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COIR INDUSTRY NEEDS TO REINVENT ITSELF

Coir industry has had an ancient history along the southern coastal belt of India. The survival of this industry depends on its ability to reinvent itself quickly to meet the fast-changing consumer preferences.



Coir doormats

India is a major exporter of value-added coir goods. Sri Lanka is the largest exporter of coir fibre, followed by Thailand and India. Despite the growth of the coir industry in some of the major coconut producing countries, not more than 10 per cent of the global output of husk is utilised for coir fibre extraction. There has been only marginal improvement in the production levels, quality and aesthetic appeal of coir products, with the result that new consumers, particularly of the younger genera-

tion, are not attracted to these products. The future of the coir industry depends on the development of non-conventional products.

The history of coir

Ropes and cordage made from coconut fibre have been in use from ancient times. Indian navigators who sailed the seas to Malaya, Java, China, and the Gulf of Arabia centuries ago, used coir for their ship ropes. Arab writers of the 11th century AD referred to the extensive

use of coir for ship ropes and rigging. A coir industry in the UK was recorded prior to the second half of the 19th century. During 1840, Captain Widely, in co-operation with Captain Logan and Thomas Treloar, founded the well-known carpet firm of Treloar and Sons in Ludgate Hill, England, for the manufacture of coir floor coverings.

The Indian coir industry

The coir industry in India has been strongly oriented towards exports since its early days when the trade was dominated by European business enterprises. With the arrival of Independence, the trade fell into Indian hands, which was a turning point in the history of the coir industry in India. The structure of the industry has undergone drastic changes. The pattern of exports and the product mix have also changed. From being merely a fibre and yarn exporter, India became an exporter of value-added goods. This has, in turn, brought about a major shift in the total volume and value of exports.

In the initial years, the export was mostly of coir yarn to European countries, for agricultural purposes in hop and beans cultivation, and as a raw material for industrial units



Brown coir fibre

engaged in the manufacture of coir products. Subsequently, with the easy availability of synthetics at competitive prices and the rising cost of wages, the European coir industries were constrained to either close down or reduce their output, leaving a gap in the international market. But India could not effectively capitalise on this opportunity, paving the way for the synthetics to capture the market unchallenged. The substitution of natural floor covering with synthetic alternatives was irreversible, to the detriment of the Indian coir industry and trade, the ill-effects of which continue to be felt even now.

Varieties of coir

Brown coir harvested from fully ripened coconuts is thick, strong and has high abrasion resistance. It is typically used in mats, brushes and sacking. Mature brown coir fibre contains more lignin and less cellulose than fibre such as flax and cotton, so it is stronger but less flexible. Fresh water is used to process brown coir.

White coir fibre, which is harvested from coconuts before they are ripe, is white or light brown in colour. It is smoother and finer, but weaker. It is generally spun to make

yarn used in mats or rope. The coir fibre is relatively waterproof, and is one of the few natural fibres resistant to damage by saltwater. Seawater and fresh water are both used in the production of white coir.

Uses of coir

1. Brown coir is used in floor mats and doormats, brushes, mattresses, twine, floor tiles and sacking.

2. Pads of curled brown coir fibre, made by needle-felting (a machine technique that mats the fibres together), are shaped and cut to fill mattresses. These are also used for erosion control on river banks and hillsides.

3. A major proportion of brown coir pads is sprayed with rubber latex, which bonds the fibres together (rubberised coir) to be used as upholstery padding for the automobile industry in Europe. The material is also used for insulation and packaging.

4. The major use of white coir is in rope manufacture. Mats of woven coir fibre are made from the finer grades of bristle and white fibre, by hand or mechanical looms.

5. White coir also is used to make fishing nets because of its strong resistance to saltwater.

6. In horticulture, coir is a strongly recommended substitute for sphagnum moss because it is free of bacterial and fungal spores, and produces good results without the environmental damage caused by peat mining.

7. Coir is also useful to deter snails from delicate plants, and as a growing medium in intensive glass-house (greenhouse) horticulture.

8. Coconut coir from Mexico has been found to contain many large colonies of the beneficial fungus *Aspergillus terreus*, which acts as a biological control against plant pathogenic fungi.

9. Coir is also used as a substrate to grow mushrooms.

Innovation in coir products

Coir composites as a wood substitute. The R&D efforts of the Coir Board of India were successful in developing a coir composite that can substitute wood, plywood and MDF boards. The composites are made out of a combination of two or more materials to achieve superior properties over its components. Here coir fibre and phenolic resoles are used to make plywood of any desired density. Based on the density,

Table I
Major Producers and Exporters

| Major producers worldwide | Major exporting towns in India |
|---------------------------|--------------------------------|
| India | Alappuzha |
| Sri Lanka | Kayamkulam |
| Indonesia | Chirayinkeezhu |
| Malaysia | Kollam |
| Philippines | North Parur |
| Thailand | Thrissur |
| Vietnam | Kozhikode |
| Mexico | Kannur |
| Caribbean countries | Ponnani |
| | Vaikom |

Table II
Export of Coir Products

| Item | April-March 2012 | | April-March 2011 | |
|-----------------------|--------------------------|--------------------|--------------------------|--------------------|
| | Quantity (metric tonnes) | Value (Rs million) | Quantity (metric tonnes) | Value (Rs million) |
| Coir fibre | 119,684 | 2032.4 | 83,393 | 1214.8 |
| Coir yarn | 5563 | 314.1 | 5022 | 268.5 |
| Handloom mats | 27,656 | 2354.5 | 29,409 | 2152.6 |
| Power loom mats | 36 | 2.4 | 0 | 0.0 |
| Tuft mats | 33,021 | 2774.5 | 33,349 | 2396.8 |
| Handloom matting | 1474 | 158.3 | 1406 | 124.5 |
| Power loom matting | 0 | 0.0 | 0 | 0.0 |
| Geo textiles | 3681 | 243.3 | 3267 | 182.3 |
| Coir rugs and carpets | 191 | 18.6 | 1147 | 82.6 |
| Coir rope | 793 | 34.1 | 212 | 8.7 |
| Curled coir | 11,856 | 317.1 | 55,270 | 105.6 |
| Rubberised coir | 416 | 55.0 | 383 | 47.7 |
| Coir pith | 206,424 | 2215.1 | 157,855 | 1482.9 |
| Coir of other types | 58 | 6.8 | 46 | 3.6 |

the ply can replace plastic boards, MDF boards or hard boards made out of wood.

Coir as packaging material. Another R&D project of the Coir Board in collaboration with the Indian Institute of Packaging, Mumbai, has developed an alternative to conventional wood-based packing material for various applications. Crates made out of coir composite board for heavy equipment like circuit breakers, lids for fibre drums and collapsible reusable containers replacing plywood are some of the outcomes of this very exciting project.

Coir 'bhoovastra'. Another non-conventional product from the coir industry is the coir *bhoovastra* or coir geo textiles commonly being used in soil bioengineering applications. One of the major ecological threats that the world faces today is soil erosion, particularly of the topsoil. It takes thousands of years to form the thin layer of surface soil but needs only a few minutes to lose it through erosion caused either by water, wind or mindless human interference. The coir *bhoovastra* is a

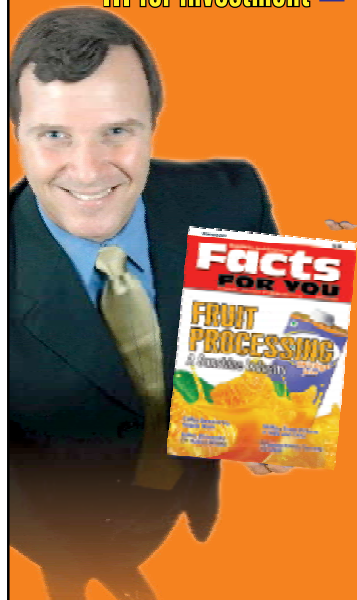
long-term bio-degradable geo textile. Its effectiveness for soil bioengineering and bioremediation applications has been well acknowledged. It protects the soil surface and promotes growth of vegetation during its formative stage. It can dissipate the energy of flowing water and absorb solar radiation.

Rubberised coir and needled felt. A CFC/ITC study held in the mid-90s has identified coir needled felt, geo textiles and coir pith as products with good export potential. Coir needled felt is being used as mattress material, plant liners, insulation pads, geo textiles garden products and even as organic mulch. The restrictions imposed on the use of polyurethane in the UK and the enforcement of stringent fire retarding practices elsewhere in Europe, offer scope for exporting rubberised coir, provided the price is competitive. The European and Japanese car seat manufacturers market (that earlier used rubberised coir) lost on account of the high cost of production, can possibly be regained if India and Sri Lanka step in with quality products

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Coir ropes

at competitive prices.

Coir pith. Coir pith or coir dust—a spongy residual material—is the by-product of fibre extraction that has caught the imagination of horticulturists. It has immense potential as a soil conditioner and moisture-retaining medium. Its demand is on the rise due to the restrictions being imposed on mining of peat moss. Other garden products like plant liners, baskets, grow bags, shredded husks, and bit fibre are also in demand for orchid and other cut flower cultivation in the large and growing market garden sector.

Challenges facing coir exports

Quality. The quality of coir products is often difficult to maintain because of the very nature and availability of raw materials like fibre, yarn, dyes and chemicals. Besides, the production infrastructure in India is obsolete and often in dilapidated condition. The workmanship of thousands of skilled and semi-skilled workers varies so substantially that homogeneity and standardisation are hard to achieve.

Obviously, quality is the casualty. Training for skills development and extension programmes for quality upgradation of the widely scattered tiny household units (apart from their maintenance) are critical to improve the current state of affairs.

Market intelligence—a major gap. Inadequate, ready-to-use information keeps the manufacturers, mostly running small units, ignorant of the market conditions and consumer preferences—a situation that no industry can afford in this era of globalisation. The Coir Board has recently set up a Coir Trade Centre at Kochi, which will hopefully address this badly felt need of the industry.

R&D is insufficient. One major problem the coir industry faces today is the inadequate R&D efforts for product development and diversification. Notwithstanding the euphoria over the rising demand for eco-friendly products, goods manufactured out of natural fibres, especially from hard fibres, are finding it tough in the global market. The very properties of natural hard fibres like inconsistent quality and mechanical behaviour, moisture related characteristics and durability are disad-

vantageous for large-scale industrial production. The processing technologies require specific adaptations and modifications.

The biggest challenge before the coir industry in the new era of the open market will be to keep the quality of the products and service levels high, even while keeping costs low. As improved technology increases production, industry groups and governmental agencies are actively promoting new uses for coir fibre. Geo textiles are one promising area. Kerala had designated the year 2000 as Coir Geo Textiles Year, which it observed by increasing marketing efforts and supporting research to improve production.

The domestic market in India, although very vast with good potential, still remains unexploited. At present, organised marketing of coir in the country is being undertaken by the Coir Board, Coir Marketing Federations of the state governments, State Coir Corporations and State Coir Development Agencies—besides the manufacturers in the private sector. Unfortunately, the organised coir sales channels in the country are insufficient to tap the unexploited household sector in India. The private-sector efforts in this field are to be given a boost to expand the market.

Programmes organised by the Coir Board like Coir Expos in important cities, providing assistance to entrepreneurs in the private and co-operative sectors to set up sales outlets, offering market development assistance to intensify marketing efforts and adopt IT oriented services, intensifying publicity efforts, participation in exhibitions and trade fairs, etc are not enough. The private sector should also be involved in the organised development and marketing of coir products. ■

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