



AN ANALYSIS OF RAW JUTE PRODUCTION - AN INDIAN PERSPECTIVE

Dr.K.Thiripurasundari* **P.Rathi****

*Principal, Sri Parasakthi College for women, Courtallam & Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli.

**Assistant professor in Commerce (sf), Sri Parasakthi College for women, Courtallam.

Abstract

Jute is one of the important natural fibers after cotton in terms of cultivation and usage. Cultivation is dependent on the climate, season, and soil. Almost 85% of the world's jute cultivation is concentrated in the Ganges Delta. This fertile geographic region is shared by both Bangladesh and India (mainly West Bengal). To grow jute, farmers scatter the seeds on cultivated soil. When the plants are about 15–20 cm tall, they are thinned out. About four months after planting, harvesting begins. The plants are usually harvested after they flower, before the flowers go to seed. The stalks are cut off close to the ground. The stalks are tied into bundles and soaked in water for about 20 days. This process softens the tissues and breaks the hard pectin bond between the bast and Jute hurd (inner woody fiber stick) and the process permits the fibres to be separated. The fibres are then stripped from the stalks in long strands and washed in clear, running water. Then they are hung up or spread on thatched roofs to dry. After 2–3 days of drying, the fibres are tied into bundles. The suitable climate for growing jute is a warm and wet climate, which is offered by the monsoon climate during the fall season, immediately followed by summer. Temperatures ranging from 70–100 °F and relative humidity of 70%–90% are favorable for successful cultivation. Jute requires 2–3 inches of rainfall weekly with extra needed during the sowing period. Hence, against the above background, an attempt is made in this paper to analyze the raw jute production in India.

Key Words: *Jute Plant, Jute Cultivation, Raw Jute Production.*

Introduction

Jute is a natural fiber popularly known as the golden fiber. It is one of the cheapest and the strongest of all natural fibers and considered as fiber of the future. Jute is second only to cotton in world's production of textile fibers. India, Bangladesh, China and Thailand are the leading producers of Jute. It is also produced in southwest Asia and Brazil.

Jute is cultivated in Indian subcontinent, Thailand, China and Africa. The two main types of jute, white jute (*Corchorus Capsularis*) and dark jute or tossa (*Corchorus Olitorius*) are grown in India, Bangladesh, Thailand, China, south Asian countries and Brazil.

India is the largest producer of jute goods in the world, while Bangladesh is the largest cultivator of raw jute. The cultivation of Jute in India is mainly confined to the eastern region states - West Bengal, Bihar, Assam, Tripura, Meghalaya, Orissa and Uttar Pradesh. Nearly 50 percent of total raw jute production in India alone figures in West Bengal.

In India 4000,000 families are involved in the cultivation of raw jute. There are 76 jute mills in India and nearly 1, 37,679 (Oct.2001) people are employed in these mills. Several thousand other people are engaged in several jute related diversified goods. India is also self sufficient in the jute seed production. More than 90 percent of seeds are produced by the state seed corporation of Andhra Pradesh and Maharashtra.

Jute is a bio degradable crop grown mainly in the Ganges delta. It is one of the most important natural fibers after cotton in terms of cultivation and usage. Major parts of West Bengal and Bangladesh are involved in Jute cultivation. Countries like China, Thailand, Myanmar, Nepal and Bhutan also cultivate Jute.

Hence, against this backdrop, an attempt has been made in this paper to analyse the raw jute production in India for the period of Eleven years from 2005-06 to 2015-16.

Review of Literature

Md. Moyazzem Hossain and Faruq Abdulla (2015)¹ made their study titled, "Jute Production in Bangladesh: A Time Series Analysis", the main purpose of this research is to identify the Auto-Regressive Integrated Moving Average (ARIMA) model that could be used to forecast the production of jute in Bangladesh. The comparison between the original series and

forecasted series shows the same manner which indicate the fitted model behaved statistically well and suitable to forecast the jute productions in Bangladesh i.e., the models forecast well during and beyond the estimation period.

Malla, M.M.U, Akhtar, S, Alam, M.K and Huq, A.S.M.A, (2014)², explained in their research paper that the study was designed to examine the financial performance of traditional jute products manufacturing industry in Bangladesh. The study found that the public sector suffered more losses during the study period. The manufacturing cost of the public sector jute manufacturing industry was substantially higher compared to private sector for all kinds of products. Therefore, per unit labour cost was substantially higher in the public sector jute manufacturing industry compared to the private sector, which was almost double in the cases of all products. The public sector sold most of their products through local buying houses (exporters). Estimated gross profit from per unit output for the public sector jute manufacturing industry was higher than the private sector. However, the mills under Bangladesh Jute Spinners Association obtained higher level of profit from their specialized products (yarn/twine).

Objectives

1. To present overview of jute cultivation.
2. To analyse the raw jute production in India.

Methodology

The nature of the present study is mainly based on secondary data. In order to attain the objectives of the study, relevant secondary data for a period of 11 years, i.e., from 2005-06 to 2015-16 have been taken for analysis. The relevant data have been analyzed by using the Average Annual Growth Rate (AAGR) and Compound Annual Growth Rate (CAGR) to make an in depth analysis of raw jute production in India and to draw a meaningful conclusion.

The following are the most basic and essential processes in the Indian jute cultivation.

Jute Cultivation



Jute is a crop which requires huge rainfalls. It requires alluvial soil with stagnant water. It requires maximum water during the sowing period. The suitable climate for growing jute (warm and wet climate) is during the monsoon season. Temperatures from 20°C to 40°C and relative humidity of 70%–80% are necessary for successful cultivation. Jute requires 5–8 cm of rainfall weekly. The two main types of jute, white jute (*Corchorus Capsularies*) and dark jute or tossa (*Corchorus Olitorius*) are grown in India.

White Jute(*Corchorus Capsularis*)

Several historical documents (including, Ain-e-Akbari by Abul Fazal in 1590) state that the poor villagers of India used to wear clothes made of jute. Simple handlooms and hand spinning wheels were used by the weavers, who used to spin cotton yarns as well. History also states that Indians, especially Bengalis, used ropes and twines made of white jute from ancient times for household and other uses. It was also used for transporting agricultural goods.

Tossa Jute (*Corchorus Olitorius*)

Tossa jute (*Corchorus olitorius*) is a variety of jute in which India is the leader. It is used both for fibre and eating purpose. Tossa jute fiber is softer, silkier, and stronger than white jute. This variety astonishingly shows good sustainability in the climate of the Ganges Delta. Along with white jute, tossa jute is also cultivated in the soil of Bengal. Currently, India and Bangladesh is the largest global producer of the tossa jute variety.

Climate and Soils

Jute requires a warm and humid climate with temperature between 24° C to 37° C. Constant rain or water-logging is harmful. The gray alluvial soil of good depth, receiving salt from annual floods, is the best for jute. Flow ever jute is grown widely in sandy loams and clay loams.

Sowing of Jute



Sowing of jute in midlands and high lands starts with showers in March and continues till early June. Compost, Phosphorus and Potash, Urea, Nitrogen fertilizers are used as a fertilizers. It also requires 500mm of water.

Harvesting



Jute is harvested between 120 days to 150 days from sowing when the flowers have shed. Early harvesting gives good healthy fibers. The harvested plants are left in field for 3 days for the leaves to shed. The stems are then made up into bundles for steeping in water. Steeping is carried out immediately after harvest.

Retting



Retting is the process of extracting fiber from stem of the plants. The various ways of Retting are: Mechanical retting (hammering), chemical retting (boiling & applying chemicals), steam/vapor/dew retting, and water or microbial retting. Among them, the water or microbial retting is a century old but the most popular process in extracting fine fibers. However, selection of these retting processes depends on the availability of water and the cost of retting process.

To extract fibers from jute plant, a small stalk is harvested for pre-retting. Usually, this small stalk is brought before 2 weeks of harvesting time. If the fiber can easily be removed from the Jute core, then the crop is ready for harvesting.

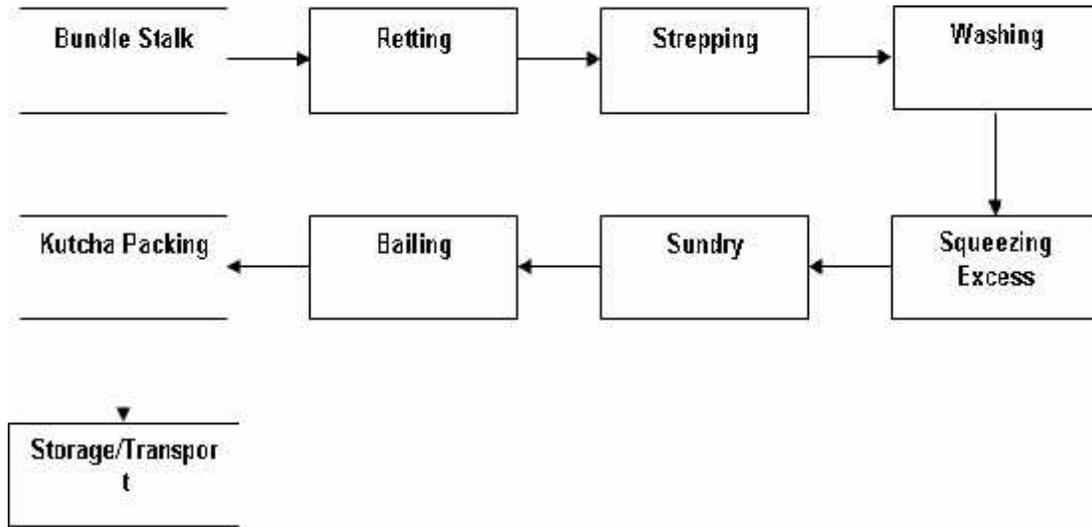
After harvesting, the jute stalks are tied into bundles and submerged in running water. The stalk stays submerged in water for around 20 days. However, the retting process may require less time if the quality of the jute is better. In most cases, the fiber extraction process of fibers in water retting is done by the farmers standing under water.

When the jute stalk is well retted, the stalk is grabbed in bundles and hit with a long wooden hammer to make the fiber loose from the jute. After losing the fiber, the fiber is washed with water and squeezed till the last drop of water. The extracted fibers is further washed with fresh water and allowed to dry on bamboo poles. Finally, they are tied into small bundles to be sold into the primary market.

The Fibre Extraction



The jute plant's fibers lie beneath the bark and surround the woody central part of the stem. To extract the fibers from the stem, the process is carried out in the following stages:



The following Table 1 shows that the production of raw jute in India for the period of 11 years from 2005-06 to 2015-16.

Table 1: Production of Raw jute in India (Consolidated)

Years	Area '000' Hectares	Production '000' Bales
2005-06	760	9970
2006-07	792	10316
2007-08	814	10219
2008-09	786	9634
2009-10	811	11230
2010-11	774	10009
2011-12	809	10736
2012-13	777	10340
2013-14	756	11083
2014-15	750	10618
2015-16	731	9938

Source: Ministry of Agriculture, Govt., of India

The above table 1 shows the production of raw jute in India for a period of 11 years, depicting a fluctuating trend. From 760 hectares in 2005-06, is raised to 814 in 2007-08, in terms of area of cultivation. The production trend also widely fluctuating.

The following Table 2 shows the growth rate of raw jute production for a period of 11 years from 2005-06 to 2015-16. The researcher used AAGR & CAGR for analysing the growth rate of production area and raw jute production.

Average Annual Growth Rate

Annual growth rate is a useful tool to identify trends in investments. The formula used to calculate annual growth rate uses the previous year as a base.

$$\text{AAGR} = \frac{\text{Ending value} - \text{Beginning value}}{\text{Beginning value}} \times 100$$

Compound Annual Growth Rate

The compound annual growth rate, or CAGR for short, measures the return on an investment over a certain period of time.

$$CAGR = \left(\frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{\left(\frac{1}{\# \text{ of years}} \right)} - 1$$

Table 2: Growth Rate of Raw Jute Production

Years	Area ('000' hectares)	AGR	Production ('000' Bales)	AGR
2005-06	760	-	9970	-
2006-07	792	4.21	10316	3.47
2007-08	814	2.78	10219	-0.94
2008-09	786	-3.44	9634	-5.72
2009-10	811	3.18	11230	16.57
2010-11	774	-4.56	10009	-10.87
2011-12	809	4.52	10736	7.26
2012-13	777	-3.96	10340	-3.69
2013-14	756	-2.70	11083	7.19
2014-15	750	-0.79	10618	-4.20
2015-16	731	-2.53	9938	-6.40

Source: Ministry of Agriculture, Govt., of India

	Area	Production
Average Annual Growth Rate (%)	-3.29	2.67
Compound Annual growth Rate %)	-0.35	-0.029

The above table 2 reveals that the annual growth rate for production of raw jute each year compared to the previous year shows high fluctuation. The jute production area has increased for the year 2007-08 and 2009-10 with 814 and 811 respectively. The period of 2015-16 has recorded the maximum annual growth rate for eleven years from 2005-06 to 2015-16 is -3.29 per cent which explains that there is an Average Annual Growth Rate (AAGR) area of jute production every year. Compound Annual Growth Rate (CAGR) is the annualised average rate of growth between given years assuming growth takes place an exponentially compounded. CAGR denotes that the jute production area grows every year at a compounded rate by -0.35 per cent. The raw jute production has increased for the year 2009-10 and 2013-14 with 11230 and 11083 respectively. The period of 2015-16 has recorded the maximum annual growth rate for eleven years from 2005-06 to 2015-16 is 2.67 per cent which explains that there is an Average Annual Growth Rate (AAGR) raw production of jute every year. Compound Annual Growth Rate (CAGR) is the annualised average rate of growth between given years assuming growth takes place an exponentially compounded. CAGR denotes the production of raw jute grows every year at a compounded rate by -0.029 per cent.

Findings

1. The area of production of jute was high in the year 2007-08.
2. The raw production of jute was high in the year 2009-10.
3. The jute production area achieved an Average Annual Growth Rate of -3.29% and Compound Annual Growth Rate of -0.35 % over period of 11 years.
4. The raw production of jute achieved an Average Annual Growth Rate of 2.67% and Compound Annual Growth Rate -0.029 % over a period of 11 years.

Conclusion

Jute is grown as the most important cash crop in the family farms of eastern India. It supports more than 40 lakh farm families and generates employment for almost another 10 lakh people engaged in industry and trade involving jute fibre. Due to stiff competition from cheaper synthetic fibres, changing climatic conditions, erratic nature of rainfall over space, time and quantity, shortage of farm labour, non-availability of quality seeds and other inputs, shrinking availability of fresh water for retting and competing alternate crops area under jute cultivation is on decline in the country. Improved Cultivation and Advanced Retting Exercise (ICARE) has developed a number of technologies in recent years to meet the challenges.



Adoption of these kind of technologies have increased yield and quality of jute fibre, reduced cost of cultivation and thereby increased income of the family farms in eastern India. The National Jute Board, Govt of India has recently launched the 'Jute-ICARE' programme to promote the jute growing regions for sustaining jute fibre production of the country.

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