2009 International Year of Natural Fibers

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Background

Natural fibers are important components of clothing, home furnishing and industrial textiles, including packaging, papermaking and composite materials with numerous applications.

In particular, the textile industry uses a wide array of natural fibers, with cotton, wool, silk and linen being the more popular. Factors such as fashion trends, textile production technology, logistics, trade agreements and trade barriers, population, disposable income, prices and availability of textile fibers have consistently influenced the patterns of textile consumption through time. The annual average world textile fiber end-use consumption has more than tripled from 18 million tons in the 1960s to 57 million tons in the 2000s. However, consumption evolved differently for natural and manufactured textile fibers: while the annual average consumption of natural fibers doubled from 12 million tons in the 1960s to 24 million tons in the 2000s, the annual average consumption of manufactured fibers experienced more than a five-fold increase from 5 million tons to 33 million tons over the same period. Consequently, the average share of natural fibers in total textile fiber consumption decreased from 71% in the 1960s to 42% in the 2000s. Despite the shift in relative terms towards manufactured fibers, natural fibers remain a critical input to the textile industry. Furthermore, besides their importance in textile production and their various industrial uses, natural fibers provide employment to millions of people worldwide, contribute to food security, and provide economic development opportunities to many developing and least developed countries.

1 This is a reprint of an article published in Cotton: Review of the World Situation 61(6), 2008.
2 Senior Economist (Trade), Food and Agriculture Organization of the United Nations (FAO), Trade and Markets Division (EST).
3 Economist, International Cotton Advisory Committee.
4 In this section, natural fibers include cotton and wool while manufactured fibers include polyester, rayon, acrylic, nylon, aramid, alginate, azlon, spandex, saran, TFE-flurocarbon, vinal and vinyon (ICAC 2007).
In this context, and with the objectives of raising awareness and stimulating the demand for natural fibers, encouraging appropriate policy responses from governments to the problems faced by natural fiber industries, fostering an effective and enduring international partnership among the various natural fibers industries, and promoting the efficiency and sustainability of the natural fibers industries, the United Nations proclaimed 2009 as the International Year of Natural Fibers (IYNF).

The IYNF is to be coordinated by the Food and Agriculture Organization of the United Nations (FAO), under the guidance of an International Steering Committee, in which the ICAC and the International Forum for Cotton Promotion (IFCP) represent the cotton sector. However, most of the activities will be initiated, planned and funded by individual organizations around the world. This article intends to contribute to the IYNF by providing a description of the composition and size of the natural fibers market, and portraying the promotional efforts pursued by the FAO, the ICAC, the IFCP and other organizations towards the IYNF.

**Natural Fibers Production**

There is a diverse range of natural fibers produced by farmers throughout the world, and not all of them are used in the textile industry. While many developed countries have
important natural fiber industries, in these large and diverse economies the economic contribution of natural fibers is minor compared to many other industries. For some developing countries, however, natural fibers are of major economic importance: some examples are cotton in West African countries, jute in Bangladesh and sisal in Tanzania. In other cases, these fibers are of less significance at the national level but are of major local importance at the regional level, as is the case of jute in West Bengal (India) and sisal in North-Eastern Brazil. Proceeds from the sale and export of natural fibers often contribute significantly to the income and food security of resource-poor farmers and processors in least developed countries. The uses of natural fibers range from apparel to industrial applications and in most -if not all- applications they are subject to competition from manufactured substitutes.

Natural fibers may be classified according to their source as cellulosic (from plants), protein (from animals), and mineral. Plant fibers may be seed hairs, such as cotton; bast (stem) fibers, such as linen; leaf fibers, such as sisal; and husk fibers, such as coir from the coconut. Animal fibers include wool, hair, fur, and secretions, such as silk. The only important mineral fiber is asbestos; but due to its associated health problems it is of little economic consequence nowadays.

According to FAO estimates, world production of natural fibers averaged 31 million tons per year over the period 2003-2005 (Table 1). Cotton represented, on average, 76% of total fiber production by weight, followed by jute (9%), wool (7%), and a number of other fibers. The average annual value of all natural fibers over the same period amounted to US$ 36 billion. Cotton represented a higher share of the total value (86%) than of the total volume. The second most important fiber in terms of value was wool (8%), followed by silk (3%), jute (1%) and flax fiber (1%).

Cotton production is estimated at 26.4 million tons in 2007. The major cotton producing countries are China, India, the United States, Pakistan, Brazil, and Uzbekistan, accounting

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5 Except for cotton, FAO uses a set of 3-year average prices expressed in national currencies to estimate the value of production of each fiber at country level. The set of national prices are not publicly available. FAO uses the season-average Cotlook A Index to estimate the annual value of cotton production. Since prices expressed in national currencies for each fiber differ substantially across countries due partly to factors external to the fiber market, the average annual value of production should be interpreted only as a rough estimate, and no comparison of average unit values should be attempted.

6 This is true even when comparing cotton production with a total volume that excludes kenaf, coir and other animal fibers.
for 85% of world production. Global trade in cotton amounted to 8.3 million tons in 2007, much of which was imported by processing and manufacturing countries which subsequently re-exported it in the form of textiles and clothing. Other uses for cotton include upholstery, curtains, and some industrial applications.

FAO statistics indicate that annual wool production averaged 2.2 million tons in recent years, with production recorded in almost 100 countries. Australia accounts for about one-fourth of world wool production, followed by China (17%), New Zealand (10%), Iran (3%), Argentina (3%), the United Kingdom (3%), India (2%) and Russia (2%). Exports of greasy plus scoured wool amount to around 800,000 tons annually.7 Most wool exports, like cotton, are mainly processed in importing countries for subsequent re-export. Wool is used largely for the manufacture of apparel (48%), with coarser types used for bedding, upholstery and carpets (42%).

Table 1. World Production of Natural Fibers, Annual Average (2003-2005).

<table>
<thead>
<tr>
<th>Natural Fiber</th>
<th>Thousand Tons</th>
<th>%</th>
<th>Thousand US$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cellulosic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>23,733</td>
<td>75.4%</td>
<td>31,203</td>
<td>85.8%</td>
</tr>
<tr>
<td>Jute</td>
<td>2,664</td>
<td>8.5%</td>
<td>480</td>
<td>1.3%</td>
</tr>
<tr>
<td>Flax fiber</td>
<td>777</td>
<td>2.5%</td>
<td>426</td>
<td>1.2%</td>
</tr>
<tr>
<td>Kenaf</td>
<td>500</td>
<td>1.6%</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Coir</td>
<td>450</td>
<td>1.4%</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Sisal, Henequen and Other Agaves</td>
<td>299</td>
<td>1.0%</td>
<td>75</td>
<td>0.2%</td>
</tr>
<tr>
<td>Ramie</td>
<td>249</td>
<td>0.8%</td>
<td>172</td>
<td>0.5%</td>
</tr>
<tr>
<td>Abaca</td>
<td>87</td>
<td>0.3%</td>
<td>28</td>
<td>0.1%</td>
</tr>
<tr>
<td>Hemp</td>
<td>68</td>
<td>0.2%</td>
<td>32</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wool</td>
<td>2,191</td>
<td>7.0%</td>
<td>2,959</td>
<td>8.1%</td>
</tr>
<tr>
<td>Silk</td>
<td>413</td>
<td>1.3%</td>
<td>975</td>
<td>2.7%</td>
</tr>
<tr>
<td>Other animal fibers*</td>
<td>50</td>
<td>0.1%</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>31,212</td>
<td>100.0%</td>
<td>36,350</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

*Other animal fibers include alpaca, cashmere, angora, mohair and camel.

n.a.: not available.

Source: FAO

Production of jute fluctuated substantially through time, influenced mostly by weather conditions and prices. In the present decade, production ranged from 2.3 to 2.8 million tons. The volume of production of jute generally exceeds that of wool, but its value is just one-sixth that of wool. India and Bangladesh are the largest jute producing countries,

7 Depending on cleanness, wool is classified into greasy (raw, unwashed), scoured (cleaner, washed wool), and snow white wool.
accounting for 65% and 25%, respectively, of the world production, followed by China (Mainland), Myanmar, Thailand and Nepal. Kenaf, a fiber very similar to jute, is produced in smaller quantities of around 500,000 tons in a number of countries, predominantly in Asia. These two fibers have very similar uses, so trade and consumption reports typically combine them into one category. Traditionally, jute and kenaf have been used to manufacture packaging materials like hessian, sacking, ropes, twines, and carpet backing cloth. These applications have been progressively taken over by manufactured materials, and the use of jute and kenaf, along with other natural fibers in similar markets, has declined. However, in recent years, new technologies have been developed to use jute in the production of high value added and price competitive intermediate and final products, such as home textiles, composite materials, geo-textiles,8 paper pulp, technical textiles, chemical products, handcrafts and fashion accessories.

Some 777,000 tons of flax fiber (linen) are produced annually, of which two-thirds are produced in China (Mainland), and the remainder in France (11%), Russia (7%), the Czech Republic (2%), and Spain (1%) among other countries. Linen is used for a range of textile products, including clothing and other household textiles.

Coir, the fiber from the husk of the coconut, is produced in many tropical countries, but reliable data are available only for the few in which coir exports and manufactures are of some commercial significance. In many countries, coir is produced on a small scale in villages and is not tracked by national statistics. Information from the major exporters - including India, Sri Lanka, Thailand, Malaysia, and Indonesia- indicate that annual production of coir has fluctuated around 450,000 tons in recent years. Coir is used in upholstery and mattresses, for floor mats and matting, brooms and brushes, in cordage, and in some newer applications such as geo-textiles and composite materials.

Silk is produced from cocoons of the silk-producing moth, commonly called the "silkworm." The cocoon, formed from an unbroken fiber secreted from the caterpillar's body, is gathered and the fiber unwound. This unwinding or “reeling” of the fiber is, together with other elements of silk production, very labor-intensive. Silk production has amounted to around 413,000 tons annually in recent years. China (Mainland) accounts for 70% of global

8 Geo-textiles are permeable fabrics which, when used in association with soil, have the ability to separate, filter, reinforce, protect, or drain. Typically made from polypropylene or polyester, geo-textile fabrics come in three basic forms: woven, needle punched, or heat bonded. Source: http://en.wikipedia.org/wiki/Geotextile.
production, followed by India (19%) and other countries with smaller volumes of production, such as Vietnam, Thailand, Turkmenistan, Uzbekistan, and Brazil.

Over the period 2003-2005, annual production of sisal, henequen and similar hard fibers averaged 300,000 tons. These fibers are produced from the leaf of the agave plant and similar species, mainly in Africa and Latin America. Brazil has the largest share of production of these fibers (44%), followed by Tanzania (9%), Kenya (9%), Colombia (7%), Mexico (6%), and Madagascar (3%). Traditionally, these fibers have been used for cordage, particularly for baling twine and for sacking. However, in the face of competition from manufactured materials in those applications, their utilization increased in other markets, including carpets, composite materials, and paper pulp.

Hemp is a bast fiber similar to flax, kenaf, jute and ramie, used for textiles, cordage and fine paper products. The wood-like core fiber can be used for animal bedding, garden mulch, fuel and an assortment of building materials. Hemp is a distinct variety of the plant species cannabis sativa L. but unlike other varieties it contains virtually no tetrahydrocannabinol (THC), the active ingredient in marijuana. Since it can easily be confused with marijuana, hemp production is restricted or prohibited in many countries. In recent years, global hemp production averaged 68,000 tons annually. Hemp production is concentrated in China (Mainland) and the European Union. Hemp is also produced in Chile, Russia, and Korea.

Abaca is produced from the leaf stalk of a plant closely related to the banana, and is native to the Philippines. Abaca production totals around 87,000 tons annually, of which more than 80% is produced in the Philippines, with the remainder produced almost entirely in Ecuador. Only small quantities of abaca are now used in traditional cordage applications, with most being pulped for a range of specialty papers, for sausage casings, tea bags, coffee filters, cigarette filters and bank notes.

Promotional Efforts

Natural fibers face the challenge of developing and maintaining markets while competing with manufactured fibers. In some cases this might involve defining and promoting market niches; in others, conducting research to develop new technologies to facilitate the use of natural fibers in new applications where their natural advantages allow them to compete
effectively with manufactured fibers. But in all cases, promoting the value of natural fibers to the final consumer is critical for the success of the campaign. Along those lines, the main objective of the IYNF is to raise the profile of natural fibers, emphasizing their value to consumers while helping to sustain farmers’ incomes. A complementary objective is to promote measures to improve the efficiency and sustainability of natural fiber production. The IYNF will emphasize the environmental advantages of natural fibers over manufactured fibers, while seeking at the same time to promote the realization of their clean potential.

The idea of the IYNF originated at a meeting of fiber producing and consuming countries at the FAO in Rome. At the request of the FAO, the actual declaration was made by the General Assembly of the United Nations on December 20, 2006. The program of events includes several international conferences, displays and fashion shows in many countries, run by a variety of national and international organizations. The 66th Plenary Meeting of the ICAC conducted in Izmir, Turkey, in November 2007 served as a venue for the International Steering Committee to meet and advance the agenda of the IYNF. Future meetings are scheduled at the 67th and 68th Plenary Meetings of the ICAC in Ouagadougou, Burkina Faso, in November 2008, and Capetown, South Africa, in October 2009.

Promotional events will take place around the world, including at the Plenary Meetings of the ICAC, the Australian Cotton Conference, the Milano Unica textile fair in Italy, the 10th International Cotton Conference in Poland and many other venues. The calendar of events is growing steadily, as various natural fiber groups in many countries plan their own events for the year. A video is currently being prepared, and FAO encourages industry organizations to organize their own activities for 2009. 9

There is no single organization or grouping of international organizations that represents the interests of all natural fibers. Rather, various groups, some governmental, some non-governmental, each concerned with an individual natural fiber, actively work to support their fibers. The organizations with active participation in the International Steering Committee are the ICAC, the IFCP, the International Cotton Association, Cotton Council International, Bremen Cotton Exchange, the Common Fund for Commodities, United Nations Industrial Development Organization, the International Wool Textile Organisation, the International

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Jute Study Group, the Intergovernmental Group on Hard Fibres, the Intergovernmental Group on Jute, Kenaf and Allied Fibres, the International Network for Bamboo and Rattan, the International Association of Users of Artificial and Synthetic Filament Yarns and of Natural Silk (AIUFFASS), the European Industrial Hemp Association, Eurojute, Cotton Association of India, East India Cotton Association, Cotton Corporation of India, Gdynia Cotton Association, Fondazione Industrie Cotone e Lino, London Sisal Association, the German Industrial Association for Yarns, Fabrics and Technical Textiles (IVGT), the Italian Silk Forum, the Indian Coir Board, the State of Bahia Union of Vegetable Fiber Industries (Sindifibras), the German Federation for Reinforced Plastics (AVK), the Ministry of Textiles of India, Tanzania Sisal Board, Glucksburg Consulting Group, the Brazilian Office of Science, Technology and Innovation, the Federal University of Campina Grande, the University of Sao Paulo, Universidade Estaduale Paulista, New Zealand Trade and Enterprise, the South African Council for Scientific and Industrial Research, Katani Ltd., Zylpeon International B.V., Kensys SARL and Masters of Linens. These groups represent the interests of farmers, traders, processors and textile manufacturers, and in some cases consumer groups and retail organizations. One expected result from the IYNF is the development of closer links between the bodies representing various natural fibers.

Every actor in the natural fibers value added chain (farmers, processors, manufacturers, traders, retailers and consumers) is expected to benefit from the International Year of Natural Fibers, particularly farmers and natural fibers exporting countries. The FAO believes that there will be environmental and health benefits in consuming as well as producing countries stemming from increased awareness and increased use of natural fibers.

References

FAO. “Background Note on Natural Fibres,” available online at

FAO. “International Year of Natural Fibres 2009,” International Year of Natural Fibres Coordinating Unit, Trade and Markets Division (EST), available online at
