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When shopping for a pair of blue jeans or a t-shirt, have you ever considered the impact the article of clothing has on our environment, let alone our own body? Traditionally, raising cotton, ginning, spinning, weaving, knitting, dying and wet processing uses harmful chemicals, as well as a huge amount of water. The Green Movement has helped spotlight these issues, causing both consumers and people in the cotton industry to take notice and make changes.

Conventional cotton growers all over the world use synthetic fertilizers and pesticides that adversely effect the environment and water supply. Also, conventional cotton processors use chemicals that can be harmful to the environment as well as the wearer. A call for more green products, have changed some cotton growers farming methods to organic processes. Organic cotton growers use methods that do not involve harmful chemicals to grow a successful crop. They use crop rotation and cover cropping (the planting of an early crop to be dug in the soil before maturity) to manage soil fertility (nitrogen content), soil quality, water conservation, weed and pest control. In addition, the use of manure to further raise the nitrogen levels of the soil and the use of beneficial insects as well as bacteria and viral pathogens to fight pests. [1] Using organic farming methods not only are better for the environment around the farms but better for the health of the farm workers. According to Ethical Fashion Forum:

> "Between 1 and 3% of agricultural workers worldwide suffer from acute pesticide poisoning with at least 1 million requiring hospitalization each year, according to a report prepared jointly for the FAO, UNEP and WHO. These figures equate to between 25 million and 77 million agricultural workers worldwide. Some of the symptoms of pesticide poisoning include headaches, vomiting, tremors, lack of coordination, difficulty breathing or respiratory depression, loss of consciousness, seizures and death." [2]

What a crime to continue to expose farmworkers to this type of harm when alternative methods that are both safe and effective are available. Cotton Today is a company that helps. Their mission statement states "The cotton industry envisions a future where environmentally sustainable production and manufacturing will thrive along with businesses that depend on cotton as a source of income." They help growers conserve water, soil and energy while still being profitable. More framers need to be willing to receive this type of help and change the way they are doing business. [3]

After the cotton is harvested and ginned (seeds removed) it needs to be further processed. This processing also traditionally involves the use of unsafe chemicals and uses water. Whitening of the cotton is conventionally done with chlorine bleach that has toxic byproducts such as dioxin that is released into the environment. A change to a greener whitening process of hydrogen peroxide that decomposes into oxygen and water ($2\ H_2O_2 \rightarrow 2\ H_2O + O_2$) is much safer. In nature H_2O_2 is produced by both plants and animals is formed naturally in the environment. [4]

The finishing and dying process also uses energy, water and chemicals. In conventional finishing, water at high temperatures, with chemicals such as formaldehyde (a known carcinogen) are used and dyes that contain heavy metals as well as sulfur. Alterative methods for finishing use warm water with soda. Beautiful dyes made from organic materials that are water based have low impact on the environment and the people who are manufacturing and wearing the clothing.[5] All the changes in the cotton industry towards a greener product support the Paul Anastas and John Wamer's third "Principal of Green Chemistry" use of chemicals that are less toxic to people's health and the enviornment.[6]

The case study *Greening a Cotton Textile Tupply Chain* by Beatrice Kogg shows the difficulty of obtaining cotton that has been handled in a green method, from growing to the end processing. The company Verner Fang AB, who the study was focused on, found that if they wanted green products all the way down the supply chain, they needed to influence the change by offering premiums to their vendors as incentives for going green. The vendors reported that the cost of going green was negligible after the initial change over. More demand for organic cotton and "greener" processing has also offset any cost and been an incentive for more farmers and processors to change. The premiums paid account for a 10-15% up charge on products made as "eco-labeled" products.[7]

In the past consumers were only able to find "eco-labeled" apparel at specialty stores such as Whole Foods and on line at specialty stores such as Natural Clothing Company. The price of a "sustainable organic cotton" t-shirt at Whole Foods is $10.00 and at Wal-Mart a comparable "regular" cotton t-shirt sells for $11.98. It seems that the prices for more eco friendly products are no longer being passed on to the customer. Large companies like Levi's are coming out with new lines reflecting the trend to be more eco-friendly. Levi joined the Better Cotton Initiative that helps reduce water use in cotton growing and is using less water in manufacturing of jeans. It seems that it doesn't have to take a bite out of the consumer's wallet to purchase eco-friendly clothing. We just need to show that is important to us by purchasing it over the conventionally made clothing. The end product when using green methods quality is just as good, or better than conventional. In the case of cotton, the consumer does not have to sacrifice quality or pay more money for being eco conscious. If there is a greater demand, more framers and processors will have the incentive to change. We as consumers can make a difference by choosing to purchase products that are green.

References

1. "Organic Cotton vs Conventional What's the-Difference." Green Cotton. N.p., n.d. Web. 19 Apr. 2013.
2. "The-issues: Pesticides." The Ethical Fashion Forum. N.p., n.d. Web. 19 Apr. 2013.
3. "Cotton & Natural Resources." Natural Resources. N.p., n.d. Web. 19 Apr. 2013.
4. "Hydrogen Peroxide - a Greener Alternative to Chlorine Bleach." The Healing and Wellness Center of Kent Island. N.p., n.d. Web. 19 Apr. 2013.
5. "Organic Cotton vs Conventional What's the-Difference." Green Cotton. N.p., n.d. Web. 19 Apr. 2013.
6. Anastas, Paul T. and Wamer John. *Green Chemistry: Theory and Practice*. N.p.: Oxford UP New York, 1998. Print

7. Greening a cotton-textile supply chain: a case study of the transition towards organic production without a powerful focal company**.** Beatrice Kogg. Greener Management International. 43 (Autumn 2003) p53. Word Count: 5500.
8. "Levi's Has a New Color For Blue Jeans: Green." *Bloomberg Businessweek* Issue 4301 (2012): p26-28, 3p. Print.