bloom

Boosting European Citizens' Knowledge and Awareness of Bio-Economy Research and Innovation

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BLOOM- Webinar

Wear What You Talk - Bioeconomy & Textiles

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2. Survey: What do you look for when buying clothes?

Wear What You Talk

2. Survey: What makes you decide which clothes you buy?

- I buy any style that suits me
- My top priority is wearing the latest fashion trends
- I look at the brand
- I look at the price
- I look at the quality
- I look at the fibre
- I look at environmental and social compatibility of the clothes
- *Other (possibly run in chat)*

Plant-based fibres - cotton

Opened seed capsule of the cotton fruit

Raw cotton

Plant-based fibres - Viscose

Left: pulp cellulose (photo: Lenzing)/ right photo: spun fiber (left) filament yarn (right)

World production of fibres

Plant based fibres:

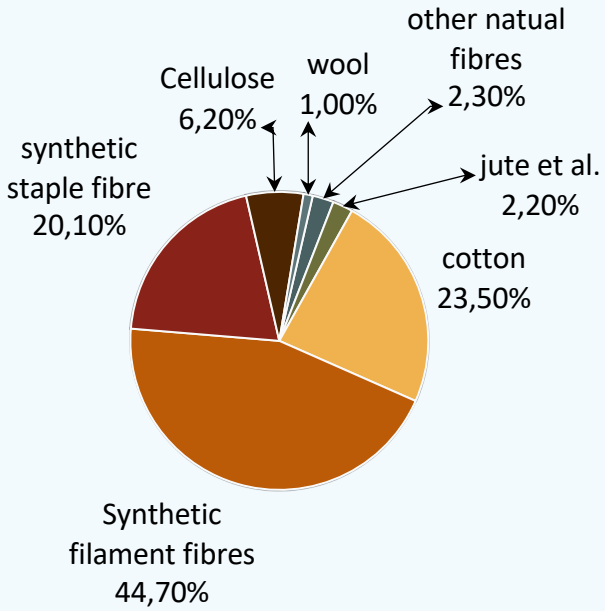
Natural vegetable fibres (approx. 26%):
cotton, linen, hemp, coconut, ramie, sisal

Cellulose fibres (about 6 %):

Viscose, Modal, Lyocell, Cupro, Acetate

Synthetic fibres (approx. 65%)

(raw material crude oil):
Polyester, polyamide, elastane, kevlar, aramid



Global fibre production at a glance © Bremen Cotton Exchange, almost 110 million tons of fibres produced worldwide in 2018; more than two thirds of these are man-made fibres

Use and characteristics

Fibre	Cotton	Viscose
Use	Underwear, outerwear, home textiles, technical textiles	outerwear, home textiles (e.g. decorative fabrics)
Wearing comfort	soft, skin-friendly, very absorbent, breathable, roughened also warming	soft, skin-friendly, very absorbent, breathable, feels cool (does not store heat), falls fluently
Care of clothing	easy-care, hard-wearing, hot washable, creases, susceptible to fungi and bacteria (mould stains)	easy to care for, hard-wearing, 30-40 degrees washing, crease-resistant, swells strongly, susceptible to fungi and bacteria (mould stains)

How is cotton produced?

Cultivation of the plants in more than 80 countries (mainly USA, China, India, Pakistan, Uzbekistan, Turkey, EU) with different agricultural methods (seeds partly genetically modified, monoculture, irrigation necessary, use of fertilizers, pesticides)

Harvest hand-picked, mechanical harvest

Extraction of the fibres Ginning (separation of fibres, capsule residues and seeds), pressing of the fibres into bales, transport to the spinning mill

Cleaning, carding (alignment of the fibres),

Spinning and weaving (yarn, fabrics)

The production of 1kg of cotton fabric requires on average 11,000 litres of water worldwide; in India up to 23,000 litres.

How is viscose produced?

Cultivation Raw material (wood) from forest, tree plantations (beech, pine, spruce or eucalyptus), from which cellulose, the raw material for viscose, is obtained

Mechanical harvesting of wood, chipping of the wood, extraction of cellulose Wood by-products such as lignin are dissolved and removed from the wood with organic solvents such as methanol or ethanol to obtain cellulose (pulp) of over 90%.

Extraction of the fibres The cellulose is chemically modified by means of caustic soda and carbon disulphide. The viscose mass is precipitated into filaments through fine spinnerets in a spinning bath (with sulphuric acid, sodium and zinc sulphate or other substances) and dried.

Spinning and weaving the threads into yarn, fabrics

The production of viscose requires chemicals and energy.

Environmental aspects of cultivation

Cotton	Viscose
• Mainly monoculture with high use of pesticides, artificial fertilizers and water, (about ¼ of the insecticides sprayed on arable land worldwide land on cotton fields) • Defoliant for mechanical harvesting • Organic cotton has lower water consumption, no use of pesticides, herbicides, artificial fertilizers, genetic engineering but crop rotation and organic fertilization	• Wood plantations as monocultures are not ecofriendly. Using wood from sustainable forestry is an alternative. • The extraction of the raw material cellulose from wood is done mechanically, thermally and with the help of chemical processes. • Compared to cotton, less water, no fertilizer and no pesticides are needed. The area required is also smaller.

Environmental aspects of fibre production

Cotton	Viscose
Mechanical extraction of the fibres and cleaning of the fibres (energy and water consumption)	As in the case of man-made fibres, the fibres are produced by precipitation of the spinning solution in a chemical bath. In Europe there are usually closed loops, the chemicals are recovered and the energy used is also further used in the process.

A more precise evaluation of both fibre types is difficult, as there are different processes and other parameters involved in the production of the fibres, such as:

- Where is the fibre grown?
- Which wood from which forestry is used?
- Which chemicals are used?
- Are they used in closed cycles?
- …

What are the solutions?

- Use **less clothes**
- Use **Second Hand**
- Recycling of worn textiles
- Producing more fibres from **renewable** raw materials
- **Organic cultivation** of cotton and other natural fibres
- Produce fibres from **waste materials or alternative raw materials** such as brown algae, banana peel or milk