



## National Organic Cotton Policy Gap Analysis

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## Executive summary

Pakistan is the fourth largest cotton producer and the third largest cotton consumer in the world. The cotton crop is the mainstay of its economy. Last year, the production of cotton was reduced due to multiple factors. Two particularly important factors affecting cotton production and its quality are the indiscriminate use of pesticides, leading to insect resistance/pressure, and the use of chemical fertilizers, which deteriorate the quality of the soil. Of the total pesticides sprayed, 80% are used on cotton crops (Qamar et al. 2008, p. 137). Cotton growers use more pesticides by increasing the number of sprays/dosages, which they believe increases crop production; however, these poor preventive measures not only damage the crops but also put farming communities, including women and children, at risk.

Organic cotton is a commodity that can be produced and certified to organic agricultural standards. Its production sustains the health of soils, ecosystems, and people by using natural processes rather than artificial inputs.

CABI, under the Cotton Advocacy for Policy and Seed (CAPAS) Project, conducted a gap analysis to review the gaps in existing policies, documents, and frameworks, and to suggest a way forward for the government with the engagement of relevant stakeholders for the promotion of organic cotton in a country.

The analysis found that farming communities are excited to produce profitable organic cotton, but that they need support from government in overcoming the obstacles in the way of the production of organic cotton in the country. Most importantly, government at the provincial and federal level should focus on the development of organic agriculture, especially organic cotton policy, with the engagement of the relevant stakeholders. There is also a need to establish seed multiplication through the Organic Cotton (ORCO) Hub and Breeding Programme with a focus on immediate, medium-term, and long-term approaches, engaging the seed research institutes, seed companies, the Federal Seed Certification and Registration Department (FSC&RD), farming communities, etc. Seed quality assurance at farmer, field, and market level is needed to ensure non-genetically modified organism (GMO) seed availability. There is great potential to produce organic cottonseed, especially in the hotspots/virgin lands of Balochistan, Sindh, and Punjab. The Government of Balochistan is already implementing the organic cotton project in the Barkhan and Lasbela districts with funding from the Laudes Foundation. There is a need to establish a National Certification and Laboratory Testing System to support the farmers for the certification and testing of samples, with subsidization from the government. The supply chain of organic inputs such as biopesticides, biofertilizers, etc, urgently needs to be developed in the organic producing areas of the country for the production of organic cotton on a sustainable way. An ethnobotanical survey of the hotspots of the organic cotton growing area may help identify local plant varieties that can be used as biopesticides and help develop a new supply chain for medicinal plants and their products for the income generation and livelihood improvement of farmers. The analysis found that the organic cotton marketing system is weak in the organic cotton growing regions: government needs to formulate policy agenda for developing the cotton industry or supply chain, as well as to deliver monetary benefits to farmers in the shape of premiums/support prices for the production of organic cotton. The analysis also found that the State Bank of Pakistan (SBP) needs to announce a special credit facility for organic cotton farmers, keeping in view the local documentation status/facilitation for Balochistan.

Pakistan can harvest the benefits from emerging international demand for organic cotton through making concrete interventions, for example by immediately starting a programme for the capacity building of organic cotton farmers in general and the farmers of Balochistan in

particular in terms of improving their knowledge and skills in integrated crop management and good agriculture practices. The current government is keen to put a long-term strategy in place to increase organic cotton area and production, development of new high-yield varieties, the establishment of supply chains, and trying to facilitate farmers in getting good quality inputs, credit, and due prices for their crops. Cotton is also vital in achieving the Sustainable Development Goals relating to poverty, sustainable agriculture, and gender development; for reducing poverty through engagement and poverty alleviation; and for improving the livelihoods of all associated farmers and their families.

## Objectives of the gap analysis

Pakistan harvested its first organic cotton bale in Balochistan province. This province has great potential to produce organic cotton as it has large areas of virgin land. There is tremendous scope to increase Balochistan's contribution through an improved policy and regulatory environment. This analysis attempts to highlight the existing policies (at both national and state level) and regulatory frameworks, if any, that could act as a catalyst in the development of organic cotton in the province. It also aims to suggest new policies needed to scale organic cotton production in the province, as well as in the country.

### The scope of the assignment was as follows:

- to define the role of regulations, policies, procedures, and guidelines in the policy framework for organic agriculture in Balochistan and Pakistan, with a special emphasis on cotton
- to gather and provide designate policy briefs, procedures, and guidelines defined to promote organic agriculture, especially cotton, in the province; also, to examine those policies that are detrimental to organic agriculture in general
- to identify policy advocacy bodies that can be approached for guidance and collaboration, including government departments that should be targeted for advocacy efforts
- to identify, discuss, suggest, and document implications and gaps in policy or regulation that should be included in the framework
- to engage in policy and advocacy for seeking subsidies or organic inputs (non-GMO seed, "desi" cottonseed, biopesticides, etc)
- to scan the evidence regarding non-GMO seed availability
- to identify demand and supply gaps for non-GMO seed and other inputs
- to identify the potential for non-GMO seed multiplication through organic farmers
- to identify seed certification gaps and challenges
- to determine institutional capacity regarding non-GMO variety development and seed multiplication
- to understand the supply and value chain of organic cotton
- to trace international and national key players in the GMO seed sector, fertilizers, and potential resistance at each level
- to determine the status of credit disbursement and training regarding organic farmers in Balochistan
- to identify the relevant members for provincial working groups on organic cotton
- to identify organic cotton growth hotspots in Sindh, Balochistan, and Punjab, focusing on virgin lands

## Gap analysis approach

The analysis entails a review of the existing literature relevant to cotton policy, the regulatory framework, and the status of various convention/protocols to which Pakistan has been signatory. It identifies gaps in the existing documents and makes recommendations to address them. Specific information relevant to organic cotton is negligible.

A questionnaire was designed and circulated to more than 25 different stakeholders of the cotton supply chain including government institutes, ministries at the federal level and relevant agriculture departments from Balochistan, Sindh, and Punjab. They were approached to get insights and to make connections for further support on policy work. Questions asked can be found in the Appendix.

## **Acknowledgements**

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We would also like to thank those stakeholders who responded to the GAP analysis questionnaire and shared their knowledge to help produce this report.



## Abbreviations

AARI	Ayyub Agriculture Research Institute
API	Agriculture Policy Institute
APTMA	All Pakistan Textile Mills Association
BASPS	Balochistan Agriculture Sector Policy and Strategy
Bt	<i>Bacillus thuringiensis</i>
CAPAS	Cotton Advocacy for Policy and Seed
CCRI	Central Cotton Research Institute
DAE	Department of Agriculture Extension
FSC&RD	Federal Seed Certification and Registration Department
GMO	Genetically Modified Organism
IFPRI	International Food Policy Research Institute
KCA	Karachi Cotton Association
KSC	Kauns Seed Corporation
MNFS&R	Ministry of National Food Security & Research
NIA	Nuclear Institute of Agriculture
NIAB	Nuclear Institute of Agriculture and Biology
NIBGE	National Institute for Biotechnology and Genetic Engineering
NIGAB	National Institute for Genomics and Advanced Biotechnology
ORCO	Organic Cotton
PARC	Pakistan Agriculture Research Council
PCCA	Pakistan Cotton Cess Act
PCCC	Pakistan Central Cotton Committee
PCCO	Punjab Cotton Control Ordinance
PCGA	Pakistan Cotton Ginners Association
PCSI	Pakistan Cotton Standards Institute
PSC	Punjab Seed Corporation

PTP	Pakistan Textile Policy
SAB	Sindh Abadgar Board
SBP	State Bank of Pakistan
SDPI	Sustainable Development Policy Institute
TSC	Tassco Seed Corporation
TWG	Technical Working Group
ZTBL	Zarai Tarqati Bank Limited

## Introduction

Cotton is the major cash crop in Pakistan, contributing 9.5% to the GDP and 41.37% in employment by employing more than 15 million people. It directly and indirectly fetches US \$3.5 bn as a foreign exchequer. Punjab produces 79% and Sindh produces 20%. Balochistan and Khyber Pakhtunkhwa both collectively produce just 1% of cotton. Pakistan received PKR 544 bn, equivalent to US \$3.47 bn, from textile exports in 2018–19. Textile exports accounted for PKR 285 bn from hosiery (13%), PKR 259 bn from readymade garments (11%), PKR 227 bn from bed wear (10%), PKR 211 bn from cotton fabric (09%), PKR 110 bn from cotton yarn (5%), and PKR 77 bn from towels (3%) (Gallup Pakistan 2019).

In Pakistan, the textiles industry consists of 11.30 m spindles, 3 m rotors, 350,000 power looms, 18,000 knitting machines, and a processing capacity of 5.2 bn. It has 700,000 industrial and domestic stitching machines. In addition, it has a strong fibre base of 13 m bales of cotton and 600,000 tons of manmade fibres, including polyester fibre. There are 21 filament yarn units, with a capacity of 100,000 tons. The filament and yarn industry are supported by the Purified Terephthalic Acid plant, which has a 500,000-ton capacity. A complete textile value chain thus exists in the country, which is rare in the world: many of Pakistan's competitors only have a primary base or a finished base textile industry (SDPI [Sustainable Development Policy Institute] 2018). The income from cotton is important to cotton producing households, accounting for nearly 40% of total household income among landowners and nearly 45% of total household income among sharecroppers (International Food Policy Research Institute [IFPRI] 2008).

Pakistan is one of the leading countries producing high volumes of cotton but two particularly important factors that have affected cotton production and its quality are; the indiscriminate use of pesticides and chemical fertilizers. Of the total pesticides sprayed, 80% are used on cotton crops. Cotton growers use more pesticides by increasing the number of sprays/dosages, which they believe increases crop production; however, poor preventive measures not only damage the cotton crop but also put farming communities at risk.

Prevailing climatic conditions, water shortages, increasing health expenditures on skin, and cytogenic diseases are massive signs of a need for a shift in the current cotton production system. The need to cope with climatic severity and to meet increasing organic cotton demands from the US, Europe, the UK, and other high-end apparel markets has sent strong signals to developing countries such as Pakistan to make the necessary shifts at policy and field level to reap the financial incentives associated with this huge demand and respect for organic cotton production and the respective organic cotton supply chains.

In its latest reports, the US Rodale Institute has used long-term field experiments to prove that organic crops, including cotton production, has the potential to surpass conventional cotton production and are greatly beneficial for soil health, human health, animal health, and the environment ([www.rodaleinstitute.org](http://www.rodaleinstitute.org)). The Rodale institute's analysis found that organic farming (before actual production) was "significantly more environmentally friendly". It also found that organic cotton farming is less likely to contribute to global warming, acidification, and eutrophication than conventional cotton farming.

The current government of Pakistan is keen to form a long-term strategy regarding sustainability as well as to increase the area under cotton production, develop new high-yield varieties, establish supply chains, and make efforts to facilitate farmers in achieving good quality inputs, credit, and due price for their crops, especially cotton, as the textile sector rests on cotton production in Pakistan.

Balochistan is the largest province of Pakistan (forming 46% of the country's area) and is considered a land of opportunity, especially for developing mineral, livestock, fruit, and organic agriculture. This is because much of its land remains unutilized due to a lack of well-connected physical, technological, and human infrastructure. After the 18th amendment of Pakistan's constitution (dealing with the devolution of powers to the provinces), the provincial government of Balochistan is keen to take proactive initiatives for making the province a hub for organic agriculture, especially cotton.

Although Balochistan is blessed with huge but untapped resources of all types for promoting agriculture, it depends on Punjab and Sindh for agricultural inputs, including seed. Balochistan's department of agriculture has recently made its first ever agriculture sector policy and strategy for agriculture promotion, assisted by the FAO and financial assistance of USAID and the Department of Foreign Affairs and Trade, Australia.

## The Organic Cotton Production Initiative in Balochistan

Organic cotton is grown using methods and materials that have a minimum impact on the environment. The Laudes Foundation (formerly the C&A Foundation) launched an organic cotton production project in Balochistan (2016–19) with the WWF Pakistan as the implementing partner, along with Department of Agriculture Extension (DAE) Balochistan. Responses to the current gap analysis by the Director General of DAE Balochistan show that 2800 farmers from the Barkhan and Lasbela districts of Balochistan have been trained in the importance of organic cotton, associated incentives, capacity building on agronomic practices and bio input preparation methods, while DAE field staff have been engaged for last three years in the organic cultivation of cotton and the development of a viable supply chain.

The third year of the organic cotton production project (2018–19) marked its success, with 181 farmers from both project districts achieving organic certification. The project was extended for another year, which led to the certification in 2019–20 of an area of 7200 acres farmed by 883 farmers, with a production of 5455 metric tons of organic seed cotton. The project



played its part in linking the supply chain actors and project farmers and ultimately in developing an organic cotton supply chain, which resulted in the procurement of organic cotton produce by the ginners and the production of around 9800 organic cotton bales. Keeping in view the importance of the cotton sector, especially for the promotion of organic cotton in Pakistan, CABI (with funding from the Laudes Foundation under the CAPAS Project) conducted an organic cotton policy gap analysis for further support to policy at a national and provincial level in the country, with engagement from stakeholders.

## Review of existing policy documents (1923–2020)

The Pakistan Cotton Cess Act (PCCA) 1923 (16 March 1923, modified 1 June 1951 after the creation of Pakistan) refers to cotton duties imposed on cotton ginning and other supply

chain activities and cotton rate fixation through the Gazette, but contains nothing on the importance of organic cotton or the production system in the country (PCCA 1951).

The PCCC consists of:

- one cotton botanist or cotton breeder from Punjab, Sindh and Balochistan
- one representative of cotton growing interests from Punjab, Sindh, and Balochistan
- one representative of the cotton ginnerers
- one person from the Ministry of Textile Industry
- one representative of the cotton merchants
- one representative of the cotton exporters
- one representative of the banking interests, nominated by the Ministry of Finance

The Cotton Transport Act 1923 provides guidelines for declaring a cotton protected area; and for any restrictions imposed on the transport of cotton in certain circumstances for the purpose of maintaining the quality and reputation of the cotton grown in any area in the province, to prohibit the importation of cotton (or of any specified kind of cotton) into that area by rail, road, river, or sea, or by any one or more such routes.

The Punjab Cotton Control Ordinance (PCCO) 1966 is a major document for cotton-related matters in the Punjab. It covers almost all aspects of matters relating to cotton processing, such as ginning, pressing, and following the Pakistan Sustainable Cotton Initiatives. This ordinance says that no person shall commence the construction of any new factory, or make any extension to an existing factory that is likely to increase its capacity for ginning or pressing cotton or crushing cottonseed, unless they have been granted a licence by the competent authority. This act also set a standard for the weight of a cotton bale (standard net weight of 170 kg, with a variation of plus or minus 5% at 8.5% moisture content and with an average weight of 17,000 kg for a cotton lot of 100 bales, with variation of up to plus or minus 3%). It also prohibits contamination of any foreign metal, especially fibres other than cotton, as a punishable offence. The PCCO is completely silent on the production, processing, and marketing-related matters of organic cottonseed or cotton production. The PCCO 1966 allows the government to impose a restriction on growing any cotton variety to avoid mixing different varieties of cotton to make a particular area for a specific trait-containing variety; no person will be allowed to sell seed of any variety or hybrid except the one allowed to be grown in the area. This clause of the PCCO 1966 is conducive to promoting organic cotton in certain specific areas first, then expanding its cultivation to other areas if sustainable and economically viable results are achieved.

Pakistan established its first Pakistan Cotton Standards Institute (PCSI) in Karachi, along with two regional offices at Multan (Punjab) and Sukkur (Sindh), under the Cotton Standardization Ordinance 2002. This ordinance gives authority to the PCSI to establish more regional offices according to the need of the country. As Balochistan is growing its cotton production area, especially organic cotton, there is a need to establish a regional PCSI office in Balochistan.

These policy measures have an immense impact on the cotton value chain, directly and indirectly. The production and processing of cotton employs more than 15 million people from farm to retail level (40% industrial labour and 40% consumers of bank credit, consisting of 54% of total exports and an 8% share in GDP) and generate the lion's share of the foreign exchange. Pakistan is the fourth largest cotton producer in the world and the third largest consumer of cotton; as such, it must convert its cotton comparative advantage into a competitive advantage (Pakistan Textile Policy [PTP] 2015).

International markets are always viewed as prime target markets and steps are taken to increase shares in those markets. Unfortunately, Pakistan's cotton value has decreased by

about 10 cents per pound due to poor grading and standardization, high levels of trashes, and the mixing of various cotton varieties at every step of the cotton value chain (PTP 2015).

Pakistan is blessed with a complete textile value chain, from production to retail. Many competitive countries only have primary or finished textile bases. However, although existing tariffs in textile industry protect local cotton industries, this is a major cause of inefficiency along the cotton supply chain and makes Pakistan textile products undesirable and uncompetitive in international markets (PTP 2015).

The PTP 2014 focuses on establishing model cotton trading houses, plant breeders' rights, to facilitate research, and the availability of certified cottonseed, but it is completely silent on cotton production, its management, standardization, and the share of organic cotton production to acquire benefits associated with organic cotton due to its eco-friendly and health benefits. It suggests establishing cotton grading and classification for proper cotton premium payments, but no incentive is suggested for organic cotton growers and input suppliers.

The government of Balochistan has been empowered in devising any policy document relating to agriculture because of 18<sup>th</sup> connotational amendment, but the federal government has to play a role in any cotton policy because cotton is under the Ministry of National Food Security and Research (MNFS&R), the Ministry of Textile, the PCCC, and other stakeholders (Balochistan Agriculture Sector Policy and Strategy [BASPS] 2015). This objective of BASPS 2015 will be achieved through the proactive role of the provincial government in making required institutional, legal, and incentive systems to support agriculture in terms of job creation and value addition of agriculture products, including cotton. Women are among the most disadvantaged segment in Balochistan, with a poor literacy rate (23%), the highest maternal mortality rate (6.3%), the lowest participation in the labour force (5.1%).

## Seed company regulations

A "seed business" is defined in the 2015 Seed Amendment Act as any commercial operation of seed involving the production, processing, conditioning, packaging, distribution, import, and export of seed. Section 22A of the Business Rules of FSC&RD allows the registering or enlisting of plant varieties or hybrids imported for general cultivation on the basis of the results of multi-location trials for at least two crop seasons. A different ordinance was approved by the federal government for the registration of varieties and the protection of the rights and legal status of seed breeders/businesses, as well as the promotion of further research and development in the seed domain in the country to meet future challenges.

## Biosafety rules and guidelines for seed

The Pakistan Biosafety Rules and National Biosafety Guidelines of 2005 are also important components of the seed sector legal framework. Framed under the Pakistan Environment Protection Act 1997, these rules regulate various aspects of the import, export, manufacture, trial, and sale of GMOs. They prohibit the import, export, sale, purchase, or trade of GMOs and their products without obtaining a licence from the federal government.

The rules also provide for the establishment of three committees:

- the National Biosafety Committee
- the Technical Advisory Committee
- the Institutional Biosafety Committee

Pakistani seed companies were limited to the multiplication of basic seed obtained from seed corporations. However, incapacity and lagging research and development helped the private seed companies take the seed development business into their own hands. Private seed sector became the lead providers in several crops including cotton.

Under the Seed Act 1976, basic seed may be produced only by a public sector organization (for example a seed corporation). In practice, however, seed companies also produce basic seed of their own varieties. Two additional seed types are; certified seed and truthfully labelled seed. Certified seed is the progeny of basic seed, produced by registered growers of seed-producing entities and certified by the government. Truthfully labelled seed is (local or imported) uncertified seed sold under the Seeds (Truth-in-Labeling) Rules 1991. Ineffective monitoring and other issues have led to many bad practices in the seed industry, and this is a significant reason for the unavailability of pure non-GM cotton seed.

## List of organizations for developing bioproducts

A few major companies/institutes that may be engaged in the bio input supply chain are mentioned below for the organic cotton production system.

- [www.parc.gov.pk](http://www.parc.gov.pk)
- [www.go-organic.com.pk](http://www.go-organic.com.pk)
- [www.organeco.pk](http://www.organeco.pk)
- <https://van.com.pk/>

## Agriculture loan disbursement

The SBP has strong regulations regarding the agriculture loaning facility through more than 20 commercial banks, including agriculture-specialized loaning banks such as Zarai Tarqati Bank Limited (ZTBL), the National Bank, Punjab Bank, Sindh Bank, the National Rural Support Programme Bank, Finca, and other micro loaning institutes. Landholding and other legalities are considered hindrances, but the SBP welcomes any suggestions for making its agriculture loaning facility more responsive, especially during crop season, through one-window operation, particularly from ZTBL.

## List of stakeholders

The following ministries/departments/institutes/bodies have been identified and connected through CAPAS Project activities. These can be approached for guidance and collaboration for advocacy efforts and for further work on and approval of organic cotton policy.

Sr. no.	Ministry/department/institute/body	Role of the organization	Role for organic cotton promotion
1.	MNFS&R Islamabad	MNFS&R (or the Ministry of Agriculture) is a cabinet-level ministerial department of the Government of Pakistan responsible for implementing, enforcing, developing, and executing policy on agriculture, rice, livestock, fishing, and farming.	Supports policy work and the engagement of line departments, such as FSC&RD and the PCCC, in further work on the seed domain.
2.	PCCC Islamabad	Under MNFS&R, the PCCC is an independent and autonomous committee with the mandate of improving and developing the growing and manufacturing of cotton and cotton by-products through an extensive research and development programme. The PCCC has established a chain of research institutes across the country to conduct applied research on cotton. The PCCC is responsible for a mono-crop (cotton) but also for multidisciplinary activities, the conduct of National Coordinated Varietal Trials, legislative measures, and market and economic research on cotton.	Supports policy work and practical engagement for securing non-GMO cottonseed and developing non-GM varieties; varietal testing at different ORCO Seed Hubs.
3.	Pakistan Agriculture Research Council (PARC)	PARC is a top national organization working in close collaboration with other federal and provincial institutions in the country to provide science-based solutions to agriculture. PARC is to develop high-yield crop varieties for all ecological zones of the country, undertake aid, promote and coordinate agricultural research, arrange expeditious utilization of research results at farm level, establish research establishments (mainly to fill gaps in existing programmes of agricultural research), arrange the training of high-level scientific manpower in agricultural sciences, and generate, acquire, and disseminate information relating to agriculture through its media wing at National Agriculture Research Center Islamabad.	Supports policy draft preparation under the Organic Agriculture Institute of PARC; facilitation of farms at Balochistan Agricultural Research and Development Center for further field support; testing of biofertilizer products available with PARC.



4.	Agriculture Policy Institute (API) Islamabad	API is an important institute responsible for analysing the impact of important agricultural policies on relevant groups (such as consumers, processors, and exporters) and advising the Food Ministry on policy adjustments needed for greater efficiency and equity.	Supports organic cotton policy development. It can review and supports policy drafts.
5.	FSC&RD	FSC&RD is an attached department of MNFS&R, with headquarters at Islamabad and 27 field offices/laboratories throughout Pakistan. FSC&RD is a third-party department with the mandate to regulate the quality of seed of various crops under the legal provisions of the Seed Act 1976, the Seed (Amendment) Act 2015, and related rules and regulations. FSC&RD also acts as the executive arm of the National Seed Council of Pakistan. FSC&RD is engaged with the following activities through its regional and field offices spread across Pakistan: <ul style="list-style-type: none"> <li>○ seed certification</li> <li>○ seed testing</li> <li>○ crop variety registration</li> <li>○ seed company registration</li> <li>○ Seed Act enforcement</li> <li>○ seed technology training</li> <li>○ seed import and export</li> </ul>	Supports organic cotton policy with a focus on the seed domain and further support in the field for seed certification.
6.	DAE Balochistan	DAE Balochistan is responsible for providing extension services to farmers throughout Balochistan and implementing agriculture development projects as and when required from the provincial and federal governments. Agriculture extension services through field staff offices are provided at district, tehsil, and union council level.	Supports policy work at provincial and federal level; engagement with farmers in Balochistan to produce organic cotton; on-the-ground support for the implementation of the organic cotton programme in Balochistan.
7.	Department of Agriculture Research Balochistan	Department of Agriculture Research Balochistan is responsible for providing research services for crop variety development according to the existing environmental conditions of the province. Farmer education is also conducted through various programmes at research stations of this departmental wing.	Supports policy work, Integrated Pest Management, and varietal research in Balochistan.
8.	DAE Punjab	DAE Punjab is responsible for providing extension services to farmers throughout Balochistan and implementing agriculture development projects as and when required from the provincial and	Supports policy work and promotion of organic cotton in the hotspot of Punjab province, as well as support to provide non-GMO seed from the

		federal governments. Agriculture extension services through field staff offices are provided at district, tehsil, and union council level.	seed companies operating in Punjab province.
9.	DAE Sindh	DAE Sindh is responsible for providing extension services to farmers throughout Balochistan and implementing agriculture development projects as and when required from the provincial and federal governments. Agriculture extension services through field staff offices are provided at district, tehsil, and union council level.	Supports policy work and promotion of organic cotton in the hotspot of Sindh Province, as well as support to provide non-GMO seed from the seed companies operating in Sindh Province.
10.	National Institute for Genomics and Advanced Biotechnology (NIGAB)	NIGAB, under the umbrella of PARC, is responsible for dealing in the gene study of various crops as per the policy direction of PARC and MNFS&R. It also provides gene testing services to farmers and organizations across Pakistan.	Provides facilities for GMO testing and further work on the cotton breeding programme.
11.	National Institute for Biotechnology and Genetic Engineering (NIBGE)	NIBGE is one of the main biotechnology institutes of the four bioscience centres of the Pakistan Atomic Energy Commission and was formally inaugurated by the President of Pakistan in 1994. It is a focal point of modern biotechnology and provides a technology receiving unit to help the development of the country through the application of modern biotechnology and genetic engineering. The research programmes at NIBGE are mainly aimed at improving agriculture, health, environment, and industry and are supported by national and international financial grants.	Provides facilities for GMO testing and further work on the cotton breeding programme.
12.	Nuclear Institute for Agriculture and Biology (NIAB)	NIAB is an agriculture and food irradiation national research institute managed by the Pakistan Atomic Energy Commission. NIAB has four important research divisions engaged in agriculture and biology related research: <ul style="list-style-type: none"> <li>o Plant Breeding and Genetics</li> <li>o Soil and Environmental Sciences</li> <li>o Plant Protection</li> <li>o Animal Science</li> </ul>	Provides support in policy drafting with a focus on the seed domain; practical support in the provision of non-GMO seed; development of non-GMO varieties; provides field for non-GMO seed multiplication; provides training to farmers on seed multiplication techniques; quality assurance of non-GMO seed.
13.	Central Cotton Research Institute (CCRI) Multan	CCRI Multan is a premier institution at the national level. The institute has contributed significantly by advancing and generating knowledge in cotton research and development since its	Supports policy drafting, with a focus on the seed domain; practical support in the provision of non-GMO seed; development

		establishment in 1970. Over the years, many achievements have been made in the development of high-yield varieties with standard fibre quality characteristics such as staple length, fineness, strength, etc.	of non-GMO varieties; provides field for non-GMO seed multiplication; provides training to farmers on seed multiplication techniques; quality assurance of non-GMO seed.
14.	CCRI Sakrand	CCRI Sakrand is a cotton research institute to serve Sindh's ecological areas. The institute has contributed significantly by advancing and generating knowledge in cotton research and development.	Supports policy drafting, with a focus on the seed domain; practical support in the provision of non-GMO seed; development of non-GMO varieties; provides field for non-GMO seed multiplication; provides training to farmers on seed multiplication techniques; quality assurance of non-GMO seed.
15.	Cotton Research Institute, Ayyub Agriculture Research Institute (AARI) Punjab	CRI (under the umbrella of AARI Faisalabad) is working to develop high-yield cotton varieties suitable for the ecological zones of Punjab.	Supports policy drafting, with a focus on the seed domain; practical support in the provision of non-GMO seed; development of non-GMO varieties; provides field for non-GMO seed multiplication; provides training to farmers on seed multiplication techniques; quality assurance of non-GMO seed.
16.	PCSI Karachi	PCSI has the mandate to perform the following key functions: establishing and promoting a cotton standardization programme based on internationally accepted grading and classification systems setting up grades and standards for seed cotton and lint cotton training new generations of cotton graders, classers, arbitrators, and instructors	Supports policy drafting, specifically cotton standardization; training of stakeholders.
17.	Karachi Cotton Association (KCA)	KCA is the recognized cotton association for the whole of Pakistan. All sections of the trade are represented on the Board of Directors. KCA maintains a code of fair and equitable trading practices in the form of rules, regulations, and bye-laws; maintains a suitable set of standards for the classification of cotton; and provides for just settlement of disputes. It handles matters affecting the general interests	Supports policy for trade-related aspects.

		of the cotton trading community. It offers the buyers and sellers opportunities to obtain useful information regarding the ruling cotton prices and current market conditions throughout the world.	
18.	Pakistan Cotton Ginners Association (PCGA)	The PCGA puts effort into working together towards improving practices, policies, and trends surrounding the “white gold”, better known as cotton. The PCGA is well aware of the social and economic importance of cotton, not only in Pakistan but all over the world.	Support on policy and developing ginning in the organic cotton region; promotion of organic cotton in the region.
19.	All Pakistan Textile Mills Association (APTMA)	APTMA is the premier national trade association of the textile spinning, weaving, and composite mills representing the organized sector in Pakistan. APTMA emerged as the largest association of the country as it represents 396 textile mills, of which 315 are spinning, 44 are weaving, and 37 are composite units.	Supports policy with line/view of the Pakistan Textile Policy.
20.	Punjab Seed Corporation (PSC)	PSC is engaged in the production of basic seed directly and indirectly through the assistance of registered growers. The department ensures quality input for maintaining a sound system for the effective distribution of quality seed. Quality seed production involves a series of processes called the seed chain. Quality seed of all major crops including cotton are provided to farmers in Punjab.	Support on the provision, varietal testing, and multiplication of non-GMO seed at the designated farms.
21.	Sindh Seed Corporation	Sindh Seed Corporations is engaged in the production of basic seed directly and indirectly through the assistance of registered growers. Quality seed of all major crops including cotton and wheat is provided to farmers in Sindh.	Support on the provision, varietal testing, and multiplication of non-GMO seed at the designated farms.
22.	Seed companies in Punjab and Sindh	Multiplication of the available stock of non-GMO seed.	Supports the provision of non-GMO seed; engagement in the organic cotton region for the further multiplication of non-GMO varieties with quality assurance.
23.	Chamber of Agriculture Sindh; Chamber of Agriculture Punjab; Farmer Organization Balochistan	Farmers’ Organizations work for the benefit of the farmers through raising issues with government and sensitizing the government to develop policies and packages, as well as premiums and subsidies, for the farmers.	Supports policy work to sensitize the government to promote organic cotton as a commodity; provides farms for further seed multiplication; coordinates with government departments

			for the benefit of the farming community.
24.	Husein Ebrahim Jamal Research Institute, University of Karachi	Provides testing facility to the customers on reasonable charges; ensures international standards and ISO certification.	Provides GMO testing following ISO certified standards.

## Organic cotton hotspots in Pakistan

As a result of discussion with relevant stakeholders of the study, the following hotspots have been identified for future organic cotton production in the country.

Balochistan	Sindh	Punjab
Barkhan Lasbela Sibi Khuzdar Kharan Turbat Awaran Bolan, Dera Bughti Nushki Chagi	Shaheed Benazir Abad Khairpur Sanghar Jamshoro Matiari (Kacho) Dadu (Kaachho) Umer kot Nangarparkar (near green belt)	Bahawalpur (Cholistan) Rahim Yar Khan Bahawalnagar Dera Ghazi Khan

## Availability of non-GMO cotton varieties in Pakistan

Pakistan has established various cotton variety development programme across the country for developing cotton varieties according to the changing demands of textile sector at the national and international level. Below is the list of major cotton research stations and their respective non-*Bacillus thuringiensis* (Bt) cotton varieties. These can be included in the organic cotton programme with a focus on quality assurance of the seed. As with all research institutes, foundation seed of the varieties is available, which needs to be multiplied at the virgin land for purity and avoidance of contamination.

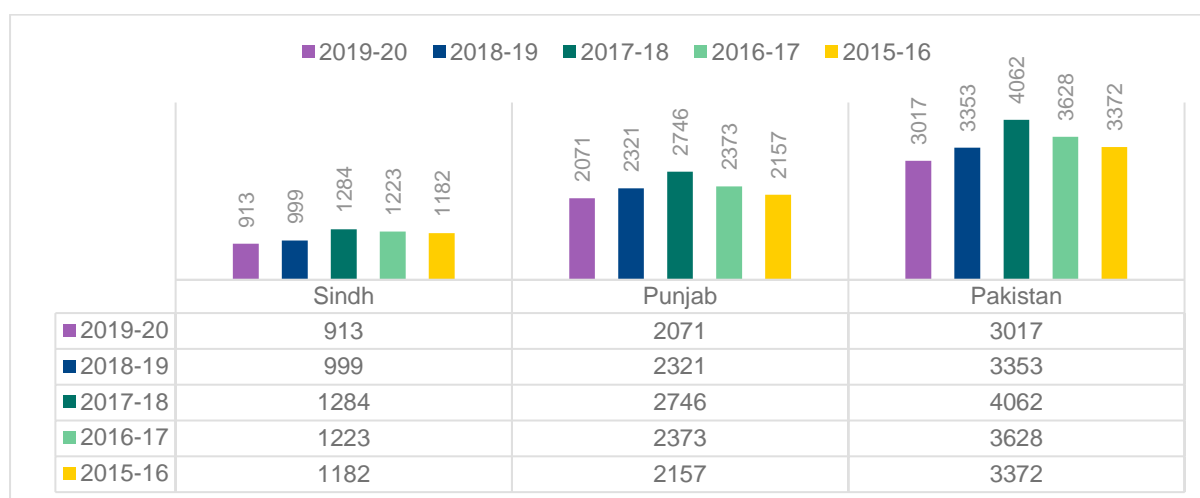
Name of institute	Non-GM cotton variety
NIAB	NIAB-KIRAN
	NIAB-112
	NIAB-2008
	NIAB-78
	NIAB-111
	NIAB-846
	NIAB-852
	NIAB-777
	NIAB-878
Nuclear Institute of Agriculture (NIA) Tandojam	Sohni
	NIA-Noori
	Sadori
	NIA-Ufaq
CCRI Multan	CIM-496
	CIM-554
	CIM-573
	CIM-608
	Cyto-124
	CIM-610
	CIM-620
	Light Brown
	Dark Green
CCRI Sakrand	CRIS-129
	CRIS-510
	CRIS-533
	CRIS-543
	CRIS- 585
	Colour Cotton Light Green
	Dark Green
	Dark Brown
AARI Faisalabad	FH-1000
	FH-941
	FH-942
NIBGE	NIBGE-115

## Cottonseed availability in Pakistan

Although Pakistan is among the top five cotton producing countries, its cotton crop is under immense pressure due to changing international cotton standards, changing consumer behaviour, climatic changes, acute water shortages, and above all retorted cottonseed production systems in the country. Unfortunately, the per-hectare yield of seed cotton is still very low compared to other developed cotton growing countries.

Figure 1 shows the availability of cottonseed in the country to meet the demand for cotton production. For organic cotton production, the quantity of non-GMO seed is negligible, so there is big gap for the production of non-GMO seed for the production of organic cotton, especially given the issue of seed contamination with the Bt gene and quality assurance at every step of the supply chain.

**Figure 1 Cottonseed availability in Pakistan (000 metric tons)**



Sources: PCCC (2018–19), Pakistan Statistics Bureau (2020)

## Cottonseed quality assurance

This analysis also draws attention to the quality assurance of the cottonseed. A good number of varieties are available with the seed research institutes for further multiplication and use in the organic cotton programme, but due to contamination issues concerning Bt traces in the field, the quality of seed is compromised. Unfortunately, during the testing of cottonseed samples of varieties from institutes sent for GMO testing, most samples were found GMO positive. Time is needed to work more on the quality assurance of the cottonseed supply chain from the field to the farmer and to the market level.

### Action needed

- **Immediate:** the engagement of stakeholders such as MNFS&R, FSC&RD, and organic cotton farming communities to further specify their needs and explore feasible steps forward, especially at the policy level in the Seed Act
- **Short-term:** the seed multiplication programme should be extended to the farmer's field, seed companies, and seed research institutes level to meet the demand for organic cotton production in the country
- **Long-term:** a seed breeding programme should be developed to improve and better adapt non-GMO cotton varieties with the different institutes

## **Stakeholders who may resist the promotion of organic cotton in the country**

In Pakistan stakeholders who are involved with the GMO seed, chemical fertilizer, and chemical pesticide businesses may resist against the promotion of organic cotton in the country.

### **Seed companies in Pakistan**

The US company Monsanto is the market leader in GM crops. The other major companies involved are DuPont, Dow, Bayer, and Syngenta.

### **List of fertilizer market players in Pakistan**

1. Arif Habib Corporation Limited
2. Dawood Hercules Corporation Limited
3. Engro Fertilizer Limited
4. Engro Corporation Limited
5. Fatima Fertilizer Company Limited
6. Fauji Fertilizer Bin Qasim Limited
7. Fauji Fertilizer Company Limited



## Stakeholders for the Working Group on Policy Working

Sr. no.	Designation	Ministry/departments/institutes/bodies
1.	Cotton Commissioner	MNFS&R Islamabad
2.	Vice President	PCCC Islamabad
3.	Chairman	PARC
4.	Director General	API Islamabad
5.	Director General	FSC&RD
6.	Director General	DAE Balochistan
7.	Director General	Department of Agriculture Research Balochistan
8.	Director	NIBGE
9.	Director	CCRI Multan
10.	Director	Cotton Research Institute, AARI Punjab
11.	Joint Director	PCSI Karachi
12.	Chairman	PCGA
13.	Director	APTMA
14.	Representatives	Farmers' organizations, Punjab, Sindh, and Balochistan
15.	Representatives	Parliamentarian, Balochistan
16.	Representatives	CAB International
17.	Representatives	WWF for Nature, Pakistan
18.	Representatives	Junaid Jamshed, Alkaram, Khaadi, ChenOne, Gul Ahmed, and Nishat Linen

### Key responsibilities of the Working Group

- Identify, discuss, and suggest implications and gaps in policy or regulation for contemplation and inclusion in a framework
- Facilitate collaboration and building synergy among partners/stakeholders dealing with the issues of organic agriculture policy and multiplication of non- GM cottonseed
- Strengthen the commitment and capacity of stakeholders at all levels for a stronger voice on organic cotton in Pakistan
- Clearly delineate the role of regulations, policies, procedures, and guidelines in the policy framework
- Appropriately designate policy briefs, procedures, and guidelines to promote organic agriculture, with a focus on organic cotton and the availability of non-GM seed in the province
- Policy advocacy for seeking subsidies on organic inputs and non-GM seed
- Hold and facilitate meetings with public representatives
- Facilitate CABI in achieving project targets regarding policy advocacy and seed initiatives
- Prepare and review draft of organic agriculture policy and represent it at the right forums
- Coordinate organic cotton matters in the legislature and executive streams in Balochistan and with other provinces

## Potential seed companies working with cottonseed production in Pakistan

Punjab	Sindh	Balochistan
Four Brother Group Pakistan Tez Ro Seed (Pvt) Ltd PSC Zanta Seed Company Jullundur Seed Corporation	Tassco Seed Corporation Morjhango Seed Corporation Advance Seed Corporation Abadgaar Company Shuja Seed Company Advantage Seed Corporation Kaleri Seed Corporation Super Nayab Seed Corporation Aim Seed Corporation	Quetta Seed Company Khetran Seed Company

## ICT and gender development through organic cotton in Balochistan

A major proportion of cotton is produced in Punjab and Sindh; the ICT system here in agriculture and women's development is much better than in Balochistan, where social, economic, and cultural challenges prevail. Balochistan has huge potential to sustain organic cotton production, and economic activities through organic cotton supply chain and mass production of biological inputs for organic cotton will trigger ICT and gender development in Balochistan.

## Stakeholders stance on organic cotton policy

### MNFS&R Pakistan

The response received reflected that no dedicated policy has so far been formulated. However, it is the government's desire to have an organic agriculture policy to support organic production. Besides, the existing Seed Act has recently been amended and incorporated all desired provisions, which enables the private sector to produce and trade seed more independently. Resultantly, the seed companies have developed a number of varieties and some are working on biotechnology to develop their own gene. The Plant Breeder's Right Act is another milestone the government has achieved. It gives more liberty and legal security to technology developers and breeders of varieties and helps attract investment in the seed sector. For the production of organic cotton, however, the availability of non-GMO cottonseed is a challenge MNFS&R can direct all provincial and national stakeholders for organic cotton policy and its implementation at all levels. In the absence of policy, the organic cottonseed system cannot be improved, so MNFS&R will support the organic cotton policy with CAB International.

### PARC and NIGAB

PARC is the apex national organization working in close collaboration with other federal and provincial institutions in the country to provide science-based solutions to the agriculture. PARC has working experience of certification, which can be used for organic cotton as well in future with policy working. There are gaps in the implementation of the cottonseed policy in the country which need special attention towards Policy support.

As about 90% area is covered by genetically modified cotton in Pakistan it is very hard to find pure non-GM seed, so there should be area specification for seed production for organic cotton for quality assurance. Lack of a marketing system for organic cotton produce from

farmer to market level needs special attention, and a premium should be offered to farmers. The non-existence of a traceable system and Local Organic Cotton Certifying Body is major issue putting a huge certification burden on the shoulders of the farmers.

Government should support farmers through establishing a National Certification System. There is also a need to subsidize the farmers for laboratory testing charges for GM and chemical detection as process of organic certification. Government should use PARC-NIGAB GMO testing facility on subsidised rates for promotion of the organic cotton in the country.

Government should revive research and development in the public sector for securing non-GMO seed varieties; in this case, new niches in the Balochistan and Potohar regions are ideal. Farmers' training programmes should be initiated, such as the Farmer Field School programme, to educate the farmers on good agricultural practices.

## API

API has a mandate to analyse domestic and international sectoral/commodity specific policies; to conduct studies on emerging policy issues relating to input/output production, consumption, prices, costs, marketable surplus, demand, supply, stock, and trade; to examine/estimate the production, processing, storage, and marketing costs of agricultural commodities (crops and livestock); to analyse the impact of important agricultural policies on producers, consumers, processors, exporters, and importers; and to advise on policy adjustments needed for greater efficiency and equity.

API is engaged in price policy for seed cotton. The institute does not work on cottonseed. The right incentives and market information system may help farmers adopt organic agriculture including cotton. Departments needs to be sensitized on organic seed cotton to encourage public and private sectors.

At present, with new leadership, the institute is in the process of reform with the help of international organizations such as IFPRI, FAO, and CABI. API has the technical knowledge capacity to organize policy dialogues, create technical working groups (TWGs) for policy input, and organize stakeholder workshops for the policy drafts. These services can be offered to all sectors and subsectors of agriculture in Pakistan's federal or provincial departments. There is a serious need to educate farmers through media sources or a farmer schooling system to sensitize them to use certified organic cottonseed for better productive gains.

API is already working on crop standards set by FAO. This needs to be known through farmers' workshops, which can be organized by API-CABI. API intends to carry out a Pakistan agriculture credit survey micro-finance facility for organic farmers in all provinces, including Baluchistan.

Some highlights need special attention for the promotion of organic cotton:

- there is a need to work on an organic agriculture/cotton policy
- there is a need to map the supply–demand organic cotton value chain
- organic cotton demand by ginners and manufacturers should support farmers
- high-yield varieties and bio inputs should be linked with organic cotton
- availability of national organic quality assurance system
- there should be a market competitive financial incentive as organic cotton premium on the production of organic cotton

## CCRI Multan

CCRI Multan has been working for the development of non-GMO cotton variety development since 1973. Since the inception of R&D on organic cotton variety development in 2005, CCRI has introduced 20 non-GM cotton cultivars, which are suitable for different ecological zones. These cultivars are suitable for organic cotton. The major gap in the existing cotton policy is due to the non-implementation of Seed Act 2015. The separate zones for organic cotton production may be identified. The farmers should be registered for organic cotton production. There should be a support price for organic cotton to enhance organic cotton production in the province and across the country.

CCRI Multan is now producing non-GMO seed in isolated areas to avoid contamination. This basic non-GMO seed will be provided for organic cotton and seed production in the organic zones of the country. CCRI Multan contributed to the first organic cotton bale production in 2018 by collaborating with WWF Pakistan on the Nature and Provincial Extension Department of Balochistan. CCRI Multan provided the seed for non-GMO cotton varieties, CIM-496, CIM-620, CIM-610, and CIM-717.

## Department of Agriculture Research Balochistan

The Department of Agriculture Research has the task of working on biological control, the development of integrated pest management, and the control of nematodes and viruses affecting different crops, vegetables, and fruits in Balochistan. Agricultural production is a very complex system. It depends on several interrelated components, such as the development of appropriate production technology, the dissemination of modern technology to the end users, and the formulation of farmer-friendly agricultural policies. The department has also established a museum, which functions as the only insect museum in the province of Balochistan.

No initiatives have been adopted yet for organic cottonseed policy development and implementation in Balochistan. There is also no seed certification system in Balochistan, although some of the lines are in hand and need to be registered. The department is interested in working with the CABI initiative for the development of non-GMO cottonseed in Balochistan because department is well-equipped with technical and scientific expertise and ready to play its part in collaboration for the organic cotton project.

## DAE Balochistan

The Agriculture Extension Department, with the joint collaboration of WWF Pakistan, launched a three-year project (2016–19) entitled “Organic Cotton Cultivation Promotion with Small and Marginal Tribal Farmers in Balochistan” by securing financial support from the Laudes Foundation (formerly the C&A Foundation).

Balochistan is totally dependent on the other provinces, especially Punjab, for all crops seed, including non-GMO cottonseed. Similar situation is prevailing regarding organic cotton foundation seed. Much work is needed on cotton research and development from the Balochistan perspective. A serious concern was that strict monitoring policies are needed to ensure the availability of organic cottonseed as it was not available this year throughout the country, which seems a big threat to organic cotton promotion and production and its sustainability in Balochistan. The department also suggested that quality assurance with punitive measures should be taken to tackle the malpractice prevailing in its business from gate to textile industry.

There should be a cottonseed supply chain so farmers can get organic seed on time and the government should subsidize it. The department will support the development of a national cotton policy and regulate the Organic Cotton Act at provincial level as well. Through these,

private entities and traders engaged in the seed business and the procurement, processing, and export of organic cotton products can be regulated.

There should be free distribution of organic cottonseed, at least for a period of three years, and distribution of allied machinery to the organic cotton growers, besides extending financial support for organic cotton farmers and other related support policies. The government should focus on developing the organic regions. They should issue an order for the complete banning of chemical fertilizers, pesticides, and GMO seed within the potential organic cotton regions/areas/districts and allocation of at least five acres under organic cotton depending upon the availability of cultivable land by each of the cotton progressive farmers.

For wider promotion and engagement with policyholders, national-level and provincial-level committees on organic cotton can be established. There should be investment in the processing, training, marketing, and promotion of organic agriculture. Balochistan is a much-deprived province and there are big issues surrounding infrastructure development at the district level, which is also a hindrance for supply chain development, so policy level intervention should be included for sensitizing the government to focus on the organic cotton schemes the wider benefit of the people of Pakistan, especially Balochistan. Tax breaks for organic cotton farmers may be included in the way forward.

Further points included the following:

- There is a need for national organic cotton data maintenance and its dissemination to relevant stakeholders as and when required
- There is a need for support to growers/farmers for organic certification
- DAE Balochistan has convinced the current organic cotton farmers to use organic manure and compost for soil fertilization rather than using chemical fertilizers
- The Agriculture Department cannot sustain organic cotton production by its own resources. For the next five to 10 years, the organic cotton development project will build the capacity of cotton farmers and agriculture departments in all provinces. During this time acceptable ecosystem and legislative frameworks will be developed to support organic cotton policy and production, which will support and help organic agriculture in general and cotton in particular for long-term sustainability
- DAE is working with CABI/WWF and has procured non-GMO seed for the seed project farmers, as well as shortlisted seed companies for seed multiplication and taken up the case for seed certification for further safety and sustainability for organic cotton

## **NIAB**

NIAB is maintaining the approved non-GM cotton varieties and producing non-GM cottonseed on a regular basis. These varieties are used for developing basic and pre-basic seed of true-to-type cottonseed for distribution to cotton growers. This is NIAB's ongoing activity. Currently, the cottonseed regulation process is being implemented through FSC&RD. To promote organic cotton, NIAB proposes an organic cotton premium price in Balochistan to encourage farmers to adopt organic cotton production.

## **AARI**

AARI is engaged in developing new cotton varieties. There is a great deal of demand for organic cotton. Trials have been conducted for organic cotton but it could become successful if the farmers are given a premium on organic cotton, because farmers are more interested in net profitability. AARI has a non-GM cotton variety named MNH-786. AARI suggests implementation of the Seed Act in letter and spirit and the implementation of a seed production system. As per AARI's understanding, Balochistan has great potential for organic cotton production. Powers of seed certification are vested with FSC&RD, which has a

shortage of staff and a lack of capacity for seed testing. Non-GM seed availability is the most important factor in developing an organic cotton ecosystem in Pakistan.

The following points may help for the promotion of organic cotton:

- There is no competitive financial incentive (premium)
- There is an absence of an organic cotton policy
- There is a distorted organic cotton supply chain
- There is low demand for organic cotton by cotton ginners and manufacturers
- There is a lack of farmers' associations in organic cotton

## DAE Sindh

The DAE Sindh is engaged in crop policies, crop support, extension services, advisory services for plant protection measures, issuing working licence to the ginners, and seed marketing. The department will support the organic cotton policy at provincial and federal level.

## PCSI Karachi

PCSI has a mandate for dealing in raw cotton quality, classification, grading, ginning, handling, standardization, and training. PCSI also makes suggestions and recommendations for drafting any policies for the development of cotton in the country. PCSI is of the view that cash incentives for cotton producers would help promote organic cotton in Pakistan. Farmers and their family members would benefit from the environmentally friendly cultivation of organic cotton. Multinational seed companies should be allowed by the provincial and federal governments to market their non-GMO cottonseed.

- There is an absence of strict monitoring of private seed companies by the provincial and federal authorities
- There is non-implementation of strict zoning of seed/variety cultivation in a particular area/region
- There has been failure of seed research in the private and government sector
- There is non-availability of certified seed to farmers
- The distribution/supply of organic seed to registered farmers should be at subsidized rates or free of cost to promote organic cotton in the country and at hotspots
- There should be legislation by the provincial and federal government for increasing the production and quality of organic cotton in the country
- PCSI supports the development of organic cotton in the country
- There should be guidelines by PCSI for improving the organic cotton quality, ginning, grading, classing, handling, and marketing of cotton
- Joint venture and joint projects in the field of raw cotton picking, grading, classing, ginning, handling, and standardization may be initiated with PCSI
- There should be gradewise segregation and ginning of organic cotton for getting high germination organic seed from higher grade of seed cotton. A joint supervised ginning scheme with PCSI may be initiated for the production of high-quality lint. The higher grade (grade 1 and grade 2) cottonseed may be preserved by the private and public organizations for sowing in the next season
- Sindh organic cotton hotspots; Tharparkar and Cholistan
- Agriculture department officers and officials should be trained as Organic certification and testing experts.
- There is a need develop strong linkages of organic cotton growers, ginners, and seed companies to preserve non-GMO seed

- Farmers should be registered for the cultivation of organic cotton and the introduction of market based organic cotton premium

### **Sindh Abadgar Board (SAB) (Progressive Farmers' Organization)**

SAB promotes agriculture activities through disseminating and teaching at grassroots level in the greater interest of the nation and country, as agriculture is the backbone of the economy. Agriculture challenges like timely availability of irrigation water, inputs including seed and market-based crop prices should be a top priority at each level. SAB is promoting agriculture products through marketing in local, regional, national, and international markets. SAB observes that there is no benefit at to organic cotton farmers due to low production, low market prices, absence of premium, and the lack of an organic cotton and agriculture policy. Research and development are too weak due to lack of funds and technical support. All stakeholders should sit together and develop ideal varieties, which must be of short duration, drought resistant, and early maturity.

SAB can play a vital role in the advocacy of cotton and other crops;

- Seed multiplication should be focused on meeting the demands of farmers
- Funds for research and development should be enhanced
- Strict measures should be implemented for seed quality assurance
- Private sector seed companies may be motivated to initiate research and development for quality seed development of non-GMO varieties
- The coastal belt of lower Sindh and Balochistan, as well as arid zones of Thar, are good for organic cotton production
- FSC&RD should be strengthened for crop inspection and certification, which takes time
- Seed certification departments should train farmers to raise awareness and understanding about certification processes
- There is a lack of agriculture finance for small farmers, or small farmers have no access to loans from banks due to the need for documentation
- There is no financial incentive (premium) on organic cotton
- There is low availability of the non-GMO cottonseed
- The unavailability of an organic agriculture/cotton policy in the country is an issue
- Farmers are less interested in non-GMO cotton due to low yield per acre

### **Kauns Seed Corporation (KSC), Sindh**

KSC is in great support of any organic cotton policy preparation and will take part actively in any such activity for policy making. KSC thinks that provincial and federal stakeholders on cotton should seriously think about organic cotton policy which will lead the farming community, private businesses and cotton research institutes to work for promotion of organic cotton in Pakistan.

### **Tassco Seed Corporation (TSC)**

TSC is engaged in pure cottonseed production. TSC believes organic cotton and its by-products are useful for the health of livestock, and its oil is edible. The availability of pure cottonseed is the biggest challenge. Government institutes should maintain the germplasm of non-Bt cottonseed and organic cottonseed. TSC will follow and stand by implementing the cottonseed policy. TSC thinks the most important point for an organic cotton production system is financial incentives (premiums) on organic cotton.

## Findings from the gap analysis

The organic cotton policy gap analysis empirically proved that all stakeholders engaged at the national, provincial, and district level recommended that the availability of non-GM (non-Bt) cottonseed is the biggest challenge facing the development of organic cotton production and promotion in Pakistan. Bt and non-Bt contamination of cotton varieties are due to the absence of organic cotton zones isolated from conventional cotton zones. Pure organic cottonseed multiplication should be given due importance. Institutes engaged in cotton research research and development should build their capacity regarding organic cottonseed and required inputs.

After organic cottonseed availability, preparation of national organic cotton policy is the top priority for all relevant stakeholders because in the absence of such a policy all stakeholders are not clear about the future of organic cotton at national and international level. Free organic cotton certification facility should be provided to farmers. This will act as catalyst for other farmers to become part of organic cotton production system.

Production of organic cotton per acre is far lower than for conventional cotton, and attacks of pests/insects and diseases on organic cotton are much higher than for conventional cotton which requires a competitive financial incentive for organic cotton. Organic cotton financial incentives should be in accordance to retail prices of organic cotton products on the national and international markets. This will play an important role in developing organic cotton ecosystem in the country. Due to financial incentives farmers will convert their conventional cotton areas to organic cotton areas. This will also help in winning stakeholders support on organic cotton policy dialogue and other related issues.

There is a total absence of any well-established bio input supply chain. Availability of effective bio inputs (biofertilizers, biopesticides, etc) is a big challenge. Organic cotton farmers have strong financial constraints and available bio inputs are costlier than pesticides and not very effective as well. Engagement of government research and development institutes in R&D activities of biological inputs and making the available bio-inputs more effective will create an opportunity to develop local biopesticides.

Without introducing virgin and isolated cotton zones in Punjab, Sindh, and Balochistan, organic cotton production systems and related bio inputs supply chain development will remain an intimidating challenge. There are areas, such as the Potohar belt in Punjab, Thar in Sindh, and the vast virgin lands of Balochistan, where zoning for organic cotton is possible.

Although the SBP has an agriculture credit policy for organic agriculture, the legal formalities for getting a loan from commercial banks restrict the farmers in getting loans for organic cotton through one-window operation; the network of commercial banks, especially ZTBL has limited branches in Balochistan. Unconventional banking through various micro-finance organizations like Akhuwat Foundation may play a role if engaged with organic cotton farmers in project areas.

## Recommendations

- Development of an organic cotton policy with engagement of relevant stakeholders/working groups
- Organic cotton premium as per the market price of textile sector products at national and international markets for the encouragement and wider promotion of organic cotton farming



- Establishment of the organic cottonseed multiplication Programme with a focus on immediate, medium-term, and long-term approaches engaging the research institutes, seed companies, FSC&RD, farming communities, etc
- Free laboratory testing facility for cottonseed and organic cotton samples of farmer's field
- Establishment of a “National Organic Certification System” for organic cotton textile products.
- Start of ethnobotanical survey to identify local plant varieties that can be used as raw material in the preparation of biopesticides, develop a supply chain of medicinal plants and their products for starting income generation activities
- Establishment of the bio inputs supply chain for effective control of organic cotton insect, pests and disease
- Organic cotton specialised credit facility for organic cotton farmers with minimum documentation
- Inclusion of organic cotton regions in the government’s priority development programme
- Promotion of the organic cotton at the identified hotspots at the country level
- Special focus on use of ICT for organic cotton promotion
- Inclusion of youth especially women in organic agriculture and organic cotton and bio-inputs business for job creation and enterprise development in the region

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# Appendix

## Questions from the GAP analysis questionnaire

What products or areas of farming do you work in?

1. Govt. Regulation: crop policies, supports, land utilisation, inter departmental issues. Cotton related cases in courts.
2. Govt. Implementation.
3. Govt. Communication.
4. Govt. Logistic (NLC etc)
5. Govt. Finance
6. Govt Research budget, manpower, approval delays, imports etc.
7. Govt Farm Support, irrigation, weights and measures, quality, agriculture extension, plant protection, etc
8. Banks.
  - a. Finance
  - b. Refinance
  - c. Issues related to recovery, problems or hurdles in financing due to govt *policies* in agro farming etc.
9. Textiles
10. Ginners
11. Input suppliers
12. Farmer associations
13. GMO pesticide testing
14. Cotton standards/Crop Standards Institute etc
15. Trade attached of the countries importing cotton from Pakistan or exporting to Pakistan

Are you, or your organisation, aware about the production of organic cotton in Pakistan and what benefits do you think the farmer will have from cultivating organic cotton?

What initiatives has your esteemed department undertaken for the organic cotton seed policy development and implementation?

Are you aware of any cotton policies in Pakistan?

What are, in your view, the gaps in existing cotton seed policy implementation in Pakistan?

What suggestions does your department propose to improve policy on the organic cotton seed system in the province and across the country?

What measures has the department taken to ensure the availability of the organic cotton seed in Pakistan?

Does your department play any role in developing regulations/policies/procedures and guidelines for organic agriculture or organic cotton?

What support can your department provide in policy and advocacy work?

If policy work were to start, what role can your department, and you as an Individual, play in supporting the policy and advocacy work in Pakistan in the larger interest of the nation?

### **Questions for Cotton Breeders, Researchers and Farmers:**

Which non-GMO varieties are available within your department for further seed multiplication in the field?

What is your institutional capacity regarding non-GMO variety development and seed multiplication?

What are your suggestions and/or feedback on the quality assurance issues of the cotton seed and how can we address it?

Can you suggest any organic cotton growth hotspots or virgin lands?

What are the seed certification gaps and challenges?

Do you have any suggestions about the facility for farmers to get non-GMO seed testing and certification of organic field?

What is status of the microfinance facility for the organic cotton farmers in Balochistan at present and are there any future plans or opportunities by the State Bank/Microfinance bank?

What type of input supplier (bioproduct) is available within your company?

What would you rate as the most important challenge to organic cotton production? (1 being the most important; 7 being least important)

- a) Organic agriculture/cotton policy
- b) Non-GMO cotton seed
- c) Farmer interest due to low yield per acre
- d) Farmer associations interest
- d) Financial incentive (premiums) on organic cotton
- f) Supply-demand organic cotton value chain
- g) Organic cotton demand by ginners and manufacturers

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