

Eco friendly and Recyclable Textiles: Current Scenario and Sustainable Uses



Presented by

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Need for Eco-friendly & Recyclable Textiles

Concerns Related To Textiles Industry

- Textiles Production and Processing - Chemical Intensive Applications
- Associated Social and Environmental Concerns
- Growing Concerns -
 - Increasing industrial Pollution
 - Industrial waste disposal problems
 - Economic and social health of the farmers and industrial workers
- Unawareness about Environmental Sustainability – Ethical, Environmental and Socially responsible business structures are required.

Environmental Sustainability

- Need to believe in environmental sustainability
 - taking incremental steps in supply chain processes to make it happen
- Need to be aware about the social, economical and ecological benefits of environmentally sustainable product development processes.

3

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Environmental Sustainability

- Care for the Environment
 - Influence the supply chain to use Sustainable Processes
 - Run business operations in an environmentally friendly way
 - Work to conserve energy and reduce waste.
 - Sustainable design approach - Explore the use of sustainable materials and products.

4

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Definitions

Sustainable Textiles – Textile products that have been environmentally friendly, support communal harmony, as well as capable of supporting fashion needs.

- **Eco Textiles:** Any textile product, which is produced in eco-friendly manner and processed under eco-friendly limits (defined by agencies like oekotex, ifoam etc.).
- **Organic:** Any crop cultivated by using organic principles of agriculture like organic manures and bio fertilizers can be considered Organic. This is a crop that is cultivated without pesticides, chemicals and synthetic fertilizers (e.g., organic cotton).

5

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Definitions

- **Recycled/ biodegradable:** natural and synthetic fibers which are biodegradable or can be broken into pieces to recycle and produce textile fibers again are called recyclable fibers. These are recycled to produce recycled fibers, then converted into textiles.
- **Natural:** Natural fibers - like cotton, linen, jute etc. which are obtained from natural sources and may be considered eco-friendly based on the process of cultivation and processing.
- **Sustainable Processing:** Textile wet processing using environmentally friendly agents and sustainable methods of processing in order to have environmentally safe processing with less chemicals inputs and problems in effluent disposals etc. (e.g., use of peroxide bleaching, natural dyes, azo free dyes.)

6

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Use of Eco Textiles Fibers - Related Industries

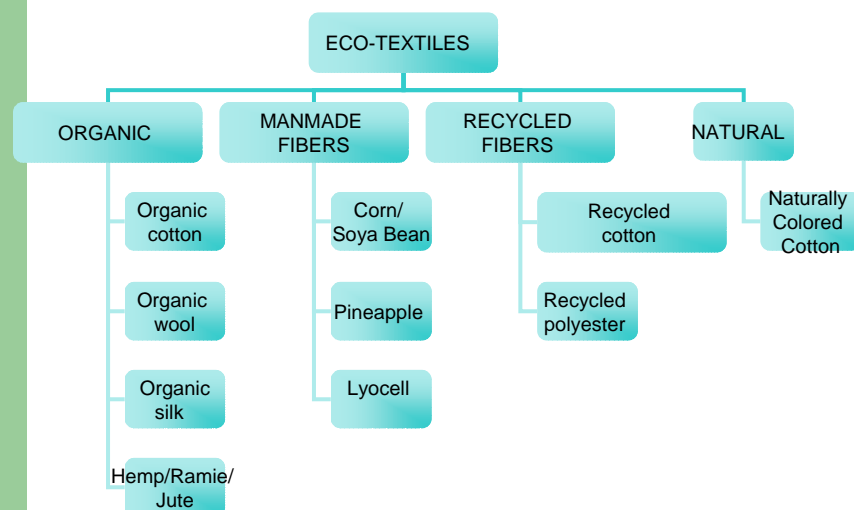
- Fashion and Apparel Industry
- Home Furnishing and Textile Industry
- Hygiene and Health Care Industry
- Packaging Industry – “Eco Packaging” an Important Feature
- Growing Recycling Industry- Generating Rural Employments
- Medical Textiles Industry – Growing Opportunities’

7

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CLASSIFICATION - Eco Friendly Textiles Fibers



8

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COTTON FACTS

- Cotton is one of agriculture's most water-intensive and pest-sensitive crops
- It is estimated to consume 11% of the world's pesticides.

(Kooistra, K.J., et. al. 2006).

Total Pesticides consumption on different crops in India

Crop	Area (%)	Pesticide use (%)
Rice	24	17
Oil seeds	10	2
Cotton	5	54
Vegetables and fruits	3	13
Plantations	2	8
Sugarcane	2	3
Others	5	3

Source : CICR Technical Bulletin,1/2000

9

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Organic Cotton- A Sustainable Alternative



Social and Environmental benefits

- Organic cotton cultivation helps in decreasing pollution.
- Organic cotton cultivation helps in improving soil fertility.
- Organic cotton farming helps in preventing water, soil and air contamination.
- Equivalent/ better fiber properties helps in diversified products development- suitable for all products.
- Suitable uses : baby products, apparel, textiles, hygiene and care products like- cotton balls, ear buds, sanitary pads, medical textiles – scrubs, beddings, packaging materials like cosmetics bags etc.

10

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Certification of Organic Cotton- Why?

Certification provides a comprehensive system for ensuring that certain standards of organic production and processing have been met . It authenticates the product and increases its credibility.

Steps included:








- Settings of standards
- Inspection and verification against those standards
- Certification: recognize the producer who successfully meet the standards

11

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Organic Organizations (European Union & USDA) & Certification Agencies

Organic Organizations	Logo	Organisation	Logo
IFOAM – International federation of Organic Agriculture Movements To fulfil its mission as facilitator of the worldwide organic movement, IFOAM depends on a system of internal structures and individuals operating in response to the Federation's evolving plans and objectives.		Soil Association, Organic Textiles United Kingdom	
USDA - United States Department of Agriculture United States Department of Agriculture USDA facilitates research, planning, standardization, policies and farm projects based in California – USA. ORGANIC EXCHANGE - California, USA. Organic Exchange is a charitable organization committed to expanding organic agriculture, with a specific focus on increasing the production and use of organically grown fibers such as cotton.		Control Union International (aka SKAL International), Sustainable Textile Production Programme Standards for the processing of natural fibres Netherlands, International <i>NB: Textiles are described as "sustainable" rather than "organic", although the cotton fibre is organic; the processing criteria are generally slightly less stringent than other standards listed here.</i>	
CERTIFICATION AGENCIES AGRECO - Germany Formed to certify the organic farms and organic products		AIAB-ICEA Tessile Biologico (Organic Textiles) Italy	
IMO – Institute of Market ecology, SWITZERLAND The Institute for Marketecology (IMO) is one of the first and most renowned international agencies for inspection, certification and quality assurance of eco-friendly products. Our world-wide activities are accredited by the Swiss Accreditation Service (SAS) according to EN 45011 (ISO 65), which is the international standard for certification. ECO CERT – INDIA ECOCERT is committed to building trust between consumers and the operators involved in ecologically sound production, processing and marketing in a		Demeter International e.V. Processing of textiles from DEMETER fibres (includes IVN Standards) Germany International Association of Natural Textile Industry (IVN) IVN Best – Naturtextil Germany Naturland Processing Standards for Textile Germany	
		Other certification Programmes in Germany, Denmark, Switzerland, Sweden, Japan, USA and Canada.	

12

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Organic Cotton Production Statistics

Summary Table 3: Projected organic cotton stocks and fiber production (in metric tonnes) for 2005 growing season, by region: ending stock as of February 2006.

By region, 2005-2006	Beginning stock August 1	Harvest	Sales/ Commitments	Stock on Feb. 2006	% of Production
SE Asia (Pakistan/India)	2,037.00	10,834.86	11,835.00	1,036.86	34.93%
Middle East (Turkey, Israel)	0.00	10,760.00	10,700.00	60.00	34.69%
China	420.00	2,531.60	2,630.00	321.60	8.16%
Other Africa	804.38	2,469.60	2,859.00	414.98	7.96%
North America (USA)	0.00	1,867.64	1,868.00	0.00	6.02%
Latin America	172.00	1,188.00	1,035.00	325.00	3.83%
Africa CFA zone	68.50	1,014.95	1,049.00	34.45	3.27%
North Africa	0.00	240.00	240.00	0.00	0.77%
CIS (Commonwealth of Independent States)	0.00	110.00	110.00	0.00	0.35%
EU, Central Europe	0.00	0.00	0.00	0.00	0.00%
Central America	0.00	0.00	0.00	0.00	0.00%
East Asia and Australia	0.00	0.00	0.00	0.00	0.00%
Total in Metric tonnes	3,501.88	31,016.65	32,326.00	2,192.89	100.00%
Total in Bales	16,050.28	142,159.65	148,160.83	10,050.74	

Conversion Note: 2 200 pounds are in a Metric Tonne and 480 pounds in a bale.

13

Organic Wool



- Insecticides are used to control mange, mites, lice, flies, and other pests on sheep herds.
- In order to be certified livestock need to feed on natural vegetation matter with bio fertilizers, cleaning with bio cleaning agents and natural insecticides.
- In order for wool to be certified as "organic," it must be produced in accordance with federal standards for organic livestock production.
- All certification agencies accredited with IFOAM can certify organic wool. International accepted certifying agency is Bio-grow from New Zealand.



14

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Organic Wool

Improved properties

- Excellent insulation and thermal properties
- Excellent softness and absorbency

• Leading Countries

- US
- Canada
- New Zealand
- Denmark



15

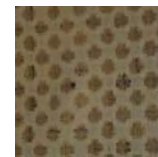
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Organic Silk

- Organic silk or vegetarian silk is made from the cocoons of wild and semi-wild silk moths of India and China.
- In its production the pupae are not stifled or killed to obtain reeled yarn but the open-ended cocoons are spun into yarn.

• Improved properties

- Greater degree of fiber purity, resulting in better yarn luster and uniformity than normal spun silk.
- Since the fiber is spun, it has better fiber strength and durability.



16

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HEMP – Sustainable by Nature

- The world's oldest and the strongest natural textile fiber cultivated on earth.
- Few pesticides or fertilizers are used – sustainable by nature
- Hemp grows well in a wide variety of climates and soils. It requires far less fertilizers and pesticides than most commercial crops. Ecofriendly substitute of linen
- The only complete substitute of cotton for heavy weight products like tops, bottoms, jackets and outerwear and for denims.
- The U.S. government produced the movie [Hemp for Victory](#) to encourage farmers to grow hemp.



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HEMP – Sustainable by Nature

Environmental & Social benefits of Hemp

- Hemp's extraordinary qualities: it helps in conditions soil, clears noxious weeds, 3 times the tensile strength of cotton, stain resistant, mould and bacteria resistant, moth and silverfish resistant, fire and heat resistant.
- Hemp retting – a softening procedure in ground, does not exhaust fertility of the soil.
- Today industrial hemp is cultivated in US, Canada, China, Russia, Hungary, Germany, the Netherlands, France, Spain, England, Poland and many other Eastern European countries.



About 30 different spinning mills in the United States offer a market for raw hemp fiber.

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Certification of Hemp

- The hemp associations of various countries certifies the suppliers and manufacturers.
- Accrediation with IFOAM required
- EIHA – Europe



19

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Recycled Cotton

- Recycled Cotton is also an ecofriendly choice in cotton clothing.
- Recycled cotton is cotton fabric which is made from recovered cotton that would otherwise be cast off during the spinning, weaving or cutting process.
- The discarded cotton waste is collected, shredded into small fibers and processed again into yarns and fabrics.
- Truly eco-friendly – because of waste recycling process, no chemicals used during processing, it helps in generating employment and good for the environment.
- No certification is mandatory, however Oekotex certificate adds credibility and authentication.



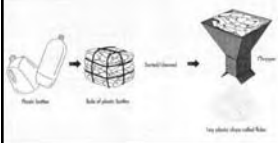
20

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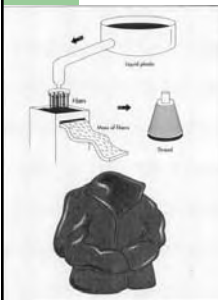


Recycled Polyester



Recycled Polyester Manufacture (PET)

- Polyester – one of the most non-biodegradable polymer
- Creating environmental problems
- World's largest Polyester recycler - Wellman Inc.
- Major revolution happened in 1993 when Wellman Inc. introduced the first polyester textile fiber made from post consumer PET packaging: Fortrel® EcoSpun®.
- A new generation of fiber - Most suitable for diversified products range such as backpacks and blankets, T-shirts, sportswear, soft luggage and socks.
- Certification - Licensed or patented yarns (eco spun) + eco certification from Oekotex and SGS or any other environmental testing agency.



21

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Other Ecofriendly Fibers – New Innovations

- BAMBOO
- CORN FIBER
- SOY BEAN FIBERS
- PINAPPLE FIBERS
- BANANA LEAF FIBERS
- BLACK DIOMAND FIBERS
- LYOCELL

22

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WET PROCESSING – Environmental Concerns

- Important environmental concerns related to textile wet processing:
 - Chemical intensive wet processing – scouring, bleaching, mercerizing, dyeing , printing etc.
 - Heavy metals – iron, copper, lead etc, found in dyestuffs auxiliaries, binders etc.
 - Residual dyestuffs, chemicals in water: due to poor fixation of colors.
 - PVC and phthalates: used in plastisol printing paste.
 - Formaldehyde : found in dispersing agents, printing paste and colorant fixatives.

23

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Sustainable Processing of Textiles

Need for Ecofriendly Wet Processing – sustainable and beneficial methods .

Eco friendly bleaching

- Peroxide bleaching

1. Eco friendly dyeing and Printing

- Low impact dyes
- Natural dyes
- Azo Free dyes
- Phthalates Free Printing

24

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Sustainable Processing of Textiles

Explore into Bio Processing of Textiles

- Bio-processing can simply be defined as the application of living organisms and their components to industrial products and processes, which are mainly based on enzymes.
- Bio processing also offers the potential for new industrial processes that require less energy, less water and less effluent problems with effective results.
- Enzymatic Desizing
- Enzymatic Scouring
- Enzymatic Bleaching
- Bio polishing and Enzyme based softeners etc.

25

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Companies Going Sustainable

- Cutter & Bucks – Fall'04 with 50 % organic
- Coop of Switzerland- Sum '02 with 5% organic
- Gap Inc – launched first organic cotton collection in Sum06.
- Marks & Spencer - Fall'03 with 5% organic cotton
- Nike – Fall 02 with 5-10% organic cotton and Lycra H&M – launched first collection in Fall'05
- Nordstrom – Sum 02 with 5 % Organic
- Pratibha Syntex: Successfully selling blended knits of organic cotton, Bamboo, recycle cotton and other eco fibers.
- Tree Hugger- launched his first Bamboo blended collection in sum 06.
- Timberland- Spr03-Spr-06 with 5-10% organic
- Under the Canopy - Successfully running eco fashion business using all sustainable fibers.
- Wal-Mart- Spring 07 (fully organic and blends)

26

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Opportunity for Sustainable Products

- Corporate Leadership – Huge Opportunities
- Key Driver – Rapidly increasing Consumer awareness and increasing demand for sustainable products
- NGO's and Consumer Organizations – Enablers and motivational support to corporate
- Business benefits in using socially responsible business practices and sustainable products.

27

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THANKS FOR YOUR TIME

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Q & A

28

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