

Kala Cotton: A Sustainable Alternative

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Abstract

Further to the Brundtland Report, Our Common Future (1987) this paper extends the model of sustainable practices of ‘interconnecting people, processes and environment’ (Hethorn and Ulasewicz 2008) to the cotton-growing farmer community and users of cotton among organizations and Indian designers. Presently, 96% of India's cotton cultivation is under Bt (*Bacillus thuringiensis*) cotton crops, the first genetically modified crop to be approved for cultivation in India in 2002. While introduction of Bt cotton led to a dramatic increase in production across cotton producing states, there have also been controversies regarding allegations that it has spurred farmer suicides in the country, thereby pointing to the unsustainability of these genetically modified seeds. The greatest sustainability challenges for cotton cultivation are to reduce pesticides, fertilizers and water use while promoting better working conditions and financial returns for farmers. Organic cotton cultivation is a system that does not use synthetic pesticides, fertilizers, growth regulators or defoliants. Kala cotton is an indigenous, organic, rain-fed crop growing in eastern Kutch, Gujarat. This species of cotton offers obvious benefits including healthier soil quality and place less demand on the scarce water resources. In order to explore the possibilities of Kala cotton, some non-governments organizations (NGOs) are engaging with farmers to research about the crop to facilitate collaborations with weavers. Some fashion designers, online crafts and even a large textile mill are using Kala cotton for fashion apparel. Through survey and interviews of a sustainable fashion designer and an NGO, this paper discusses the resurgence of Kala cotton.

Keywords: Kala cotton, farmers, weavers, sustainability

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Introduction

Further to the Brundtland Report, *Our Common Future* which emerged from the 1987 World Commission on Environment posited sustainability as a realisable condition through the convergence of environmental, social and economic action, professionals have the ability to design systems that link human wants and needs through the design process using sustainable and ecological materials (Esslinger, 2011). Victor Papanek (1971) urged design professionals to commit to a higher social responsibility by adopting a sustainable design approach to determine future environments that will not intensify the environmental crisis. Adding to the advancement of Papanek's (ibid.) theory to the implementation stage by McDonough & Braungart (2002), this paper extends the model of sustainable practices of 'interconnecting people, processes and environment' (Hethorn & Ulasewicz, 2008) to the community of farmers and weavers of the indigenous Kala cotton yarn, fabric and textile products by independent organizations and Indian designers.

Cotton (*Gossypium hirsutum*) is a *kharij*¹ crop grown for its cash and fibre-yielding value cultivated under rain and irrigated conditions. The total climatic water requirement of cotton is about 700-1000 mm, which depends on the time of sowing and varies according to genotype, region, soil and management by farmers (Bhaskar *et al*, 2005). Even though cotton is a natural fibre, the large amount of water required by this crop is a matter of concern, and therefore minimizing water usage is imperative for it to be sustainable. However, 99 percent of West African cotton is rain-fed as is a large proportion of Indian cotton (Fletcher, 2008). Cotton crops alone account for 24% of the total global use of pesticides (Quinn, 2010). The greatest sustainability challenge for cotton cultivation is the need to reduce pesticides, fertilizers and water use. Organic cotton cultivation eschews the use of chemical pesticides, fertilizers, growth regulators or defoliants (Fletcher, 2008) as natural methods are used to control pests and weeds. Organic production causes singular reduction in the toxicity profile of cotton to zero.

The focus of this paper is on *Kala* cotton -an indigenous cotton that grows almost exclusively in the Kutch² area of Bhuj district of Gujarat in India and the commercial opportunities emerging from the increasing use of this fibre as an example of a sustainable fibre-yarn-textile chain enabling sustainable livelihoods for farmers and weavers.

Methodology

Based on a survey of the Kutch region, this paper adopts a triple-pronged approach to study the experiences of weavers of Kala cotton; the initiatives of Khamir – an organization for the promotion of traditional handicrafts and associated practices including the production and promotion of Kala cotton; and the endeavors of design professionals engaged in the use of Kala for the development of 100% organic textile products. The participant stakeholders' lived experiences are studied through participant observation and in-depth interviews to understand their motivation in using the indigenous Kala cotton for sustainable livelihoods.

Bt Cotton in India

In the last decade, there has been considerable debate about the cotton problem³ in general and controversy about Bt (*Bacillus thuringiensis*) cotton in particular. While cotton has been cultivated for about five thousand years, Bt cotton is a relatively recent development of a genetically modified (GM) transgenic cotton developed by the techniques of genetic engineering that has insect-repellant toxins particularly against several bollworm species. Gruere and Sengupta (2011) claim that with the development of global agricultural corporation Monsanto's GM cotton seeds, Bt cotton was the first such crop approved for cultivation in India in 2002. This increased the area of cotton cultivation to 6.2 million hectares in 2007 (The Hindu, 2007). The official acknowledgement of Bt cotton for having increased production notwithstanding, this strain of cotton is highly controversial in India. Critical examination of GM crops in some countries including Africa, China and India has led to the conclusion that their performance and impact has in fact, been 'highly variable, socio-economically differentiated and contingent on a range of agronomic, socio-economic and institutional factors' that have obstructed the formulation of evidence-based policy (Glover, 2010). The benefits of its adoption for small landowners and farmers remain questionable.

Among other allegations, Bt cotton has been held responsible for being the main reason for several cases of farmer suicides across different parts of India. This purported cause and effect phenomenon has been a highly controversial issue particularly in the cotton growing states of Madhya Pradesh, Maharashtra, Andhra Pradesh and Tamilnadu (Krishnakumar, 2005; Nadal, 2007; Sahai, 2005). While environmentalist and activist Vandana Shiva attributes the spate of suicides particularly among Bt cotton farmers to these transgenic seeds, other researchers have refuted the alleged relationship between the suicides and Bt cotton cultivation and have posited other plausible causes (Gruere *et al.* 2008; Gruere and Sengupta 2010, Shah 2012). In reference to the history of cotton farming in India, Prasad (1999) has analyzed the motivations for the disregard of *desi*⁴ cotton species in spite of their sturdy and pest resistant nature and the reasons for their perceived 'inferior' status as compared to hybrid and American varieties, claiming the dependence of farmers on pesticide dealers and the increasing expenditure on irrigation as the other possible reasons for these suicides. Based on the Parliamentary Committee report on Bt crops in 2012, a ten year moratorium has been imposed terminating all ongoing trials of transgenic crops.

Kala Cotton

Archeological evidence shows that the date of cotton samples found at Mohenjo Daro sites such as Dholavira can be dated between 3250 and 2750 BCE produced from a cotton plant closely related to *Gossypium Arboreum* type. The indigenous *Arboreum* and *Herbaceum* varieties have been the predominant strains of cotton grown in India. Kala cotton is not a recently developed strain of cotton crop but is in fact, an indigenous strain of rain-fed cotton also referred to as 'old world' cotton. It had been a part of India's cotton export trade to Britain during colonial rule in India until in the last sixty years, the cultivation and weaving of Kala cotton almost disappeared.

Kala means 'black' in most Indian languages, often leading to the misconception that Kala cotton is black in colour whereas it actually refers to the boll after extraction of the cotton fibre. Belonging to the *G. Herbaceum* type with seed type usually of V-797 and G. Cot. 21., it can be recognized by its main feature of short to medium staple length of 20-22 mm. Its boll type is either closed or semi-open which is plucked along with the calyx.

Kala cotton has distinctive characteristics:

- i. It is an indigenous strain of cotton. People of Kutch refer to this type as Rammol⁵ as it is organic by default. The prime differentiator between the genetically pure Kala cotton and the genetically modified Bt cotton is that though varieties can be developed by 'Pedigree and Back Cross breeding' methods, modern genetic engineering procedures are avoided (Khamir, 2012).
- ii. Kala cotton is sturdy and durable even in the face of difficult land and weather conditions. It imposes less demand on the scarce water resources making it very water-efficient. Studies have shown that approximately 1400 litres of irrigated water are required to grow one kilogram of other types of cotton. Kala is completely rain-fed and grows easily even in the arid, drought-prone areas of Kutch where there is less than 40 cm of rainfall. Its drought tolerance is so high that it does not require supplementary irrigation.
- iii. Rain-fed cotton offers obvious benefits including healthier soil and less demand on the water infrastructure, although there are trade-offs. Being rain-fed, the Kala cotton plant receives sporadic water which causes its fibres to be of coarser quality.
- iv. Kala cotton is ecologically more benign than other varieties of cotton. For the most part, it is grown in Kutch as a rain-fed crop with chemical fertilizer and pesticide-free approach which leads to healthier soil quality and makes it organic by default. While Energy - whether electrical or diesel, required for raising and supplying water for irrigation, as well as for the manufacture and transportation of chemical fertilizers, there are side effects wherein greenhouse gases are produced, the environment, soil and water are poisoned (Khamir brochure). While irrigated cotton in Gujarat generates 0.63% of greenhouse gases, other rain-fed hybrids in Gujarat generate 0.58% while Kala cotton in Kutch generates 0.11%, testimony to the fact that Kala cotton production in Kutch is among the most energy-efficient and carbon neutral in the world (ibid).

Kala Cotton Initiative by Khamir

A joint initiative of Kachchh Nav Nirman Abhiyan⁶ and the Nehru Foundation for Development, Khamir at Kukma, Bhuj is an organization engaged in the support and sustenance of traditional handicrafts, practices and culture, community and local environments. It was established in 2005 with the prime objective of addressing the critical situation that emerged after the earthquake in 2001 that devastated Bhuj. Rebuilding the area brought industrialization and employment in mills but also adversely impacted cultural livelihoods. With the introduction of industrialized textile production that catered to the demands of the export market, traditional weaving practices and local partnerships disappeared as did the cultivation of Kala cotton. The number of weavers in Kutch

declined from over 2000 in the mid-1990s to only 600-700 at the time. Small-scale weavers faced a dual problem – they were unable to buy raw materials in bulk, nor could they adequately cater to changing market dynamics. To address the problems, it was deemed imperative to start a three-stage initiative including initial explorations, development of a local value chain and subsequent scaling up with timely financial and technical support. Collaboration with other organizations⁷ was the key to the strategy.

For this purpose Khamir initiated the Kala Cotton Initiative in collaboration with Satvik⁸ and Setu Resource and Support Centre for sustained support of indigenous cotton farming followed by handloom cotton weaving. The preservation of agricultural and artisan livelihoods in Kutch necessitated raw material that was grown in the vicinity, was environmentally benign and held value for community. Khamir leveraged the potential of Kala cotton which was found to adhere to these criteria that re-iterated local and cultural practices in a modern idiom. Textile experts were consulted to address the challenges of the conversion of short staple length fiber into yarn. The financial returns and cultural potential of this cotton was explained to the handloom weavers, some of whom were earlier mixing natural with manmade yarn. Weaving was a challenge necessitating changes in the loom configuration with differing yields and shafts. After prolonged experimentation with spinning and weaving, the first Kala cotton products were produced in 2010. The use of the original old world cotton to create fabric in an integrated chain was reminiscent of the legacy of spinning and weaving khadi⁹ cloth and its conversion into clothing and accessories in pre-independent India, reinterpreted for the modern marketplace. In creating a multi-layered value chain for marginalized communities using local cotton and traditional skills, the Kala Cotton initiative by Khamir is an example of an integrated approach to indigenous cotton cultivation and textile production in tandem with local ecology by facilitating synergized linkages for sustainable livelihoods for marginalized communities of farmers, spinners, ginners and weavers that have, in turn, encouraged its continued cultivation and use.

Spinning

Spinning of Kala cotton yarn is undertaken on hand-operated charkha¹⁰ at the hand spinning unit has been established by a hand spinning group in Manjal village with about ten women spinners. In some units there is a simultaneous use of the semi-mechanized, solar energy powered *Ambar* Charkha that reduces the rigour and time required for hand spinning and also enables experimentation in blending of short-staple Kala cotton yarn with longer staple natural yarn. To retain the authenticity of Kala it was necessary to monitor and ensure that synthetic or long-staple cotton is not blended with it. Therefore extending the scope of village level spinning mills, the processes of ginning, carding and spinning of Kala cotton are also carried out at the Ramakrushna Spinning Mills at Kutch where three hundred kilos of single twenty count yarn are spun daily.

Weaving

Khamir engages with weavers directly and provides them with yarn for production. The tangible outcome of its initiative in promoting indigenous cotton is that the scale has

increased from 300 kilos to 30,000 kilos with a turnover of 14 million rupees (~209,160 USD) in 2015. The human factor in terms of the number of people engaged with Kala and earning livelihood include farmers (24 families), spinners (10 families), dyers (2 families) and weavers (70 families). Farmers receive a premium price and are therefore encouraged to grow indigenous cotton. Higher wages and market support have also contributed to the increase in the number of weavers. Remuneration for weavers is eighty rupees per metre which generates monthly income of minimum 10,000 rupees (~150 USD). There has been sectoral increase in the remuneration for weaving in Kutch. The cumulative result is that the value chain which had deteriorated for several decades is exhibiting resurgence in Kala cotton.

S No	Particulars	2014-15	2015-16
1	Kala cotton fabric (metres)	64,13,334	1,03,74,840
2	Kala cotton yarn sale (rupees)	16,59,558	29,69,536
3	Retail sale (metres)	6,56,626	19,71,195
4	Wholesale (metres)	57,56,718	84,03,645
5	Kala cotton weavers	34	49
6	Amount of purchase from weavers (metres)	44,84,349	57,66,628
7	Average monthly payment to weavers (rupees)	10,000 to 12,000	14,000 to 15,000

Fig 1: Details of finance and sales of Kala cotton
Source: Khamir

Though statistics indicate relative annual increase in demand of Kala, a substantial increase in sales is required for its sustainability. Khamir's revivalist efforts are evident also in the Makhel pocket of Adesar in the east Kutch from where it purchases cotton from 160 out of approximately 4000 Kala cotton farmers of Kutch. Of the remaining approximately 700 weavers at Adesar, only around 60 of them use Kala cotton. The threat of inconsistent demand, plagiarism from the powerloom sector and substitution by cheap non-organic cotton are impediments to the revival of Kala cotton on a larger scale.

To increase the marketability of the products and to project these handmade, environment friendly, limited edition products in a niche category, brand 'Kala' was positioned as aspirational synonym for the urban designer markets. From 2010 onwards designer-entrepreneur Archana Shah of Bandhej has mentored the entire product development. The products made during pilot phase were marketed to various designers and boutique owners of varied demographic profiles, and the feedback was reviewed. The entire Kala cotton initiative was launched at the Khamir exhibition '*Retelling the stories of crafts of Kachchh*' at Chinmaya Mission Hall, New Delhi in December, 2011.

The Vankar Community

In 2001, in the barren wetlands of the Rann of Kutch, an earthquake measuring 7.7 on the Richter scale with its epicentre 20 kilometres from Bhuj, devastated over a million people causing death and destruction to villages and towns of Anjar, Bhachau and Rapar

(Vasudev, 2017). The resilience of the local people was instrumental in starting projects to revive textiles and handicrafts in the region. The Bhujodi village which has been home to the *vankar* (weavers) reclaimed itself to emerge as a hub for handloom cotton and woollen textiles. Even fifty years earlier, farming and weaving were the only two professions of Bhujodi inhabitants, each carrying on for half the year. But due to inconsistencies in the onset of monsoon, farming became unreliable which led to the shift from farming to weaving for sustainable livelihoods.

Weaver families often claim kinship with each other; several members are recipients of national level awards¹¹. Shamji Vankar Vishram is one of the six brothers who oversees Vankar Vishram Valji Weaving, a family based dyeing and weaving business. His brother Arjun bhai points out how the workspace is designed with due consideration of natural elements of the sun and wind so that there is minimum or no use of electricity. There are looms available for young aspirants who want to learn weaving as a profession or hobby, or even to augment their formal education. Along with contemporary designs, some of which are chemical-dyed or use synthetic wool, the focus is on traditional designs that have been passed down the generations of this family. Over the last twenty years, Shamji has developed a thriving enterprise for Indian and international clients with adequate work for over sixty weavers. His own journey as a master craftsman, entrepreneur and recipient of the UNESCO Seal of Excellence mirrors and chronicles that of his family, the Bhujodi village and the craft of handloom weaving.

Chaman Siju hails from eleven generations of weavers and is committed to redefining the textile lineage of his family. His father Premji Vankar has been a National Award winner in 2001 as are several other members of the family including his brothers, mother and sister-in-law. A graduate of Judy Frater's *Kala Raksha* (Preservation of Traditional Arts) *Vidhyalaya* (school) which is the first institute of design for traditional artisans, Chaman Siju's weaving skills were supplemented and enhanced by the development of a contemporary design aesthetic that drew from traditional tenets. Committed to promoting indigenous artisans, his work iterates the importance of using indigenous materials including Kala cotton for regular orders as well as its potential as a fashion fabric to uplift the artisans working with traditional handlooms. At Textiles India 2017 in Gandhinagar, Gujarat – a mega event which celebrated fabrics from various regions of India, Kala cotton received a boost when the Prime Minister wore a Kala cotton stole by Chaman Siju. He aspires to create a local museum to house a collection of authentic Kala cotton and heirloom textiles from Gujarat.

Kala Cotton And Fashion

At the intersection of people, processes, and the environment, design professionals constitute an important component in the development of sustainable products. They are able to make decisions related to development processes and procedures that affect the final sustainability of a product (Hethorn & Ulasewicz, 2008). Understanding the perceived and lived experiences of design professionals may result in comprehensive descriptions that lead to a greater understanding of the essence of the phenomenon (Moustakas, 1994) of the development of 100 percent organic cotton textile

products. Alison Welsh, Head of Fashion Research, Manchester Metropolitan University collaborates with Shamji Vankar for her project 'Field to Fashion' in conjunction with Khamir to explore the possibility of creating awareness about Kala cotton in the global market and place it in a niche segment for its strength, durability and striking resemblance to linen, and the application of this fibre in developing denim fabric. In India, contrary to the assumption that there would be a lukewarm response to the short-staple yarn, some fashion labels known for their conscious and conscientious approach to material sourcing and production including *Bandhej* by Archana Shah, *Cell DSGN* by Shani Himanshu, *Maku Textiles* by Shantanu Das, *Anavila* by Anavila Mishra, *Deepika* by Deepika Govind, *AND* by Anita Dongre Design, *Urvashi Kaur* by Urvashi Kaur and others have showcased Kala cotton for its unique visual and textural qualities. London-based *Stitch* by Stitch sources Kala cotton for home furnishings. The certification of Kala cotton has given authenticity and value to the product range. Kala cotton is also in the process of registration as a trademark.

Conclusion

The integrated endeavour of Khamir in supporting farmers and encouraging the *vankar* of the Bhujodi village of Kutch and fashion designers who have exhibited both professional and personal identification as well as commitment to sustainability through their role in the use of this indigenous cotton has resulted in an upsurge of consumer interest in Kala. Today there are 4000 small and marginal farmers based in 30 villages of Rapar and Bhachau blocks of Eastern Kutch and in the Patdi, Dasada and Mandal blocks of Surendranagar in Gujarat cultivating the around 15000 tons of cotton every season. The narrative of Kala cotton is relevant to academia and conscientious consumers as an example of the effectiveness of 'localism' (Fletcher 2008) by espousing the use of indigenous fibre grown within 150 miles. The impact of their initiatives has resulted in the revival of an erstwhile unsustainable cotton crop as a sustainable alternative to Bt cotton. The increased demand for authentic Kala cotton products tells the story of this indigenous cotton in a 'voice' which is authentic and sensitive to the ethos of the land.

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Notes

¹Indian crops are classified into Kharif and Rabi, sown according to seasons. Kharif crops are sown and harvested between July - October at the onset of south-west monsoon.

² Also spelt Kachchh

³The 'cotton problem' related to the policy issues of the global cotton market received widespread coverage in the international media between 2002 and 2004 following the WTO General Council's decision on multilateral trade negotiations and cotton subsidies.

⁴ Indigenous, local

⁵*Ram* refers to an Indian god and *mol* means crop

⁶Also referred to as Abhiyan, it is a collective of Kutch based development organizations governed by community initiatives

⁷Khamir collaborates with several organizations for mutual benefit. It shares common goals with Kachch Nav Nirman Abhiyan (KNNA) related to Kutch crafts which provides a common platform for their craft-related activities. The Khamir Campus was built through the initiative of the Nehru Foundation for Development (NFD) and KNNA for funding to build craft parks in earthquake-affected regions. It partners with Craftroots to collaborate on varied craft development projects. Kutch Mahila Vikas Sangathan (KMVS) helps to link groups of women garbage collectors to create a local supply chain for Khamir's Plastic Recycling Project.

Khamir is supported by All India Artisans and Craftworkers Welfare Association (AIACA) to improve health and safety conditions for Indian textile workers including the effluent treatment plant linked to Khamir's dyeing unit. The Friends of Women's World Banking is a premier financial institution that supports small scale entrepreneurs, particularly women as well as Khamir's Kala cotton initiative. Hunnarshala supports through seed grant and technical expertise. The Kandla unit of IFFCO helps Khamir with funds for artisan development, welfare activities, and promotion of craft products.

⁸Satvik is an association of organic farmers in Kutch

⁹Hand spun and hand woven fabric using natural cotton and silk yarn

¹⁰Indigenous spinning wheel

¹¹ Shilp Guru and National Awards presented to master craftspersons

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