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The Future of Organic Fibers

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Abstract

Organic fibers which are produced without chemical fertilizer , pesticide and genetically modified seeds (GMO) under the certification for organic fibres processing and these are generally natural fibers. Organic fibers require much more time, labour, cost value, care and special agriculture areas than conventional fibers. Organic fibers are not enough to make the cloth safe since finishing treatments may entail some additional toxic effects. Therefore Global Organic Textile Standard (GOTS) which includes environmental and social aspects of whole production has been accepted recently. Organic textile production has environmental- ecological, economical, social positive impacts: Environmental- ecological impacts: Prevention of the pollution of natural sources by ceasing chemical fertilizer; chemical pesticide; contribution to prevention of global warming; decrease of consumption of the natural sources: soil, water, weather; decrease of energy requirement; standards for the protection of human health and biological diversity by textile standards; decrease of waste such as biological degradation, recycling; Economical impacts: Cost value of organic fibre production and selling; Social impacts: Promotion of organic fibres, management of organic fibres. The future of organic fibers in the world depends on some dimensions such as textile, agriculture, environment- ecology, social life, economy etc. It is as follows mainly that the amount of consumption of organic fibers in textile area instead of other fibers; the growing possibilities of organic fibers in agriculture; positive impacts of organic textiles to environment and ecology; people becoming conscious about their health and environment by wearing organic textile products; buying capability of consumers to wear these organic textiles which are more expensive than conventional ones etc. will determine the future of organic textile production in the world. A brief review will be done on environmental subjects above and the future of organic fibers will be revealed at above conditions.

Key words

Organic fibers, Organic textiles, Organic cotton, Environmental protection, Pesticide, Fertilizer, GOTS Standard

1. INTRODUCTION

Natural textile fibres are obtained from vegetable sources such as cotton, kapok, linen, ramie, hemp, jut, sisal; from animal sources such as wool, mohair, cashmere, silk, spider silk. Viscose, cupra, acetat rayons from wood and linters; kazein from milk, silkool from soya, zein from maize, ardil from peanut are also obtained from natural sources but they are not in fibre form, then they are extruded into fibres after required special treatments and these are called as regenerated fibres. Polyamide, polyester, polyacrylonitrile, polyurethane, polyvinylchloride, polyethylene, polyprophylene, polybenzimidazole etc. are synthetic fibres produced by synhetizing chemicals obtained from petroleum and then they are extruded into fibres after required special treatments. Even though natural fibres are dated to B.C.8000 and still are being used; regenerated and synthetic fibres has begun to be produced since A.C. 19. Century e.i since Industrial Revolution. Industrial Revolution has

brought also environmental pollution while industrial production has being increased by using industrial chemicals ; fosile fuels such as petroleum, coal, and natural gas has being begun to be used in industry, thereafter nuclear, wind, sun, bio, geothermal etc. energies has begun also to be used in industry [1].

Industrial revolution improved in all industrial areas quickly, The World was polluted and changed in a huge ratio as never seen before such as thinning ozon layer; destruction of ecological life; pollution of weather, water and soil; global warming; climate change; melting icebergs in Poles; increasing waste etc. It may be added to these, the increase of people population in the world. The interest in environmental pollution increased in 80's all over the world in all areas, in textile as well. Some precautions are thought in textile area such as using natural fibres instead of synthetic fibres; producing organic fibres, ecotextiles, recycled fibres; dyeing by natural dyes; not using chloride bleaching agent etc. [2].

Organic fibres are the special production of conventional natural fibres which do not use chemical fertilizers; toxic pesticides (insecticides, herbicides or fungicides, defoliants) and genetically modified seeds (GMO). Organic fibres follow also a certification for organic fibres processing [3].

Application of the amount of chemical fertilizers and pesticide are very important since their excessive use entails quite harmful effects by degrading the soil, reducing its nutrient and water retention capacity; by decreasing the crop yield; by contaminating their toxic effects on waters which they pass through; by polluting weather with solvants or volatile compounds when pesticides are applied; by increasing global warming occurred nitrogen oxide (N2O) since the excessive use of nitrogen originated fertilizers; by exposing farmers and living creatures these toxic chemicals; by creating toxic effect on crops from pesticide residue etc.The goal of organic fibre production is to protect the natural sources and people health besides all living creatures and their sustainable life conditions [3] [4]. Certification of organic fibres needs some hard procedure such as ceasing the use of pesticides, chemical fertilizers before three years followed by organic cultivation; using only permissible substances; covering physically the borders of cultivation fields; cultivating some trap plantes if necessary; using organic manure etc.; enrichment of soil organically etc. [5].

It was true that only natural fibres were produced up to Industrial Revolution and they were organic. Organic fibres has begun to be produced since 80's again and encouraged by public actions who were aware of 'green' and 'sustainable production'. It is expressed that organic fibres such as cotton, linen, hemp, jute, wool, mohair, silk were produced in some parts of the World. But despite of these intensive environmental action, it is not registered a significant improvement for 30- 40 years. For example organic cotton, the leading of organic fibres was only produced 0.7% of conventional cotton in the world in 2012 [6]. The other organic fibres such as linen, hemp, wool , silk etc. are produced only in a small ratio. Organic cotton has currently been grown in 23 countries, mainly India, China, Turkey, Tanzania, USA etc.

Organic fibres which are produced all over the world

Organic cotton: Conventionally cotton in the world uses % 25 of pesticide (16% of all the insecticides and 6,8% of all herbicides used) [7] and cotton is in the 4th place in the use of chemical fertilizers in the world, and needs 33% fertilizer of raw cotton weight during cultivation [8] Even though GMO seeds are forbidden in organic cotton, GMO seeds are used in the organic cotton production in USA [7]. The production of conventional and organic fibres in the world is given in Table 1 [6] [7] [9] [10].

Table 1: Conventional and Organic Fibres in The World

	Conventional Cotton Lint			**Organic Cotton Lint**		
	Production (M ton)	Cotton % among fibres	Cotton cultivated area M Ha	Production (ton)	Organic Cotton %	Organic Cotton cultivated area Ha
1960	10,113	67,5	30-36			
1999-2000	20,2	37,5		7545	0.04	
2000-2001	18,869	38,1		6480	0.03	
2001-2002	21,281	38,4		18000	0.08	
2003/2004	21,135	36,9		25394	0,10	
2005/2006	26,532	38,6	30-36	37799	0,14	
2006/2007	26,751		34,36	57931	0.20	
2011/12	27,100		35,52	139000	0.50	317000
2013/14	25,700			116974	0.40	220765
2015/16	21,87		30,49			

As can be seen in Table 1; conventional cotton production is about 25 M tons during 2000's and it is consumed about 38% among other fibres involving nearly 30-36 M Ha cultivation field in the world which corresponds aproximately 2.5% of agricultural areas of the world. When it is glanced organic cotton; total production is about 6500-139000 tons during 2000's and it is produced about 0.038-0.5% of conventional cotton (0.7% also suggested [6]), 317000 Ha (2012) cultivation field in the world. These results show that organic cotton had not registered promising progress for 30-40 years.

Organic linen: Linen is made from flax, a crop that requires very little pest-controlling chemicals. Flax plant is harvested for its fibers, seeds, and seed oils. It's also best when it's a teeny bit wrinkly, so you can conserve energy by putting away the iron [11].

Organic Hemp: The hemp plant is harvested for its fibers, seeds, seed meals and seed oils including narcotic property. Oil is produced from females which have been left to stand after the fiber-producing males have been harvested. **It is easy to grow hemp organically,** since it **does not require herbicides and fertilizers** and hemp does not have a high water requirement. It has a root system that aerates the soil and draws nutrients and water from deeper soil layers, so the requirement of fertilizers and irrigation decreases [12].

Organic Wool: Organic wool requires strict regulations such as feeding sheep from the last third of gestation must be certified organic; prohibiting synthetic hormones, genetic engineering of the sheep, synthetic pesticides on pastureland, and also parasiticides on sheep [13].

Organic silk: Organic silk would involve growing the mulberry trees organically, without chemicals, and raising the silkworms humanely and without hormones [14]. Peace silk or vegan silk permits the moth to make a hole on cocoon, ceasing its death in cocoon, despite of the decrease of fibres quality [11] .

Alpaca: Organic alpaca sheeps do not require insecticides to be injected into their fleece, are fairly self-sufficient, do not need to be treated with antibiotics. It seems that they are good for environment [11].

2-IMPACT FACTORS OF ORGANIC TEXTILE

Organic textile production has environmental- ecological, economical, social positive impacts:

Environmental- ecological impacts: Prevention of the pollution of natural sources by ceasing chemical fertilizer; chemical pesticide ; contribution to prevent global warming; decrease of consumption of the natural sources : soil, water, weather; decrease of energy requirement; standards for protection of human health and biological diversity; decrease of waste such as biological degradation, recycling;

Economical impacts: Cost value of organic fibre production and selling;

Social impacts: Promotion of organic fibres, management of organic fibres.

2.1. Preventing the Pollution of Natural Sources by Ceasing Chemical Fertilizer

All vegetable natural fibres need some inorganic compounds, organic compounds, water, CO_2 , sun light, seed, and soil treatments to grow up. As example, cotton plantes requirement under irrigation are 100–180 kg/ha nitrogen (N), 20–60 kg/ha phosphorus (P), and 50–80 kg/ha potassium (K) compounds; chemical fertilizers to supply these compounds are added to fields for the cuiltivation of conventional fibres[15]. But these chemical fertilizers are forbidden for organic agriculture since their excessive use creates harmful effects such as soil degradation, reduction of its nutrient and water retention capacity, salinization, erosion, eutrophication, the overextraction of water and the reduction of ecologic diversity as well as human health on the agricultural area. Carbon nutrient amount 0.5 to 5 % of the soil, has also crucial importance[4]. Excessive use of nitrates, phosphates fertilizers and pesticides which occur methane and nitrous oxide gases by spreading air and their solutions in ground and surface waters which entail also environmentally and ecologically harmful effects [15]. 1 kg of cotton lint requires 350 g chemical fertilizer and cotton is in the 4^{th} order in the use of synthetic fertilizers [8]. Natural organic fertilizers such as organic manure, compost of green leaves, stalks, roots etc. manure, mulch, liquid organic manure such as (biogas) slurry and micronutrient were used instead of chemical fertilizers to meet the requirement of cotton fibre growth [4] [16]. Crop rotation is also an alternative practice to fertilize application for the achievement of soil fertility. It helps prevent soils, occurence of critical pest populations and also diseases and weeds from leaching. It is important to grow cotton in rotation with leguminous plants such as beans, peas or soya beans. Because they fix nitrogen from the air and make it available to the plant, thus improving soil fertility [4] .

2.2. Preventing the Pollution of Natural Sources by Ceasing Pesticides

All crops are under the biological effects such as animals, insects, beetles, bacteria, fungi, weed etc. as well as physical and chemical effects. These biologically living beings can give damage to natural fibres resulting the decrease of yield, the quality of fibres, and the increase of difficulties in fibre processing. To prevent these biological effects pesticides, insecticides, fungicides, herbicides, defoliants are used during the cultivation of crops. Natural vegetable fibres also require pesticides, a leading of natural fibre cotton only consumes 25% of pesticide consumption in the world since it is highly susceptible for pests and diseases. But these pesticides and solvants are quite toxic and excessive use of pesticide depletes the soil nutrients thus the requirement of synthetic fertilisers will increase[12]. Ground and underground waters are also polluted by pesticide contamination causing soil salinisation, particularly in dry areas and causing a degradation of soil fertility and the occurrence of methane and nitrous oxide gas [17].
Additionally volatile pesticides or solvents of pesticides are spread into weather causing harmful effect on employees, crops, air, earth, water. These pesticides are persistent chemicals and they leave a toxic residue on cotton lint, leaves, stems, roots, seeds, even in the soil. The amount of pesticide in the earth is increasing as time passes by and entails toxic effect. Pesticides in cotton fibres are also persistent[18] . Pesticides are not generally soluble in water, they are persistent chemicals to degradations. Then they may be left on textile products to create harmful effect on textile consumers. That's why, organic chlorinated pesticide are tested on ecological textiles for Oekotex 100 and GOTS standards. Toxic pesticides

used in the production of conventional cotton are methamidophos, malathion, aldicarb, parathion, acephat etc. [7] . The total dose of pesticide chemicals vary between 1.85 kg/ha and 10.5 kg/ha in the selected region [15]. There are some researches to remove organophosphate pesticides (OP) pesticides from waste waters [19]. Organic fibre production prohibites the use of pesticide and some natural precautions are suggested and these will decrease the pollution of natural sources in the world.

Natural pesticides: If preventive measures are not sufficiently efficient and pest populations exceed the economic threshold, a number of natural pesticides can be used in organic cotton cultivation. Some of these are: neem spray, prepared from neem kernels (Azadirachta indica) extract, effective against sucking pests, jassids, bollworms and thrips; pyrethrum, prepared from powdered flower heads or liquid extracts of chrysanthemum, effective against red cotton bug, cutworms, grasshoppers; botanical mixtures, combinations of extracts from different plants such as castor, thorn apple, lantana, custard apple, sweet potato leaves, tomato leaves, ginger, chilly, gliricidia, marigold, etc. Their cost values consist 10% of market price.

Trap crops: Some cotton pests prefer crops like maize, sunflower, okra (lady finger), sorghum, pigeon pea or hibiscus to cotton. By growing these crops along with cotton as a trap crop, the cotton crop is spared.

Promotion of natural enemies: Not using pesticides and diversifying crops benefit natural enemies from cotton pests such as birds, ladybirds, beetles, spiders, parasitic wasps, bugs and ants. They help the farmer keep pest attacks at tolerable levels by providing suitable habitats for these natural enemies of pests. **Crop rotation**: This helps prevent leaching from soils, a build-up of critical pest populations and also diseases and weeds [4].

2.3. Contribution to Prevention of Global Warming

Global warming is an environmental problem caused by carbon dioxide (CO_2), methane, nitrous oxide etc. gas layer occurred in the atmosphere and this layer acts as a preventive and a trapping heat from the earth and warming the planet. Fossil fuels and all industrial production entail global warming [20]. Global carbon dioxide (CO_2) concentrations in the atmosphere are expected to rise from 350 ppm to over 400 ppm which entail between 0.5 and 1 ^{O}C of a global warming by 2030. Carbon dioxide has also positive effect o plantes, it causes plante stomata to narrow, so water losses are reduced and the efficiency of water usage improves. Increasing atmospheric concentrations of carbon dioxide will also stimulate photo-synthesis of plantes and have a fertilizing effect on many crops [16]. Fibre plants absorb carbondioxide (CO_2) under sun light, then giving back oxygen (O_2) by photosynthesis. Photosynthesis cleans the weather, helps reduce global warming.It is suggested that, on average, organic cotton cultivation causes 0.98 kg CO_2 equivalent/1 kg of cotton fiber produced, this compares to 1.81 kg CO_2 equivalent/ 1 kg of fiber for conventional cotton [10].

But natural bestial fibres entail the increase effect onto global warming in reverse because animals breath oxygen (O_2) then give back as carbondioxide (CO_2). Global warming is also the result of the Industrial Revolution, the gases released to atmosphere due to industrial production in a large amount. Some international precautions were thought to decrease carbon dioxide (CO_2) level to lower %5 of 1990's level at Kyoto Protocol.

Some synthetic fertilizers used in the conventional vegetable fibres have contribution to global warming. They spend 1.5% of the world's annual energy consumption and release large amounts of carbon dioxide during their production. Additionally the excessive application of nitrate fertilizers transformed into nitrous oxide ("laughing gas"), that is 300 times more destructive than carbon dioxide (CO_2) in terms of global warming [4]. Pesticides have also increased effect on global warming by spreading green gases. Organic fibres have contribution to the decrease of global warming by ceasing fertilizers and pesticides.

2.4. Consumption of the Natural Sources: Soil, Water, Weather

It is suggested that while cultivable land is 0.218 hectar / 1 person in 2010, it will be 0,181 hectar / 1 person in 2050, that means that crop consumption will decrease per head in future [21]. Cotton production includes 2,5% of agricultural areas in the world corresponding to 30- 34 million hectars in the recent years. If conventional cotton is reversed to organic cotton, this will create a great benefit for the environment and ecology [9]. Conversion of conventional cotton field to organic field needs 3 years, organic cotton yield is approching to that of conventional cotton in the third year approximately 1100 kg lint/ ha of yield. It is important that adjacent agricultural fields must cultivate similarly since pesticides and herbicides applied in a field could easily transport to a adjacent field, thus it looses organic cotton prooperty [15]. Sustainability of soil depends on strongly the organic cultivation.

Water is the main material for living organisms, and there is no life without it. Every year, many treatments are performed to treat, clean and purify water. Therefore, availability of clean water at an affordable price remains a crucial goal for humanity. Cotton is a very water-intensive crop; it is estimated that cotton growing results in 1–6% of the world's total freshwater withdrawal. In order to produce1 kg of cotton lint, 10,000–17,000 L water is required. Innovative irrigation techniques like drip irrigation, can lower the water demand for cotton production down to 7000 L/kg-lint [15]. When conventional cotton is compared to organic cotton at the point of the consumption of conventional cotton, there may not be difference if the cotton yields are both the same; if organic cotton yield is lower than that of conventional cotton, water consumption may be higher than that of conventional cotton.

Water consumption of the cultivation of organic cotton in India, USA, Israel are given in Table 2 [22] .

Tablo 2: Water Consumption of Organic Cotton

Water Consumption of Organic Cotton			
Country	Water consumption m^3/ha	Yield seed cotton kg/ha	Water Conservation Measure
Maikaal- India	2950-4100	1200-1400	Crop rotation
USA	1500-4500	2200-4200	Drip irrigation
Israel	1300-2800	2900-4700	Mulching, hoeing of soil crust to break evaporations capillar

Oxygen in weather is always consumed by all chemical oxidation reactions, energy reactions in a large amonunts. Oxygen is reversing carbondioxide by combustion. Plantes transform into carbondioxide to oxygen by photosynthesis. Oxygen is always consumed by chemical reactions, if plantes are available enough amount, always transform into carbondioxide.

2.5. Decrease of Energy Requirement

Vegetable fibre production depends on energy in a high ratio which includes cultivation, fertilizer and pestiside applications, irrigation, machine harvesting, ginning, transportation of natural fibres, yarn production, knitting or weaving, finishing treatments, sewing clothes, transportation clothes. All these stages include carbon foot print in different ratios, some of them can be applied by hand such as harvesting, cultivation, weaving etc. which arise carbondioxide (CO_2) in a small ratio. It must be also added washing, ironing, dry cleaning etc. treatments which are applied by textile consumers and which require energy to these stages. It is suggested that consumer use needs 80% of the life cycle energy of a conventional cotton textile products [15]. Conventional and organic fibres spend the same energy except chemical synthesis of fertilizers, pesticides; for mechanical applications of chemical fertilizers and pesticides; excessive wet treatments to remove pesticides on textile products. Whereas the production of 1 kg of conventional cotton requires 15 MJ energy, 1 kg of organic cotton requires only , as a global average, 5.8 MJ of energy [10]. Energy sources today are mainly fossil fuels such as charcoal petrol, coal, and natural gas; nuclear energy; renewable energy such as sunlight, wind, rain, waves, geothermal heat, biomass, hydro electricity. Energy production is the prevalent factor of environmental pollution, and arising carbondioxide (CO_2), methane etc. from fossil fuels in a large ratio causes global warming. Thus renewable energy sources are recommendable for the ecological production.Replacing diesel fuel with biodiesel in the machinery, preferably produced from agricultural wastes and residues, would theoretically improve further sustainability of the final product [15].

2.6. Standards for Protection of Human Health and Biological Diversity

Organic fibre production only assures that the fibres are produced the lack of fertilizers, pesticides, GMO seeds, thus there will be no pesticide residue on textile products; and organic fibres requires organic fibre certification system.

But textiles are treated in the textile mills such as scouring, bleaching, dyeing, finishing etc., these may also create some toxic effects on environment and the textile consumers. Even though these textiles are produced by organic fibres, it can not be assured that the textile product is safe for human health of consumers. That's why a standard like Global Organic Textile Standard (GOTS) is also added to the organic standard.

Organic Fibre Standard: EU regulation 834/2007; USA National Organic Program (NOP); United Stated Department of Agriculture (USDA) ; OTA: Organic Trade Association (USA) (Agriculture and foods into organic textiles and body care products); Indian National Program for Organic Production (NPOP) ; the Japanese Agricultural Standard (JAS); Soil Association Organic Standard (UK); Organic Guarentee (New Zealand); IFOAM: International Federation of Organic Agriculture Movements [4] [23].

Organic Exchange: OE 100, OE Blended Standards and the new Organic Content Standard is also suggested by Textile Exchange [10]

Organic Fibre+ Ecological Processed Product : *GOTS : Global Organic Textile Standard stipulates that organic fibres or yarns, fabrics, textile products from these organic fibres* were treated and manufactured ecologically and have no toxic effects on consumers. But it does not include any preventions or precautions to protect environment from toxic by-products contained in the wastewater from manufacturing plants of these textiles pollute wastewaters, giving harmful effects on ecosystem [13].

MTS: Market Transformation to Sustainability (Sustainable Textile Standard examines garment sustainability in five areas of sustainability) standards also include ecological textile products.

Some labels of ecological cotton are given in Figure 1 [24].

Figure 1: Organic Cotton 100 Label; GOTS Label; Fair Trade Label; Better Cotton Label successively.

Ecotextile Standard: There are some ecotextile standards such as EU Flower, eco-label and Oeko-Tex 100 that they do not require organic fibres, but they stipulate that the end textile product were ecologically treated and manufactured and have no toxic effects such as allergy, skin irritations, chemical sensitivity and other health problems.
Better cotton: Environmentally friendly and sustainable cotton cultivation by controlling all stages without decrease in crop yield, in contrary by increasing the crop yield and keeping the cost the same. Harmful effect decreases 30-50 % that of conventional cotton. (BCI) [7]. Fairtrade: It is primarily a social label and focuses on improving the working and living conditions of smallholder farmers in the South. However, Fairtrade standards also include environmental criteria.

Fairtrade and Organic complement: Combining the two is a way of strengthening the position of farming families socially and environmentally as well as supporting their development efforts [4].

Cotton quality order: It is given successively Organic cotton ; Better cotton without GMO ; Better cotton with GMO ; Conventional cotton [7] .

2.7. Biodegradable Property of Organic Fibres

Biodegradable means that a material will break down or decompose through microbial action into basic elements found in nature. Many materials over time will degrade from sunlight, heat, moisture and mechanical stress, but this alone is not biodegradation. Compostable means that a material will break down quickly in a typical composting operation into nutrient-rich, soil-conditioning mixture. Heat, humidity and regular mixing, quickly break down the waste. Natural fibres are biodegradable, but synthetic fibres are recalcitrant to biodegradation and need long period of time giving pollutant products Certain studies have found the synthetic material to be an endocrine disruptor that can potentially effect the fertility. Organic fibres will biodegrade environmentally friendly while conventional fibres will give residual pesticide to the environment.

2.8. Recycling Organic Natural Fibres

Natural fibres and synthetic fibres can be recycled by tearing machines in a shorter length. Most of the time fresh and recycled fibres are mixed to produce new textiles. Conventional and organic textiles have no difference at the point of recycling, if there is pesticide residue on textile, this may only create toxic effect. For every kg of virgin cotton displaced by second-hand clothing approximately 65 kWh is saved, and for every kilogram of polyester approximately 90 kWh is saved [15]. Synthetic fibres are convenient for recycling process through melting polymer followed by fibre production from extruder. But natural fibres are not convenient to melt treatment since they have no melting properties. Especially recycled plastic bottles or even recycled polyester fabric are used in recyle process by melting process [11].

2.9. Economical Impacts: Cost Value of Organic Fibre Production and Selling

Organic fibres need more care, labor, procedure than conventional fibres, that's why organic fibres cost approximately higher than 5-50 % than conventional fibres in the world. But the total price of a textile product from organic cotton is higher 5-10 % than that of conventional cotton, since the other treatments such as yarn, weaving, finishing etc. are the same for both types. Fibre amount in the textile product will increase the price so as heavy sweatshirt will be more expensive than that of light one even though they were made of organic cotton[6] [11]. Organic and conventional cotton prices in 2013/14 period in the first 5 countries as India, China, Turkey, Tanzania, USA in the World are given in Table 3 [10] [26].

Tablo 3 : Cotton lint price in the first 5 countries in 2013/14 (correspond to 96 % of organic cotton world production)

	India	China	Turkey	Tanzania	USA	World Conventional Cotton
Organic Cotton Lint Price ($ / kg)	1,52	2,08-3,20	1,60-2,15	-	2,60-3,40	
Organic Cotton Seed Price ($ / kg)	-	1,04	-	0,43-0,46	-	
World Conv. Cotton Lint Price ($ / kg)						1,48

Transition period of conventional cotton to organic cotton requires 3 years, but the decrease of yield in three years creates a serious economical problem. Even though increasing awareness on environmental issues besides organic fibres was tried to be created, the result is not at the promising level recently. Some textile companies have begun to produce organic textiles, some of them have begun to produce only an organic line among their products. Demand and offer will determine the future of organic textiles.

2.10. Social Impacts: Promotion of Organic Fibres, Management of Organic Fibres

The more demand to organic fibres increases, the more production of organic fibres increases. Basic factors which affect the demand of organic textile products: 1-Sufficient knowledge about organic fibres and their harmful impacts on the environment, ecology: There is no enough visual or written knowledge to explain, to make the consumers conscious about the production process of organic textiles. 2-Having economical capacity to pay organic textiles being about 10% of higher price than that of conventional one: There are about 8 billion people in the world, most of them are living under insufficient conditions. That's why only people having higher salaries can pay the increase in price of organic textiles. 3-Accessibility to organic textiles: Consumers have different ability during shopping, price, model, colour, season, fibre type, accessibility etc. are the basic reasons. Organic fibres are being produced only in a small amount and it is also difficult to find, to access organic textiles all over the world, this is also a drawback of organic textiles. It is suggested that consumers have three knowledge which affects buying organic textiles: objective knowledge, subjective knowledge that is the perception of what and how people know, and knowledge usage which is gained from prior experience. This result stimulates new marketing methods, presentation, making people conscious studies to increase organic fibres demand. Renewable sources and sustainable production must be explained to consumers strictly.

Organic cotton did not show gradually increase in production and consumption for 40 years. Organic markets are only available in the developed countries such as UK, Europe, the US, Canada, Japan and Australia etc. , and in their elite shops. The global market share has gone around 4.3 Billion USD in 2009 [4]. Even though the benefits of using organic cottons instead of conventional cottons in apparel products are well acknowledged among consumers, they tend to choose conventional cotton clothing over organic cotton clothing due to relatively higher price. Organic cotton producers and retailers need to improve organic cotton production and trading processes to provide organic cotton clothing at more affordable prices [27]

The decrease in production was a problem of not having enough resources to produce organic cotton including the lack of seeds; the lack of pre-financing options; difficulty in finding capital and health care centers; accessing to training and advisory services.

The farmers may perceive the crop prices as too low, and therefore not making the investment required for organic production. This risk is especially high for farmers depending on rain, not using irrigation. In this case, it is necessary incentive precautions for farmers.

3. CONCLUSIONS

It ıs obviously seen that world is getting dirtier day by day. All sustainable precautions to prevent the pollution is worth to stimulate, like organic cotton, to leave habitable world for future generations.

There are mainly environmental- ecological, economical, social diameters from the transition conventional fibres to organic fibres; cotton is the leading of organic cultivated fibres.

Organic fibres will have environmental- ecological benefits to cease pesticides, fertilizers, GMO which entail declining yields and, therefore environmental sources such as weather, water, soil besides human health and ecosystem will be protected. Organic cultivation will supply sustainable production being environmentally friendly.

Transition to organic fibres requires about three years and the organic crop yield decreases during these years by entailing the decrease of cost value which is important for livelihood of farmers. The main problem is how can it be compensated this lost? The premium of organic cotton may surpass the conventional cotton if the first three years are compensated by some ways. This may be supplied by governmental support, incitement all over the world, transition to organic cultivation may be performed gradually. It is suggested that finding capital, seeds, health care centers, accessing to training and advisory services are even more important.

The cost value of organic textiles is higher than that of conventional. If consumers demand and pay this premium of organic production, offer of farmers will increase, therefore social awareness of consumers must be increased to buy organic products. Despite of harmful effects of conventional fibres to environment and human health; for example the production ratio of organic cotton in conventional cotton is still 0,7 % , this revealed that social interest must certainly be created. Demand, it was said, will overcome these issues.

Transition to organic fibres requires the collaborations among International Farmers Associations, Non Governmental Organisations, Governments, Trademarks, Consumers Associations and Fashion Designers. Organic textile demand from consumers could not be promising levels by now having 0,5%-0,7% of conventional cotton, due to about 10% higher price. Considering of this issue in new and creative ways may be a potential solution.

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