Challenges to present fashion consuming society and market possibilities of organic cotton: a sustainable proposition

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ABSTRACT
The article presents a reflection about the organic cotton utilization and its applicability for the production of a sustainable fashion design, concerning the challenges that the existing consuming society imposes to sustainability proposals, such as increasing the durability of products and reducing the consumption. Shows the possibilities of organic cotton in the textile industry, since the worldwide net income of cotton fiber products between 2001 and 2005 rose from 245 million dollars to 1 billion dollars, with an estimation of 5 billion dollars within the next two years. It also has its focus on the social and environmental impacts generated by the conventional cotton fiber production and its application on the fashion industry, pointing the advantages of using organic cotton on this segment. With this analysis, it is also recommended a new possibility to present fashion design – ecodesign, based on premises as selection of materials of low social and environmental impact, manufacturing and products lifespan optimization, amongst others.

Keywords
Organic cotton; Development of Sustainable Products; Fashion; Consume Society; Ecodesign.

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1. Introduction
In the last decade, the necessity of environment conservation and the applicability of sustainable initiatives, including the production of fashion items in the worldwide clothing scenario has been gaining notoriety. Relevant questions as to the sustainable production of cotton and other organic fibers by low income communities and the manufacturing of pieces of clothing with a social and an environmental appeal, according Souza (2001) began to consolidate themselves as important issues in the fashion manufacturing industry.

It is under this background that concepts as “sustainable”, “ecological” or “organic fashion”, based on processes and projects which inspire the discovery and the utilization of righteous alternatives in the conception of trends to fashion from the sustainability point of view, emerge nowadays as action and awareness tools. More than this, materials, fibers and fabrics appear as less impact alternatives as to the environment as to the health of producers, industry workers and final consumers, becoming a market segment unexplored until some time ago: a niche of people which intends to consume not only one piece of clothing, but also a concept, a creed of which they share, either concerning the environment preservation or the quality of life of the people involved in the textile production.

In the year of 2007, the questions with regard to the sustainability of the materials involved in the clothing history gained new proportions after the fashion week in São Paulo (São Paulo Fashion Week - SPFW). This event is the greatest Latin America fashion event, this has brought to the public, the concern about ecology by means of initiatives that benefit social and economically as producers as consumers, using fibers cultivation and organic fabrics. In this context, organic cotton began to emerge among the most viable alternatives for the development of a conscious fashion production, especially because of the practical possibility of culture conversion (from conventional to organic) and also because of the adaptation to the already existing textile chain. In spite of the disclosure and the use of terms that began to be pronounced by stylists, models, producers and consumers, like “ecofriendly”, “organic”, and “fair trade”, only a little was understood about the truly sustainable process of fashion production. As an example, were the interviews conducted in the place SPFW happened, where visitors and even people from the fashion area revealed not to understand the purpose completely.

The worldwide organic products turnover raised from 245 million dollars to 1 billion dollars between 2001 and 2005. In the next two years, the forecast is that this number be multiplied by five – what does not mean, however, that the fiber does not have any obstacles to be overcome (ORGANIC EXCHANGE 2006; EXAME, 2007).

The fact that 25 million people every year get poisoned by excessive, or incorrect, usage of agrochemicals, according to the non-governmental organization Environmental Justice Foundation, (2007) or, still, that only 40% of cotton is fiber and that all the rest is seed that is transformed in edible oils and animal food, meaning that in a plantation where the use of agrochemicals happen as conventional practice, good part of the chemical supplies remain concentrated in the seed which will be transformed in kitchen oil and animal food, which are the base of our nutrition, in addition, they end up justifying the relevance of reunite and divulge information about the topic.

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3 Concept which aims to conciliate the society’s economic development necessity with the promotion of social development and respect to the environment, according to the environment preservation NGO WWF (World Wildlife Fund) (2007). Available at: http://www.wwf.org.br/informacoes/questoes_ambientais/desenvolvimento_sustentavel/index.cfm

4 One of the greatest fashion weeks in Latin America, performed at São Paulo (SP), twice a year, in order to present the fall/winter trends, in January, and spring/summer trends, in June.

5 UOL’s portal’s TV, during the 22nd edition of the event, interviewed models and celebrities in order to check the public’s knowledge level about the topic. Many revealed not to understand the meaning of “sustainability” associated to the fashion industry. 50% of the interviewees had never heard about sustainable development (UOL, 2007). Available at: http://tvuol.uol.com.br/moda/spfw

6 Available at:http://portalexame.abril.com.br/revista/exame/edicoes/0885/mundo/m0121303.html
As to consumers, they develop, progressively, an environmental notion which is capable of making a change in the consuming habits enabling as the organic cotton market as the related sectors to grow.

The bibliographical revision about the related topic was the methodology used to its evaluation. For this reason guides from specialized organs, linked to researches referring to cotton organic production were consulted; also specialists in engineering publications, journalistic reports, and specific bibliography referring to fashion, sustainability and areas alike in order to overcome the limitations of sustainability in the current textile industry.

The general objectives are to point the problems in conventional cotton production (the way it is being developed), the way how this problem is used by the fashion industry (used expressions, events that bring up the matter of concern, among others); show that there are possible alternatives (the introduction of organic cotton in the sector), and punctuate the necessary reflections on the topic.

2. The impacts of conventional cotton

2.1. Harms of Conventional Production of the Fiber

The main environment problems in the textile production of cotton lay on two stages in the process: first, in the agricultural production, due to great sums of agrochemicals used in the cultivation of the fiber and, later, in the finishing stage, because of the toxic substances used to bleach and die, as said shown by Souza (1998) in the table I below.

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<tr>
<th>Cotton</th>
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<td>Toxic Aspects</td>
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Source: Souza (1998, p.2)

Legend
- Small Problem
- Medium Problem
- Big Problem

Table 1 – Ecological problems matrix in the life cycle of cotton textiles

The first concerns about the environmental impact of cotton textiles production focused, the greater part, on the fabrics’ finishing stage. It was from 1960 that members of the environmental movement began to stimulate the production and use of clothes made of raw cotton, manufactured with non-bleached fabrics. After two decades, the attention turns back on the raw material production impact, with the first organic production of cotton initiatives (EXAME, 2007).

7 Available at <http://portalexame.abril.com.br/revista/exame/edicoes/0885/ mundo>
According to the report The Deadly Chemicals in Cotton, from Environmental Justice Foundation (2007), instigated by the first steps to an ecological consciousness directed to clothing, the stylist Katharine Hamnett raised, in 1989, the alert to the impacts and negative consequences of cotton pesticides related to the fall/winter collection “Clean up or Die”. In accordance to the report (2007, p.33), “it was the first time that the fashion industry se talked about the environmental question involved in the fashion items’ manufacturing process”. In this same year, producers from Turkey made their first attempts to produce organic cotton since the invention of pesticides.

The beginning of the cotton cultivation in India and in South America at about five thousand years ago until mid twentieth century occurred predominantly without the use of agrochemicals. By thousands of years cotton pests were controlled by natural procedures, like the introduction of animals which inhibit the appearance of pests that frequently attack the fiber production. The pests’ cycle was taken into consideration before planting; processes involving rotation of different cultures in the same area were used and cotton was planted in smaller scale in order to reduce the pests impact.

According to EJF (2007), after World War II, cotton plantation changed dramatically due to the discovery of toxic chemicals – like DDT – which could be introduced in crops as alternative method to pests control. In short time, the use of these chemicals became a cheaper, faster and more efficient alternative. Finally, it did not take long for farmers to abandon the natural practices which avoided the attack of harmful organisms to plantations. The substitution of organic methods through chemical means in some countries was a phenomenon that happened very quickly, as the example of Pakistan that in 1983, only 5% of cotton plantation carried pesticides and already in 1991 this number jumped to 98%.

The great annoyance of agrochemicals is on its basic principle, chemically produced with the objective of killing, repelling or inhibiting the growth of living organisms, its action ends up harming biological processes which are necessary to the maintenance of life. Many times they not only affect the physiology of species of pests they intend to control, but also impact the welfare of human beings that come directly in contact with its formulation, in accordance to the organization PAN UK (2000).

Due to the out-of-standard storage of these products by farmers linked to the fiber production, health risks generated by agrochemicals utilized in cotton plantation are also extended to that ones who do not work directly in crops. A survey conducted by EJF (2002) in Tanzania, showed that two farms in tem owned containers with pesticides inside their bedrooms and near the kitchen where they also keep good part of their food. Not rarely, in many non-developed countries, farmers use empty insecticide packages including in order to store water.

From the farmers that work directly in cotton crops worldwide nowadays, 1% to 3% suffers with pesticide contamination, among which about 1 million are hospitalized every year. This percentage equals to approximately 51 million (almost the total population of the United Kingdom) of farmers affected by agrochemicals effects in cotton plantations. The symptoms presented include headaches, vomits, lack of coordination, respiratory difficulties, loss of consciousness, dizziness, among others. “The long term chronic effects to the exposure to pesticides lead to memory and concentration loss, disorientation, confusion and deep depression.” (EJF 2007, p. 11). Besides affecting human health, these compounds are also highly detrimental to the environment.

Some of the most toxic pesticides used in cotton plantations represent a global menace, especially to the sources of natural water. The organization PAN UK (2007), showed evidences of contamination in Rivers and Ground waters from Brazil, United States, Pakistan, Uzbekistan, Australia, Greece and west of Africa. In Brazil, the fourth biggest agrochemicals consumer and the fifth biggest cotton producer in the world, researchers tested rain waters in order to check the presence of pesticides. The result: 19 different kinds of agrochemicals were identified, among which, 12 are typically used in cotton planting.
According to the EJF (2007), nowadays, 99% of farmers who plant the fiber in the world are located in emergent countries (two thirds live in India – about 10 million farmers – and also in China, which totals 7.5 million cotton workers; the rest is found in the west of Africa, Australia, Asia and South America). In these regions, farmers used to grow cotton in areas which were smaller than a hectare and a half and in small parts of their properties, as a way of complementary income.

They are areas where the low level of conscious referring to safety at work, lack of access to the protection equipment, illiteracy, little information at the products’ labels, and chronic poverty increase even more the damage caused by cotton pesticides in low income communities. (PAN UK 2007, p. 22)

Altogether, these countries are responsible for about 75% of global production of the cotton fiber. From these, China, India, Pakistan, Uzbekistan and Brazil sum up 55% of this production, according to the NGO Organic Exchange (2006). While the fiber development happens in underdeveloped countries, consumption happens in another domain. North America and Europe sum up 45% from the consumption of cotton produced in the world despite being presence in only 13% of the world population. In both continents, cotton represents vital role in the national economy, adding the export of 80% of the fiber produced in Benin; 50% in Mali; and 20% of the production in Togo.

Currently, more than 60% of the cotton grown all over the world is reverted to clothing items and accessories. Due to the demand of 25 million tons annually, cotton records nowadays a consumption never seen before. In 2004, for instance, the production totaled a Record of 21.8 million tons. With customers buying more and more manufactured items from the fiber, it is possible to make a projection of even greater consumption for the next five years (EJF 2007).

Nowadays the cotton fiber is constituted as one of the most important non-food rural commodities in the world in terms of production and consumption. However, it is also responsible for the emission of 2 billion chemical pesticides per year, from which at least US$ 819 million are considered toxic enough to be classified as “extremely dangerous to human health and the environment” by the World’s Health Organization/WHO. The cotton cultivation is, therefore, responsible for 16% of the insecticide emission all over the world, more than any other kind of plantation. As a rule, almost 1kg of highly toxic pesticides are applied by hectare of plantation (EJF 2007 p. 33; ORGANIC EXCHANGE 2006, p. 03).

A study conducted by Technical University of Lódz (2004), in Poland, noted that highly toxic pesticides applied to plantation during the cotton production process may still be detected in clothing items on sale to the final consumer. In the study, clothes produced with cotton from Uzbekistan, Kazakhstan and United States were analyzed. The research detected traces of highly dangerous pesticides such as endosulfan, aldrin, endrin and DDT (EJF 2007).

When considering the harms of conventional cotton production, it is also needed to claim that besides the fiber farmers produce about 23 million tons of seeds per year.

These seeds are used as food to animals, chickens and cattle, and serve as an ingredient to cotton oil, product commonly used in Culinary. Many times, even after refinement, the customer ends up digesting oil and animal meat with low toxic level, but in long term it may seriously compromise the organism health. (PAN UK 2007, p. 15)

According to data from EJF (2007) the majority of workers dedicated to the cultivation of the fiber stay in India and Egypt, they stay directly exposed to pesticides for at least three hours a Day when it is time to apply the products, and many people work barefooted, and they hardly ever use protection equipment, not even during planting or in order to perform plantation maintenance, possibly using masks for mouth and nose protection (EJF 2007).
As a global commodity with substantial growth, cotton has the potential to pump development and income of some of the poorest communities in the world. Nevertheless, the wrong usage of highly dangerous pesticides to the ones who work and live near the production areas make the cotton almost always to have a negative social and environmental impact. In order to reduce the damages caused by cotton production and to preserve farmers’ health, many international organizations are acting in the sense of changing the way the fiber is produced.

Organic cotton production currently offers a strong alternative to the methods of cotton production. The consumption referring to the organic fiber moves globally US$ 1 billion and grows rapidly. With the increase of the demand, the organic cotton production offers an alternative which is not only environmentally and socially more sustainable, but also economically viable. Responding to local necessities and the consumers’ demand, organic cotton is today planted in approximately 20 countries, as Instituro Akatu (2007 8) and Organic Exchange (2007).

The NGO Organic Exchange (2006) points Turkey as the current biggest organic cotton producer in the world. The country already commercializes about 20% more organic cotton comparing to conventional cotton. India, Pakistan and USA are also big producers and are gaining space in the sector.

In Brazil, the movement for organic cotton fabric production is still incipient. In spite of this fact, the search is increasing, according to Maysa Gadelha, CEO from the company CoopNatural, organic fabrics producer at Paraíba which controlled the brand Natural Fashion. In a report published at Akatu Institute website (2007 9), shows that “in Brazil, this sense of awareness by the consumers is still beginning. In Europe, it stopped being Just a niche, now it turned into an important market share”.

Souza (1998) claims that in the last two decades, it was added, from the customer’s side, the perception that the decisions made at the time of purchase also have the ability to directly impact the production methods and to change the effects referring the social fairness and environmental security. From the producer’s side, a good option is to GO back to the natural ways of preserving the crop.

Encouraging the introduction of bird species which act as cotton pests predators; take into consideration the place’s ecology before selecting the cotton varieties to be grown; promote a crop rotation between cotton and other plants less susceptible to pests and fiber diseases in order to break the pests cycle; and use pheromones in order to discourage the pests to approach according to EJF (2007) these are some of the purposes already performed until the first half of 20th century, when not even pesticides nor agrochemicals helped the agricultural production with such power as they do it nowadays.


The year of 2007 was marked by some important initiatives in the conception of fashion and in the fashion industry of the country. Inspired by the environmental fever that since a few years ago gives an alert to problems as the global warming 10, a São Paulo Fashion Week (SPFW) brought up the issue of sustainable development and showed that the sector begins to include the concept in every link of its productive chain.

From the 22nd edition of the event on, which happened on 24 and 29 of January at Bienal Building, Ibirapuera Park (São Paulo) and presented the fall/winter collections for 2007. The

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8 The Akatu Institute is an information and education center to “conscious consumption”. Available at the internet <http://www.akatu.net/cgi/cgilua.exe/sys/start.htm.>
9 Available at the internet <http://www.akatu.net/cgi/cgilua.exe/sys/start.htm?tpl=view_
10 Global warming is the increase of the average temperature of the planet, caused by the greenhouse effect. The expression got projection with the documentary “An Inconvenient Truth”, from the ex-vice-president of the USA Al Gore, in 2006, which alerts to the dangers and consequences of global warming to mankind and environment’s health.
fashion week from São Paulo compromised to discuss about the topic for the next ten editions of SPFW. In the following edition (spring/summer 2008), which happened from 12 to 19 of June, on this year 2007, the focus was on the water matter.

However, these were not the first initiatives in the country which aimed to bring to fashion, “a traditional sector with little concern about the issue”, according to the claim in the newspaper Gazeta Mercantil (2007 11), some awareness related to its impact over the environment.

In 2003, in Curitiba, a pioneer initiative in fashion events in Brazil emerged with the Curitiba Fashion Art, idealized and coordinated by journalist Nereide Michel and by fashion producer Paulo Martins. The event tried to promote the talent of stylists and the quality of what is produced by Paraná State. During Curitiba Fashion Art12, it was given some space for discussion of the “dialogue between Fashion and Nature”, according to interview of Nereide Michel13. The objective was to show that fashion can be linked to nature and it can become something to speak for its conservation, also generating sustainability programs.

Another initiative emerged in 2004, in Campinas (São Paulo), with a cultural project with a social and environmental character and national coverage named Ecological Fashion Award (EcoFashion Awards), which consists of one contest to students and new talents in the fashion area. Besides revealing new designers to the sector, the Project aimed to present to the market some righteous alternatives for the clothing conception. Since the quality of raw-material and its obtaining processes to the productive process of fabrics and materials used in the projects were evaluated. Some of the materials proposed by the selected projects were the ecological jeans (with recycled PET fiber), handmade jeans, cotton with recycled PET fiber, cotton fabric (weaving machine), hemp, colored cotton, vegetable leather, among others.

Long before, however, members of the environmental movement had already stimulated the production and use of raw cotton clothes, manufactured with non-bleached fabrics. Therefore, expressions like “ecofashion” or “ecological fashion”14 emerged.

Since that fashion industry began to talk about “sustainability”, the issue became a big umbrella, where expressions from “sustainable fashion” to “ecological fashion” are mostly considered synonyms. Truth is, between “sustainable fashion”, “ecological fashion” and “organic fashion” there are some fundamental differences.

It is important the perception that the expression “ecological fashion” not always is referred to clothes manufacturing using organic fabrics. “Ecological fashion”, or “ecofashion”, has as one of its fundamental principles the recycling of materials not only in order to protect the environment, but also in order to promote the economy at big companies and recover materials whose cycle of life have not finished yet and that have the possibility to be used for a different function and purposes. It is the example of fabrics which are made of PET bottles’ fibers.

“Organic fashion”, not always suggests a sustainable production, but it does indicate that the fabric used for the production of clothing items which are labeled is derived from a production without agrochemicals.

When it comes to “sustainable fashion” it is the one that, besides not using agrochemicals and pesticides in the production stages it is concerned about the welfare of the workers involved in all the chain production and takes into consideration principles of a fairer trade for producers, sellers and customers. Despite the differences, all these expressions end up referring to fashion

12 Available at <http://www.curitibafashionart.com.br>
13 Available at <http://www.curitibafashionart.com.br>
14 Both expressions refer to items produced in a way that respect the environment, not specifying if the fiber production processes are organic or if the processes adopted in the productive chain or the products trade are sustainable.
production processes which take into consideration some attitudes that offer healthier alternatives as for the environment as for human beings.

4 A POSSIBLE ALTERNATIVE
4.1 Organic Cotton

The organic cotton fiber is cultivated in a system which encourages the biological activity, stimulates sustainability and demands a different handling of conventional production systems. The greatest issue which leads to discussion concerning the advantages of the use of organic cotton from the loss of conventional cotton is centered, especially, in the how bad is the use of agrochemicals 15 for nature and society.

According to reports from the non-governmental organization Environmental Justice Foundation 16 (2007), cotton production is currently a big consumer in the chemical products industry, mainly because of the huge space of the world cultivated area (about 80 million hectares worldwide). More than 10% of the pesticides consumed in the world are only used on cotton, being responsible for the global annual expense of about US$ 2 billion.

It was due to all these matters that the first concerns with the impacts of textile products processing over the environment appeared during the 60’s. The initiative was fruit of a trend which lived among the members of the environmental movement that stimulated the manufacturing of clothes produced without the use of bleach products. Though, it was only some time ago that relations between agriculture and environment began to focus on the cotton cultivation and the textile industry integrally 17.

Nowadays, organic cotton is used for clothing items production, and items of bed, bath and beyond. These products aim to attend a market niche of textile products whose expansion depend directly on the increase on the customers’ awareness about environment matters. This kind of concern is incorporating a new value of three traditional parameters of the textile industry: besides price, quality and design the environment matter needs to be considered as well.

The greatest barriers to the organic cotton market growth refer to the current difficulty in getting certified 18 organic raw material, to the big number of alliances which need to be done among the different segments of the textile production system and the education of the final consumer.

The response of these still remains small due to several factors, starting with the price of cuts, the low level of information on the harmful effects of the use of chemicals employed, both in the manufacture and planting of cotton products, the difficulty in making a distinction in stores between clothes from organic cotton and conventionally dyed colored pieces, and the confusion generated by some companies that sell raw tissue into pieces as “natural cotton” at higher prices, even if the cotton has been cultivated with conventional chemicals.

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15 Agrochemicals are a kind of agricultural inputs. They are products of chemical origin which have the purpose of extinguishing pests or diseases that attack agricultures. They may be pesticides, used to fight insects and pests in general; fungicides (kill fungi); or herbicides, used when fighting invasive plants (FAEMG, 2007).

16 Foundation destined to create, implement and build solutions, training workers and communities which are frequently affected especially by the agrochemicals action. The promote investigations and denounce actions which harm and abuse the environment in several places in the world.

17 In 1989, stylist Katharine Hamnett raised the first alert in fashion industry about the negative impacts and consequences of pesticides in cotton with the fall/winter collection “Clean up or Die”.

18 The certification is a procedure by which a third party, independent, ensures that the product, process or service complies with determined requirements, through the emission of a certificate. The difficulty while obtaining the organic cotton certification is in the fact that all the processes, from planting of cotton to one item’s manufacturing, must be free of chemicals and action which may harm the environment.
The system of production of organic cotton is the only one in which the use of pesticides in general is excused and therefore offers no risk to either the environment or farmers, unlike what happens in conventional crops of cotton. The organic production represents an alternative system where the growth of populations of natural predators is encouraged and measures such as rotation and intercalation of crops to prevent the development of pests are basic principles for maintaining the culture.

*The choice of place is one of the key factors for successful cultivation of organic cotton, is to provide unfavorable conditions for the population explosion of pests or to provide natural favorable conditions to dissect the plants in case of mechanical harvesting. In short, the system of cultivation of organic cotton fosters biological activity, stimulates the sustainability and requires a specific management.* (SOUZA, 1999, p.3)

One of the main differences about the cultivation of conventional fiber refers to a focus on agro-ecosystem that brings profound changes to the producer, who may need financial and technical support, particularly in the early stages of conversion of culture. There is, however, to consider that productivity per hectare is lower in organic farming, but, on the other hand, productivity is higher by foot (EJF, 2007: 16).

Due to the absence of so-called modern pesticides in the production of organic systems, Souza (1998) emphasizes the spreading of the idea that those are retrograde systems, or even a return to the past. In contrast, production of organic cotton requires a much more intensive and innovative management than the conventional way of producing the fiber.

In conventional production, there are several stages to which the cotton fiber is subject up until the making of the fabric. In short, it undergoes through a process of waste cleaning, it is separated, combed, processed into yarn, coated with gum or chemicals that ensure their properties, reversed into fabric, which is then washed, immersed in concentrated caustic soda, and chemically dyed or printed. All these stages require a large amount of chemicals in different degrees and represent various toxic hazards to human health and the environment. Not rarely, many of these chemicals are found in the form of waste in the final product and some may even affect the health of the consumer, causing allergies and eczema. Not only the fabric itself, but also some accessories used by the textile industry, such as zippers, buttons and some prints threaten the environment and health of consumers. They are often responsible for the release of chromium, lead, nickel and other heavy metals suspected of causing cancers and allergies, highlights the PAN UK (2007¹⁹).

Over the last 20 years, there were improvements in the chemical production of cotton. The products used in farming are increasingly being replaced by safer alternatives, and the use of water, for example, is controlled to avoid waste and pollution. However, such procedures have been frequently used in developed countries, which represent only a small percentage in the world’s production of cotton. The practices involving environmental risks are still quite restricted to developing countries, where most of the fiber is produced.

Today, the the environmental implications of the cultivation of cotton through agrochemicals are present in all segments of value aggregation of the textile chain. According to Souza (1998, p. 10),

> ... it is important to understand that the competition oriented strategies for the preservation of the environment can only be achieved by the inclusion of all actors involved in manufacturing, use, and disposal of textile products, considering the optimization of the entire cycle of life.

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¹⁹ Pesticide Action Network UK: ONG which works in order to eliminate risks brought by pesticides and human exposure and from the environment to them. They act with more power in the United Kingdom, but count on global action which promote safer alternatives, and with the production of items from food to healthier textiles.
The economic and ecological aspects need to reconcile the interests of businesses and the environment.

The negative effects of synthetic products seem rather obvious when brought to surface, but the biggest surprise is attributed to the negative impacts caused by cotton. The idea is difficult to assimilate when you have in mind that the cotton fiber is of natural origin, and yet a product of natural origin not necessarily means the non-involvement of environmental impacts.

4.2 Color Cotton

The main advantage of using naturally colored cotton fiber is the elimination of the use of dyes at the stage of finishing the fabric, which reduces the environmental impact of the process of dyeing. Another advantage of naturally colored fiber, notes Souza (1999), is the possibility of increasing the producer price of the product up to 100% compared with the products produced from conventional fiber.

However, the colored cotton also has disadvantages in connection with the variety of colors obtained, which could be reversed from a change of attitude of the consumer in relation to short term character of fashion due to seasonality, changes in the palette of colors, among other factors. Souza (2001) notes that, besides the reduced range of colors, its fibers can contaminate white cotton during cultivation and the processing should be conducted separately. Its productivity is about 10% lower than the commercial varieties white, and colored feathers do not always reach the requirements of the spinning mill and the certification processes to be developed.

4.3. Cotton in Conversion

What is today called “cotton in conversion” is the cotton grown in areas that have recently joined the organic methods of production (usually two or three years). Even if the fiber is being grown without the use of chemical fertilizers or pesticides, soil still contains chemical residues from past practice, which had great use of pesticides.

This period of transition, notes Souza (1999a) is very difficult for farmers, who often experience a drop in the harvest and still can not obtain a profit with the award of organic products. Today, there are labels which guarantee the conversion of conventional to organic production, which helps the producer during the transition from the practice.

4.4. Opportunities and Prospects for National and International Market for Organic Cotton

Currently, organic cotton is used by the textile industry for production of shirts, sweaters, jeans, children’s clothes, pajamas and articles of bed, table and bath. These products are intended to serve a niche market of textile products, whose expansion depends directly from consumers’ increasing concern with environmental issues.

Initially, at around the 70, the parts produced from organic textiles had a character basically craft, with the supply of recycled tires, shoes or small quantities of shirts made with hemp fibers, as conveyed in the magazine field Business Review. According to the report, the few and most recently, networks such as American retailers Wal-Mart, the Spanish Zara and designer labels as Armani, Levi’s, Nike and Timberland joined the idea. With that, multiplied to the supply of parts and business won an unprecedented scale (EXAME, 2007). 20

According to a study by the Organic Exchange NGOs (2007), the worldwide revenue of items produced from organic cotton jumped to 245 million U.S. dollars to 1 billion dollars between 2001 and 2005. Currently, everyone, especially in the United States, some countries have

20 Available at <http://portalexame.abril.com.br/revista/exame/edicoes/0885/mundo/m0121303.html>
used the small amount of 5% of organic cotton in some of its parts and clothing (such as Nike and Timberland), according to NGOs PAN UK (2007). The organization says that the grain of conventional and organic cotton are mixed before being spun. The final product still contains 95% of conventional cotton, possibly including fiber containing genetically modified, and so little can be called sustainable, but this system brings some benefits.

In terms of market, the scenario is promising. The NGO Organic Exchange (2007) shows that the worldwide revenue of items produced from organic cotton already is 1 billion dollars. After staying for a few years to narrow niche of “social labels”, the idea of using organic fibers was headed by companies in the port of Nike, Levi’s, among others. Currently, large companies increasingly seek to fulfill a niche market of textile products, whose expansion depends directly from consumers’ increasing concern with environmental issues.

First, it allows big companies including organic fiber within its range of products and the limited volume of organic cotton available never allow companies to port from Nike and Timberland offer a significant proportion of products 100% organic cotton. Moreover, mixing the fibers also helps the production of organic cotton to grow until the supply is sufficient to supply large companies and so they will produce, increasingly, 100% organic products.

The changes over time in the market for organic cotton stem mainly from a sharp imbalance between supply and demand. Despite the interest of some large companies, the supply of raw material is still low, observed by the major difficulties in production and prevents the development of enterprises of larger size.

The imbalance between supply and demand creates a deadlock: there is a significant potential demand for cotton produced from the perspective of sustainability, but farmers in several places in the world are not getting enable the volumes of production needed to supply that market alternative. The reasons relate to, among others, lack of technology capable of ensuring the production of cotton sustainable basis to enable a regular supply of the product.

That is why many experts suggest that the clothes designed in a sustainable will never replace traditional - they must serve to strengthen the marketing of companies interested in associating his name with actions politically correct. One hypothesis is that, despite the significant increase in sales, the clothes such remain restricted to a small audience. “Just as there are people willing to stay six months in the queue waiting to buy a hybrid car, we will have people interested in buying these pieces,” says the designer Lynda Grose, who ministers to discipline sustainable fashion at the School of Arts of California, in the U.S., in an interview for the magazine EXAME21 (2007).

Already the distribution system, whose points of sale offer the products of clothing, is the principal liaison with the consumer. The business strategies are specific to the two basic approaches that guide the launch of collections by confections: the standard lines (products of mass) and the creative lines (products of fashion).

Several types of equipment operate in retail, textiles, with great diversification in the case of products from clothing according to the public to be reached. Several brands have own distribution network or through the form of franchises, mainly in shopping centers and points of greater consumption, considering the different social classes.

In the case of organic textiles, the increased costs charged almost all segments, and the response of consumers remains small. The education of consumers to the consumption of products from organic cotton raises the costs of marketing the company, since the purchase is still driven by factors such as brand, price and very little based on the environmental impacts generated by the manufacturing of parts, as the search below realized by Akatu Institute, about the criteria that people take into consideration when choosing clothes. There are no differences

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on the steps of cutting and sewing, but the costs are higher for products from organic cotton due to the small volume of production.

Results:
The mark 3.13% - 10 votes
The quality of the fabric 21.32% - 68 votes
The visual aspect 34.80% - 111 votes
The social impacts 7.84% - 25 votes
The price 30.09% - 96 votes
Other factors 2.82% - 09 votes

Source: Instituto Akatu\(^2\) (2007)

Despite the promising scenario and count on the support of the patrol, environmental activists, the ecologically correct fashion must overcome many obstacles to sustain the medium and long term. One key is to convince most consumers to pay more for clothing made taking into account the principles of sustainability. Some pieces organic reach cost 30% more expensive than traditional. The entry of large retail networks in the business solve the problem. The network Wal-Mart is investing significantly in the business since 2004, the point of today be the main buyer of organic cotton in the world. Thanks to the large scale of the business, the company from the United States to reduce prices significantly, reaching its offer in gondolas shirts ecologically correct from U.S. $ 8 dollars (EXAME, 2007).

However, if other networks retailers follow the same path, may lack in raw material market. Currently, organic cotton represents only 1% of global production of the commodity. Brazil, the fifth largest producer of conventional cotton in the world, yet has no significant action in that niche market. The most immediate benefits, and perhaps the most important production of organic cotton are not necessarily related to monetary or economic issue, but basically the awareness of farmers on these aspects. They refer to maintaining the health of workers in cotton growing and their families as well as the promotion of biodiversity and the preservation of the environment by eliminating the use of chemicals in farming.

5.0 Ecodesign: A New Proposal for Design of Fashion
This is where it is introducing the Ecodesign concept. The ecodesign is, second Martins and Sampaio (2006, p.2), “a process methodology for development of products, production processes, incorporating environmental principles and tools such as analysis of the cycle-of-life of the product (LCA)”. Breezer (1996) artins apud Sampaio (2006) suggests seven steps for the ecodesign: Development of new concept of Project Proceeds; organization of the Pilot Project of the Product; selection of material for low-impact; optimization of production techniques of products; systems for efficient distribution of products; reduction of environmental impacts of products; optimization of lifetime the product; optimization of the process at the end of the cycle of life. (MARTINS and SAMPAIO 2006, p. 2)

The ecodesign take part, therefore, a process whose approach is to reduce the impacts of a product at the same time that preserves their quality, functionality and performance of use, to improve the quality of life for users of today and tomorrow. Under that approach, the environment is as important as the technical, control costs and demand of the market. The clothes produced

\(^2\) Available at <http://www.akatu.net/cgi/cgilua.exe/sys/start.htm>.
through aspects made by the ecodesign is therefore not regarded as an independent element of the whole nature.

An important issue here is considered the fact that: if the environmental impacts generated by production companies in specific places are geographically bounded, the product itself can be considered a ‘polluter nomad’ as emphasizes Kazazian (2005). At each stage of its life cycle (extraction of raw materials, manufacturing, distribution, use, recovery), inflows (energy field) and output (waste, liquid and gaseous emissions) produce negative impacts on the environment (pollution, waste, harmfulness) in different places on the planet.

Currently, given the globalization of production, components of a product travel thousands of miles. As scores Kazazian (2005), until the day of their marketing, a pair of jeans and its components, for example, run about 70 thousand kilometers and generate local pollution in each of the stages of its manufacture. Thus, in Namibia, the extraction of copper which serves the manufacture of rivets is held in such deplorable conditions leading to acidification of air responsible for respiratory disease that devastates part of the country’s population, according EJF (2007).

The method of life-cycle analysis (LCA), adopted by ecodesign, as Martins and Sampaio (2006) aims to reduce the use of natural resources and the generation of waste, and reuse the design, repair, re-manufacturing the product or components, make use of recyclable materials, and provide for their own recycling. Here, we select role of designer and articulate solutions on all this cycle, integrating all the environmental impacts. The ecodesign as emphasizes Kazazian (2005) is therefore an approach that requires a new way to design, which foresees the future of the product to reduce the environmental impact throughout the life cycle, whichever is intended for the use and not the product.

Another feature of products designed by means of ecodesign factor is the “traceability”, that is, it needs to demonstrate that the environment was well integrated in its click of life as an approach that takes into account the use of water, energy, dumping of waste in soil, air, etc.. The product should inform buyers of its social commitments that were signed in its production.

Conceived that way, Kazazian (2005, p. 43) notes that the product presents itself as the tool of a more humane economic logic, which reaches the well-being through a satisfaction that results “more than the use of possession”. This statement is reinforced by Manzini (2002) when referring to the dematerialization of consumption by means of services and product-service systems (PSS), with the displacement of the proceeds from the producer to consumer.

Businesses, in turn, to choose this type of production are the tools of ecodesign and systems products and services a factor of innovation that helps reposition their strategies, targeting the responsible consumption and the consequent improvement of quality of life of consumers without affecting the environment. Other reasons may exist, particularly the improvement in product quality, reduce costs and stimulate the internal innovation. The demand environment stimulates creativity and can lead to major changes: new functions, new materials, new technologies, new uses, specifically regarding the production of items of clothing.

At the same time, consumers are increasingly sensitive to initiatives that will lead to savings in raw materials and energy, as the market for organic clothing, and the other to facilitate the use and maintenance of the product.

**FINAL CONSIDERATIONS**

There are several possible reflections from today that the fashion industry calls a sustainable fashion. Replicated the press many times in recent months, the term gained legitimacy in the mouth of professional designers and the industry that just questioned the real possibility of adopting the principles of a truly sustainable fashion in the context in which we live.
Another side, the fast pace that the fashion system prints in the relations of purchase and sale of goods, especially of items of fashion, is reduced the period of validity of these products. It is “particularly” on the items of fashion, because it is intrinsic to its principle eternal reinvention.

The question about the development of sustainability in the industry, considering that the very word now includes in its meaning more remote your being a seasonally disposable, should also be addressed in events such as fashion week in Rio de Janeiro and Sao Paulo (Fashion Rio and São Paulo Fashion Week, respectively).

It is up to the fashion industry itself to figure out so many problems caused by current patterns of production of main fiber employed in the industry, cotton, on possible solutions. It is also the government and the organizations responsible and benefit stimulate the conversion of conventional production of fibers such as cotton to organic production, not to make the consumer pay more for parts produced within parameters that respect both the environment as those involved in the textile process.

Either because of the emerged campaigns by the fashion industry, or constantly worked in the environmental information in the media, the truth is that the changes that are happening as the preferences of consumers toward products with contents of environmental preservation, show the need for adjustments of producers, designers and merchants to a new situation which outlines how increasingly trend in the fashion world. The question is whether that, as any trend will continue.

At the same time, emerges here is that these actions can not be restricted to only promotional marketing of designer labels to gain customers that are beginning to awaken to the relationship between production of items of fashion and socio-environmental impacts. There on that the actual feasibility of expanding the concept and the proposed sustainability coupled with the incessant search for new trends in clothing.

One of possible strategies scores by Kazazian (2005) is propose seeking appearances less subject to fashion, using materials suitable for aging, encourage the repair and maintenance in order to delay the obsolescence of the product. Similarly, with the same proposal, the fashion consultant, Gloria Kalil (2007) strengthens the difference between fashion and style. She says that it is possible to make a cut within the range of what is offered in stores, fashion sense won a major. Kalil adds that the style is what concerns the personality of each and reinforces that “those who have style adopts an attitude sustainable, because it is so conscious choices and not be slaves of fashion turn.”

A proposal for deployment of future work to bring social and environmental consciousness to the production of current fashion, is take information on the use of sustainable materials and techniques to the various actors involved in the chain textile, clothing and fashion products, such as farmers, producers, entrepreneurs, designers, marketing professionals, economists, businessmen, among others. Souza (1999a) scores that even the stylists and designers are not always aware of environmental issues and costs faced by farmers and weaving, because their activity has focused on style, competition and price. The growth of information on the environmental impacts of development of textile can put them in a unique position to promote changes and reduce these impacts more effectively.

Start by teaching of sustainability in elementary school until the courses for graduate and postgraduate diploma in Fashion Design and other related courses, such as cross discipline, and its importance in the design of clothing products, is an alternative. Another option is to promote specific actions with the farmers, manufacturers, apparel manufacturers, designers and consumers in order to sharpen effectively to all participants of the textile chain benefits of the use of organic fiber for the environment, to society and current future generations. It is expected therefore reduce both the impasse created by the imbalance between supply and

demand for organic items in the fashion industry, as the price assigned to them, each time a major obstacle to the development of this market is to convince consumers to pay more by clothing made in sustainable principles. The intention is that production above demand, and that this in turn grow front of awareness and orientation of organic consumption.

A final alternative to the transition from a condition thought to conventional production of fibers used in the manufacture of items of fashion for a thought raised under organic production is covered by the journalist Ana Cândida Zanesco, idealizer of the Institute Ecotece, information center on sustainable dressing; who proposes a change of terms. Instead of “eco-fashion”, “organic fashion” and other jargon often addressed to address the issue, Zanesco, apud Mansur (2007) suggests the use of the term “conscious dress.” The proposal comes from meeting with the premise that “dress” is a verb in the daily life of people and is through this act that we can build a society more aware. Every time we buy a piece of clothing we use our power to consumers. Here, we must seek a balance between the personal satisfaction, the preservation of the planet and social welfare.

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