



ECO-FRIENDLY FASHION CONCEPTS FOR WOMEN'S WEAR: NAVIGATING SUSTAINABILITY IN THE FASHION INDUSTRY

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INTRODUCTION

"There is no beauty in the finest cloth if it causes hunger and unhappiness." Mahatma Gandhi

Though, for to say that green is the new black is unfortunately a platitude. Saving a planet became cool at once! Eco-awareness is a hot topic, but a smashing business as well! There are multiply terms used from the early 2000-s in the by-then-familiar eco-jargon to certify the eco-compatibility of the garment. We use terms like: organic, traded in a fair way, repurposed, low-impact, made locally and ethically, and what's more it is almost always artisanal. And as natural: sustainable...Sustainability turned into a global trend and became an integral part of (fashion) design and production process [1]. It is a key stage in the life cycle of a fashion garment, and explores approaches such as low-impact textiles techniques, mono-materiality, design durability, zero waste techniques, upcycling, repair and maintenance techniques, closed-loop design systems, low-impact manufacturing technologies, and so on. Is it a gimmick? "Greenwashed" consumers are dubious about 'conscious' fashion, and they wonder there any real commitment behind all these stuff, or it is just another peep-talk, an excellent hang-tag and a good PR?

Sustainable Fashion

Sustainable fashion – also called eco fashion –, is a mega trend, the goal of which is to create a system supported indefinitely in terms of environmentalism and social responsibility. Sustainability calls-to-action in all the levels and platforms of the fashion industry too.

The supply chain and environmental footprint aspects of a garment "Fashion uses more water than any industry other than agriculture. At least 8,000 chemicals are used to turn raw materials into textiles, and 25% of the world's pesticides are used to grow non-organic cotton. It causes irreversible damage to people and the environment, and still two-thirds of garment's carbon footprint will occur after it is purchased. – It was addressed to one of the World's first sustainable fashion platforms year 2008, according to the analysis of the world's leader non-profit organization promoting sustainable lifestyles in the areas of sustainable agriculture, cuisine and architecture and design. [8] Sustainable fashion is part of the larger trend of sustainable design where the product is created and produced with consideration for the environmental and social impact. (It may have throughout its total life span, including its "carbon footprint.") Within the eco-fashion industry, products are created with social responsibility. With recycling of the materials in sustainable, but wearable designs, the aim is to reduce the fashion world's carbon footprint and to support environmentalism. Garment, as any product, has its principal phases of the life cycle: design, production, distribution, use and end-of-life (e.g. recycling). Sustainable design techniques can be integrated into all these stages, and can help developing the product quality, as well as evolving its lifespan and the way of its recycling. Characteristics of the product may vary according to the market level for which certain item is produced. But the problems that we met during the product life cycle process are common in all the levels of the fashion market. A process known as "supply chain" includes five stages: design, sampling, selection, manufacturing and distribution. [1] Demand for sustainability aware thinking can be integrated into each step of this process, involving all the actors of the supply chain. The responsibility of the designer is always in a debate and it unquestionable in this process. But it is not enough underlined how much all the other participant's handle maintaining the eco factor the supply chain. Pattern makers for the well-made pattern that is closely related to the

work of the cutters, who handle zero-waste cutting. Sewers for the skilfully devised sample, finishers for the perfect finishing, and using eco-friendly technologies, manufacturing for implementation with zero waste, sales and distribution for good promoting, carry for well-organised transport, etc. Only this way the principles of sustainable conscious philosophy can be maintained.

On the other hand issues of environmental health and safety do not apply only to the production of synthetic fabrics and creating of sustainable garments by using recycled materials. Moreover, they are not limited to enactment of environmentally conscious criteria into the product design, and it's fair and cost-effective producing. Statements moved from production issues to after-purchase care, considering that washing garment 30 times puts out more pollution than it took to make it – or to produce a new one [9] Care of the clothes (i.e. their laundry – washing and ironing) as well causes environmental pollution. Creating of garments which never need to be laundered and does need care (e.g. "auto-cleaning", "anti-bacterial" or single use/disposable apparel) cannot be an objective of the fashion industry. As well the perspective of eco-friendly design, even some funny/favourite items can be seen each season in collections. Can fashion ever be sustainable? First and foremost, designers faced the formidable task of educating sceptical and leisure customers. It seems to a most important aspect of current acting: making clear to the consumers meaning and importance of sustainability in the clothing. Since the fashion industry is an enormous prominent factor in the global economic system, meaning of sustainable fashion should be reviewed by all. Aspects of sustainable fashion encompass not only environmental issues. It cannot mean any more time wasteful creating of (unnecessary) artificial products, and cannot be solved in a fast-moving fashion cycle. It has to be valued global and integrated way, having in mind the huge social impact on the global fashion industry, which employs up to forty million people worldwide in manufacturing and agriculture. [10]

Relation of design and the three pillars of sustainable fashion retail chain

The fashion industry is now made up on a variety levels; from Haute Couture to the mass-market there are many people employed in the fashion industry. All they make an important contribution to the process of creation, production and placing the goods in the fashion market. The applicants of creating a product are textile and garment designers, fashion buyers, pattern makers, sewing workers, production managers, machinists, finishers, and so on. [1] However there are over more participants in the fashion system if we include all the stakeholders as a potential respondent of the chain: suppliers, manufacturers, retailers and fashion bureaus, post-consumer actors (e.g. second-hand market), service providers for software, press and industry associations, and independent actors, experts and fashion lecturers. [11] Opportunities that designers have in reducing the undesirable environmental properties and social impacts associated with the life cycle of the garment, are many. Environmental conform fashion satisfies economic demands, fits socially, fulfils the environmental concerns, and is a tolerable and viable product made in a fairway, i.e.: it is a sustainable product. The three pillars of sustainable fashion development are differently sensitive partakers of the fashion retail supply chain [11] and has a different impact on fashion design in general.

NATURAL DYES

What is Herbal Textile?

When the textile is dyed with the extractions obtained from various

herbs, they are referred to as Herbal Textiles. When the dyeing is done with herbal extractions, no chemicals are used in its **dyeing process**. Whereas, some chemicals such as copper sulphate and ferrous sulphate are used as catalysts when dyeing is done with vegetable dyes. So, herbal dyes are different from vegetable dyes as they also carry some or the other medicinal value.

The concept of herbal textiles is derived from Ayurveda – a branch of Ayurveda, the ancient 5,000 year old Indian system of Vedic healthcare. So herbal textiles are also called ayurvedic textiles. Loosely translated, “ayur” is Sanskrit for health, “veda” means wisdom, and “vastra” is cloth or clothing. Ayurveda clothing is made from organic cotton fabric that has been permeated with special herbs and oils that promote health and cure special diseases depending upon the blends of embedded herbs and oils. “Ayurveda is the knowledge of life, to live a vigorous and disease free life. Ayurveda treats man as a whole which is a combination of bone, mind and soul.” Color has plays an important role in human life since Stone Age to present silicon age. **Color application** not only improves surface appearance of the substrate but also expresses emotion and ideas of the wearer.

Since long time Ayurveda cloth has been in use in the treatment of a broad range of diseases such as diabetes, skin infections, eczema, psoriasis, hypertension and high blood pressure, asthma, arthritis, rheumatism, and even some forms of cancer. Ayurveda clothing is believed to help restore balance within the body's systems and strengthen the immune system.

Herbal textiles are an alternate way to dye entirely with herbal extractions. **Vegetable dyes** are employed without using chemicals to bring medicinal value to apparel. Even **bleaching of cloth** does not adopt a chemical process; it is done naturally by exposing the cloth to sunlight. Because it is environmentally friendly, it does not pollute the environment by contaminating water resources in areas close to processing units. Those herbs provide many shades of red, yellow, brown, orange, green, etc.

Herbal textiles can bring health benefits and fight diseases such as hypertension, heart ailments, asthma and diabetes. The healing effects of herbal textiles is proven by indigo; cuscus crass against asthma; turmeric, which can cure pain and is beneficial for enhancing skin qualities; and sandalwood, which fights stress with its soothing effects. Some other herbal dyes are catechu, pomegranate, tamarind, madder, castor oil, sweet basil, lime, wild turmeric, henna, curry leaf tree, aloe and certain herbal fruits.

Dyeing is one of the processes of decorating textiles with different dye stuff like natural or synthetic. Plants and herbs are the major source of the natural dyes and their parts, such as stems, wood, leaves, fruits and seeds etc, are used for extracting color components.

Natural dyes are known for their soft, lustrous colors and endurance. Even after a long period they retain a great beauty and charm. Originating from natural sources, they do not create any pollution problem and in some cases, the 'waste' obtained in the process becomes an ideal fertilizer.

Due to current eco- consciousness there has been a revival of inherent in eco-friendly natural dyes throughout the world. The application of herbal products on the textile substances is a very new concept. It gives a new direction towards the treatments of various diseases through textile industry.

Herbal Textile is dyed entirely with herbal extractions, without using any sort of chemicals. The herbs used are different from vegetable dyes as they are not only natural but also have medicinal value. These herbs are applied directly to the fabric with the help of natural ingredients, so that the medicinal value of the herbs can be kept intact. No chemical process is adopted while dyeing. Even bleaching of cloth is done naturally by exposing it to sunlight. The herbs also do not pollute the environment through contamination of water resources in areas close to processing units. All kinds of shades of red, yellow, brown, orange and green etc. can be prepared with the help of these herbs.

What Is Herb?

Herbs are garden plants that are grown and harvested for culinary, aromatic, medicinal, and fibrous uses. Plant herbs are placed in the garden for their unmistakable fragrances, attractive textures, appealing colors, and variety of home uses.

Some of the Herbs Used in Textiles are:

Turmeric: Turmeric belongs to the same family as ginger, Sometimes known as “Indian saffron”, it is the source of the familiar yellow color of many Asian curry dishes. Both the culinary spice and the dye are obtained from its root. Turmeric was and is still used for textile painting and printing in India.

Indigo: Indigo's ability to produce an extensive range of beautiful blue shades has made it the most successful dye plant ever known. The commercially available indigo powder is made from the leaves of *Indigofera tinctoria*, which requires hot, sunny, and humid growing conditions to flourish.

Madder: Madder's leafy tops sprawl untidily over the ground and their clusters of tiny yellow flowers look insignificant. Yet to the dyer, madder is a miracle of nature because its roots contain alizarin, one of the most valuable red **dye pigments** ever known.

Pomegranate: The succulent pomegranate fruit yields an ochre-yellow dye and the skin is rich in tannin, which improves colorfastness.

Onion: The outer skin of this common vegetable is one of the most useful and readily available **dye stuffs**. It is ideal for a novice dyer's first experiments since it reliably produces rich, vibrant shades of orange, yellow, rust, and brown on all fibers.

Manjistha: It is an Ayurvedic herb that is usually used as blood purifier and diuretic.

Sandalwood: Sandalwood is heavy and yellow in color as well as fine grained and unlike many other aromatic woods, it retains its fragrance for decades.

Neem: It is a large Semi-evergreen tree, trunk ex-dues a tenacious gum, bitter bark used as toxic, seeds yield aromatic oil, sometimes placed in Genus Melia.



Fig: Different herbs used in textiles

Herbs And Textile Industry:

Globally, as many countries have been enforcing a ban on textiles that have been colored using chemical dyes, this had been a body blow to the handloom industry. At the same time, textiles dyed using natural vegetable dyes, especially medicinal plants, have been commanding a huge market due to their obvious advantages. Nowadays much of the stress in textile industry is given on Herbal dyes that use only natural plants and minerals for all steps of the production process. The advantage of the dyes extracted from the medicinal plants origin from renewable resources, limited chemical reactions involved in their preparation, biodegradable properties, health curing properties, and harmony with nature.

The traditional cotton dyeing embedded with innumerable hazardous chemicals and pesticides pose a serious threat to the human skin and environment. A liberal use of dangerous chemicals in the textile industry leads to severe health problems that affect the nervous system. Alternatively, organic cotton prohibits the use of such chemicals, with a gentle attitude towards environment and skin. The word 'organic' denotes agricultural products that use no synthetic chemicals or pesticides. Herbal dyeing is famous for its Eco friendly and herbs integrated in a fabric. In this process, natural textiles are dyed with herbs like Turmeric, Henna, Aloe Vera, Indigo etc. In the whole process, no chemicals are used; the textiles are 100% safe and 100% chemical free.

Benefits of Herbal Textiles:

Herbal clothing can help reduce exposure to allergens and other

irritants and give a comfortable feeling.

1. Manual farming and organic practices have a lower carbon footprint as the entire process consumes less fuel and energy and emits fewer greenhouse gases compared to chemical textiles.
2. Not grown from genetically modified cottonseed.
3. Grown with natural rather than synthetic pesticides and fertilizers, no chemical defoliants used.
4. Eco-friendly processing that does not compromise workers' health and helps reduce water and electric use and toxic runoff.
5. Strict testing ensures the absence of contaminants like nickel, lead, formaldehyde, amines, pesticides and heavy metals.
6. People with allergies and chemical sensitivity especially benefit from organic cotton clothing, as conventional cotton may retain harmful toxic residues. Even if you don't have sensitive skin, organic cotton will just feel better against your skin.
7. Children are at greater risk for pesticide-related health problems.

Organic Cotton though grown without using pesticides and insecticides is still dyed using hundreds of so called low impact chemical dyes adults. Millions of children in the US receive up to 35% of their estimated lifetime dose of some carcinogenic pesticides by age five through food, contaminated drinking water, household use, and pesticide drift.

Environmental Benefits:

1. Improved soil fertility
2. Increasing cotton yields
3. Massive saving of precious water. This is important as cotton is a water-hungry crop, which can cause problems in areas without high natural water availability. It has a positive effect on the content of organic matter and helps to avoid soil acidification. It improves soil structure by increasing soil activity, thus reducing the risk of erosion
4. It promotes the development of earthworms and above ground arthropods, thus improving the growth conditions of the crop. Furthermore, organic crops profit from root symbioses and are better able to exploit the soil, and organic fields accommodate a greater variety of plants, animals and microorganisms.

The Process of Herbal Textile Manufacturing:

The process of producing herbal textiles begins with 100% organic yarn / fabric and every step in the preparation of herbal cloth and clothing is carefully and precisely controlled and no chemical process is adopted while dyeing and processing the fabric. The process of herbal dyeing starts with the gray cloth passing through several stages of treatment before it becomes colorful and ready to wear. Fabric and yarns that can be used for herbal dyeing are certified organic cotton, natural cotton, silk wool, linen, jute, hemp and their natural blends.

1. Desizing: The washing of processed grey cloth starts with removing sizing, gums and oils used in the course of weaving by washing with natural mineral-rich water and sea salts.

2. Bleaching: The bleaching of cloth is done naturally by exposing it to direct sunlight, then it is bleached with biodegradable, naturally derived, organic cleaning agents and surfactants like Saptala (Acacia sinuata), Phenila (Sapindus mukorossi) etc.

3. Mordanting: To make the colors bright and fast, natural mordants such as, myroballans, rubhabs leaves, oils, minerals, alum, bark of lodhra (Symplocos racemosa), kenduka (Diospyrose ebenum), fruit extracts of haritaki (Terminalia chebula), iron vat, etc., are used, but mordants like copper, chrome, zinc, tin, etc., are avoided due to the environmental reasons.

4. Dyeing:

- The organic cotton yarn or fabric is then dyed in a carefully controlled mixture of herbal dyes depending upon the disease or ailment being treated.
- The dyes used for dyeing herbal clothing comes by blending and carefully preparing different medicinal herbs, plants, flowers, roots and barks.
- The temperatures of the dyes, the duration and number of the dye soaks, the blend of herbs, and even the equipment used are carefully controlled.
- These herbs are applied directly to the fabric with the help of natural ingredients, so as to keep the medicinal value of the herbs intact.
- All kinds of shades of red, yellow, brown, orange and green, etc,

can be prepared with the help of these herbs.

- The medicated cloth is allowed to cool and repeatedly washed to remove any loose particles and is always dried in shades.

5. Finishing: The finishing process used after herbal dyeing is also organic and is given by sprinkling pure water on the cloth and then stretching under pressure, using hand rolls, aloe vera, castor oil etc.

6. Recycling Residue: The entire process is organic. It does not pollute the environment like synthetic dye. Solid and liquid waste is separated through the process of filtration and used for farming purposes – as a manure and for watering the fields and the waste is used as bio-manure and also to generate bio gas.

Uses/Applications of Herbal Textiles:

The most effective time to use herbal clothing is when the body is at rest such as during sleep or meditation because this is when the body is naturally healing and re-establishing balance. Skin is recognized as being the body's largest organ. The skin can act as a barrier but also as a conduit for outside substances to enter the body. Many environmental toxins and chemicals in conventional clothing are assimilated into the body through the skin. Anything which can improve the skin's natural ability to block and resist harmful chemicals and toxins from entering the body will be beneficial to health.

Keeping this in mind, herbal textile is often used in making bed coverings, **underwears**, towels, meditation clothes, sleepwear, and other such garments that stay close to human skin so that all its benefits could be absorbed through the skin. The technology for making herbal clothing is also being utilized for making coir mats, mattresses, door mats and carpets. For coir mats, the fibers are first soaked in herbal dyes and then woven into coir mats.

"Stand Out in the Noise" Eco Clothing collection from herbal dyed fabric.



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