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Zeba Jamal
P.hD. Research Scholar, Department of Textile and Apparel Designing, I. C. COHS, CCS HAU, Hisar, Haryana, India

Dr. Nisha Arya
Asstt. Professor, Department of Textile and Apparel Designing, I. C. COHS, CCS HAU, Hisar, Haryana, India

Dr. Lalita Rani
Asstt. Professor, Department of Textile and Apparel Designing, I. C. COHS, CCS HAU, Hisar, Haryana, India

Kumari Medha
M.Sc. Student, Department of Textile and Apparel Designing, I. C. COHS, CCS HAU, Hisar, Haryana, India

Corresponding Author:
Zeba Jamal
P.hD. Research Scholar, Department of Textile and Apparel Designing, I. C. COHS, CCS HAU, Hisar, Haryana, India

Golden Fibre: Jute

Zeba Jamal, Dr. Nisha Arya, Dr. Lalita Rani and Kumari Medha

Abstract
Jute is a natural fibre which is given status of "Golden Fibre" because of its golden shine. It a biodegradable fibre and is emerging as a strong substitute to synthetic fibres. India ranks first in its production. Jute has paved its way into geo and industrial textiles. It has several advantages as eco-friendly nature, high tensile strength, low extensibility, and ensures better breathability of fabrics. Mainstreaming of this fibre will help India in generating revenue from its sale and will provide employment to farmers.

Keywords: jute, fibre, cellulosic, natural

Introduction
Cotton, jute, flax, ramie, hemp, sisal, manila hemp, wool, and silk are some of the major natural fibres, which are widely being used throughout the world. Apart from these, a large number of fibres grown in much smaller quantities in different parts of the world have local economic importance and are mostly consumed locally. Jute is the second most important natural fibre after cotton in terms of global consumption. It is extensively used for the manufacture of flexible packaging fabrics besides its prospective use as carpet backing, decorative fabrics, and in some other fields of technical textiles. Although over 40 wild species (of jute) are known, only two, namely, *C. capsularis linn*. (Commonly known as White jute) and *C. olitorius linn*. (Commonly known as Tossa or Daisee jute) are cultivated commercially. Though jute plant is known principally for its versatile fibre, every part of the plant has its use. The tender leaves are cooked and consumed as vegetables. The leaves which fall off the plant enrich the soil, about 1 MT of dry matter is put back into the soil and about 3 MT of roots remain per acre of land. The stick which remains after jute fibre is extracted is used as a domestic fuel and also as a cheap building material. The plant itself has a very high carbon dioxide assimilation ability; in the 120 days of its growing period, an acre of jute absorbs about 6 MT of carbon dioxide form atmosphere and releases 4.4 MT of oxygen; several times higher than trees. Apart from the versatility of the jute plant, the plant compares very favourably in terms of its ecological footprint when compared with synthetic packaging materials (Basu and Roy 2008) [2].

Cultivation
Jute needs a plain alluvial soil and standing water. The suitable climate for growing jute (warm and wet climate) is offered by the monsoon climate during the monsoon season. Temperatures ranging 20˚ C to 40˚ C and relative humidity of 70%–80% are favorable for successful cultivation. Jute requires 5–8 cm of rainfall weekly with extra needed during the sowing period.

Uses
Jute is the second most important vegetable fibre after cotton; not only for cultivation, but also for various uses. Jute is used chiefly to make cloth for wrapping bales of raw cotton, and to make sacks and coarse cloth. The fibres are also woven into curtains, chair coverings, carpets, area rugs, hessian cloth and backing for linoleum.
Jute has entered many diverse sectors of industry, where natural fibres are gradually becoming better substitutes. Among these industries are paper, celluloid products (films), non-woven textiles, composites (pseudo-wood) and geo-textiles.
The fibres are used alone or blended with other types of fibres to make twine and rope. Jute butts, the coarse ends of the plants, are used to make inexpensive cloth. Conversely, very fine threads of jute can be separated out and made into *imitation silk*. As jute fibres are also being

used to make pulp and paper, and with increasing concern over forest destruction for the wood pulp used to make most paper, the importance of jute for this purpose may increase.

Diversified jute products are becoming more and more valuable to the consumer today. Among these are espadrilles, floor coverings, home textiles, high performance technical textiles, Geo-textiles, composites, and more. Jute has many advantages as a home textile, either replacing cotton or blending with it. It is a strong, durable, colour and light-fast fibre. Its UV protection, sound and heat insulation, low thermal conduction and anti-static properties make it a wise choice in home décor. Also, fabrics made of jute fibres are carbon-dioxide neutral and naturally decomposable. These properties are also why jute can be used in high performance technical textiles.

Advantages

It has high tensile strength, low extensibility, and ensures better breathability of fabrics. Therefore, jute is very suitable in agricultural commodity bulk packaging.

It helps to make best quality industrial yarn, fabric, net, and sacks. It is one of the most versatile natural fibres that has been used in raw materials for packaging, textiles, non-textile, construction, and agricultural sectors. Bulking of yarn results in a reduced breaking tenacity and an increased breaking extensibility when blended as a ternary blend.

Advantages of jute include good insulating and antistatic properties, as well as having low thermal conductivity and a moderate moisture regain. Other advantages of jute include acoustic insulating properties and manufacture with no skin irritations.

Jute has the ability to be blended with other fibres, both synthetic and natural, and accepts cellulosic dye classes such as natural, basic, vat, sulfur, reactive, and pigment dyes (Basu *et al.* 2008) [1].

Conclusion:

Conclusively, it can be stated that jute is an important natural fibre, which has the capacity and caliber to conquer the world and replace synthetic fibers with its qualities and advantages over them.

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