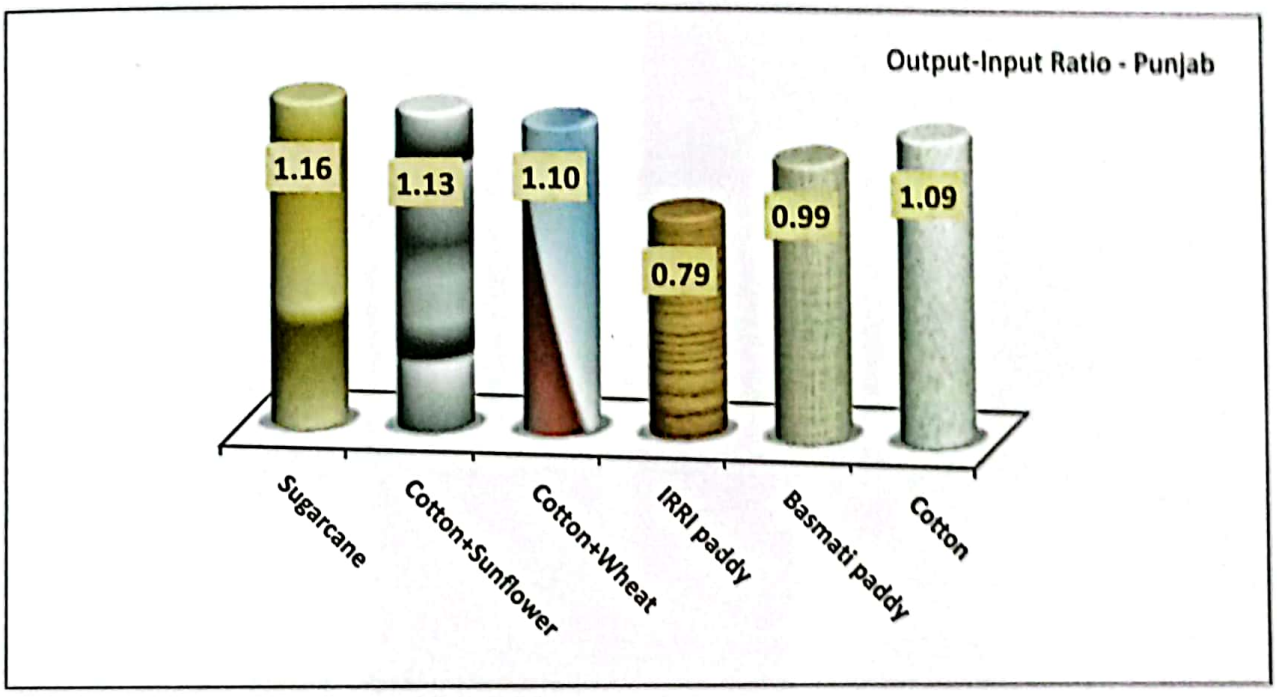
API SERIES NO. 262

Policy Analysis Report
Seed Cotton - 2017-18 Crop



GOVERNMENT OF PAKISTAN
AGRICULTURE POLICY INSTITUTE
MINISTRY OF NATIONAL FOOD SECURITY AND RESEARCH
ISLAMABAD

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CONTENTS

ABBREVIATIONS

AARI	:	Ayub Agricultural Research Institute
API	:	Agriculture Policy Institute
APTMA	:	All Pakistan Textile Mills Association
BCR	:	Benefit Cost Ratio
BPS	:	Basic Pay Scale
CFR	:	Cost and Freight
CIF	:	Cost, Insurance and Freight
CLCV	:	Cotton Leaf Curl Virus
COP	:	Cost of Production
CPI	:	Consumer Price Index
CRI	:	Cotton Research Institute
DAP	:	Di. Ammonium Phosphate
DRC	:	Domestic Resource Cost
ECC	:	Economic Coordination Committee
E&M	:	Economics & Marketing
EPC	:	Effective Protection Coefficient
FAO	:	Food and Agriculture Organization
FOB	:	Free on Board
FSC&RD	:	Federal Seed Certification and Registration Department
FYM	:	Farm Yard Manure
GDP	:	Gross Domestic Product
GOT	:	Ginning Out Turn
HSD	:	High Speed Diesel
ICAC	:	International Cotton Advisory Committee
ICPM	:	Integrated Crop Production Management
IPM	:	Integrated Pest Management
IPNS	:	Integrated Plant Nutrition System
IRRI	:	International Rice Research Institute
ITMF	:	International Textile Mills Forum
KCA	:	Karachi Cotton Association
KPK	:	Khyber Pakhtunkhwa
MOC	:	Ministry of Commerce
NARC	:	National Agricultural Research Centre
NCL	:	No Control Limit
NFS&RD	:	National Food Security and Research Division
NIAB	:	Nuclear Institute of Agriculture and Biology
NPC	:	Nominal Protection Coefficient
NSC	:	National Seed Council
OLS	:	Ordinary Least Squares
PAPA	:	Pakistan Agriculture Pesticides Association
PARC	:	Pakistan Agricultural Research Council
PBS	:	Pakistan Bureau of Statistics
PCCC	:	Pakistan Central Cotton Committee
PCGA	:	Pakistan Cotton Ginners Association
PCSI	:	Pakistan Cotton Standards Institute
PSC	:	Punjab Seed Corporation
SSC	:	Sindh Seed Corporation
TCP	:	Trading Corporation of Pakistan
WTO	:	World Trade Organization

SUMMARY OF FINDINGS AND RECOMMENDATIONS

- Findings

Area and Production

- Punjab and Sindh contribute 68.3 and 30.8 per cent of the cotton production while the share of both KP and Balochistan is 0.9 per cent.
- During the last decade, cotton production has declined @ 0.9 per cent per annum mainly due to 1.1 per cent declined in area as the yield has improved @ 0.3 per cent per year.
- Cotton production in 2016-17 is produced at 10.67 million bales, against 9.92 million bales last year, which is 7.6 per cent higher than 2015-16.
- Cotton production has fallen short of the target by 24.3 per cent during 2016-17.

Major Varieties

- According to the Annual Field Survey Report of API for 2016-17 cotton crop, major cotton varieties sown in Punjab were Bt.cotton, CIM-496, CIM-499, CIM-473, CIM-506, S-5000, MNH-786, MNH-886 and MNH-121.

Domestic Prices

- Monthly average market prices of seed cotton for 2016-17 crop during the post harvest months in major producing areas have generally remained slightly below the actual export parity prices.
- The monthly wholesale market prices of seed cotton during the post harvest period averaged at Rs 3133 per 40 kgs in the Punjab and Rs 2846 in Sindh.
- Monthly average wholesale prices of seed cotton ranged from Rs 2775 to Rs 3508 per 40 kgs during the post harvest months in major producing areas of the Punjab and Rs 2225 to Rs 3500 per 40 kgs in Sindh.

- Monthly average spot prices of cotton lint at Karachi averaged at Rs 6883 per 40 kgs in 2016-17 higher from Rs 23.3 against the last year.

Cost of Production

- In the Punjab, the cost of cotton cultivation during 2017-18 season is estimated at Rs 58,621 per acre.
- The cost of production at the market / ginnery level of Punjab would be Rs 3125 per 40 kgs, reflecting a rise of 2.18 per cent over the last year.
- In Sindh, the cost of cotton cultivation for 2017-18 crop is expected at Rs 59,428 per acre.
- The cost of production at market / ginnery level of Sindh would come to Rs 3068 per 40 kgs, showing an increase of 16.11 per cent over the last year.

Economics of Cotton and Competing Crops

- The economics of cotton has an edge over basmati and IRRI in Punjab during 2016-17 in respect of entire economic criteria.
- In case of indirect competition, sugarcane paid better than cotton combinations in returns to overall invesment, purchased inputs and crop duration, but lagged behind in the irrigation water.
- In Sindh, cotton farming evidenced its superiority over IRRI paddy in terms of returns to all the economic criteria.
- In case of indirect competition, the cotton combinations with wheat or sunflower perfomed better than sugarcane in terms of returns to overall investment, crop duration and purchased inputs. However, in terms of irrigation water, both the cotton combinations have outcompeted the sugarcane with a considerable margin.

Economics of Fertilizer Use on Cotton Crop

- Benefit Cost Ratio refers to the ratio between the value of additional produce obtained by using a certain dose of fertilizer and the additional costs incurred therein. These ratios have shown favourable situation in context of cotton crop during 2016-17.

- Regarding the parity ratio between prices of fertilizer and seed cotton, the quantity of seed cotton needed to buy one nutrient tonne of N fertilizer has fluctuated between 0.39 and 1.24 tonnes while that of P fertilizer between 0.78 and 3.16.

Nominal and Real Market Prices

- The nominal prices of seed cotton in the Punjab indicate an overall increase of 108 per cent while the real market prices have shown a fall of -2 per cent during 2007-08 to 2016-17.

- In Sindh, the nominal market prices of seed cotton have observed overall escalation of 104 per cent while the real market prices have fall by over -4 per cent against the base year level.

World Production and Prices

- World cotton production estimated at 22.93 million tonnes in 2016-17 is projected to increase to 24.57 million in 2017-18.

- International prices of Index-A cottons have widely fluctuated from the lowest level of 70.80 cents per pound in 2009-10 to the highest level of 165 cents per pound in 2010-11. The price remained subdued during 2015-16 averaging at 80.80 US cent per pound. Orleans Texas could reach 100.53 cents in 2011-12, the highest ever during the period under review.

Export Parity Prices

- Based on actual export price of Pakistani cotton during 2016-17, the export parity price of seed cotton calculates to Rs 3114 per 40 kgs and Rs 2987 on the basis of average during 2014 to 2016.

- The export parity price comes to Rs 2546 per 40 kgs on the basis of Futures contract prices of New York No.2 Cotton.

Import Parity Prices

- Based on actual cif (Karachi) price of imported cotton during 2016-17, the import parity price of seed cotton works to Rs 3441 per 40 kgs and Rs 3851 for average of 2014 to 2016.

- Based on CFR Far Eastern quoted price of Index – A cottons, the import parity price comes to Rs 3614 per 40 kgs during 2016-17 and Rs 3428 on average of 2014 to 2016.

Economic Efficiency

- Economic efficiency of resource use in cotton production has been evaluated by estimating the Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost (DRC).

- The NPCs have been below one under import scenario both in Punjab and Sindh. Under import scenario, both NPC and EPCs are below 1 throughout the analysis. Hence cotton seed growers are being taxed and resources are flowing out from the agriculture sector.

- However, under export scenario these ratios remained higher than one except 2011-12 and 2015-16. In the Punjab and during 2012-14 and 2013-14 in Sindh.

- Similarly, the EPCs are below one under export scenario in the Punjab, except during 2013-14 but throughout the period in Sindh under both the export and import situation.

- The DRC indicates the opportunity cost of domestic resources employed per unit of value added in production of a commodity.

- The DRCs have been less than one during the period under analysis since 2011-12 except 2014-15 in the Punjab and for entire period in Sindh under export situation. Generally the situation implies a Comparative Advantage in seed cotton production, both under export and import scenario.

- The findngs of economic efficiency analysis warrant more investment in cotton production and marketing for export purpose as well as to meet domestic requirements of textile industry as the imports are more expensive.

World Comparison

- Pakistan is the 4th largest cotton producer in terms of area and production but ranks at 27th position in terms of yield.
- As per data for ICAC for the year 2012-13, China has provided the highest direct assistance to cotton sector through production programmes at US $ 5813 million, followed by USA at $ 562 and Turkey at $ 312 million respectively. No such direct assistance is reported in Pakistan, India and Brazil.
- Among 6 competing countries, cost of production of seed cotton was estimated at Pak Rs 3446 per 40 kgs in USA while in India it was reported at Pak Rs 2395 per 40 kgs.
- The cost of production of seed cotton is estimated at Pak Rs 3239 per 40 kgs in China and Rs 2774 in Pakistan during 2013-14 according to the International Cotton Advisory Committee (ICAC), Washington DC, USA.

Policy Options

Based on the analysis of relevant factors covered in the main text of the Report, the likely policy options for seed cotton 2017-18 crop are presented below:

S.No.	Base	Worked back price of seed cotton at ginnery level	
		Rs/40 kgs	
1	Export parity prices based on average:		
	i) Actual export price of Pakistani cotton		
	- During 2016-17 (Oct-May)	3114	
	- During 2013-14 to 2015-16	2987	
	ii) Futures contract prices of New York No.2 cotton (average of October, December 2017 and March 2018	2546	
2	Import parity prices based on average:		
	i) Actual cif Karachi prices of imported cotton:		
	- During 2016-17 (Oct-May)	3422	
	- During 2013-14 to 2015-16	3859	
	ii) CFR Far Estern quoted price of Index-A Cottons		
	- During 2016-17 (Oct-May)	3614	
	- During 2013-14 to 2015-16	3428	
3	Average wholesale prices of seed cotton in Major Producer Area Markets during the post-harvest period in 2016-17		
	- Punjab (Sep – Feb)	3133	
	- Sindh (Sep – Dec)	2846	
4	Cost of production for 2017-18 crop		
	- Punjab	3125	
	- Sindh	3068	
5	Cost of domestic resources involved in:	At exchange rate of Pak Rs 104.81	
		Punjab	Sindh
	i) Producing cotton for import substitution based on 2015-16 prices of cotton (actual average)	82.77	86.91
	ii) Producing cotton for export based on 2016-17 prices of cotton (actual average)	77.99	79.3

- Recommendations

In view of the field information, consultation with the stakeholders in the API Committee meeting on cotton and analysis of relevant factors, following proposals are made regarding intervention price and improving productivity, quality and marketing of cotton crop:

Intervention Price

- The Government may like to consider for announcement of intervention price of seed cotton (Base grade 3 with staple length 1-1/16″) for 2016-17 crop around Rs 3000 per 40 kgs in view of world cotton situation and high input costs, if deem necessary.

- It provides a reference point to intervene by the public sector agency, if needed. It is to be implemented only when the market prices of seed cotton fall below the Intervention Price.

- In view of trade libralization and active role of private sector, the actual incentive to cotton growers should come through the market forces.

- The government policy of encouraging the role of private sector in cotton marketing and trade may be continued.

- The TCP should be designated as the implementing agency for seed cotton through buying lint at the price determined on the basis of intervention price of seed cotton, if announced in case of need.

Improving Productivity

- A comprehensive National Seed Policy should be announced by the Government and implemented in true spirit.

- The Government should ensure implementation of Federal Seed Act 2015 - the Cotton Research Institute should only release varieties

- Comprehensive plan should be designed for balanced use of inputs and new technology by the Research and Provincial Agriculture Extension Departments.

- The coordination among the Provincial and Federal Research Institutes should be strengthened in order to improve research activities for productive outcome.

- The role of private sector may be promoted to supply certified seed through public – private partnership. The APTMA may be involved in research, marketing and quality improvement programmes.

- Availability of certified seed is a serious problem. The Punjab Seed Corporation should supply the certified cotton seed to the growers at a reasonable price.

- The price, date of manufacture and weight should be labelled on the bags of fertilizer and brands of pesticides/weedicides.

- There is a dire need to introduce an appropriate monitoring system to verify the performance of Bt cotton varieties in the field particularly for toxin level.

- There is a need of zoning at this time to conserve areas for precious crops like cotton as sugarmills are being installed in the heart of cotton growing regions.

- Awareness campaign for cotton growers should be undertaken by the research and provincial agriculture extension departments. This may include identification of pure Bt cotton seed and other important considerations in relation to the cotton crop with the adoption of updated Bt. technology.

- Early sowing of Bt cotton has raised some problems like boll rottening and pest attack which need to be addressed.

- The government should strengthen the IPM programme of NARC for its effective implementation in the entire cotton growing area.

- The Pest Scouting and Warning System should be further strengthened enabling the farmers to take timely action and apply appropriate pesticides.

- On the pattern on Punjab Seed Corporation of the Government of Sindh, KPK and Balochistan should also pay a special attention to seed production to meet their provincial requirements.

- There is a need to encourage the Soil Testing facilities to assess the need of appropriate fertilizers for balanced input use.

- In order to acknowledge the innovative work of the genuine breeders, the seed of a new variety should be auctioned in the open market.

- The NIBGE in collaboration with Cotton Research Institutes should work hard on heat / drought resistant varieties to avoid excessive boll shedding and improving boll weight.

- The Government should take strict measures in order to control the Mealy Bug through management practices and biological control.

- Provincial governments should implement quality standards in the true spirit in order to improve the quality of cotton in the country.

- APTMA should buy cotton on the basis of standards approved by the Pakistan Cotton Standards Institute.

- Instead of exporting raw cotton, the textile industry should be updated in order to promote production of value added cotton made ups for exports.

- Marketing of cotton is a big problem as no ginning factory is properly working and also load shedding and skilled labour for picking, so government should may emphasize and amend the Cotton Control Act according to the prevailing situation and effective implementation.

Secretary
M/o NFS&R

October, 2016

- PARC may be advised to test EM technology, Bio-fertilizer and other relevant technologies of fertilizer for balanced fertilizer use to reduce cost of production.

- In order to promote cotton cultivation in the country, there should be restriction on establishing new sugarmills in the cotton region.

- The Plant Breeders Rights Act may be approved and implemented in order to promote the varital development.

- pH value of soil has gone to the range of 8-10 due to indiscriminate use of chemical inputs and shallow tillage operations. There is a need of encouraging deep ploughing and Disc plough in cotton growing areas.

- There is a dire need to introduce Land Use Act to conserve the fertile Agriculture land for crop cultivation and not for residential accommodation.

Improving Quality and Marketing

- To improve and maintain quality of seed cotton, educational campaign informing the pickers about the proper methods, timing and handling should be launched through media and bruchure,

- Research on Ginning may be carried out to deal with the issues of cotton ginning and related matters.

- The deductions and underweightment in cotton marketing for various quality consideration need to be standdardized. Supervisory committee consisting of representatives of growers, local market committee, cotton delears and provincial agriculture departments should be constituted to check malpractices in cotton marketing.

- Government should take serious action to improve the quality of cotton lint for export promotion and launch a vigorus programme to ensure proper packing and truthful labelling.

- Like other commodities, a Regulartory Authority may be established to control prices and quality of agriculture inputs.

- The effective Cotton Standardization and Grading System may be implemented in accordance with the provisions of the Pakistan Cotton Standardization Ordinance, 2002.

- Cotton quality can be improved if implemented at ginnery level to only procure high quality seed cotton.

COTTON POLICY ANALYSIS FOR 2017-18 CROP

INTRODUCTION

Cotton is an important cash crop of Pakistan and the largest primary source of raw material for the textile industry. Cotton crop has contributes around 5.2 per cent of the value added in agriculture sector and about 1.0 per cent share in GDP[1]. Cotton farming is a major source of income for rural labour especially the women as pickers. The cotton sticks are also widely used as firewood at village level. Hundreds of ginneries are spread all over the country, especially at village/town level in remote areas and the livelihood of their seasonal/permanent labour depend on cotton crop. It also provides raw material to oil extraction mills and the cotton seed cake which is a key source of animal feed.

2. Cotton farming is the principal source of raw material for the textile sector. Besides, factories and textile mills in the country employing millions of skilled and unskilled labour along the entire cotton value added chain, from weaving to textile and garment export. In view of dynamic nature and multifaceted role of cotton in the country through exports and providing livelihood to millions of farmers, traders and workmen, it has always received priority and preference of the government particularly in textile industry.

3. The crop was cultivated on 2.489 million hectares in 2016-17 accounting for 13 per cent of the cropped area, required by 1.5 per cent on the last year. Pakistan produced 10.67 million bales in the year 2016-17 against 9.92 million bales last year showing a decrease of 7.6 per cent. Due to exceptional losses from previous year's pest infestation and low domestic prices at the sowing time. Cotton production and prices has adversely affected all the cotton related sectors of the economy. In view of the importance of cotton, there is an urgent need to minimize incidence of such fluctuations and take effective measures to stabilize its production overtime.

4. In order to ensure a reasonable production level for the domestic textile industry and safeguard the interest of the cotton growers, the Government has been analysing the

[1] Economic Survey of Pakistan 2016-17

Intervention Price for Cotton[2] in the past to be implemented only when the market prices of seed cotton fall below the intervention price level. Otherwise, the Government always encourages the role of private sector in marketing and trade of cotton. Accordingly, no intervention was required during the last couple of years as the market prices remained at reasonable level during the season. However, in view of the fragile market situation, the Government retained the intervention price for seed cotton at Rs 3000 per 40 kgs for 2015-16 crop.

5. Under the WTO regime, the cotton trade has become increasingly quality conscious. Demand for contamination free and clean cotton is increasing in the global trade, even the local textile industries demand for the standard cotton for manufacturing the quality made ups. Challenges in the textile industry would become more serious in the years ahead, which warrant for Pakistan to prepare its cotton production and marketing strategies to face the emerging issues in the domestic and global markets. The Government is well aware of the importance of improving the quality of cotton and controlling the pest attack on cotton production. The Pakistan Cotton Standards Institute (PCSI) promoting the quality control of cotton in the country was invited to provide training to the Cotton Pickers' Trainers. Accordingly, the PCSI has made a proposal for the training of Cotton Pickers' Trainers in picking for promotion of clean cotton production in the Punjab.

6. Cultivation of un-approved varieties, attack of diseases like, CLCV, Mealy bug and traditional farm management practices, are a few issues which affect the productivity of the crop. It was identified that Pakistan is lacking CLCV resistant germplasm and there is a dire need of importing global cotton germplasm to widen the cotton genetic base in the country. In order to implement the case, the government has approached the USDA. The USDA has agreed to provide funds through the Cotton Productivity Enhancement Project to be disbursed through an international agency ICARDA in Pakistan, and the Cotton Research Institutes.

7. With the aim to address the yield gaps and the low productivity issues, several steps are being undertaken like introduction of cotton in other potential areas and bridging the yield gap through adequate supply of certified seed, balanced use of inputs and optimal plant population

[2] Base grade 3 with staple length 1-1/16"

etc. Measures are also being taken to develop the disease/heat/drought resistant and Genetically Modified cotton varieties. Pest Scouting and Early Warning system is being strengthened by the provincial governments to control any disease attack. The private sector is being facilitated for production of Bt-cotton hybrid seeds through technical and financial assistance. The Government have also approved some Bt-cotton varieties for getting benefit of new technology to boost cotton production in the country.

2. SOWING AND PICKING TIMES OF COTTON

8. In major cotton growing districts of the Punjab and Sindh, sowing of American cotton varieties is generally recommended by Provincial Agriculture Departments from 1st May to end June in the Punjab, 15th March to 15th June in Sindh, the whole month of May in the Khyber Puktunkhwa and Balochistan. Province-wise details of the recommended sowing times for cotton growing districts are given in Table-1.

Table-1: Recommended Sowing Times of American Cotton

Province/District	Time of Sowing
Punjab	
Faisalabad, Sargodha, Jhang, Toba Tek - Singh Sahiwal, Pak Pattan, Okara Bahawalpur, R.Y.Khan	1st May to 15th June
Mianwali	10th May to 15th June
Multan, Lodhran, Vehari Muzaffargarh, Layyah, D.G.Khan, Rajanpur	1st May to end of June
Khanewal	15th May to 15th June
Bahawalnagar	1st May to 20th June
Sindh	
Thatta	15th March - 31st March
Tharparkar, Mirpurkhas and Badin	1st April - 30th April
Hyderabad	15th April - 15th May
Sanghar	15th April - 20th May
Dadu, Nawabshah and Naushahro Feroz	1st May - 31st May
Khairpur, Sukkur, Ghotki, Larkana, Shikarpur & Jacobabad	15th May - 15th June
Khyber Pakhtunkhwa	
D.I.Khan	1st May to 31st May
Balochistan	
Lasbela, Dera Murad Jamali, Nasirabad	1st May to 31st May

Sources:

1. Cotton Research Institute, Multan.
2. PCCC, Karachi.
3. Cotton Research Institute, Sakrand.

9. Picking of cotton in Sindh and in some parts of the Punjab starts in August and may continue up to February in certain cases depending upon the crop and climatic conditions.

10. An important development is the rising trend of Bt cotton by farmers. Mostly cotton growing area has become under Bt Cotton with different names in the Punjab and Sindh. It may pay additional income to cotton growers in Pakistan owing to high yield and less cost on plant protection. However, the Bt. Cotton varieties grown are valuable to cotton Leaf Curl Virus (CLCV) and sucking pests like Mealy Bug , Jassid and White fly which are a major threat to cotton crop in Pakistan. The time of sowing and suitable areas for cultivation of BT cotton in the Punjab for are presented in Table - 2

Table 2: ZONING FOR CULTIVATION OF BT COTTON IN THE PUNJAB

Bt Variety	Suitable Areas for Cultivation	Time of Sowing
IR-NIBGE-3701	All Fertile Lands of Punjab especially Bahawalpur and Rahim Yar Khan	15th April to 15th May
Ali Akbar 703	Rahim Yar Khan, Rajanpur, Bahawalpur, D.G. Khan and areas of early sown cotton	1st March to 15th April
MG-6	Low Fertile Lands and less irrigation water available areas especially areas of Muzafargarh, Bahawalnagar and Bahawalpur	1st April to 15th May
Sitara-008	Central Fertile Areas of Cotton, Khanewal, Multan, Vehari and Lodhran	1st March to 15th May
FH-113	Low Fertile Lands and Less Water Available Areas (Rahim Yar Khan, Rajanpur, D.G. Khan and Non Core Areas of Cotton), Layyah, Muzafargarh, Bahawalnagar, Haroonabad, Fort Abbas, Sandy Areas of Bhakkar and Hard Pan of Bahawalpur	16th April to 15th May
Neelum 121	Fertile and Irrigation Water Available Non Core Areas, Especially cotton sowing areas after potato crops (Okara, Sahiwal)	1st March to 30th April
Ali Akbar 802	Highly Virus Affected Areas, Multan, Lodhran, Muzafagarh, Khanewal and Non Core Areas of Cotton	15th April to 15th May
IR-NIBGE-1524	Low Fertile Lands with less water availability areas of Southern Punjab (Bahawalpur, Bahawalnagar)	15th April to 15th May
Hybrid GN-2085	All Fertile Lands of Punjab and suitable for progressive farmers	15th April to 15th May
Bt.CIM-598	All Fertile Lands and Irrigation Water Available, Core and Non-Core Areas of Punjab	1st March to 30th April
Sitara-009	All Fertile Lands of Punjab	1st March to 15th May
MNH-886	All Fertile Lands of Punjab	1st March to 15th May
Tarzan-1	Central Fertile Lands of Punjab	15th March to 15th May
N-141	All Fertile Lands and Irrigation Water Available Areas	15th March to 30th April
A-One	Central Fertile Areas of Cotton, Khanewal, Multan, Vehari and Lodhran	1st March to 15th April
NIBGE-3	Fertile and Irrigation Water Available Areas	1st March to 1st week of April

Source:- CCRI, Multan

3. PROVINCIAL SHARES IN AREA AND PRODUCTION

11. Provincial shares in area and production of cotton based on average of 2014-15 to 2016-17are provided in Table-3. During this period cotton production averaged at 11.516 million bales from 2.784 million hectares (6.879 million acres).

Table-3: Provincial Shares in Area and Production of Cotton: Average of 2014-15 to 2016-17

Country/ Province	Area		Production	
	000 hectares	Per cent	000 bales	Per cent
Pakistan	**2784.1**	**100.0**	**11516.1**	**100.0**
Punjab	2127.0	76.4	7866.0	68.3
Sindh	618.0	22.2	3548.3	30.8
KPK& Balochistan	39.1	1.4	101.7	0.9

Source: Annex-I.

12. Punjab and Sindh account for 76.4 and 22.2 per cent in cotton area and 68.3 and 30.8 per cent in production (Figures 1 and 2). Cotton yield in Sindh is higher than Punjab resultantly production share of Sindh exceed its area share. The share of Khyber Pakhtunkhwa and Balochistan together in production is 0.9 per cent from 1.4 per cent area. Cotton yield in Khyber Pakhtunkhwa and Balochistan together is much lower than Punjab and Sindh.

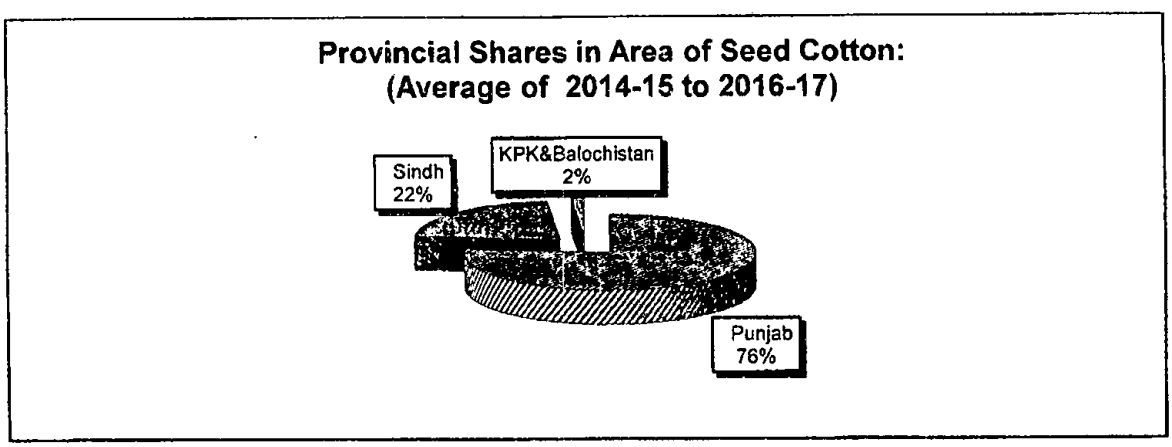

Fig-1: Provincial Shares in Area

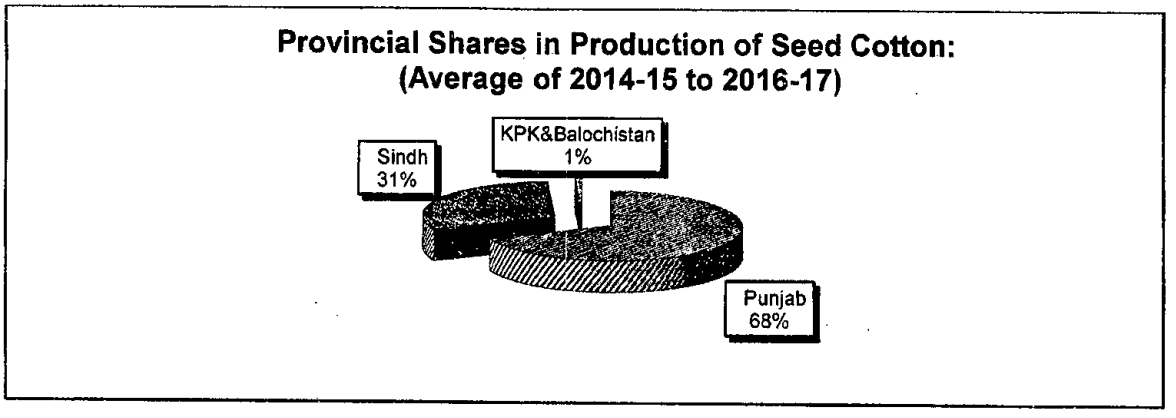

Fig-2: Provincial Shares in Production.

4. IMPORTANT COTTON GROWING DISTRICTS

13. The district-wise data on area and production of cotton are given in Annex-III. The Bahawalpur district producing more than one million bales of cotton per annum. The districts producing more than 100 thousand bales of cotton per year each are Bahawalnagar, Rahim Yar Khan, Lodhran, Vehari, Khanewal, Rajanpur, Multan, Muzzafargarh, D.G.Khan, Sahiwal, Pakpattan, Mianwali, Layyah, T.T.Singh, and Bakhar from the Punjab province and Sanghar, Ghotki, Nawabshah, Khairpur, Matiari, Mirpurkhas, NausheroFeroze, Sukkur, Umerkot, Tando Allahyar and Badin from Sindh Province. These 27 districts account for more than 95 per cent of the cotton production in the country. The districts of Bahawalnagar, Rahim Yar Khan, Lodhran, Vehari, Khanewal, Rajanpur, Multan, and Sanghar each producing more than half million bales per year altogether account for 48 per cent of the cotton in the country.

5. CHANGES IN AREA, YIELD AND PRODUCTION

14. During the period of 2006-07 to 2016-17, cotton area ranged between 2.489 and 3.106 million hectares (6.151 and 7.674 million acres) and yield between 581 and 816kgs per hectare (235 to 330 kgs per acre). Therefore, cotton production oscillated between 9.917 and 13.960 million bales. Long term and short term changes in area, yield and production are discussed below:

5.1 Long-term Changes: 2006-07 to 2016-17

15. During the period under reference, cotton production at country level decreased @ 0.9 per cent per annum mainly due to1.1 per cent decline in area although 0.3 per cent contraction in yield (Table-4).

Table-4: Average Annual Growth Rates of Area, Yield and Production of Cotton: 2006-07 to 2016-17

Country/ Province	Area	Yield	Production
	---------- Per cent ----------		
Pakistan	**-1.1**	**0.3**	**-0.9**
Punjab	-1.7	-0.7	-2.3
Sindh	0.7	2.4	3.1

Note: The growth rates have been worked out by estimating the equation, $Y=a(1+r)^x$, through Ordinary Least Squares (OLS) method from the data given in Annex-I.

16. In the Punjab, cotton production decreased @ 2.3 per cent annually due to reduction of 1.7and 0.7 per cent in area and yield. In Sindh, cotton production increased @ 3.1 per cent per annum solely due to2.4 percent improvement in yield and 0.7 per cent escalation in area.

5.2 Short-term Changes 2015-16Vs 2016-17

17. According to the final estimates provided by the provincial Agricultural Department, cotton production during 2016-17 at country level worked out as 10.671 million bales, as compared, 9.917 million bales produced in 2015-16 (Table-5). The 7.6 percent increase over the production is due to huge improvement of 25.4 percent in yield but 14.2 per cent decline in area.

Table-5: **Area, Yield and Production of Cotton: 2015-16 and 2016-17 Crop**

Country/ Province	Area		Changes in 2016-17 over 2015-16	Yield		Changes in 2016-17 over 2015-16	Production		Changes in 2016-17 over 2015-16
	2015-16	2016-17		2015-16	2016-17		2015-16	2016-17	
	-- 000 hectares --		Per cent	--Kgs/hectare --		Per cent	-- 000 bales --		Per cent
Pakistan	**2901.9**	**2489.1**	**-14.2**	**581.3**	**729.2**	**25.4**	**9917.4**	**10671.2**	**7.6**
Punjab	2242.7	1815.3	-19.1	481.1	653.8	35.9	6343.0	6978.0	10.0
Sindh	621.2	636.6	2.5	951.6	961.0	1.0	3475.6	3596.9	3.5
KP	0.4	0.4	0.0	510.3	510.3	0.0	1.2	1.2	0.0
Balochistan	37.6	36.8	-2.1	441.5	439.6	-0.4	97.6	95.1	-2.6

Source: Annex-I

18. Cotton production in the Punjab estimated at 6.978 million bales, 10.0 per cent higher than6.343 million bales produced in 2015-16. Greater production is solely due to increase in yield by 35.9 per cent though higher decline in area by 19.1 per cent.

19. In Sindh, cotton production remained 3.597 million bales, 3.5 per cent also higher than 3.476 million bales in 2015-16. Increase in production is due to increase in yield and area by 1.0 and 2.5 per cent.

20. Provincial Agricultural Departments have provided following reasons for changes in area, yield and production.

❖ **Punjab**

Area

21. The area shows a decrease 19.1% over the previous Kharif crop which is due to discouragement of growers regarding low rate and damage of crop on large scale during last year because of post/insect attack (White fly, Jassid, Army boll worm, Pink boll worm etc).

Production

1. Better management produced whole some effect on yield.
2. Yield also increased due to adequate availability of inputs (Fertilizer, pesticide etc) on subsidized rates.

❖ **Sindh**

Area

Area under Cotton crop has increased, due to ban impose on Rice cultivation in Left Bank of Indus River, more irrigation water was available & Cotton crop is cash crop, so the growers sown more area under the crop

Production

22. As government has provided subsidy on fertilizers & growers received better market rate, so the growers has applied balanced recommended doze to the crop and managed there crop properly.

6. TARGETS VS ACHIEVEMENTS: 2016-17CROP

23. Federal Committee on Cotton(FCC) was held at Ministry of Textile Industry has fixed Seed Cotton production target for 2016-17 crop at 14.101 million bales. As per final estimates of Provincial Agriculture Departments, cotton production is reported at 10.671 million bales24.3

percent less than the target due to 17.0 percent shortage in area and there was also decreasing 8.8 percent in yield (Table-6).

Table-6: Targets and Estimated Achievements of Area, Yield and Production of Seed Cotton: 2016-17 Crop

Country/ Province	Area		Deviation from the target	Yield		Deviation from the target	Production		Deviation from the target
	Target	Achieve-Ment		Target	Achieve-ment		Target	Achieve-ment	
	--- 000 ha ----		Per cent	Tonnes/ha		Per cent	– 000 bales --		Per cent
Pakistan	**2999.0**	**2489.1**	**-17.0**	**799.7**	**729.2**	**-8.8**	**14101.0**	**10671.2**	**-24.3**
Punjab	2310.0	1815.3	-21.4	699.5	653.8	-6.5	9500.0	6978.0	-26.5
Sindh	650.0	636.6	-2.1	1177.5	961.0	-18.4	4500.0	3596.9	-20.1
KP	1.0	0.4	-60.0	510.3	510.3	0.0	3.0	1.2	-60.0
Balochistan	38.0	36.8	-3.2	438.7	439.6	0.2	98.0	95.1	-3.0

Sources: 1. For targets: Respective Ministry of Textile Industry.
2. For achievements: Annex-I.

24. Production of cotton fell short of the target by 26.5, 20.1, 60.0 and 3.0 percent in all provinces Punjab, Sindh, KP and Baluchistan respectively. Area of cotton also fell down of the target by 21.4, 2.1, 60.0, and 3.2 respectively in Punjab, Sindh, KP and Baluchistan respectively. Thus yield of Punjab and Sindh also could not be achieved. Only Baluchistan slightly surpassed the target in yield by 0.2 per cent.

7. DOMESTIC SUPPLY, DEMAND, STOCKS AND PRICE SITUATION

7.1 Domestic Supply, Demand and Stocks

25. The domestic production of cotton during 2016-17 is reported at 10.67 million bales which is 7.59 per cent higher than the last year's production of 9.917 million bales. Due to significant decrease in production during last year has left the zero carryover stocks. Resultantly the total supply during 2016-17 with the current production of 10.670 million bales.. Accounting for the likely consumption, imports and exports, the closing stocks of 2016-17 are likely to be only 0.43 million bales which is due to heavy import of cotton during 2016-17 (Aug-July)

Table-7: Domestic Production, Demand and Stocks of Cotton (Lint): 2014-15 to 2016-17 (August-July)

Item	2014-15	2015-16	2016-17 (estimated)
	---------- Million bales * ----------		
1. Opening stocks	0.883	0.562	0.00
2. Production	13.996	9.917	10.670
3. Total supply	**14.697**	**10.297**	**10.670**
4. Likely Consumption	**14.727**	**12.633**	**13.060**
5. Imports	0.983	2.435	2.963
6. Exports	0.573	0.281	0.143
7. Closing stocks	**0.562**	**0.00**	**0.43**

* One bale = 170 kgs = 375 lbs.

Sources:

a) For item 1 & 4 Textile Commissioner Organisation (TCO).

b) For item 2, 5 & 6 PBS, Karachi..

7.2 Domestic Price Situation

7.2.1 Seed cotton (Phutti)

26. Monthly average wholesale prices of seed cotton in the main producing area markets of Punjab during the post-harvest period of 2016-17 crop are detailed in Table-8.

Table-8: Monthly Average Wholesale Prices of Seed Cotton (Phutti) in the Main Producer Area Markets of Punjab for 2016-17 Crop.

Market	Sept	Oct	Nov	Dec	Jan	Feb	Avg
Punjab	----------**Rs per 40 kgs**----------						
Bahawalnagar	2881	3110	3342	3300	3471	3425	**3255**
Bahawalpur	2931	3167	3310	3210	3190	3292	**3183**
R.Y Khan	2859	3102	3144	3221	3303	3410	**3173**
Mian Channu	2775	3083	3058	3098	3135	-	**3030**
Khanewal	2872	3044	3200	3175	3249	-	**3108**
Vehari	2893	3127	3000	3051	3253	3508	**3138**
RajanPur	2942	3139	3125	3088	-	-	**3073**
Burewala	2878	3115	2963	3004	3231	3441	**3105**
Average	**2879**	**3111**	**3143**	**3143**	**3262**	**3415**	**3133**

Source: Directorate of Agriculture (E&M), Punjab, Lahore.

27. Monthly average wholesale prices of seed cotton during the post-harvest period in Punjab ranged between Rs averaged at Rs 2775 per 40 kgs in Mian Channu market during moth of September 2016 and Rs 3508 per 40 kgs in Vehari market during the month of February 2017. The seasonal average price of seed cotton ranged between Rs 3030 to Rs 3255 per 40 kgs in Table-9.

Table-9: Monthly Average Wholesale Prices of Seed Cotton (Phutti) in the Main Producer Area Markets of Sindh for 2016-17 Crop.

Markets	Aug	Sept	Oct	Nov	Dec	Avg
	----------Rs per 40 kgs----------					
Umerkot	3419	3044	2919	2250	-	**2908**
Mirpur Khas	3375	2888	2888	2225	2488	**2773**
Sanghar	2850	2994	2925	2550	2550	**2774**
Matiari	2863	3094	3000	2475	2800	**2846**
Hyderabad	3500	2988	2925	2325	2500	**2848**
T.M.Khan	3450	2994	2813	2800	-	**2764**
Shaheed Benazir Abad	3288	3075	3100	2749	2825	**3007**
N.S.Feroze	-	3025	3116	2981	3075	**3049**
Ghotki	-	-	3088	3051	3300	**3146**
Average	**3249**	**3011**	**2938**	**2645**	**2633**	**2846**

Sources: D.G. Agriculture Extension, Hyderabad, Sindh.

28. In Sindh, average monthly wholesale prices of seed cotton during the post-harvest period ranged between Rs averaged at Rs 2255 per 40 kgs in Mirpur Khas Market during month of November 2016 and Rs 3500 per 40 kgs in Hyderabad market during the month of August 2016. The seasonal average price of seed cotton ranged between Rs 2764 to Rs 3146 per 40 kgs.

7.2.1 Cotton Lint (Raw Cotton)

29. Monthly average spot prices of raw cotton at Karachi during 2015-16 and 2016-17 are presented in Table-10. The spot price during 2016-17 averaged at Rs 6883 per 40 kgs which is 23.3 percent higher than last year.

Table-10: Monthly Average Spot Prices of Raw Cotton at Karachi for 2015-16 and 2016-17 Crops (August-May)

Month	Base Grade -3, staple length 1-1/16", Micronaire Value 3.8 to 4.9 NCL (No Control Limit)	
	2015-16	2016-17
	Rupees per 40 kgs	
August	4880	7080
September	4991	6450
October	5582	6410
November	5698	6469
December	5758	6712
January	5726	6872
February	5616	7149
March	5785	7245
April	5785	7216
May	5986	7227
Average	**5581**	**6883**

Source: Karachi Cotton Association (KCA). Karachi.

8. COST OF PRODUCTION (COP) OF SEED COTTON

30. Cost of production is one of the main factors in formulation of the indicative price suggestions for the farm produce. However, its calculation involves several conceptual difficulties due to wide variations in agro-climatic conditions, input use levels and farming systems under which the crop is grown.

31. Cost of production estimates for seed cotton: 2017-18 crop are derived by using the same input-output parameters as done in the Cotton Policy Analysis report for 2016-17. Updated rates of different cultivation operations and inputs' prices for Punjab and Sindh provinces (major cotton producing provinces) were collected by API from the field through a survey carried out in Punjab and Sindh. The detailed cost estimates for Punjab and Sindh are given in Annex-V and Annex-VI respectively while a summary of the results is presented below in Table-11.

Table-11: Average Farmer Net Cost of Production of Cotton: 2016-17 and 2017-18 Crops

S. No	Item	Unit	Cost estimate		Change in 2017-18 against 2016-17
			2016-17 crop	2017-18 crop	
	Punjab				
1	Net cost of cultivation	Rs./acre	56748	58621	1873
2	Yield	Kgs/ acre	752	752	0
3	Cost of production at farm level	Rs./40 Kg	3018.50	3085.31	67
4	Marketing cost	,	40	40	0
5	Cost of production at Market/ ginnery	,	3058.50	3125.31	67
	Sindh				
1	Net cost of cultivation	Rs./acre	51072	59428	8356
2	Yield	Kgs/ acre	785	785	0
3	Cost of production at farm level	Rs./40 Kg	2602.38	3028.19	426
4	Marketing cost	,	40	40	0
5	Cost of production at Market/ ginnery	,	2642.38	3068.19	426

Source: Annex-V and VI.

- **Punjab**

32. During 2017-18, net cost of raising one acre of seed cotton (inclusive land rent) in Punjab is likely to be Rs 58621 (Table-10). Based on an average yield of 752 Kg per acre, cost of production at the farm level works out to Rs 3085.31 per 40 Kg.

33. For determining ginnery level cost of production per 40 kg, marketing expenses @ are added to the farm level cost of production which gives ginnery level cost of Rs 3125.31 per 40 kg, Rs 67 higher than the corresponding COP of 2016-17.

- **Sindh**

34. During 2017-18 crop season, net cost of cultivation of cotton in Sindh including land rent works out to Rs 59,428 per acre. Based on an average yield of 785 Kgs per acre, farm level cost of production of cotton is estimated at Rs 3028.19 per 40 Kg. By adding marketing expenses @ Rs 40 to the farm level COP, mill gate cost of production would be Rs 3068.19 per 40 Kg – more by Rs. 426/40 Kg than the last year cost of Rs 2642.38 per 40 Kg.

8.1 Cost of major operations and inputs

35. Shares of different production operations/ inputs for 2016-17 and 2017-18 for Punjab and Sindh provinces are shown in Table-11 are described below:

Table-12: Gross Cost of Cultivation of Seed Cotton: 2016-17 and 2017-18

(Cost/acre)

S.No	Inputs/ operations	2016-17	2017-18 (Estimated)
	Punjab		
1	Land preparation	6126 (11)	6601 (11)
2	Seed and sowing operations	2963 (5)	3847 (6)
3	Weedicides	4038 (7)	4500 (8)
4	Irrigation	3548 (6)	3696 (6)
5	Fertilizers including FYM	9215 (16)	9408 (16))
6	Harvesting & threshing etc	6300 (11)	6300 (11)
7	Land rent	16667 (29)	16667 (28)
8	Other costs	8890 (15)	8602 (14)
9	Gross cost	57747 (100)	59621 (100)
	Sindh		
1	Land preparation	6953 (13)	7155 (12)
2	Seed and sowing operations	3994 (8)	2902 (5)
3	Weedicides	2940 (6)	5100 (8)
4	Irrigation	2059 (4)	2081 (3)
5	Fertilizers including FYM	7499 (14)	10323 (17)
6	Harvesting & threshing etc	6888 (13)	6700 (11)
7	Land rent	13333 (26)	16667 (28)
8	Other costs	8406 (16)	9501 (16)
9	Gross cost	52071 (100)	60428 (100)

Notes:

- Numbers are rounded off to zero decimals due to which calculations may result in slight differences
- Figures in parenthesis represent average shares in the gross cost of cultivation per acre.
- 'Other costs' include mark-up on investment, management charges, picking charges, land revenue, land tax, drainage Cess and cutting of cotton sticks.

- **Punjab**

36. Like 2016-17 Land rent might be the major component of the cost of production of seed cotton in Punjab during 2017-18. It adds to the total cost by 28% followed by fertilizer 16%, other costs 14% and land preparation and harvesting and threshing each @ 11%. Other costs consist of mark-up on capital, land tax, management charges, picking charges, land revenue,

'Drainage Cess' and cutting of cotton sticks. Other costs (all operations other than the above mentioned) lei between 6 and 8 per cent.

- **Sindh**

37. For Sindh, major components of cost of production for 2017-18 crop are expected to be land rent (28%), fertilizer including FYM (17%), other costs (16%), land preparation (12%) and harvesting and threshing (11%).

9. ECONOMICS OF COTTON AND COMPETING CROPS

38. Farmers' priorities and decisions regarding resource allocation among the competing crops are primarily governed by a number of economic considerations particularly focusing on gross cost, gross income, gross margin, net income, output-input ratio, etc. These indicators provide useful insights into the pattern of resource use at the farm level, both by individual as well as the whole farming community.

39. Cotton, a kharif crop, competes with rice for land, water and other farm resources in the areas where cultivation of both the crops is technically feasible. Cotton also faces indirect competition from sugarcane, which occupies the land throughout the year as an annual crop.

40. The economics of cotton and competing crops has been analyzed in terms of input-output prices paid and received by the growers during the 2016-17 crop year. The details of the analysis are provided in Annex- VI. A summary of various economic indicators for the Punjab and Sindh is presented in Tables 13 & 14 and depicted at Figures 3 & 4:

Table-13: Economics of Cotton and Competing Crops at Prices Realized by the Growers in the Punjab: 2016-17 Crops

Province/Crop/ Crop combination	Output-input ratio	Gross revenue per		
		rupee of purchased inputs cost	day of crop duration	acre-inch of irrigation water used
		------- Rupees ------		
1. Cotton	1.09	3.37	246	2680
2. Basmati paddy	0.99	2.21	243	755
3. IRRI paddy	0.79	1.89	173	502
4. Cotton + Wheat	1.10	3.63	245	3030
5. Cotton + Sunflower	1.13	3.36	258	2459
6. Sugarcane	1.16	4.55	237	1943

Source: Annex-

- **Punjab**

41. Cotton, in Punjab, though rewarded the farmer with better returns as compared to Basmati and IRRI Paddy in terms of returns to overall investment, but could hardly make break even and paid back marginally higher than the cost of production. However, in terms of remaining indicators, like gross revenue per rupee of purchased inputs and irrigation water, cotton's performance was significantly better than both Basmati and IRRI paddy. Basmati paddy could compete only in terms of returns to crop duration but still paying relatively lesser than the cotton. IRRI paddy could not compete, neither Cotton nor Basmati, in any of the criteria adopted for the economic analysis.

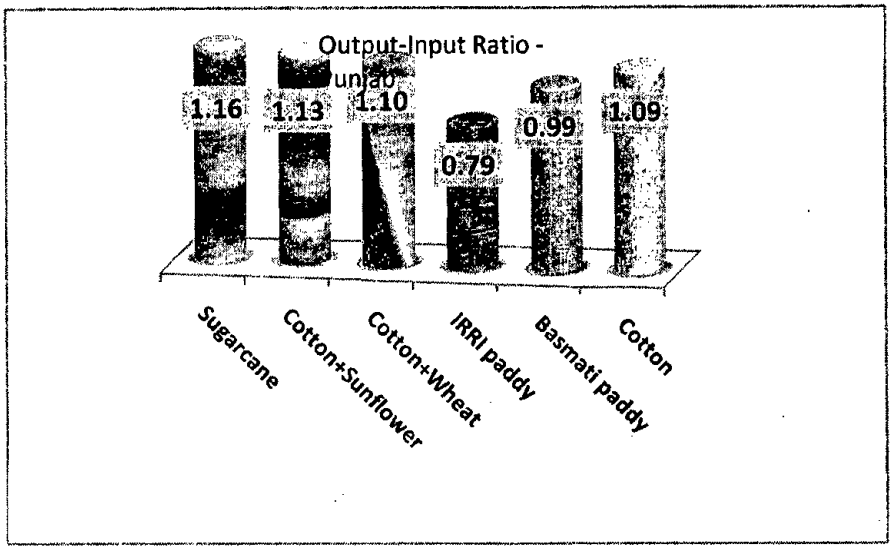

Fig- 3 : Returns to Overall Investment in Punjab.

42. In case of indirect competition, sugarcane paid considerably better returns over both the cotton combinations in respect of output-input ratio and purchased inputs cost. Cotton combinations, both with wheat and sunflower performed better, giving back to the grower higher returns as compared to the sugarcane crop particularly in terms of crop duration and irrigation water.

Sindh

43. In Sindh, cotton farming performed in a mix way - better than IRRI paddy in terms of some of the economic criteria including purchased inputs and irrigation water, while IRRI paddy paid better returns in terms of output-input ratio and crop duration. However, the noticeable point is that both Cotton and IRRI paddy could successfully make it giving back to farmer what the farmer had invested - cost of production.

Table-14: Economics of Cotton and Competing Crops at Prices Realized by the Growers in Sindh: 2016-17 Crops

Province/Crop/ Crop combination	Output-input ratio	Gross revenue per		
		rupee of purchased inputs cost	day of crop duration	acre-inch of irrigation water used
		-------- Rupees --------		
1. Seed Cotton	1.11	3.94	232	3087
2. IRRI paddy	1.19	3.58	240	773
3. Cotton +Wheat	1.11	3.86	231	3231
4. Cotton +Sunflower	1.16	4.17	249	2618
5. Sugarcane	1.25	4.28	232	1597

Source: Annex-VI

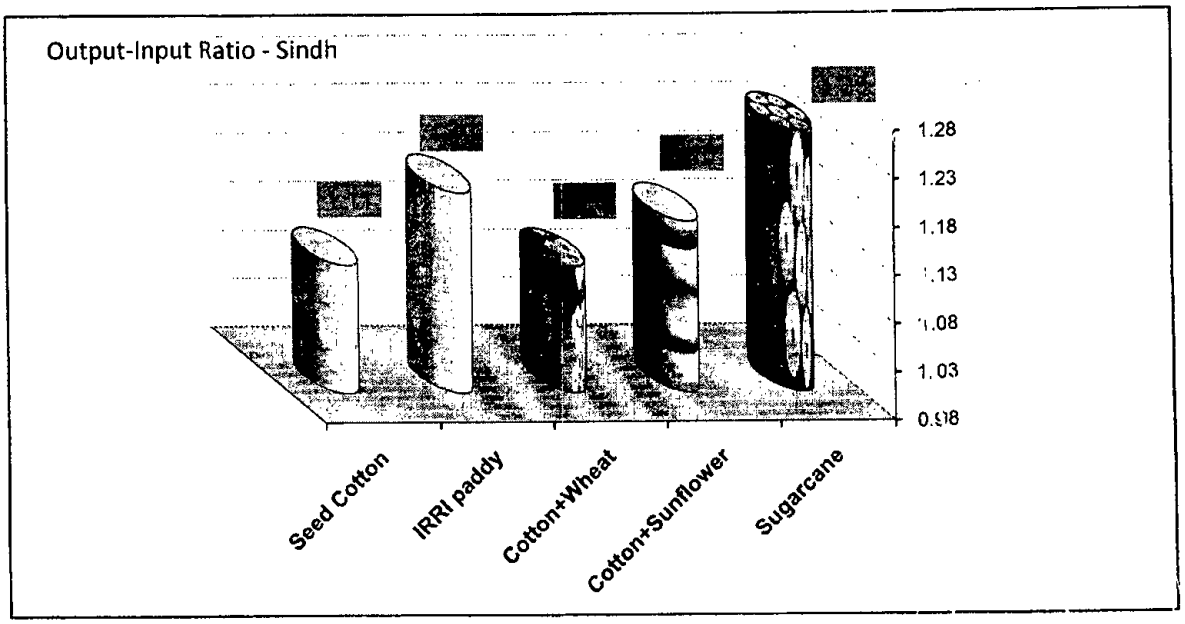

Fig- 4: Returns to Overall Investment in Sindh

44. In case of indirect competition, sugarcane farming, presuming that the farmers have received the notified price, has shown much better returns over the cotton combinations with wheat or sunflower in respect of certain economic criteria like returns to overall investment and purchased inputs. However, in terms of irrigation water, both the cotton combinations have out-competed the sugarcane with a considerable margin.

10. ECONOMICS OF FERTILIZER USE IN COTTON CROP

45. The economics of using fertilizer in cotton crop has been analyzed through estimating (i) Benefit Cost Ratio of fertilizer use and (ii) Parity Ratio between the prices of fertilizers and seed cotton.

10.1 Benefit Cost Ratio (BCR)

46. The BCR refers to the ratio between value of additional produce obtained by using a certain dose of fertilizers and the additional costs incurred therein. The BCR greater than one means that benefits are higher than the costs entailed in the process and vice versa. In order to account for the variation in cotton-fertilizer response under different conditions, the BCRs have been computed at 4 different response levels. The results of the exercise are set out in Table-15.

Table-15: Benefit Cost Ratio (BCR) of Fertilizer Use on Cotton: 2007-08 to 2016-17

Year	Response Ratios (Seed Cotton: Nutrient) of			
	3.00:1	3.75:1	4.50:1	5.25:1
2007-08	2.72	3.22	3.68	4.10
2008-09	1.24	1.51	1.77	2.02
2009-10	2.72	3.27	3.78	4.26
2010-11	3.08	3.72	4.32	4.88
2011-12	1.63	1.96	2.26	2.54
2012-13	1.32	1.60	1.86	2.10
2013-14	1.51	1.82	2.11	2.38
2014-15	1.19	1.46	1.64	1.84
2015-16	1.20	1.44	1.67	1.98
2016-17	1.70	2.05	3.26	2.62

Sources: 1. For 2007-08 to 2015-16: Cotton Policy Analysis Report for 2016-17 crop, by API.
2. For 2016-17: Annex-VII.

47. It may be seen from the above Table that the BCR is substantially higher than one even at the lowest cotton-fertilizer response ratio of 3:1. It implies that the benefits of using a certain dose of fertilizer for cotton farming are much higher than the corresponding costs.

10.2 Parity Ratio between Prices of Fertilizer and Seed Cotton

48. The parity ratio between prices of fertilizers and seed cotton refers to the quantity of seed cotton required to purchase a certain quantity of chemical fertilizers. In view of fluctuating prices, the ratio has been calculated for 2007-08 to 2016-17 and presented in Table-16. The quantity of seed cotton needed to buy one nutrient tonne of N fertilizer has ranged between 0.39 to 1.24 tonnes. The parity ratios between prices of seed cotton and those of phosphatic fertilizer have fluctuated from 0.78 to 2.35 during the period of analysis except 2008-09 where the parity ratio jumped to 3.16 because of hike in domestic prices of DAP due to exorbitant rise in world prices. During 2016-17 the prices of phosphorus and nitrogen are lesser than the last year which, however had been declining constantly during 2012-13 to 2016-17.

Table-16: **Parity Ratio between the Prices of Fertilizer and Seed Cotton: 2007-08 to 2016-17**

Crop Year	Sale Prices of		Market Prices of Seed Cotton	Quantity of Seed Cotton needed to buy one nutrient tonne of	
	Nitrogen N	Phosphorous P		Nitrogen N	Phosphorous P
	----------Rupees per tonne----------			----------Tonnes---------	
2007-08	22850	28390	36400	0.63	0.78
2008-09	28760	120000	38000	0.76	3.16
2009-10	31850	73620	61150	0.52	1.20
2010-11	35000	98260	89475	0.39	1.10
2011-12	45870	118750	57612	0.80	2.06
2012-13	77870	149570	63688	1.22	2.35
2013-14	74260	139980	72500	1.02	1.93
2014-15	72870	124830	72488	1.00	1.72
2015-16	80950	129190	64825	1.24	1.99
2016-17	57610	87240	75725	0.76	1.16

Notes: 1. The prices of N and P have been worked out from those of Urea and DAP as adopted in estimating the cost of production of seed cotton.

2. The market price of seed cotton is the average price prevailed in the producer area markets of the Punjab and Sindh.

11. NOMINAL AND REAL MARKET PRICES OF SEED COTTON

49. The intervention price of seed cotton is annually reviewed by the government well before sowing time, mainly with the purpose to regulate the market in case the market prices fall in the open market below a certain level. The Government always encourages the role of private sector in marketing and trade of cotton. As a result, most of transactions in cotton are made in the open market. To ascertain overtime changes in the purchasing power of cotton, the nominal market prices of cotton are being deflated by the Consumer Price Index (CPI). The nominal and real market prices of seed cotton for the Punjab and Sindh for the period 2007-08 to 2016-17 are presented in Table-17 and 18.

11.1 At Market Prices of Seed Cotton in the Punjab

50. The nominal and real market prices of seed cotton for 2007-08 to 2016-17 are shown in Table-17 below and depicted in Figure-5.

Table-17: Nominal and Real Market Prices of Seed Cotton (Phutti) in the Punjab: 2007-08 to 2016-17

Crop year	Nominal Market Prices	Consumer Price Index (CPI)	Real Market Prices
	Rs per 40 kgs	2007-08= 100	---- Rs per 40 kgs -
1	2	3	4 = (2/3)x100
2007-08	1486	100.00	1,486
2008-09	1557	117.03	1,330
2009-10	1916	128.85	1,487
2010-11	4003	146.45	2,733
2011-12	2558	162.57	1,573
2012-13	2552	174.53	1,462
2013-14	3044	189.69	1,605
2014-15	2549	197.74	1,289
2015-16	2626	203.25	1295
2016-17	3090	212.16	1,456

Note: Market prices are the average monthly wholesale prices of seed cotton during post-harvest period in major producing area markets of the Punjab.

Sources: For CPI 2016-17, Economic Survey of Pakistan 2016-17.

51. The nominal price of seed cotton averaging at Rs 1486 per 40 kgs for 2007-08 crop had peaked all time higher level to Rs 4003 per 40 kgs in 2010-11, during the study period, which however, declined in the following two years to Rs 2558 and Rs 2552 per 40 kgs in 2011-12 and

2012-13, respectively. The nominal market price again took an upward trend and reached at Rs.3044 per 40 kgs in 2013-14 and again declined to Rs 2549 per 40 kgs in 2014-15 the lowest since 2010-11. The price improved by 17.67 per cent in 2016-17 to Rs 3090 per 40 kgs.

52. During the period under review, the real market price has experienced fluctuations, touching the lowest level of Rs.1289 per 40 kgs in 2014-15 and in terms of real value the highest level of Rs 2733 per 40 kgs in 2010-11.

52. During 2016-17, the nominal market price averaged at Rs 3090 per 40 kgs, which is high by the previous year level. Consequently, the real value of seed cotton improved by 12.4 per cent over the previous year but still 2.0 per cent lower than the base year level. The real price of seed cotton in 2016-17 is, in fact, much higher against the last year and near to the base year.

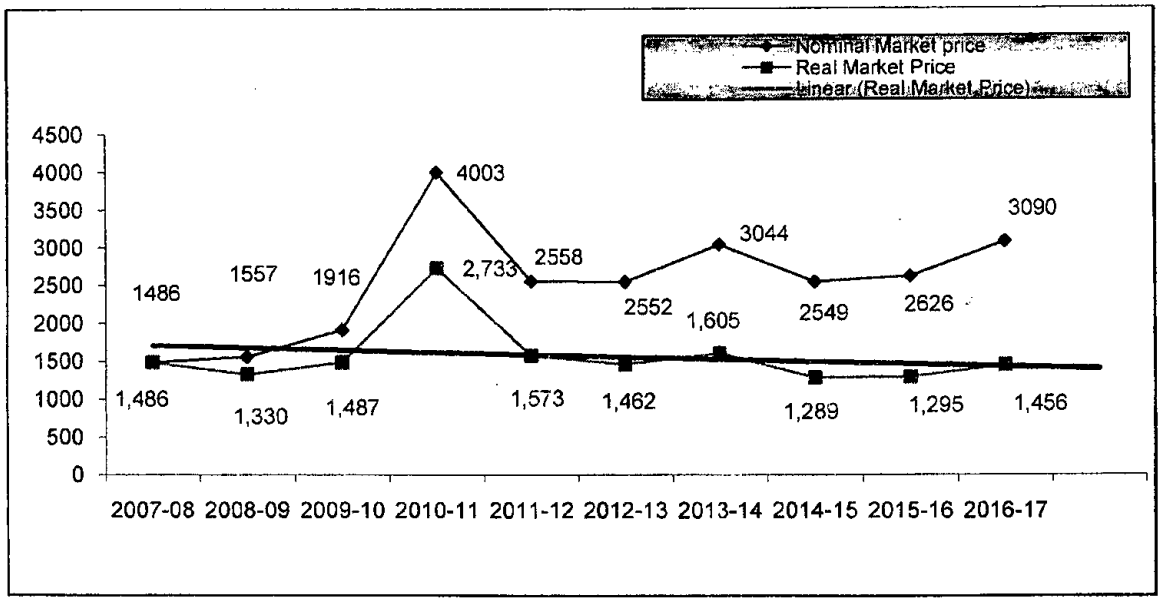

Fig: 5: Nominal and real market prices of seed cotton (Phutti) in Punjab 2007-08 to 2016-17

11.2 At Market Prices of Seed Cotton in Sindh

53. The nominal and real market prices of seed cotton in Sindh for 2007-08 to 2016-17 are presented in Table-17 and depicted in Figure-6.

Table-18: Nominal and Real Market Prices of Seed Cotton (Phutti) in Sindh: 2007-08 to 2016-17

Crop year	Nominal Market Prices	Consumer Price Index (CPI)	Real Market Prices
	Rs per 40 kgs	2007-08= 100	------ Rs per 40 kgs ------
1	2	3	4= (2/3)x100
2007-08	1456	100.00	1,456
2008-09	1525	117.03	1,303
2009-10	1903	128.85	1,477
2010-11	3874	146.45	2,645
2011-12	2051	162.57	1,262
2012-13	2543	174.53	1,457
2013-14	2755	189.69	1,452
2014-15	2125	197.74	1,074
2015-16	2461	203.25	1,214
2016-17	2968	212.16	1399

Note: Market prices are the average monthly wholesale prices of seed cotton during post-harvest period in major producing area markets of Sindh.

Sources: 1. Price Policy Reports of Seed Cotton by API (various issues).
2. For CPI 2016-17, Economic Survey of Pakistan, 2016-17.

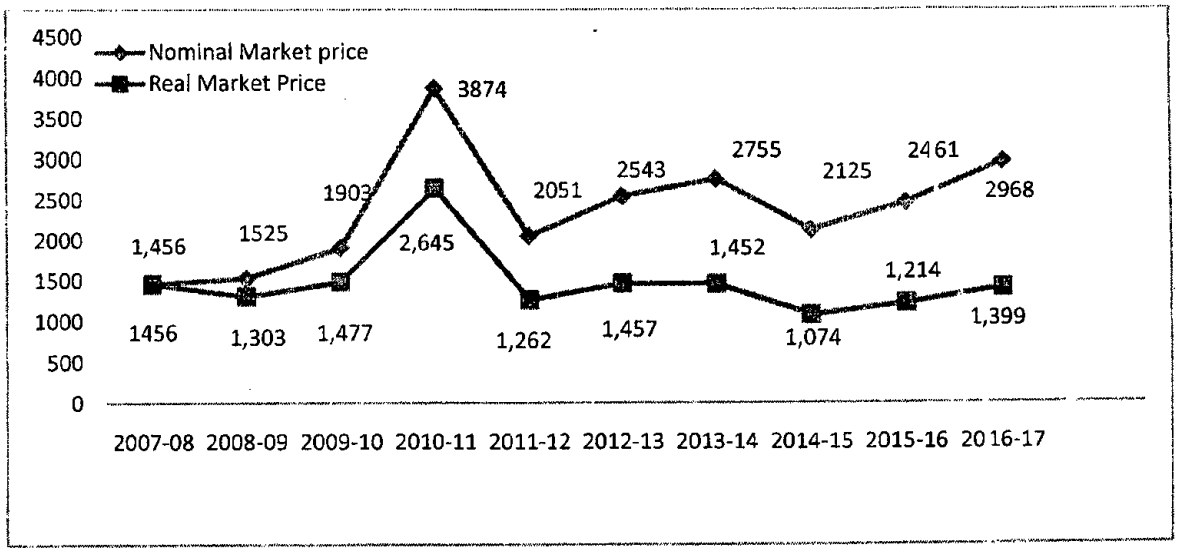

Fig-6: Nominal and real market prices of seed cotton (Phutti) in Sindh 2007-08 to 2016-17

55. It may be seen from Table-18, that there seems a steady growth trend during 2007-10 in the nominal price of seed cotton in Sindh Province. The degree of fluctuation in the nominal price reflects a similar situation as in Punjab, however, with a different degree of variation. The nominal market price of seed cotton averaging at Rs 1456 per 40 kgs in 2007-08 shot up by 104 per cent to Rs 3874 per 40 kgs in 2010-11, exceptionally, which however could not retain and dropped to Rs 2051 per 40 kgs in very next year, i.e. by 47 per cent. The price regained a rising trend in the next two years, but again declined to Rs 2125 per 40 kgs in 2014-15 and 2968 per 40 kgs shows again rising trend in 2016-17. The real market price has experienced same fluctuations, touching the highest value of Rs 2645 per 40 kgs in 2010-11 and the lowest level of Rs 1074 per 40 kgs in 2014-15 over the base line value. In 2016-17, the price, however, evidenced a moderate income for example 15 per cent over the previous year.

56. It is important to note that for five years, the real value of seed cotton remained lower against the base year level. Similarly, due to high inflationary trend throughout the period under review, the real price remained significantly lower than the relative nominal price, which indicates that cotton growers in Sindh have received lower level of real economic returns from the crop.

12. WORLD SUPPLY, DEMAND, STOCKS, TRADE AND PRICE SITUATION

57. The global production as reported by the International Cotton Advisory Committee (ICAC) in its July 5, 2017, the global production of cotton during 2016-17 is projected at 22.93 million tones, 1.63 million tones lower than previous year. During 2017-18, the world production is forecast to increase by 4.03 percent to the level of 24.57 million tonnes. After adding the opening stocks of 18.68 million tones, total supply in 2016-17 worked to 41.61 million tones, 3.34 percent lower than 2015-16.

58. The world consumption of cotton during 2016-17 projected at 24.31 million tones is 0.12 percent higher than the last year level. For 2017-18, cotton consumption projected at 24.73 million tones, 1.70 percent slightly higher than 2016-17.

59. The end year stocks during 2016-17 projected at 17.30 million tones are about 7.38 percent less than the last year, which are forecast to further decrease to 17.15 million tones in 2017-18. The details are provided in Table-19.

Table-19: World Production, Consumption, Stocks and Trade in Cotton: 2015-16 to 2017-18

S.No.	Item	2015-16	2016-17 (Projected)	2017-18 (Projection)
		---------- Million tones ----------		
1.	Opening stocks	21.70	18.68	17.30
2.	Production	21.30	22.93	24.57
3.	Total supply (1+2)	43.00	41.61	41.87
4.	Likely consumption	24.28	24.31	24.73
5.	Trade imbalance and stocks adjustment *	(-)0.04	0.00	0.00
6.	Closing stocks (3-4+5)	18.68	17.30	17.15

Note: *Trade imbalance, i.e. the difference in world imports and exports may exist due to inclusion of linter and waste, changes in weight during transit, difference in reporting periods and measurement error. Need for stock adjustment may arise due to difference between calculated stocks and actual ones.

Source: International Cotton Advisory Committee, July 5, 2017.

13. INTERNATIONAL PRICES

60. The international prices of Index- A and Orleans/Texas Cottons during 2009-10 to 2017-18 are placed in Annex-VIII.

61. The prices of both the cottons showed a volatile and widely fluctuated pattern during the period under review. The prices of Index –A cottons have averaged at US Cent 70.80 per pound in 2009-10. In next year these prices increased sharply and averaged at US Cent 165.13 per pound, the highest level of prices during the period under review. During 2011-12 the prices started declining and reached at US Cent 70.30 per pound during 2015-16, the lowest level of price during period under review. Next year prices recovered and averaged at US Cent 82.82 per pound during 2016-17.

62. During current year 2017-18 (August-May), the prices of Index-A cottons have generally shown a volatile pattern. The prices of Orleans/Texas has flowed the same pattern upto 2012-13 but since then the Orleans Texas 1-1/23" has not been traded in international market.

14. EXPORT AND IMPORT PARITY PRICES

63. Estimation of export parity price of a commodity is helpful in ascertaining its competitiveness in international market while its import parity price is a useful measure of determining the opportunity cost of resources used in its domestic production. Since Pakistan is exporting as well as importing cotton, both the export and import parity prices of cotton have been worked out for analyzing price policy options for the next crop season.

64. The export and import parity prices of seed cotton have been calculated on the basis of their actual and quoted prices. Detailed calculations in this regard are given at Annex-IX to XIII and summarized in Table-20.

Table-20: Export/Import Parity Prices of Seed Cotton as Worked from Various Reference Prices

S.No.	Base/period	Reference price	Worked back price of seed cotton at gin
		US cents/lb	Rs/40 kgs
1.	**Export parity prices based on average:**		
	i) Actual export price of Pakistani cotton		
	- During 2016-17	77.99	3,114
	- During 2013-14 to 2015-16	73.89	2,987
	ii) Future's contract prices of New York No.2 cotton (average of Oct, Dec 2017 and March 2018)	69.64	2,546
2.	**Import parity prices based on average:**		
	i) Actual cif (Karachi) prices of imported cotton:	Rs/40 kgs	
	- During 2016-17	7,347	3,441
	- During 2013-14 to 2015-16	8,594	3,851
	ii) Index-A Cottons	US cents/lb	
	- During 2016-17	82.77	3,614
	- During 2013-14 to 2015-16	77.19	3,428

Sources: Annex-IX to XIII.

15. ECONOMIC EFFICIENCY OF RESOURCE USE IN SEED COTTON PRODUCTION

65. Seed cotton is an important cash crop of Pakistan and occupies considerable proportion of the cropped area in the country. On national basis valuable resources in the form of land, water, capital and labour are employed in production of this crop. There-fore, it is very important to estimate efficiency of resources used for producing the crop. Most commonly used measures for this estimation are Nominal Protection Coefficient (NPC), Effective Protection Coefficient and Domestic Resource Cost Coefficient (DRC) and these are derived by constructing Policy Analysis Matrix (PAM). The analysis is based on cost of seed cotton production in Punjab and Sindh, import and export parity prices and foreign exchange rate. Estimated coefficients are summarized in Table-21.

- **Seed cotton under import situation**

66. Data in Table-21 represents economic efficiency estimates under import situation.

67. It may be seen from the referred Table that NPC estimates both for Punjab and Sindh provinces have been continuously much less than one during the period under study. Though these indicate slight variation over the years but mostly have been closer to 0.7. The situation explains that seed cotton growers are implicitly taxed in Pakistan and is suggestive that sufficient room exists for increasing indicative price of cotton in Pakistan. Because higher price may encourage development of the crop while lower price would do the other way round.

68. The above NPC and EPC values imply that cotton growers in Pakistan occasionally get economic price (export parity price) and thus are implicitly taxed.

69. The Domestic Resource Cost (DRC) coefficients in seed cotton production calculated at export parity prices are less than one both for Punjab and Sindh provinces. It needs to be noted that DRCs are widely different across the years which may be the result of varying import prices. The DRC values suggest that cost of domestic resources employed in production of the crop is significantly less than the corresponding import cost. Thus seed cotton has comparative

advantage in the crop and it would be wise to invest in cotton crop than to import. Last column in Table-20 provides implications for DRCs. The figures are derived by multiplying DRCs with the exchange rate during the concerned year. It is indicated from the Forex earning costs that they fluctuated widely, however, these are too less at times and endorse comparative advantage in seed cotton production in Pakistan.

Table – 21: Nominal and Effective Protection Coefficients for Seed Cotton (Import situation): 2011-12 to 2015-16

Crop/ year	NPC	EPC	DRC	Cost of DRC to earn/ save Forex
Seed cotton (Punjab)				
2011-12	0.64	0.52	0.41	37.14
2012-13	0.83	0.69	0.64	62.91
2013-14	0.80	0.68	0.52	51.18
2014-15	0.66	0.48	0.62	62.95
2015-16	0.67	0.46	0.72	75.89
Seed cotton (Sindh)				
2011-12	0.51	0.38	0.35	31.78
2012-13	0.83	0.70	0.54	53.16
2013-14	0.73	0.60	0.44	44.05
2014-15	0.62	0.44	0.53	53.47
2015-16	0.69	0.51	0.62	64.77

Source: Estimated from the data in Annex- to .

- **Seed cotton under export situation**

70. This analysis is based on cost of production of the foregone crop, its wholesale price in the domestic market and international market price i.e. fob price at Karachi.

- **Nominal Protection Coefficient (NPC)**

71. For the present analysis NPC values for the Punjab and Sindh provinces are produced in Table-22.

72. It is observed in the referred table that NPC estimates both for Punjab and Sindh under export scenario are occasionally higher than one (though with small margin) except in 2011/12 and 2015-16. The same trend is almost maintained for Sindh. From these estimates it may be deduced that on the whole cotton growers in Pakistan have some degree of price protection. In Punjab, they remained taxed during 2011-12 and 2015-16 as NPC was less than one while in

Sindh they were taxed during 2012-13 and 2013-14. Since 2012-13 onward domestic prices exceeded the corresponding export parity prices, consequently NPC values for these years exceeded one. It reflects price incentive for increasing cotton production in Pakistan.

73. Being more specific to 2015-16 crop, in this year NPC values for both cotton producing provinces (Punjab, Sindh) declined against the preceding three years. Its main reason is that during 2015-16 price of cotton in the domestic market declined due to price fall in the international market. This calls for revisiting domestic cotton production policy for stabilizing its price in the country.

- **Effective Protection Coefficient (EPC)**

74. Estimates of EPCs under export situation are also presented in Table-20 EPC values during the period 2011-12 to 2015-16 show cyclical behavior. During earlier years of analysis EPC remained below one while in 2013-14 it exceeded for Punjab to 1.15. In 2015-16 it dropped to its lowest ebb during the period of analysis. This analysis reveals that efficiency of cotton crop in Pakistan is sensitive to its price in the domestic market and may suddenly affect cotton growers' profits and development of the crop.

- **Domestic Resource Cost Coefficient (DRC)**

75. DRC estimates for cotton production under export scenario are also presented in the above referred table. It is evident from the DRC estimates that Pakistan has comparative advantage in cotton production as DRC values both for Punjab and Sindh are less than one except in 2014-15 for Punjab. Data on private and social profitability in background of the above estimates are produced in Annex-XIII to IX.

76. It may be concluded from the above findings that more investment in cotton production and marketing for export purposes may benefit Pakistan by saving foreign exchange. It is supported by the cost of domestic resources to earn/ save foreign exchange Table-20. These figures are derived by multiplying DRCs with exchange rates for the respective years.

Table-22: Nominal, Effective Protection and Domestic Resource Cost Coefficients for Seed Cotton (Export situation): 2011-12 to 2015-16

Crop/ year	NPC	EPC	DRC	Cost of DRC to earn/ save Forex
Seed cotton (Punjab)				
2011-12	0.96	0.88	0.69	62.6
2012-13	1.06	0.98	0.91	89.7
2013-14	1.17	1.15	0.87	86.6
2014-15	1.03	0.92	1.18	120.4
2015-16	0.80	0.60	0.92	95.9
Seed cotton (Sindh)				
2011-12	0.77	0.64	0.58	52.9
2012-13	1.05	0.98	0.76	74.8
2013-14	1.06	0.99	0.74	73.2
2014-15	0.96	0.82	0.97	99.2
2015-16	0.81	0.65	0.76	79.3

Source: Estimated from the data in Annex-XIII to IX.

77. DRC estimates under import scenario are found significantly less than one which means that Pakistan has comparative advantage in seed cotton production. Very low values of DRCs show that surplus potential in cotton yet remains to be exploited in Pakistan.

16. COTTON YIELD AMONG COMPETING COUNTRIES

78. According to the FAO Statistics the latest data on the cotton yield among competing countries is available for 2016. The area, yield and production among competing countries are detailed in Annex-xv, while a summary of the feature is presented in Table - **23**.

79. Globally, the cotton crop occupied an area of **30207 thousand** hectares during 2016 with a total production of **65392 thousand** tonnes. The world top 20 cotton producing countries contribute 93 per cent of total area and 95 per cent of total production.

80. India ranks on the top with 10.500 million hectares, followed by USA and China with 3.848 and 3.376 million hectares. Pakistan occupies 4th position in this regard. In terms of cotton **production**, China is on the top with 16.029 million tones, followed by India with 14.413 million tonnes and USA with 10.050 million tonnes. However, Pakistan retains 4th position in cotton production with 4.943 million tonnes in the world top producing countries.

Table-23: Area, Yield and Production of Seed Cotton Among Competing Countries: 2016

S.No	Country	**Area** (000 ha)	**Yield** (Kgs/ha)	**Production** (000 tonnes)
1	India	10500	1373	14413
2	United States of America	3848	2612	10050
3	China, mainland	3376	4748	16029
4	**Pakistan**	**2489**	**1986**	**4943**
5	Uzbekistan	1272	2600	3307
6	Brazil	996	3477	3464
7	Burkina Faso	720	1251	900
8	Mali	655	912	597
9	Turkmenistan	540	796	430
10	Benin	419	828	347
11	Turkey	416	5048	2100
12	Nigeria	383	791	303
13	Argentina	377	1787	673
14	CÃ´te d'Ivoire	355	1066	378
15	Greece	324	4186	1355
16	United Republic of Tanzania	320	574	184
17	Chad	315	484	152
18	Australia	280	5416	1519
19	Cameroon	224	1111	249
20	Myanmar	202	2169	438
	Total of 20 top producing countries	**28011**	**2207**	**61832**
	World Total	**30207**	**2164.792**	**65392**

Source: World Statistics Year Book 2016

81. India has the largest area under cotton in the world representing almost 35 percent of the world cotton area. However its production is very low as compared to other major cotton producing countries due to its low productivity.

82. Similarly, Pakistan ranks 4th in terms of both area and production of cotton but lies at 27st position in terms of yield during 2016. It implies that there is a lot of potential to boost cotton productivity per hectare in Pakistan. It is an alarming situation and deserve special attention by all concerned quarters. The cotton yield in Pakistan is at 1986 kgs per hectare against 1373 tonnes in India. While the world average Yield of cotton is 2165 kgs per hectare. (Annex- xv).

17. COTTON VARIETIES AND YIELD POTENTIAL IN PAKISTAN

83. Cotton is one of the most important fiber producing plant also an important cash crop, contributes significantly in foreign exchange earnings. It accounts about 1.0 per cent in the GDP and contributes 5.2 percent in agriculture value addition (Pak. Economic Survey 2016-17). Around two-thirds of the country's export earnings are from the cotton made-ups and textiles.

84. Despite of the world's 4th largest cotton producer and a leading exporter of yarn in the world, Pakistan ranked 21th in the world in terms of yield. As a result, Pakistan annually imports up to 1000 480 lb. Bales of cotton to meet the growing needs of local textile industry. Therefore it has become vital for Pakistan to increase its yield per acre.

85. Various cotton varieties sown in Pakistan in various ecological zones along with yield potential are presented at Annex-----. Above hundred varieties are grown in the country. The annex shows the data of 38 varieties from the year 2000 to 2018. The yield potential of these varieties ranges from 2400 kgs to 4500 kgs per hectare.

86. Several BT cotton varieties have been approved for commercialization in Pakistan. According to the Annual summary report progress report of Central Cotton Research Institute, Multan for 2009-10, Bt cotton dominated the farmers choice for cultivation, major cotton varieties sown in the Punjab were CIM-496, CIM-499, CIM-473, CIM-506. The Government of Pakistan has officially approved genetically modified cotton crops for cultivation in the country. These varieties were recommended by PCCC after more than two years of trials in the field.

18. ACKNOWLEDGEMENT

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1.	Mr. Abdul Karim	Chief (Coordinator)
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10.	Mr. Shamir Ahmed	APS
11.	Mr. Muhammad Naeem	DMO

Secretary
M/o NFS&R

ANNEX-I

PROVINCE-WISE AREA (HECTARES), PRODUCTION AND YIELD OF COTTON IN PAKISTAN : 2006-07 TO 2016-17

YEAR	PUNJAB	SINDH	KHYBER PUKHTUNKHWA	BALOCHISTAN	PAKISTAN
AREA			000 hectares		
2006-07	2462.9	570.1	0.30	41.6	3074.9
2007-08	2424.8	607.4	0.20	21.9	3054.3
2008-09	2223.7	561.5	0.20	34.5	2819.9
2009-10	2435.8	634.7	0.04	35.1	3105.6
2010-11	2200.6	457.0	0.17	31.3	2689.1
2011-12	2533.7	259.2	0.24	41.4	2834.5
2012-13	2308.7	530.1	0.24	39.8	2878.8
2013-14	2199.0	568.0	0.26	38.4	2805.7
2014-15	2322.9	596.2	0.97	41.2	2961.3
2015-16	2242.7	621.2	0.40	37.6	2901.9
2016-17	1815.3	636.6	0.40	36.8	2489.1
YIELD			Kgs per hectare		
2006-07	715	716	340	439	711
2007-08	636	710	425	438	649
2008-09	669	902	425	440	713
2009-10	597	1144	340	440	707
2010-11	607	1316	430	374	725
2011-12	747	1547	468	446	816
2012-13	702	1091	482	443	770
2013-14	707	1055	497	442	774
2014-15	753	1019	517	442	802
2015-16	481	952	510	442	581
2016-17	654	961	510	440	729
PRODUCTION			000 bales		
2006-07	10350.0	2398.2	0.60	107.4	12856.2
2007-08	9062.0	2536.2	0.50	56.4	11655.1
2008-09	8751.0	2978.3	0.50	89.2	11819.0
2009-10	8552.0	4270.7	0.08	90.7	12913.5
2010-11	7854.0	3536.8	0.43	68.9	11460.1
2011-12	11129.0	2356.8	0.66	108.5	13595.0
2012-13	9526.0	3400.4	0.68	103.6	13030.7
2013-14	9145.0	3523.4	0.76	99.7	12768.9
2014-15	10277.0	3572.5	2.95	107.1	13959.6
2015-16	6343.0	3475.6	1.20	97.6	9917.4
2016-17	6978.0	3596.9	1.20	95.1	10671.2

Sources:
1- For 2006-07 to 2014-15 : Agricultural Statistics of Pakistan 2014-15,NFS&R, Islamabad
2- For 2015-16: Final estimates provided by respective Provincial Agriculture Departments
2- For 2016-17: Final estimates provided by respective Provincial Agriculture Departments

ANNEX-II

PROVINCE-WISE AREA (ACRES),PRODUCTION AND YIELD OF COTTON IN PAKISTAN : 2006-07 TO 2016-17

YEAR	PUNJAB	SINDH	KHYBER PUKHTUNKHWA	BALOCHISTAN	PAKISTAN
AREA			**000 acres**		
2006-07	6086.1	1408.8	0.74	102.8	7598.4
2007-08	5991.9	1500.9	0.49	54.1	7547.5
2008-09	5495.0	1387.5	0.49	85.3	6968.3
2009-10	6019.1	1568.4	0.10	86.7	7674.3
2010-11	5437.9	1129.3	0.42	77.3	6645.0
2011-12	6261.0	640.5	0.59	102.3	7004.4
2012-13	5705.0	1309.9	0.59	98.3	7113.9
2013-14	5433.9	1403.6	0.64	94.9	6933.1
2014-15	5740.1	1473.3	2.40	101.8	7317.6
2015-16	5541.9	1535.0	0.99	92.9	7170.9
2016-17	4485.8	1573.1	0.99	90.9	6150.8
YIELD			**Kgs per acre**		
2006-07	289	290	138	178	288
2007-08	257	287	172	177	263
2008-09	271	365	172	178	288
2009-10	242	463	138	178	286
2010-11	246	533	174	152	293
2011-12	302	626	189	180	330
2012-13	284	442	195	179	312
2013-14	286	427	201	179	313
2014-15	305	412	209	179	324
2015-16	195	385	206	179	235
2016-17	265	389	206	178	295
PRODUCTION			**000 bales**		
2006-07	10350.0	2398.2	0.60	107.4	12856.2
2007-08	9062.0	2536.2	0.50	56.4	11655.1
2008-09	8751.0	2978.3	0.50	89.2	11819.0
2009-10	8552.0	4270.7	0.08	90.7	12913.5
2010-11	7854.0	3536.8	0.43	68.9	11460.1
2011-12	11129.0	2356.8	0.66	108.5	13595.0
2012-13	9526.0	3400.4	0.68	103.6	13030.7
2013-14	9145.0	3523.4	0.76	99.7	12768.9
2014-15	10277.0	3572.5	2.95	107.1	13959.6
2015-16	6343.0	3475.6	1.20	97.6	9917.4
2016-17	6978.0	3596.9	1.20	95.1	10671.2

Sources: 1- For 2006-07 to 2014-15 : Agricultural Statistics of Pakistan 2014-15,NFS&R, Islamabad
2- For 2015-16: Final estimates provided by respective Provincial Agriculture Departments
2- For 2016-17: Final estimates provided by respective Provincial Agriculture Departments

ANNEX-III

Area: 000 ha

Production: 000 bales

Yield: Kgs/ha

DISTRICT- WISE AREA, YIELD AND PRODUCTION OF SEED COTTON
AVERAGE OF 2014-15 TO 2016-17

S.No	Province/ District/ Agency	Area	Production	Share in total production	Yield
	PUNJAB				
1	Bahawalpur	265.25	1049.60	9.11	673
2	Bahawalnagar	226.07	884.79	7.68	665
3	R.Y.Khan	200.93	809.40	7.03	685
4	Lodhran	181.33	696.50	6.05	653
5	Vehari	175.15	671.07	5.83	651
6	Khanewal	172.30	658.29	5.72	649
7	Rajanpur	139.63	583.41	5.07	710
8	Multan	143.02	522.62	4.54	621
9	Muzaffargarh	137.19	479.11	4.16	594
10	D.G.Khan	95.99	335.42	2.91	594
11	Sahiwal	71.24	246.88	2.14	589
12	Pakpattan	41.53	149.90	1.30	614
13	Mianwali	53.77	145.73	1.27	461
14	Layyah	48.51	136.45	1.18	478
15	T.T.Singh	35.84	133.31	1.16	632
16	Bhakkar	40.66	111.16	0.97	465
17	Jhang	32.43	75.68	0.66	397
18	Faisalabad	25.68	69.52	0.60	460
19	Okara	18.08	68.39	0.59	643
20	Kasur	9.08	18.50	0.16	346
21	Sargodha	7.09	10.49	0.09	252
22	Chiniot	1.87	2.91	0.03	265
23	Khushab	1.76	2.67	0.02	259
24	M.B.Din	1.07	1.61	0.01	256
25	Nankana Sahib	0.53	0.80	0.01	256
26	Jhelum	0.41	0.67	0.01	281
27	Sheikhupura	0.27	0.60	0.01	382
28	Chakwal	0.27	0.52	0.00	328
	Sub Total Punjab	**2126.93**	**7866.00**	**68.30**	**629**
	SINDH				
1	Sanghar	123.97	744.61	6.47	1021
2	Ghotki	83.33	492.52	4.28	1005
3	Khairpur	81.13	428.44	3.72	898
4	Nawabshah	62.30	339.46	2.95	926
5	Matiari	41.46	244.64	2.12	1003
6	Mirpurkhas	38.55	235.25	2.04	1037
7	N.Feroze	35.45	203.96	1.77	978
8	Sukkur	33.17	202.12	1.76	1036
9	Umerkot	28.65	167.45	1.45	994
10	Tando Allaahyar	23.09	132.67	1.15	977
11	Badin	20.94	105.04	0.91	853
12	Jamshoro	15.29	90.94	0.79	1011
13	Dadu	10.77	58.93	0.51	930
14	Hyderabad	6.55	37.68	0.33	979
15	Thatta	6.64	30.73	0.27	787
16	Tando Muhammad Khan	4.07	20.33	0.18	848
17	Larkana	1.06	5.53	0.05	888
18	Tharparkar	1.02	5.29	0.05	879
19	Karachi	0.57	2.70	0.02	801
20	Shikarpur	0.01	0.07	0.00	804
	Sub Total Sindh	**618.03**	**3548.35**	**30.81**	**977**
	Sub Total of Khyber Pukhtunkhwa	**0.59**	**1.78**	**0.02**	**514**
	Sub Total of Balochistan	**38.53**	**99.93**	**0.87**	**441**
	Total of Pakistan	**2784.08**	**11516.06**	**100.00**	**704**

Notes:
1. Data have been arranged in decending order of production.
2. Percentage shares are calculated on the basis of country total.

Sources:
1. M/o NFS&R, Islamabad.
2- Respected Agriculture Provincial Departments

Annex-IV

AVERAGE FARMER COST OF PRODUCTION OF SEEDCOTTON IN PUNJAB: 2016-17 TO 2017-18 CROPS

S.No	Operations / Inputs	Average No. of oprs/units/ acre	2016-17 crop		Average No. of oprs/units/ acre	2017-18 crop	
			Cost per unit	Cost per acre		Cost per unit	Cost per acre
1	2	3	4	5 = 3*4	6	7	8 =6*7
		Data 2003-04			(Field data 2017)		
				.....Rs.....			.....Rs.....
1	**Land preparation:**						
	1.1 Deep ploughing	0.228	1200	273.6			
	1.2 Rotavator/disc plough	0.233	1300	302.9	1.20	1400	1680.00
	1.3 Ploughing	3.200	700	2240	3.00	760	2280.00
	1.4 Ploughing & planking	1.341	700	938.7	1.00	800	800.00
	1.5 Planking	0.421	350	147.35	0.48	400	192.00
	1.6 Tractor levelling (hrs)	0.537	700	375.9	0.77	760	585.20
2	**Seed and sowing operations:**						
	2.1 Seed used (kgs)	7.643	260.00	1987.18	10.00	250.00	2500.00
	2.2 Sowing						
	2.2.1 Ploughing+planking	0.394	700	275.8	1.00	800	800.00
	2.2.2 ridging	0.228	700	159.6	0.68	760	516.80
	2.2.3 drilling	0.772	700	540.4	0.04	760	30.40
	2.2.4 Manual labour for sowing, bu	0.369		800			1000.00
3	**Irrigation: * (Nos)**						
	3.1 Canal	2.156	-	95.72	4.00	-	95.72
	3.2 Private tubewell (Rs./hr)	1.706	900	1535.40	4.00	900	3600.00
	3.3 Mixed	2.739	700	1917.30			
	3.4 Labour for irrigation and water cou	3.462	400.00	1384.80	3.46	400	1384.00
4	Interculture:						
	4.1 With tractor	2.640	700.00	1848.00	1.40	760.00	1064.00
	4.2 Manual weeding/ thinning (m.days	4.600	400.00	1840.00	1.20	1300.00	1560.00
5	Plant protection including application c	5.769	700.00	4038.30	6.00	750.00	4500.00
6	Farm Yard Manure including transport and application cost			800.00	0.56	1800	1008.00
7	Fertilizers: (bags)						
	7.1 DAP	0.731	3100.00	2266.10	1.00	2500.00	2500.00
	7.2 SSP	0.071	1086.00	77.11			
	7.3 SOP	0.029	5200.00	150.80	0.16	3600.00	576.00
	7.4 NPK	0.046	3100.00	142.60	0.04	3100.00	124.00
	7.5 Urea	2.297	1820.00	4180.54	2.00	1400.00	2800.00
	7.6 CAN	0.224	1614.00	361.54	0.24	1200.00	288.00
	7.7 NP	0.069	2100.00	144.90	0.44	2100.00	924.00
	7.8 Humic Acid		800.00	800.00			800.00
	7.8 Fertilizer transport and application	3.467	84.00	291.23	3.88	100.00	388.00
8	Mark up on investment on item 1 to 7 e	-	-	2982.00			3190.04
	item 5(1) @12.5 % per annum for 6 months						
9	Management charges for 8 months			1790.00			1375.00
10	Land rent for 8 months		25000	16667		25000	16667
11	Average weighted land tax @ Rs 132/acre/annum for		132	88.00		132	88.00
12	Land revenue including local rate, chaukidara etc			5.00			5.00
13	Payment to pickers (Rs./40 Kg)		303.00	5700.00		300.00	5700.00
14	Cutting of cotton sticks			600.00			600.00
15	Gross cost (item 1 to 14)			57747.43			59620.83
16	Value of cotton sticks	-		1000			1000
17	Net cultivation cost (item 15-16)			56747			58621
18	Yield per acre (kgs)			752.00			760.00
19	Cost of production at farm level: (Rs/40 kgs)						
	19.1 Including land rent			3018.48			3085.31
	19.2 Excluding land rent			2131.96			2208.11
20	Marketing cost (Rs/40 kgs)	-		40.00			40.00
21	Cost of production at market/ginnery						
	21.1 Including land rent			3058.48			3125.31
	21.2 Excluding land rent	-		2171.96			2248.11

Annex-V

AVERAGE FARMER COST OF PRODUCTION OF SEEDCOTTON IN SINDH: 2016-17 AND 2017-18 CROPS

S.No	Operations / Inputs	Average No. of oprs/units/ acre	2016-17 crop		Average No. of oprs/units/ acre	2017-18 crop	
			Cost per unit	Cost per acre		Cost per unit	Cost per acre
1	2	3	4	5 = 3*4	6	7	8 = 6*7
		Data 2003-04	.....Rs.....		asis 2017 data...	.....	Rs.....
1	**Land preparation:**						
	1.1 Deep ploughing	0.553	1400	774.2	0.41	2000	820
	1.2 Rotavator/disc plough	1.000	1200	1200	1	1260	1260
	1.3 Ploughing	2.071	700	1449.7	3	750	2250
	1.4 Ploughing & planking	1.333	900	1199.7	1	950	950
	1.5 Planking	0.030	350	10.5	1	375	375
	1.6 Levelling (hrs)	0.859	1100	944.9	1	750	750
2	**Seed and sowing operations:**						
	2.1 Seed used (kgs)	10.279	300.00	3083.7	10	200.00	2000
	2.2 Sowing						
	2.2.1 Ploughing+planking	0.160	1100	176	0.16	950	152
	2.2.2 ridging	0.236	850	200.6	1	750	750
	2.2.3 drilling	0.763	700	534.1		700	
	2.2.4 Manual labour for sowir and gap filling	0.988		800			1100
3	**Irrigation: * (Nos)**						
	3.1 Canal	3.148	-	93.09	6.00	-	93.09
	3.2 Private tubewell (Rs./hr)	2.454	700	1717.80	2.50	750.0	1875
	3.3 Mixed	0.413	600	247.80			
	3.4 Lift irrigation	0.251			0.45	250	112.5
	3.5 Labour for irrigation and wate	3.732	350.00	1306.20	3.73	350	1306
4	Interculture:						
	4.1 With tractor	0.524	700.00	366.80	1.00	750.00	750
	4.2 With bullocks	1.259	800.00	1007.20			
	4.3 Manual weeding/ thinning (m	4.700	350.00	1645.00	2.00	1200.00	2400
5	Plant protection including applicati	4.200	700.00	2940.00	6.00	850.00	5100.00
6	Farm Yard Manure including transport and application cost			700.00	0.38	2000	760.00
7	Fertilizers: (bags)						
	7.1 DAP	0.893	2700.00	2411.10	1.00	2500.00	2500.00
	7.2 NPK	0.056			0.06	3100.00	173.60
	7.3 Urea	1.834	1839.00	3372.73	4.00	1350.00	5400.00
	7.4 SAN	0.016			0.24	1250.00	300.00
	7.5 NP	0.076	2187.00	166.21	0.03	2100.00	63.00
	7.6 Humic Acid	1.000	598.00	598.00	1.00	650.00	650.00
	7.8 Fertilizer transport and applic	2.880	87.00	250.56	5.30	90.00	476.64
8	Mark up on investment on item 1 t item 5(1) @14 % per annum for 8 mon	-	-	2710.28			3227.32
9	Management charges for 8 months			1790.00			1375.00
10	Land rent for 8 months		20000	13333		25000	16667
11	Average weighted land tax @ Rs 200/acre/annum f		200	132.00		132	88.00
12	Land revenue including local rate, chaukidara etc			5.00			5.00
13	Drainage Cess @ Rs 24/annum for 8 months		16	16.00			
13	Payment to pickers (Rs./40 Kg)		300.00	5887.50		300.00	5700.00
14	Cutting of cotton sticks			1000.00			1000.00
15	Gross cost (item 1 to 14)			52071.33			60428.32
16	Value of cotton sticks			1000			1000
17	Net cultivation cost (item 15-16)			51071			59428
18	Yield per acre (kgs)			785.00			785.00
19	Cost of production at farm level: (Rs/40 kgs)						
	19.1 Including land rent			2602.36			3028.19
	19.2 Excluding land rent			1922.96			2178.94
20	Marketing cost (Rs/40 kgs)	-		40.00			40.00
21	Cost of production at market/ginnery						
	21.1 Including land rent			2642.36			3068.19
	21.2 Excluding land rent	-		1962.96			2218.94

Annex-VI

ECONOMICS OF SEED COTTON AND COMPETING CROPS AT PRICES REALIZED BY THE GROWERS: 2016-17 CROPS

S #	Province/crops/crop combination	Crop duration	Water used	Gross cost	Cost of purchased inputs	Gross revenue	Gross margin	Net income	Output-input ratio	Revenue per		
										Rupee of purchased inputs	Crop day	Acre inch of water used
		Days	Acre inches	.....Rupees per acre.....					Ratio	.....Rupees.....		
	1	2	3	4	5	6	7=6-5	8=6-4	9=6/4	10=6/5	11=6/2	12=6/3
	Punjab											
1	Seed Cotton	240	22	53846	17471	58950	41479	5104	1.09	3.37	246	2680
2	Basmati Paddy	180	58	44106	19846	43802	23956	-303	0.99	2.21	243	755
3	IRRI Paddy	180	62	39583	16476	31152	14676	-8432	0.79	1.89	173	502
4	Wheat	180	12	40225	10905	44063	33158	3837	1.10	4.04	245	3672
5	Sunflower (spring)	180	22	41976	14710	49240	34531	7264	1.17	3.35	274	2238
6	Seed Cotton + Wheat	420	34	94071	28376	103013	74637	8941	1.10	3.63	245	3030
7	Seed Cotton+Sunflower	420	44	95822	32180	108190	76010	12368	1.13	3.36	258	2459
8	Basmati Paddy+Wheat	360	70	84331	30751	87865	57114	3534	1.04	2.86	244	1255
9	Basmati Paddy+Sunflow	360	80	86082	34555	93042	58487	6961	1.08	2.69	258	1163
10	IRRI Paddy + Wheat	360	74	79808	27380	75214	47834	-4594	0.94	2.75	209	1016
11	IRRI Paddy+Sunflower	360	84	81559	31185	80392	49206	-1168	0.99	2.58	223	957
12	Sugarcane	394	48	80588	20483	93250	72767	12662	1.16	4.55	237	1943
	Sindh											
1	Seed Cotton	240	18	49907	14107	55575	41468	5667	1.11	3.94	232	3087
2	IRRI Paddy	180	56	36429	12089	43277	31189	6849	1.19	3.58	240	773
3	Wheat	180	12	37298	10998	41363	30364	4064	1.11	3.76	230	3447
4	Sunflower (spring)	180	22	40579	14050	49160	35110	8581	1.21	3.50	273	2235
5	Seed Cotton + Wheat	420	30	87205	25105	96937	71832	9732	1.11	3.86	231	3231
6	Seed Cotton+Sunflower	420	40	90487	25105	104735	79630	14248	1.16	4.17	249	2618
7	IRRI Paddy+ Wheat	360	68	73727	23087	84640	61553	10913	1.15	3.67	235	1245
8	IRRI Paddy+Sunflower	360	78	77008	26139	92437	66298	15430	1.20	3.54	257	1185
9	Sugarcane	488	71	90695	26492	113355	86863	22660	1.25	4.28	232	1597

Notes for Annex - VI :

1. The economic analysis presented in the above exercise is based on the input-output prices applicable for 2016-17 crops.

2. The data regarding input-output parameters have been adopted from the API's price policy papers for sugarcane, seed cotton, rice paddy and wheat, 2016-17 crops. However, the relevant data for sunflower and canola were adopted from the last support price policy for non-traditional oilseeds 2000-01 crops, with necessary adjustments in input prices for updating costs and incomes for the 2016-17 crops. To incorporate the escalations in the prices of fertilizer, which occurred during the growing period of 2016-17 crops, some marginal revisions have been made.

3. Water use has been estimated from the number of irrigations as reported in the cost of production estimates of the respective crops assuming each irrigation of 3 inches and 'rauni' of 4 inches.

4. The following prices as realized by the growers for different crops are adopted for the analysis:

4.1 The minimum guaranteed price of wheat at Rs 1300 per 40 kgs, as maintained by the government for 2015-16 crop, has been adopted for the current analysis.

4.2 The wholesale market prices of basmati paddy and IRRI paddy during the post- harvest period in major producer area markets of Punjab have averaged at Rs 1443 and Rs 751 per 40 kgs, respectively. While, the average price of IRRI paddy in Sindh is reported at Rs 819 per 40 kgs.

4.3 The wholesale market prices of seed cotton during the post-harvest months of Sep - Feb 2016-17 in the main producer area markets have averaged at Rs 3090 per 40 kgs in the Punjab and Rs 2789 in Sindh.

4.4 The price of sunflower and canola 2016-17 crops has been reported hovering around Rs 2500 per 40 kgs.

4.5 The market prices of sugarcane at mill-gate in the major cane producing areas are reported to hover around Rs 180 per 40 kgs in the Punjab and Rs 182 per 40 kgs in Sindh.

5. The market prices have been adjusted for the marketing expenses to make them effective at the farm level. These expenses amount to Rs 15 per 40 kgs in Punjab and Rs 14.32 in Sindh for sugarcane, Rs 40 for seed cotton in Punjab and Sindh, Rs 45 for rice paddy in Punjab and Rs 38 for wheat and oilseeds in Punjab and Rs 42 in Sindh.

6.	Gross income =	(Yield per acre multiplied by price of principal produce at farm gate) plus (value of by-products per acre).
7.	Cost of purchased inputs =	Cost incurred on seed and related items, fertilizer, supplementary irrigation including labour, canal water rate, pesticides and weedicides.

Annex-VII

PROFITABILITY OF FERTILIZER USE ON SEED COTTON AT THE MARKET PRICE: 2016-17

S. No.	Item		Seed Cotton: Nutrient Ratio of			
			3.00:1	3.75:1	4.50:1	5.25:1
			----- Kgs -----			
1	Yield increase due to use of additional 10 nutrient kgs of fertilizer per acre		30.00	37.50	45.00	52.50
			-------- Rupees -------			
2	Direct cost of 10 kgs of NPK fertilizer at the weighted average price of Rs 884.20 per nutrient kg (i.e. Rs 115.22, 87.24 and Rs.144.00 per nutrient kg of N,P and K at the recommended NPK ratio of 2:1:1(a)		884.20	884.20	884.20	884.20
3	Indirect cost due to the application of additional fertilizer as detailed below(b)		403.64	471.14	137.44	602.14
	3.1	Transportation and application charges of 20 kgs of fertilizer @ Rs 103.0 per bag of fertilizer	41.20	41.20	41.20	41.20
	3.2	Picking charges for additional produce @ Rs 300.0 per 40 kgs	240.0	300.0	360.0	416.0
	3.3	Marketing charges for additional produce @ Rs 40.0 per 40 kgs	30.0	37.5	45.0	52.5
	3.4	Mark up on direct cost of fertilizer (item2+3.1) for 8 months @ 15 % per annum	92.44	92.44	92.44	92.44
4	Total additional cost (item 2+3)		1288.7	1355.3	1021.6	1486.3
5	Value of additional produce @ Rs 2960 per 40 kgs(c)		2220.0	2775.0	3330.0	3885.0
6	Benefit cost ratio (item 5 divided by item 4)		1.7	2.05	3.26	2.62

Notes:

a) The prices of N,P and K have been worked out from average prices of Urea, DAP and SOP used in COP estimates of the Punjab and Sindh for 2016-17 crop taken respectively as Rs 1325,2525 and 3600 per bag of 50 kgs.

b) The rates of indirect cost items are the average of the rates used in the COP estimates of the Punjab and Sindh for 2016-17 crop.

c) Average market prices of seed cotton for 2017-18 crop in the Punjab and Sindh during September to December, 2016 have been used.

ANNEX-V.II

INTERNATIONAL PRICES OF COTTONS: 2009-10 TO 2017-18

Years Aug-Jul	Index- A Cottons	Orleans/ Texas SLM 1-1/32"
	-----US Cent per pound-----	
2009-10	70.80	77.58
2010-11	165.13	89.00
2011-12	99.75	100.53
2012-13	87.84	88.32
2013-14	90.53	N.Q
2014-15	70.75	N.Q
2015-16	70.30	N.Q
2016-17	82.82	N.Q
2017-18	**80.80**	**N.Q**
August	79.27	N.Q
September	80.85	N.Q
October	78.52	N.Q
November	80.16	N.Q
December	85.18	N.Q
January	90.95	N.Q
February	88.25	N.Q
March	92.15	N.Q
April	92.09	N.Q
May	93.97	N.Q

Source: Cotton Outlook (various issues).

ANNEX- IX

EXPORT PARITY PRICE OF SEED COTTON ON THE BASIS OF ACTUAL AVERAGE EXPORT PRICE OF PAKISTANI COTTON

S.No	Item	2016-17	2013-14 to 2015-16
		US Cents per pound	
1.	Actual average export price	77.99	73.89
		OR Rupees (a)	
	Actual average export price per 40 Kgs	7245	6865
2.	Marketing expenses (Transportation, port handling forwarding,wharfage, packing, taxes and duties, insurance etc) per 40 Kgs	455	455
3.	Ex- gin price of lint per 40 Kgs (item 1- item 2)	6790	6410
4.	Value of 80 kgs of cotton seed (b)	3152	3152
5.	Ginning charges for 120 kgs of seed cotton	600	600
6.	Value of 120 kgs of seed cotton (c) (items 3 +4 - item 5)	9342	8962
7.	Seed cotton price per 40 kgs (item 6 / 3)	3114	2987

Notes:

a) One US $ = 104.81 Pak rupees.
b) Average price of cotton seed for August 2016 to July 2017 in Mirpukhas, Hyderabad, Raheem Yar Khan and Sahiwal markets was Rs 1583 per 40kgs
c) 120 kgs of seed cotton = 80 kgs of cotton seed + 40 kgs of lint.

Sources:

1. PBS for export prices.
2. KCA, Karachi for marketing expenses.
3. Pakistan Cotton Ginners Association, Karachi for ginning charges.
4. Directorate of Agriculture (E&M), Punjab, Lahore.

ANNEX- X

EXPORT PARITY PRICE OF SEED COTTON ON THE BASIS OF FUTURE'S CONTRACT PRICE OF NEW YORK NO. 2 COTTON (AVERAGE OF OCTOBER, DECEMBER, 2017 AND MARCH, 2018)

S.No	Item	Price calculations
		US Cents per pound
1.	Future's contract price as reported by KCA September 25/9/2017	69.64
2.	Grade and staple discount	4.5
3.	Discount on account of inland transportation and certification of stocks	5.5
4.	Parity price of Pakistani cotton at Karachi	59.64
		OR Rupees (a)
	Parity price per 40 kgs	5541
5.	Marketing expenses (Transportation, port handling forwarding,wharfage, packing, taxes and duties, insurance etc) per 40 Kgs	455
6.	Ex- gin price of cotton lint per 40 kgs (item 4 - item 5)	5086
7.	Value of 80 kgs of cotton seed (b)	3152
8.	Ginning charges for 120 kgs of seed cotton	600
9.	Value of 120 kgs of seed cotton (c) (items 6 + 7 - item 8)	7638
10.	Seed cotton price per 40 kgs (item 9 / 3)	2546

Notes:

a) One US $ = 105.35 Pak rupees.

b) Average price of cotton seed for August 2016 to July 2017 in Mirpukhas, Hyderabad, Raheem Yar Khan and Sahiwal markets was Rs 1583 per 40kgs

c) 120 kgs of seed cotton = 80 kgs of cotton seed + 40 kgs of lint.

Sources:

1. KCA, Karachi for marketing expenses and future contract prices.
2. Pakistan Cotton Ginners Association, Karachi for ginning charges.

ANNEX- XI

IMPORT PARITY PRICE OF SEED COTTON ON THE BASIS OF ACTUAL AVERAGE CIF (KARACHI) PRICE OF IMPORTED COTTON

S. No	Item	2016-17	2013-14 to 2015-16
		Rupees per 40 kgs	
1.	Actual average cif (Karachi) price	7347	8594
2.	Handling charges at port and transport cost from port to textile mill at Karachi @ 5 % of cif price	367	430
3.	Ex- gin price of cotton lint (Item 1+ item 2)	7714	9024
4.	Value of 80 kgs of cotton seed (a)	3152	3152
5.	Ginning charges for 120 kgs of seed cotton including ginning losses	600	600
6.	Value of 120 kgs of seed cotton (item 3 +item 4 - item 5)	10266	11576
7.	Seed cotton price (item 6/ 3)	3422	3859

Note:

a) Average price of cotton seed for August 2016 to July 2017 in Mirpukhas, Hyderabad, Raheem Yar Khan and Sahiwal markets was Rs 1583 per 40kgs

Sources:

1. PBS, for cif (Karachi price).
2. KCA, for incidental charges.
3. Pakistan Cotton Ginners Association, Karachi for ginning charges.
4. Directorate of Agriculture (E&M), Punjab, Lahore.

ANNEX- XIII

IMPORT PARITY PRICE OF SEED COTTON ON THE BASIS OF AVERAGE CFR FAR EASTREN QUOTED PRICE OF INDEX A-COTTONS

S. No	Item	2016-17	2013-14 to 2015-16
		US cent per pound	
1.	Index-A cottons assumed as cif (Karachi) price	82.77	77.19
2.	Insurance, agents commission, and port handling charges @ 5% cif price	4.14	3.86
3.	Landed cost at Karachi	86.91	81.05
		OR Rupees (a)	
	Landed cost at Karachi per 40 kgs	8074	7530
4.	Handling charges at port and transport cost from port to textile mills at Karachi @ 2.5 % of cif price	202	188
5.	Ex- gin price of cotton lint (item 3 + item 4)	8276	7718
6.	Value of 80 kgs of cotton seed (b)	3166	3166
7.	Ginning charges for 120 kgs of seed cotton including ginning losses	600	600
8.	Value of 120 kgs of seed cotton (item 5 +item 6 - item 7)	10842	10284
9.	Seed cotton price per 40 kgs (item 8/ 3)	3614	3428

Notes:

a) One US $ = 105.35 Pak rupees.
b) Average price of cotton seed for August 2016 to July 2017 in Mirpukhas, Hyderabad, Raheem Yar Khan and Sahiwal markets was Rs 1583 per 40kgs

Sources:

1. Index-A cotton price Annex - VIII
2. KCA, for incidental charges.
3. Pakistan Cotton Ginners Association, Karachi for ginning charges.

Annex -XIII

Based on Export Parity Price

ECONOMIC EFFICIENCY OF RESOURCE USE IN SEEDCOTTON

(POLICY ANALYSIS MATRIX)

Province/Year	Gross Revenue	Traded cost	Domestic Factors Cost	Profits
PUNJAB	Rupees per acre			
2011-12				
Private Prices	48535	16377	24974	7184
Social Prices	50292	13757	25175	11361
Transfers	-1758	2620	-201	-4177
2012-13				
Private Prices	48522	20329	26177	2017
Social Prices	45923	17076	26375	2472
Transfers	2599	3253	-198	-455
2013-14				
Private Prices	57723	20939	27711	9073
Social Prices	49514	17589	27910	4015
Transfers	8209	3350	-199	5058
2014-15				
Private Prices	47759	22451	32923	-7616
Social Prices	46562	18998	32613	-5049
Transfers	1197	3453	310	-2566
2015-16				
Private Prices	44529	22870	33162	-11503
Social Prices	55283	19398	32847	3039
Transfers	-10754	3473	315	-14542
SINDH				
2011-12				
Private Prices	40048	15523	22204	2321
Social Prices	51512	13039	22386	16086
Transfers	-11464	2484	-183	-13765
2012-13				
Private Prices	49508	19161	23400	6947
Social Prices	47028	16096	23581	7352
Transfers	2480	3066	-181	-405
2013-14				
Private Prices	53552	19807	24881	8864
Social Prices	50690	16638	25163	8890
Transfers	2861	3169	-282	-26
2014-15				
Private Prices	46648	21312	30440	-5104
Social Prices	48780	17902	30087	791
Transfers	-2132	3410	353	-5895
2015-16				
Private Prices	46648	21434	30554	-5340
Social Prices	57926	18005	30197	9724
Transfers	-11278	3429	356	-15063

Annex - XIV

Based on Import Parity Price

ECONOMIC EFFICIENCY OF RESOURCE USE IN SEEDCOTTON

(POLICY ANALYSIS MATRIX)

Province/Year	Gross Revenue	Traded cost	Domestic Factors Cost	Profits
PUNJAB	Rupees per acre			
2011-12				
Private Prices	48535	16377	24974	7184
Social Prices	75350	13757	25175	36419
Transfers	-26816	2620	-201	-29235
2012-13				
Private Prices	48522	20329	26177	2017
Social Prices	58228	17076	26375	14776
Transfers	-9705	3253	-198	-12759
2013-14				
Private Prices	57723	20939	27711	9073
Social Prices	71580	17589	27910	26081
Transfers	-13857	3350	-199	-17008
2014-15				
Private Prices	47759	22451	32923	-7616
Social Prices	71737	18998	32613	20126
Transfers	-23978	3453	310	-27741
2015-16				
Private Prices	44529	22870	33162	-11503
Social Prices	64764	19398	32847	12520
Transfers	-20235	3473	315	-24023
SINDH				
2011-12				
Private Prices	40048	15523	22204	2321
Social Prices	77034	13039	22386	41609
Transfers	-36986	2484	-183	-39288
2012-13				
Private Prices	49508	19161	23400	6947
Social Prices	59637	16096	23581	19960
Transfers	-10129	3066	-181	-13014
2013-14				
Private Prices	53552	19807	24881	8864
Social Prices	73199	16638	25163	31399
Transfers	-19647	3169	-282	-22535
2014-15				
Private Prices	46648	21312	30440	-5104
Social Prices	75181	17902	30087	27192
Transfers	-28533	3410	353	-32296
2015-16				
Private Prices	45648	21434	30554	-6340
Social Prices	66868	18005	30197	18666
Transfers	-21220	3429	356	-25006

Annex-XV

AREA, YIELD AND PRODUCTION OF SEED COTTON AMONG COMPETING COUNTRIES: 2016

Area = (thousand ha), Yield= (Kgs/ha), Production = (thousand tonnes)

S.No	Country	Area (000/ha)	Yield (Kgs/ha)	Production (000 tonnes)	S.No	Country	Area (000/ha)	Yield (Kgs/ha)	Production (000 tonnes)
1	Australia	280.422	5415.688	1518.678	28	Democratic People's Republic of Korea	19.510	1982.009	38.669
2	Turkey	416.002	5048.053	2100.000	29	Angola	2.911	1914.462	5.573
3	China, mainland	3376.100	4747.786	16029.000	30	Nicaragua	1.558	1872.914	2.918
4	Mexico	104.374	4674.670	487.914	31	Argentina	376.780	1786.573	673.145
5	Israel	8.340	4292.566	35.800	32	Azerbaijan	50.791	1760.981	89.442
6	Greece	323.608	4186.405	1354.754	33	Honduras	1.762	1753.121	3.089
7	Uruguay	0.001	4000.000	0.004	34	Tajikistan	162.558	1751.424	284.708
8	Syrian Arab Republic	127.863	3736.413	477.749	35	Sudan	66.360	1639.542	108.800
9	Colombia	22.230	3498.021	77.761	36	El Salvador	0.040	1450.000	0.058
10	Brazil	996.188	3477.359	3464.103	37	India	10500.000	1372.670	14413.036
11	South Africa	7.364	3468.210	27.274	38	Ecuador	2.543	1326.779	3.374
12	Bangladesh	17.401	3448.078	60.000	39	Cambodia	0.184	1320.652	0.243
13	Egypt	55.000	3181.818	175.000	40	Yemen	14.723	1292.128	19.024
14	Kyrgyzstan	16.588	3141.488	52.111	41	Burkina Faso	720.000	1250.622	900.448
15	Spain	61.777	2840.993	175.508	42	Philippines	0.004	1250.000	0.005
16	Guatemala	0.900	2775.556	2.498	43	Paraguay	12.000	1180.000	14.160
17	Iraq	11.863	2627.329	31.168	44	Afghanistan	51.102	1154.475	58.996
18	Kazakhstan	109.601	2615.852	286.700	45	Venezuela (Bolivarian Republic of	3.171	1147.903	3.640
19	United States of America	3848.000	2611.744	10049.990	46	Lao People's Democratic Republic	2.210	1144.796	2.530
20	Uzbekistan	1272.149	2599.907	3307.469	47	Guinea-Bissau	4.863	1134.485	5.517
21	Peru	18.099	2506.105	45.358	48	Uganda	69.589	1111.699	77.362
22	Botswana	0.348	2419.540	0.842	49	Cameroon	224.000	1111.152	248.898
23	Myanmar	201.951	2169.001	438.032	50	CÃ´te d'Ivoire	354.999	1065.645	378.303
24	Iran (Islamic Republic of)	82.112	2109.229	173.193	51	Albania	0.561	1053.476	0.591
25	Morocco	0.121	2107.438	0.255	52	Nepal	0.125	1032.000	0.129
26	Yugoslav Republic of Macedonia	0.003	2000.000	0.006	53	Niger	10.519	1009.792	10.622
27	Pakistan	2489.000	1985.836	4942.746	54	Viet Nam	0.641	1009.360	0.647
	World Average Yield			2165					

Source: World Statistics Year Book 2016

Annex-XVI

COTTON VARIETIES AND YIELD POTENTIAL IN PAKISTAN

S.No.	Name of variety	Yield (Kgs/hect.)	S.No.	Name of variety	Yield (Kgs/hect.)
1	CIM-482	4000-4500	27	Israr shaheed	2954
2	BH-118	2400	28	CIM-620	4000-4500
3	CRIS-5A	3900	29	BT.CIM-600	4000-45000
4	CIM-473	4000-45000	30	BT.CYTO-178	4000-4500
5	CIM-499	4000-4500	31	SLH-8	3750
6	CIM-506	4000-4500	32	BT.BH-184	2400-3200
7	CIM707	3500-4000	33	BT.CYTO-179	40000-45000
8	CRIS-134	4500	34	BT.CRIS-508	4042
9	CRIS-467	3800	35	CRIS-510	4215
10	BH-160	2400-3200	36	CRIS-533	3500
11	CIM-496	4000-4500	37	BT.CIM-632	4500-5000
12	CIM-534	4000-4500	38	CIM-610	4000-4500
13	CRIS-121	4000			
14	CIM-554	4500-5000			
15	CRIS-343	4000			
126	BT.CIM-598	4500-5000			
17	CIM-573	4000-5000			
18	SLM-317	3370			
19	BH-167	2400			
20	BT.CIM-599	4000-5000			
21	BT.CIM-602	4500-5000			
22	CIM-608	4000-4500			
23	BT.BH-178	3040-3360			
24	CRIS-129	5000			
25	BT.CYTO-177	4500-5000			
26	CYTO-124	40000-4500			

sources: Cotton Research Institute
Pakistan Centeral Cotton Cottittee