Sustainable Cotton Production Final Report

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Introduction

The World Wildlife Funds states that Cotton is the most widespread profitable non-food crop in the world. For that reason, its production process has been impactful in many environmental aspects like water usage and pollution. To put the scale into perspective, 17% of the water in the 1,976-mile Indus River is used for cotton production (World Wildlife Fund, 2024). There have been strides to minimize the impacts of producing a cotton item. Traditionally, cotton production uses an excess of water and chemicals which can be harmful to ecosystems. This is a pressing topic in the world of sustainability as more companies and consumers are becoming concerned with their environmental impact. As well as many communities being faced with drought making water usage more important and impactful.

Cotton farming is where change can be the most effective in the cotton textile making process. The farming takes place in warm climates, which can be a concern as drought can be common in many of these areas, for example in the United States the most common area for cotton processing is Texas (USDA, 2022). To produce cotton there is an abundance of labor and water needed. Looking at some of the environmental impacts of cotton farming, the major impacts are soil erosion, degradation of soil, pollution from pesticides, and water usage (World Wildlife Fund, 2023).

There are arguments that the consequences of reducing the impacts of cotton production are not worth the change. For this reason, this report's purpose is to evaluate both perspectives and propose if production changes should be made in the cotton making process to mitigate environmental impacts. The decision to change or not change the cotton production process is significant to those that care about environmental issues, accessibility issues, and those directly affected by both of those issues. The accessibility aspect is affected based on price increases that

could come with more sustainable processes. As for those most effect environmental issues, this tends to be people in less wealthy areas who are more likely to experience the consequences to environmental issues often affecting their health. Making this not only a problem for the environment and its health but also for the health and wellbeing of people.

One side of the argument is that the process of cotton clothing production is justifiable despite its environmental consequences because of economic and accessibility reasons. The other side of the argument claims that changes must be made to lessen the effects of this production on the environment and health of communities.

Perspective of Supporting Change in Cotton Production

Concerns for environmental impact have grown in recent years. This is due to more awareness as effects of issues like global warming and contamination from pollution are affecting people in parts of the world today. I would like to look specifically at the environmental impact from cotton production for textiles. A widely regarded issue when it comes to cotton production is water usage. The world count sites that 10,000 liters of water are used to produce 1 kilo of cotton (The World Count, 2024). The detriment of this can be exemplified by looking at the almost complete diminishing of the Aral Sea, the world's fourth largest lake drained mainly for cotton cultivation. The water supposed to flow into the Aral Sea was taken to the Amu Darya and became a major cotton producer at the expense of the local's jobs, health, and safety (Britannica, 2024). This is just one example of the magnitude of water used for cotton production, which is harmful as it decreases the amount of freshwater that can be accessed (World Wildlife Fund, 2023).

Additionally, pesticides from cotton farming make for contamination of the soil and water in neighboring areas (World Wildlife Fund, 2023). The exposure of pesticides to the soils and water around cotton production affects other crops and puts the health of agricultural workers at risk due to its high toxicity (Zhang, 2023). The heavy use of these pesticides' present risks to food quality and human safety. The issues of soil pollution can also apply to the fertilizers used in the cotton irrigation process. There is a balance to fertilization that can minimize its impact, however 49% of the cotton-growing countries or regions are over fertilizing. The overfertilization of the cotton crop is harmful because it seeps into the soil which pollutes groundwater and surface water nitrogen level (Zhang, 2023). On the other hand, under fertilization which takes place in 40% of cotton growing countries messes with the longevity and ecological capability (Zhang, 2023).

There are a few different methods that have been implemented to lessen the impacts of cotton textile production. One of the most widespread methods is using organic cotton. Alternatively, regular cotton as the production process for organic cotton uses 91 % less water (The World Count, 2024). In the 2019 Vogue India interview the experts interviewed cited that this is a result of there not being genetically modified crops which need more water for development. This also presents another major advantage that comes with organic cotton, which is that there is no need for the use of pesticides, significantly decreasing cotton farming impact (Chan, 2019). Additionally, the world count recites that organic cotton uses 62% lower energy demand, 46% lower CO2-emissions, and 26% lower soil erosion (The World Count, 2024).

Another proposal made by environmental advocates is the implementation of the Better Cotton Initiative. The initiative was piloted by the world wild wildlife fund which states its criteria to be the following “minimize the harmful impact of crop protection practices; use water

efficiently and care for the availability of water; care for the health of the soil; conserve natural habitats; care for and preserve the quality of the fiber; and promote decent work". This is a standard that all participants in the initiative must meet. Kathleen Delate from the Cambridge university press claims that these initiatives have picked up relevance with licensed BCI farms but she criticizes its allowance of glyphosate that forms herbicide resistance among weed species when used on genetically modified crops. Despite these critics the world wildlife fund reports that "over 75,000 Pakistani farmers have reduced their use of water by 39 per cent" (The World Count, 2024).

Overall, the largest environmental impact from cotton production comes from pesticide and water usage, in which there are strategies to reduce this use. A good alternative for water usage is using organic cotton. Many companies are adopting the use of organic cotton alternatives. This also makes for little to no pesticides to be necessary. Additionally, pesticide regulations set by the Better Cotton Initiative can hold farmers accountable for their pesticide use.

Perspective of Against Change in Cotton Production

Cotton production has been a core part of global economics throughout history, an age-old process now challenged by new ideas to decrease the environmental impact. These improvements, however, come at a cost, the main consequences I plan to explore are the economic and accessibility disadvantages that are possible. More environmentally friendly alternatives to cotton forming can come at greater cost whether this comes from the actual

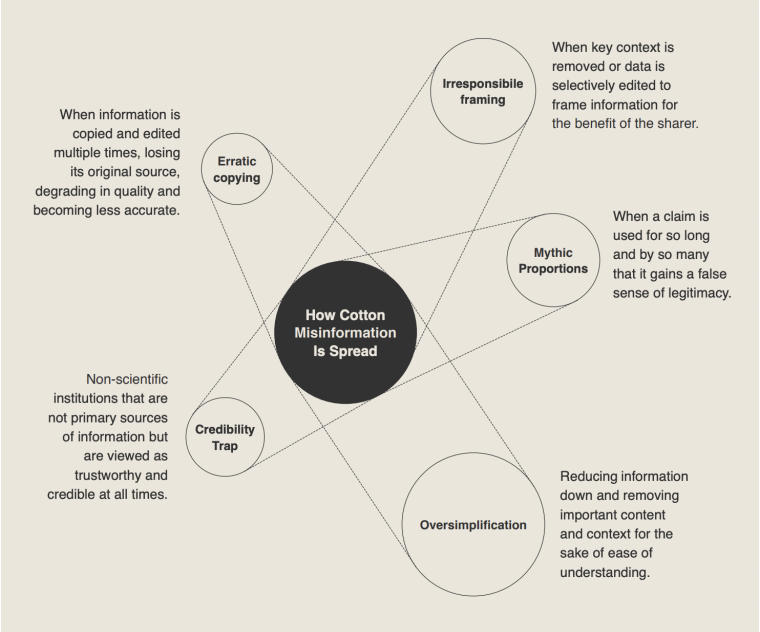
material cost or the labor cost. An increase in production cost will inevitably result in a price increase for consumers. Increasing the cost of cotton items makes for an issue in its accessibility. If cotton clothing costs more than it used to, this would put a further strain on economically disadvantaged people and communities. Ultimately this could further the class divide and put lower class individuals at greater disadvantage.

In the 2019 journal article titled Environmental and Economic impacts of better cotton: a panel data analysis it looks at the results and consequences of more sustainable cotton production practices. Specifically looking at those following the Better Cotton Initiative in Pakistan. The study also states that there is no available research to their knowledge that shows the effectiveness of the Better Cotton Initiative. The study's findings discover the yield is effective, but it takes more labor than traditional cotton farming (Zulfiqar, 2019). This could increase the workload for agricultural workers and could put them at risk of exploitation.

A similar study from 2015 with many of the same authors pointed out another restraint being that cotton farmers are used to farming conventional cotton and don't have the expertise or desire to work with better initiative cotton (Zulfiqar, 2015). To enact change the stakeholder of the situation must be considered and compliant. Without the support of farmers this process is bound to have little success. The widespread disdain for the new process among farmers could lead to a rebellion or even worse farming practices if there is not an effort to learn how to handle more sustainable processes.

Another criticism of using more sustainable practices for cotton production is that there is a great deal of misleading information in the realm of cotton production. An article by Forbes in 2021 provided insight to a recent "Cotton Myth-Busting Report". In the article they discussed one of the four myths claimed in the report that were incorrect or misleading. The myth chosen

was the claim that Organic cotton uses 91% less water than conventional cotton. The article criticizes the statistics from the Textile Exchange that is result of a life cycle analysis conducted by the organization modeled in the same way of the 2012 Cotton Inc life cycle analysis (Roberts-Islam, 2021). The article claims that life cycle analysis should not be used to make broad general claims as life cycle analysis should be used to make claims that "reflect specific farming methods and climatic conditions, data collection and analysis methodologies, and timeframes" (Roberts-Islam, 2021). Figure 2.



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Conclusion

The sustainable cotton farming methods analyzed in the paper are organic cotton alternatives and involvement in the Better Cotton Initiative. Organic cotton from the perspective of those who support its lessened environmental impact is useful as much less water is needed, and pesticides are unnecessary for farming. However, looking at organic cotton from the other point of view that these alternatives should not be implemented, there are critics of certain statistics and the fact that pesticide use can still be utilized with the production of organic cotton. As for the Better Cotton Initiative, the critics include some of the chemicals that companies are still allowed to use under the initiative. Additionally, the initiative calls for an increase in the need for hard labor.

Although these methods are common and widespread there are many other methods around and being developed currently to reduce the environmental impact of cotton production. Other strategies may also approach environmental issues not addressed in the essay like carbon emission and cotton disposal or recycling. My point here is that the methods reviewed in this paper are still continuously being further developed and they are not the only methods available.

This brings me to my position on the topic of sustainable cotton production and whether it should or should not be implemented. I believe that methods for sustainable cotton production should be implemented into the production process due to its avoidance of furthering environmental damage and providing a long-term financial advantage of using less resources. In the journal article Environmental and Economic impacts of better cotton: a panel data analysis mentioned in the previous section, the study found that “The increase in gross margin for better cotton growers is significantly higher than conventional cotton growers” (Zulfiqar, 2019). Meaning that the result found in this article shows that there is an economic advantage that the

better cotton initiative provides. The proper use of water and pesticides helps make for better production yield for the cotton (Zulfiqar, 2019). Making the implementation of the proper usage that happens with better cotton initiative a more economically sound option that also lessens the negative effects on the environment as discussed, there are negative environmental impacts of improper pesticide and water use. As for organic cotton, I believe that the reduction in water usage even if statistics aren't exactly 91% there is still a significant difference in water usage which can make a large impact. Overall, I think the implementation of both methods; The Better Cotton Initiative and organic cotton, will be helpful in reducing environmental impact and improving future economics.

Recommendation

For the implementation of more sustainable cotton production, I think that the industry should push for more cotton farms and major suppliers to join the Better Cotton Initiative to maximize its impact. Also, I think these large cotton producers could allocate areas of their farming for organic cotton and slowly continue to spread those areas until most of the cotton production that takes place at the production centers is organic cotton. Implementing these policies will result in a need for more labor, which I think in today's economy more jobs can be seen as a good thing for many communities. Overall, my recommendation is that these methods be implemented in small bits being introduced and continue to spread to do these regulations or incentives must be set.

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