psychological malfunctioning and male sexual disorders.
3. Lotus plants are cultivated in many countries such as India, Japan, China, South Korea, South East Asia, Australia, Russia, and in some African countries. Its cultivation in America and Europe is only for ornamental purposes but rarely for food. Therefore, demand of Lotus

products is high in Japan, China, Vietnam, Australia, Thailand, Singapore, and other Asian countries.

4. The consumption of Lotus products in three other provinces like Punjab, NWFP, and Balochistan of Pakistan is considerably low. The demand can enhance by adopting proper marketing strategy because many people of these provinces are unaware from its benefits and usage.
5. The export of Lotus products will open new dimensions for SMEs. The Small and Medium enterprises can earn sufficient revenue by exporting the Lotus products in domestic and overseas markets.
6. The growth of Lotus products will be helpful to maintain the natural environment clean and green.

## RECOMMENDATIONS

The author presents the following recommendations:

1. Mass awareness campaign program is the need of hour to earn sufficient foreign exchange through the export of Lotus products.
2. Government will have to play its key role to facilitate the entrepreneurs.
2. Appropriate transport facilities are required the most to dispatch the Lotus products into the markets of other provinces.
3. The farmers can be further motivated to cultivate the Lotus plant on commercial basis by providing them the appropriate knowledge of harvesting, storage and modern methods of cultivation.
4. The benefits and nutritious values of Lotus products can be disseminated among the masses by including the subject into school curriculum.
5. There is big gap between the cultivators and exporters. As the growers / cultivators are less aware from the procedure of export and exporters have little knowledge of cultivation. So SMEDA can play a role of intermediary between them to fill this gap.
6. The demand of Lotus plant can enhance through nurseries because Lotus plant develops additional beauty in the garden. This will develop an image of clean and green environment.

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