

API SERIES NO. 250



**COTTON POLICY ANALYSIS  
FOR  
2014-15 CROP**

**AGRICULTURE POLICY INSTITUTE  
MINISTRY OF NATIONAL FOOD SECURITY AND RESEARCH  
GOVERNMENT OF PAKISTAN  
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## 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 75.8 and 23.4 per cent of the cotton production while the share of both KPK and Balochistan is around one.
- During the last decade, cotton production has risen @ 0.6 per cent per annum solely due to 1.9 per cent improvement in yield as the area has fallen @ 1.2 per cent per year.
- Cotton production in 2013-14 is estimated at 12.33 million bales, 5.4 per cent less than 13.03 million bales produced in 2012-13.
- Cotton production has fallen short of the target by 4.9 per cent during 2013-14.

### **Domestic Prices**

- Monthly average market prices of seed cotton for 2013-14 crop during the post harvest months in major producing areas have generally remained above the export parity prices.
- The wholesale market prices of seed cotton during the post harvest period averaged at Rs 3044 per 40 kgs in the Punjab and Rs 2755 in Sindh.
- Monthly average wholesale prices of seed cotton ranged from Rs 2832 to Rs 3411 per 40 kgs during the post harvest months in major producing areas of the Punjab and Rs 1800 to Rs 3225 per 40 kgs in Sindh.
- Monthly average spot prices of cotton lint at Karachi have increased to Rs 7289 per 40 kgs in 2013-14 from Rs 6401 in 2012-13.

## Cost of Production

- In the Punjab, the cost of cotton cultivation during 2014-15 season is estimated at Rs 54,375 per acre.
- The cost of production at the market/ginnery level would be Rs 2902 per 40 kgs, reflecting a rise of 11.9 per cent over the last year.
- In Sindh, the cost of cotton cultivation for 2014-15 crop is expected at Rs 50,752 per acre.
- The cost of production at market/ginnery level would come to Rs 2587 per 40 kgs, showing an increase of 11.00 per cent over the last year.

## Economics of Cotton and Competing Crops

- The economics of cotton has an edge over basmati during 2013-14 in respect of purchased inputs and irrigation water, while out competing IRRI with respect to entire economic criteria.
- In case of indirect competition with sugarcane, sugarcane performed better than cotton+ sunflower in returns to overall investment and purchased inputs.
- In Sindh, cotton farming maintained its superiority over IRRI paddy in terms of purchased inputs and irrigation water.
- In case of indirect competition, the cotton combinations with wheat or sunflower lag behind sugarcane in crop duration and irrigation water in Sindh.

## 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. In view of comparatively higher prices of the produce, these ratios have moved in favour of cotton crop during 2013-14.
- 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 from 0.39 to 1.22 tonnes while that of P fertilizer from 0.78 to 2.35 during 2003-04 to 2013-14, except 2008-09 where the ratio was exceptionally high at 3.16.



### **Nominal and Real Market Prices**

- The nominal market prices of seed cotton in the Punjab indicate an overall increase of 105 per cent while the real market prices have shown a rise of 8 per cent during 2007-08 to 2013-14.
- In Sindh, the nominal market prices of seed cotton have observed overall escalation of 89 per cent while the real market prices have almost retained the base year level.

### **World Production and Prices**

- World cotton production estimated at 25.72 million tonnes in 2013-14 is projected to decline to 25.32 million in 2014-15.
- International prices of Index-A cottons have widely fluctuated from the lowest level of 52 cents per pound in 2004-05 to the highest level of 165 cents per pound in 2010-11.

### **Export Parity Prices**

- Based on actual export price of Pakistani cotton during 2013-14, the export parity price of seed cotton calculates to Rs 2640 per 40 kgs and Rs 2863 on the basis of average during 2010 to 2013.
- The export parity price comes to Rs 2268 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 2013-14, the import parity price of seed cotton works to Rs 3609 per 40 kgs and Rs 3818 for average of 2010 to 2013.
- Based on CFR Far Eastern quoted price of Index – A cottons, the import parity price comes to Rs 3122 per 40 kgs during 2013-14 and Rs 3986 on average of 2010 to 2013.

## 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. However, under export scenario these ratios remained above one during 2012-13 and 2013-14 in the Punjab and Sindh.
- Similarly, the EPCs are below one under import scenario in the Punjab, but above one 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 except 2012-13 in the Punjab under export situation. Generally the situation implies a Comparative Advantage in domestic cotton production, both under export and import scenario.
- The findings of economic efficiency analysis warrant expansion in cotton production to meet domestic requirements of textile industry as the imports are more expensive.

## World Comparison

- Pakistan is the 4<sup>th</sup> largest cotton producer in terms of area and production but ranks at 20<sup>th</sup> number in terms of yield.
- According to the Annual Field Survey Report of API for 2013-14 cotton crop, major cotton varieties sown in Punjab were Bt cotton, CIM-496, CIM-499, CIM-473, CIM-506, S-2000, MNH-786, MNH-886 and MNH-121.
- China has provided the highest direct assistance to cotton sector through production programmes at US \$ 5813 million during 2012-13 followed by USA at \$ 562 and Turkey at \$ 312 million respectively. No such direct assistance is reported in Pakistan, India and Brazil during 2012-13.
- Among 6 competing countries, cost of production of seed cotton was estimated at Pak Rs 2540 per 40 kgs in USA while in India it was reported at Pak Rs 2471 per 40 kgs during 2012-13.
- The cost of production of seed cotton is estimated at Pak Rs 2479 per 40 kgs in China, Rs 2839 in Iran, Rs 2209 in Turkey and Rs 1929 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 2014-15 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 2013-14 (Aug-Feb)		2640
	- During 2010-11 to 2012-13		2863
	ii) Futures contract prices of New York No.2 cotton (average of October, December 2014 and March 2015)		2268
2	Import parity prices based on average:		
	i) Actual cif Karachi prices of imported cotton:		
	- During 2013-14 (Aug-Feb)		3609
	- During 2010-11 to 2012-13		3818
	ii) CFR Far Eastern quoted price of Index-A Cottons		
	- During 2013-14 (Aug-Feb)		3122
	- During 2010-11 to 2012-13		3986
3	Average wholesale prices of seed cotton in Major Producer Area Markets during the post-harvest period in 2013-14 (Aug-Jan)		
	- Punjab		3044
	- Sindh		2755
4	Cost of production for 2014-15 crop		
	- Punjab		2902
	- Sindh		2587
5	Cost of domestic resources involved in:	At exchange rate of Pak Rs 99.0	
		Punjab	Sindh
	i) Producing cotton for import substitution based on 2013-14 prices of cotton (actual average)	46	48
	ii) Producing cotton for export based on 2013-14 prices of cotton (actual average)	83	76

## - Recommendations

In view of the field information, consultation with the stakeholders in the API's 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 2014-15 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 liberalization 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**

- 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 Bt cotton seed through public – private partnership. The APTMA may be involved in Government activities for research, marketing and quality improvement.
- The cultivation of uncertified Bt cotton varieties must be curtailed through strict measures.
- 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.

- In view of emerging climate change, new varieties of cotton seed like drought resistant and flood resistant are the dire need of the time.
- Availability of quality seed of cotton is the primary need. It must be ensured through enforcement of seed policy.
- A comprehensive National Seed Policy should be announced by the Government and implemented in true spirit.
- Availability of certified Bt Cotton Seed is a serious problem. It may be ensured in the market. Towards this end, an effective incentive and penalty structure must be put in place in order to guarantee its purity and quality.
- 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 rotting and pest attack which need to be addressed.
- The Punjab Seed Corporation is working well. The Government of Sindh, KPK and Balochistan should also pay a special attention to seed production to meet their provincial requirements.
- 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.
- 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 cotton production potential existing in the KPK and Balochistan may be tapped through cotton supporting activities. The provincial governments should launch Awareness Campaign to educate the growers about cotton production technology.
- 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.
- 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**

- A comprehensive educational campaign should be launched to educate the growers about improved practices of cotton picking.
- A Ginning Research Institute may be established at Multan to deal with the issues of cotton ginning and related matters.
- In order to introduce quality assurance system, the Cotton Commissioners should be posted with strong legal and administrative powers by provincial governments of Punjab and Sindh.
- In order to check the underweighment and undue deduction in cotton marketing, a supervisory committee consisting of representatives of provincial agriculture departments, local market committees, growers and cotton dealers may be constituted.
- Like other commodities, a Regulatory Authority may be established to control prices and quality of agriculture inputs.
- The Government may amend the Cotton Control Act according to the prevailing situation and strictly ensure its effective implementation.

- 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 the ginneries strictly follow the policy to only procure high quality seed cotton.
- 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.

**Chairman, API**

**June 20, 2014**

# COTTON POLICY ANALYSIS FOR 2014-15 CROP

## INTRODUCTION

Cotton is a very important crop of Pakistan. It plays crucial role in the economy. It is one of the most significant pillars of Pakistan's economy. It is an important source of raw material to the textile industry in the country. Cotton is annually cultivated over 3 million hectares accounting for more than 12 per cent of the cropped area. It contributes 6.7 per cent of the value addition in agriculture sector and about 1.4 per cent in GDP. Cotton farming is a significant source of income for rural labour especially the women as pickers. The cotton sticks are also used as fire wood round the year 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 principal source of animal feed.

2. Cotton farming is the principal source of raw material for the textile sector; 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. The foreign exchange earned from export of cotton and its made ups constitutes over 50 per cent of earnings from the merchandise exports of the country. 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. Pakistan produced an all time record cotton crop of 14.3 million bales in 2004-05 followed by 13.6 million in 2011-12 and 13.0 million in 2012-13. Cotton production has averaged around 13 million bales during the last three years. As the crop is susceptible to a host of insect/pests and diseases, its cultivation is a risky proposition. Even in bumper crop harvests, the farmers have suffered because of low prices. The swing in 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 Intervention Price in the past for the Base grade with staple length 1-1/16" 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 4 years as the market prices remained at reasonable level during the season.

5. In preparing this Report for Seed Cotton 2014-15 crop, following procedure was adopted:

- The data on different aspects of cotton production, input prices, trade situation, ginning and marketing were collected from the primary and secondary sources and analysed by the Agriculture Policy Institute.
- A field survey was also conducted by the API during March, 2014 in major cotton producing areas of the country. Interviews and discussions were held with the growers, local leaders and officials of the Provincial Departments of Agriculture, cotton ginners and traders, etc. The data of field survey was analysed and the findings were duly considered in the policy analysis.
- A meeting of the API's Committee on Cotton was held on 25<sup>th</sup> February, 2014 at API, Islamabad. It was attended by the representatives of cotton growers/ associations, Karachi Cotton Association (KCA), Trading Corporation of Pakistan (TCP), Chambers of Agriculture, Progressive Growers, Cotton Experts and officials of Federal and Provincial Governments concerned with farm inputs, cotton production and marketing, etc. Issues relating to cotton production, consumption, marketing and price situation both national and international were discussed in the meeting. The proceedings of the meeting were issued and the viewpoints of the committee members were duly considered in formulating the price policy proposals.

6. It may be noted that the cotton trade has become increasingly quality conscious under the WTO regime. Globally, the demand for contamination free and clean cotton is increasing in the world trade. Even the local textile industry demands for the standard cotton to manufacture the quality made ups. In future, these challenges are expected to become more serious. Thus, it is very essential 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. Similar training was provided in Sindh by the PCSI during 2008-09 and 2009-10.

7. There are also challenges of CLCV, Mealy bug and wide spread cultivation of unapproved Bt cotton in domestic production. 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. The Government will facilitate the activities through its cotton Research Institutes in the country.

8. In addition, the Government is planning to take several steps 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. Measures are also being taken to develop the disease/heat/drought resistant and GM 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

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

**Sources:**

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

10. 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.

11. An important development is the rising trend of Bt cotton by farmers. Almost 80 % of cotton growing area has become under Bt Cotton with different names in the Punjab and Sindh. There may be 30 % increase in cotton yield due to resistance against chewing pests. 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 susceptible 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 are presented in Table - 2 , while those for Sindh province are not available.

**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	15 <sup>th</sup> April to 15 <sup>th</sup> May
Ali Akbar 703	Rahim Yar Khan, Rajanpur, Bahawalpur, D.G. Khan and areas suitable for early sown cotton	1 <sup>st</sup> March to 15 <sup>th</sup> April
MG-6	Low fertile lands and less irrigation water available areas especially Muzafargarh, Bahawalnagar and Bahawalpur	1 <sup>st</sup> April to 15 <sup>th</sup> May
Sitara-008	Central fertile areas of cotton, Khanewal, Multan, Vehari and Lodhran	1 <sup>st</sup> March to 15 <sup>th</sup> 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	16 <sup>th</sup> April to 15 <sup>th</sup> May
Neelum 121	Fertile and Irrigation water available Non Core Areas, especially cotton sowing areas after potato crops (Okara, Sahiwal)	1 <sup>st</sup> March to 30 <sup>th</sup> April
Ali Akbar 802	Highly Virus affected areas, Multan, Lodhran, Muzafagarh, Khanewal and Non Core Areas of Cotton	15 <sup>th</sup> April to 15 <sup>th</sup> May
IR-NIBGE-1524	Low fertile lands with less water availability areas of Southern Punjab (Bahawalpur, Bahawalnagar)	15 <sup>th</sup> April to 15 <sup>th</sup> May
Hybrid GN-2085	All fertile lands of Punjab and suitable for progressive farmers	15 <sup>th</sup> April to 15 <sup>th</sup> May
Bt.CIM-598	All fertile lands and irrigation water available, Core and Non-Core Areas of Punjab	1 <sup>st</sup> March to 30 <sup>th</sup> April
Sitara-009	All fertile lands of Punjab	1 <sup>st</sup> March to 15 <sup>th</sup> May
MNH-886	All fertile lands of Punjab	1 <sup>st</sup> March to 15 <sup>th</sup> May
Tarzan-1	Central fertile lands of Punjab	15 <sup>th</sup> March to 15 <sup>th</sup> May
N-141	All fertile lands and irrigation water available areas	15 <sup>th</sup> March to 30 <sup>th</sup> April
A-One	Central fertile areas of cotton, Khanewal, Multan, Vehari and Lodhran	1 <sup>st</sup> March to 15 <sup>th</sup> April
NIBGE-3	Fertile and irrigation water available areas	1 <sup>st</sup> March to 1 <sup>st</sup> week of April

Source:-Central Cotton Research Institute, Multan.

### 3. PROVINCIAL SHARES IN AREA AND PRODUCTION

12. Provincial shares in area and production of cotton based on average of 2011-12 to 2013-14 are provided in Table-3. During this period, cotton production averaged at 12.985 million bales from 2.820 million hectares (6.969 million acres) in the country.

**Table-3: Provincial Shares in Area and Production of Cotton: Average of 2011-12 to 2013-14**

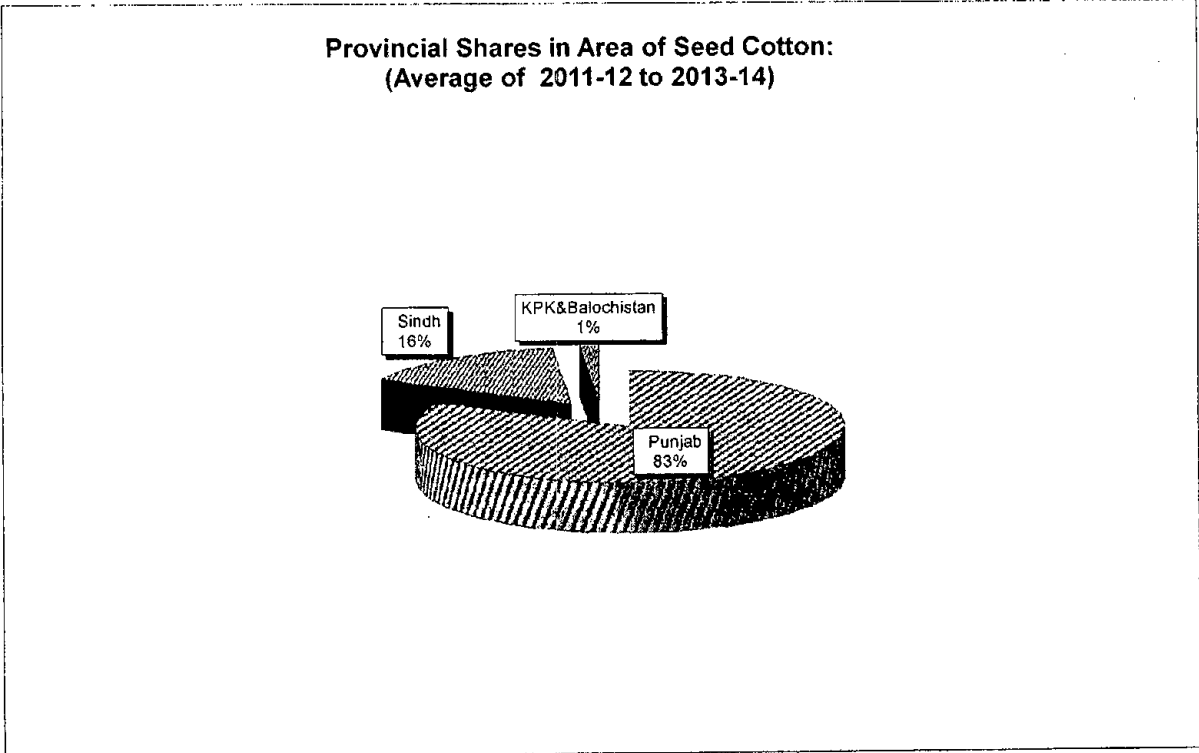
Country/ Province	Area		Production	
	000 hectares	Per cent	000 bales	Per cent
<b>Pakistan</b>	<b>2820.2</b>	<b>100.0</b>	<b>12984.6</b>	<b>100.0</b>
Punjab	2327.7	82.5	9840.3	75.8
Sindh	452.4	16.0	3039.6	23.4
KPK& Balochistan	40.1	1.4	104.7	0.8

Source: Annex-I.

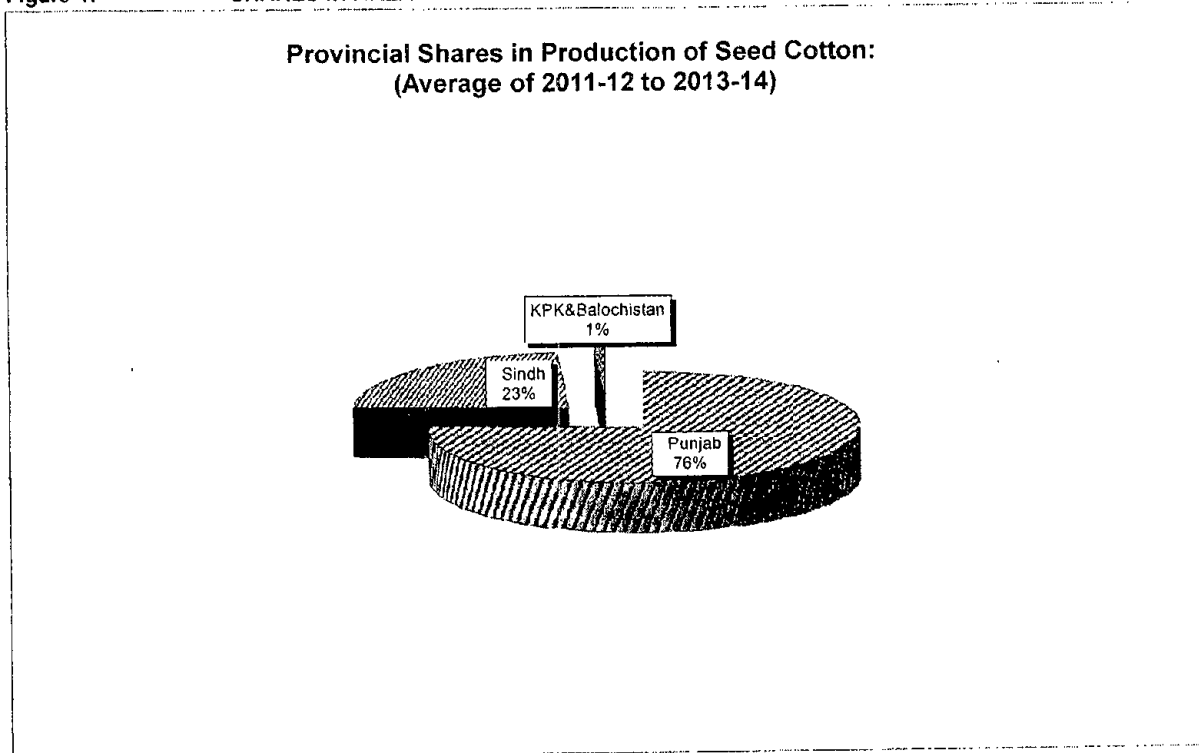
13. Punjab and Sindh account for 82.5 and 16.0 per cent in cotton area and 75.8 and 23.4 per cent in production (Figures 1 and 2). Cotton yield in Sindh is higher than the Punjab. Resultantly production share of Sindh exceeds its area share. The share of KPK and Balochistan together is 0.8 per cent in production and 1.4 per cent in area. Cotton yield both in KPK and Balochistan is much lower than Punjab and Sindh.

### 4. IMPORTANT COTTON GROWING DISTRICTS

14. The district-wise data on area and production of cotton are presented in Annex-III. The districts producing more than one million bales of cotton per annum each are Bahawalpur, Bahawalnagar and Vehari in the Punjab. The districts producing more than 500 thousand bales of cotton per year each are Rahim Yar Khan, Khanewal, Lodhran, Multan and Muzaffargarh, from the Punjab and Sanghar from Sindh province. The districts producing above 100 thousand bales each per year are Rajanpur, Sahiwal, D.G.Khan, Pakpattan, Jhang, T.T.Singh, Layyah, Okara, Faisalabad and Mianwali in the Punjab and Khairpur, Ghotki, Matiari, Nawabshah, Mirpurkhas, NausheroFeroze, Sukkur, Umerkot and Tando Allahyar in Sindh Province. These 28 districts account for more than 95 per cent of the cotton production in the country.



**Figure-1: SHARES IN AREA**



**Figure-2: SHARES IN PRODUCTION**

## 5. CHANGES IN AREA, YIELD AND PRODUCTION

15. During the period of 2003-04 to 2013-14, cotton area ranged between 2.689 and 3.193 million hectares (6.645 and 7.889 million acres) and yield between 572 and 816 kgs per hectare (231 to 330 kgs per acre). Therefore, cotton production oscillated between 10.048 and 14.265 million bales. Long term and short term changes in area, yield and production are discussed below:

### 5.1 Long-term Changes: 2003-04 to 2013-14

16. During the period under reference, cotton production at country level increased @ 0.6 per cent per annum mainly due to 1.9 per cent improvement in yield despite 1.2 per cent annual contraction in area (Table-4).

**Table-4: Average Annual Growth Rates of Area, Yield and Production of Cotton: 2003-04 to 2013-14**

Country/ Province	Area	Yield	Production
	----- Per cent per annum-----		
<b>Pakistan</b>	<b>-1.2</b>	<b>1.9</b>	<b>0.6</b>
Punjab	-0.9	0.6	-0.3
Sindh	-3.4	6.8	3.2

**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.

17. In the Punjab, cotton production decreased @ 0.3 per cent annually only due to 0.9 per cent annual decline in area because per unit yield has shown an improvement of 0.6 per cent. In Sindh, cotton production increased @ 3.2 per cent per annum solely due to 6.8 percent improvement in yield as there is 3.4 per cent annual reduction in area under cotton crop.

## 5.2 Short-term Changes: 2012-13 Vs 2013-14

18. According to the Second estimates provided by the provincial Agricultural Departments, cotton production during 2013-14 at country level worked out as 12.328 million bales against 13.030 million bales produced in 2012-13 (Table-5). The shortfall of 5.4 per cent in cotton production at the country level is due to 4.6 per cent reduction in area and 0.9 per cent decrease in yield.

**Table-5: Area, Yield and Production of Cotton: 2012-13 and 2013-14 Crops**

Country/ Province	Area		Changes in 2013- 14 over 2012-13	Yield		Changes in 2013-14 over 2012-13	Production		Changes in 2013- 14 over 2012-13
	2012-13	2013-14		2012-13	2013-14		2012-13	2013-14	
	-- 000 hectares --		Per cent	--Kgs/hectare --		Per cent	-- 000 bales --		Per cent
<b>Pakistan</b>	<b>2878.8</b>	<b>2747.5</b>	<b>-4.6</b>	<b>769.9</b>	<b>763.2</b>	<b>-0.9</b>	<b>13030.7</b>	<b>12328.2</b>	<b>-5.4</b>
Punjab	2308.7	2140.8	-7.3	701.8	704.4	0.4	9526.0	8866.0	-6.9
Sindh	530.1	568.0	7.1	1091.1	1006.6	-7.7	3400.4	3361.6	-1.1
KPK	0.2	0.3	29.2	481.9	482.8	0.2	0.7	0.9	29.4
Balochistan	39.8	38.4	-3.5	442.7	441.6	-0.3	103.6	99.7	-3.8

Source: Annex-I

19. Cotton production in the Punjab estimated at 8.866 million bales, 6.9 per cent less than 9.526 million bales produced in 2012-13. Lower production is only due to decrease in area by 7.3 per cent because yield has improved by 0.4 per cent.

20. In Sindh, cotton production is reported at 3.362 million bales, 1.1 per cent less than 3.400 million bales in 2012-13. Decrease in production is due to decrease in yield by 7.7 per cent despite 7.1 per cent expansion in area.



### 5.3 Factors Responsible for Variation in Cotton Production

21. Provincial Agricultural Departments have provided following reasons for changes in area and production of cotton crop during 2013-14.

#### ❖ Area

##### **Punjab**

1. Lower prices of cotton crop during last two years discouraged the growers to bring more area under crop.
2. Shifting of area to maize and rice crops in Lodhran, Vehari, Muzaffargrah, Bahawalnagar, T.T.Sindh, Sargodha, Pakpattan, Faisalabad and Kasur districts due to better market returns.

##### **Sindh**

Favourable weather conditions helped improved the area of cotton crop in Sindh.

#### ❖ Production

##### **Punjab**

Production of cotton in the Punjab province decreased due to only corresponding decrease in area of the crop.

##### **Sindh**

In Sindh province production of cotton decreased due to continued hot weather in the month of September & October which resulted enforced boll opening. Secondly cotton production was also affected due to attack of Pink Borer/Mealy Bug.

### 6. TARGETS VS ACHIEVEMENTS: 2013-14 CROP

22. The respective Provincial Agriculture Departments had fixed Seed Cotton production target for 2013-14 crop at 12.960 million bales. As per Second estimates of Provincial Agriculture Departments, cotton production is reported at 12.328 million bales, 4.9 percent less than the target solely due to 11.8 percent shortage in area as there was 7.9 percent improvement in yield (Table-6).

23. Punjab achieved the production target entirely on account of yield improvement by 13.4 per cent inspite of acreage decline by 11.8 per cent.

**Table-6: Targets and Estimated Achievements of Area, Yield and Production of Seed Cotton: 2013-14 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	Kgs/ha		Per cent	-- 000 bales --		Per cent
<b>Pakistan</b>	<b>3115.8</b>	<b>2747.5</b>	<b>-11.8</b>	<b>707.5</b>	<b>763.2</b>	<b>7.9</b>	<b>12960.3</b>	<b>12328.2</b>	<b>-4.9</b>
Punjab	2428.1	2140.8	-11.8	621.1	704.4	13.4	8866.0	8866.0	0.0
Sindh	650.0	568.0	-12.6	1046.7	1006.6	-3.8	4000.0	3361.6	-16.0
KPK	0.2	0.3	43.1	463.2	482.8	4.2	0.6	0.9	49.2
Balochistan	37.5	38.4	2.4	424.8	441.6	3.9	93.7	99.7	6.4

**Sources:** 1. For targets: Respective Provincial Agriculture Departments.  
2. For achievements: Annex-I.

24. Production of cotton fell short of the target by 16 percent in Sindh. In KPK and Balochistan, cotton production surpassed the target by 49.2 and 6.4 percent respectively. However, the area of cotton could not achieve the target and remained short by 11.8 and 12.6 per cent in Punjab and Sindh respectively. The targets of area in KPK and Balochistan were surpassed by 43.1 and 2.4 per cent, respectively.

## 7. DOMESTIC SUPPLY, DEMAND, STOCKS AND PRICE SITUATION

### 7.1 Domestic Supply, Demand and Stocks

25. Domestic production of cotton lint from 2013-14 crop reported at 12.33 million bales is about 5.4 percent lower than the last year's production of 13.03 million bales. Adding the opening stocks of 1.44 million bales, the total supply is calculated at 13.77 million bales. Accounting for the likely consumption, imports and exports, the closing stocks of 2013-14 are likely to be 2.30 million bales, showing an increase of 59.72 per cent over the last year (Table-7). This increase shows that Pakistan have a chance to increase cotton - related exports. If these additional stocks are not timely consumed by local industries or exports, the prices of seed cotton in the coming season are likely to decline.

**Table-7: Domestic Production, Demand and Stocks of Cotton Lint: 2011-12 to 2013-14 (August-July)**

Item	2011-12	2012-13 (estimated)	2013-14 (Provisional)
----- Million bales * -----			
1. Opening stocks	0.69	0.86	1.44
2. Production	13.60	13.03	12.33
<b>3. Total supply</b>	<b>14.29</b>	<b>13.89</b>	<b>13.77</b>
<b>4. Likely Consumption **</b>	<b>13.06</b>	<b>14.21</b>	<b>11.97</b>
5. Imports***	1.12	2.36	1.01
6. Exports***	1.49	0.60	0.51
<b>7. Closing stocks</b>	<b>0.86</b>	<b>1.44</b>	<b>2.30</b>

\* One bale = 170 kgs = 375 lbs.

\*\* Consumption in 2011-12 is excluding non-listed mills as reported by ICAC.

\*\*\* Import and Export during 2013-14 are from Aug 13 to Feb, 2014.

**Sources:**

- a) For item 1 & 4 Textile Commissioner Organization (TCO).
- b) For item 2, 3 & 5 PBS, Karachi..

**7.2 Domestic Price Situation**

**7.2.1 Seed Cotton (phutti)**

26. The monthly average wholesale prices of seed cotton in the main producing area markets of the Punjab and Sindh during the post harvest period of 2013-14 crop are detailed in Table-8.

**Table-8: Monthly Average Wholesale Prices of Seed Cotton (Phutti) in the Main Producer Area Markets for 2013-14 Crop.**

Market	Aug	Sept	Oct	Nov	Dec	Jan	Avg
<b>Punjab</b>	-----Rs per 40 kgs-----						
Bahawalpur	-	2832	2994	2976	3085	3249	<b>3027</b>
Khanewal	-	2973	2996	3009	3025	3269	<b>3055</b>
Multan	-	3054	2882	2868	2976	3100	<b>2976</b>
R.Y.Khan	-	3082	2890	2934	3078	3315	<b>3059</b>
Vehari	-	3125	2934	3078	2975	3411	<b>3105</b>
<b>Average</b>	-	<b>3013</b>	<b>2939</b>	<b>2973</b>	<b>3028</b>	<b>3269</b>	<b>3044</b>
<b>Sindh</b>	Aug	Sept	Oct	Nov	Dec	Jan	Avg
Mirpur Khas	2901	3182	2832	2142	2111	2100	<b>2545</b>
Sanghar	2933	3202	2629	2189	2079	-	<b>2606</b>
Hyderabad	2927	3164	2805	2395	2182	1800	<b>2546</b>
Nawabshah	2911	3130	3059	2679	2703	2950	<b>2905</b>
Khairpur	3125	3175	3041	2779	2763	2838	<b>2954</b>
Ghotki	-	3225	2966	2918	2867	2900	<b>2975</b>
<b>Average</b>	<b>2959</b>	<b>3180</b>	<b>2889</b>	<b>2517</b>	<b>2451</b>	<b>2518</b>	<b>2755</b>

**Note:** Rounding of figures may cause slight differences

**Sources:** 1. Directorate of Agriculture (E&M), Punjab, Lahore.

2. D.G. Agriculture Extension, Hyderabad, Sindh.

27. The monthly average wholesale prices of seed cotton during the post harvest period averaged at Rs 3044 per 40 kgs in the Punjab and Rs 2755 in Sindh.

### 7.2.2 Cotton Lint (Raw Cotton)

28. The monthly average spot prices of raw cotton at Karachi during 2012-13 and 2013-14 are presented in Table-9. The spot price during 2013-14 averaged at Rs 7289 per 40 kgs which is 13.87 percent higher than last year.

**Table-9: Monthly Average Spot Prices of Raw Cotton at Karachi for 2012-13 and 2013-14 Crops ( August-March)**

Month	Base Grade -3, staple length 1-1/16", Micronaire Value 3.8 to 4.9 NCL ( No Control Limit)	
	2012-13	2013-14
	Rupees per 40 kgs	
August	6151	7117
September	5964	7356
October	5921	7395
November	6258	6915
December	6253	7035
January	6414	7514
February	6700	7617
March	7550	7363
<b>Average</b>	<b>6401</b>	<b>7289</b>

**Source:** Karachi Cotton Association (KCA). Karachi.

## 8. COST OF PRODUCTION OF SEED COTTON

29. In preparing the price proposals for the farm produce, the cost of production is one of the imperative factors. However, its empirical estimation involves several conceptual and practical difficulties because of wide variations in agro- climatic conditions, use level of inputs, and farming systems under which the crop is grown.

30. The cost of production estimates of seed cotton for 2014-15 crop in the Punjab and Sindh have been made by adopting the input-output parameters as used in the Cotton Policy Analysis Report for 2013-14 crop alongwith the latest inputs prices and custom hiring rates of field operations. In order to revise the inputs prices and hiring rates of different field operations involved in cotton cultivation, the API carried out a field survey in the major growing areas of the Punjab and Sindh during March 2014. The detailed cost estimates of the Punjab and Sindh are given in Annex IV and V respectively, while a summary of the results is presented in Table-10.

**Table-10: Average Farmers' Cost of Production of Seed Cotton: 2013-14 and 2014-15 Crops**

S. No	Items	Unit	2013-14 crop	2014-15 crop	Increase in 2014-15 over 2013-14
<b>Punjab</b>					
1.	Cost of cultivation	Rs/acre	47850	54375	6225
2.	Yield	Kgs/acre	748	760	12
3.	Cost of production at farm level	Rs/40 kgs	2559	2862	303
4.	Marketing cost	Rs/40 kgs	35	40	5
5.	Cost of production at market/ginnery	Rs/40 kgs	2594	2902	308
<b>Sindh</b>					
1.	Cost of cultivation	Rs/acre	43788	50752	6964
2.	Yield	Kgs/acre	763	797	34
3.	Cost of production at farm level	Rs/40 kgs	2296	2547	251
4.	Marketing cost	Rs/40 kgs	35	40	5
5.	Cost of production at market/ginnery	Rs/40 kgs	2331	2587	256

Note: The figures have been rounded off.

Source: Annex- IV and V.

### **Punjab**

31. The cost of rising one acre of seed cotton in the Punjab during 2014-15 is likely to be Rs 54375, including land rent (Table-10). Based on an average yield of 760 kgs per acre, the cost of production works out to Rs. 2862 per 40 kgs. Adding up the marketing charges @ Rs. 40/40 kgs, the market/ginnery level cost of production comes to Rs. 2902 per 40 kgs, higher by Rs. 308 (11.9 per cent) than the corresponding cost of 2013-14 crop.

### **Sindh**

32. During 2014-15 crop season, the cost of cultivating one acre of seed cotton in Sindh is expected to be Rs 50752, including land rent. In view of an average yield of 797 kgs per acre, the farm level cost of production of seed cotton works at Rs. 2547 per 40 kgs. Adding marketing cost @ Rs. 40/40 kgs, the market/ginnery level cost of production would come to Rs. 2587 per 40 kgs, indicating an increase of Rs. 256 (11.0 per cent) over the corresponding cost of Rs. 2331 per 40 kgs in 2013-14.

33. The rise in the cost of production of seed cotton in both the provinces is primarily attributed to the higher cost of farm operations and cost of supplementary irrigation on account of increase in the prices of diesel and power tariff. The uprising in land rent and picking charges has also notably

added in the cost of production of seed cotton. However, lower prices of phosphatic fertilizer has to some extent offset the rise in the cost of production of seed cotton for 2014-15 crop.

### 8.1 Cost of major operations

34. The cost of major items in the gross cost of cultivation of seed cotton during 2013-14 and 2014-15 crops is presented in Table-11.

**Table-11: Cost of Major Operations/Inputs in the Gross Cost of Cultivation of Seed Cotton: 2013-14 and 2014-15 crops**

		2013-14 crop	2014-15 crop	Shares in increased cost
		Rs/acre		Per cent
<b>Punjab</b>				
1.	Land preparation	4083 (8)	4394 (8)	4.6
2.	Seed and sowing operations	2545 (5)	3016 (5)	7.0
3.	Irrigation	4354 (9)	4760 (9)	6.0
4.	Interculture	3096 (6)	3458 (6)	5.4
5.	Plant protection	3461 (7)	4038 (7)	8.6
6.	Fertilizers including FYM	8427 (17)	8470 (16)	0.6
7.	Land rent	14000 (29)	16667 (30)	39.7
8.	Picking charges	4675 (10)	5700 (10)	15.2
9.	Others	4008 (8)	4872 (9)	12.9
10.	Gross cost	48650 (100)	55375 (100)	100.0
<b>Sindh</b>				
1.	Land preparation	5108 (11)	5591 (11)	6.9
2.	Seed and sowing operations	3511 (8)	4190 (8)	9.8
3.	Irrigation	3078 (7)	3415 (7)	4.8
4.	Interculture	3193 (7)	3606 (7)	5.9
5.	Plant protection	2520 (6)	2940 (6)	6.0
6.	Fertilizers including FYM	7579 (17)	7459 (14)	(-) 1.7
7.	Land rent	10667 (24)	13333 (26)	38.3
8.	Picking charges	4769 (11)	5978 (12)	17.4
9.	Others	4365 (10)	5240 (9)	12.6
10.	Gross cost	44788 (100)	51752 (100)	100.0

**Notes:**

1. Rounding off of figures may result in slight differences.
2. Figures in parenthesis are percent shares in total cost of cultivation per acre.
3. Others include mark-up, management charges, land revenue, land tax, drainage cess and cutting of sticks.

### **Punjab**

35. In the Punjab, land rent is the most important component of the cost of cultivation of seed cotton for 2014-15 crop, contributing 30 per cent. The other constituents are: fertilizers including FYM (16 %), picking charges (10 %), irrigation (9 %), land preparation (8 %), plant protection (7 %), interculture (6 %) and seed and sowing operations (5 %).

### **Sindh**

36. In Sindh too, land rent is also the central component of the cost of cultivation of seed cotton during 2014-15 crop year, contributing 26 per cent. The other component are: Fertilizers including FYM (14 %), Picking charges (12 %) land preparation (11 %), Seed/sowing operations (8 %), Irrigation and Interculture (7 % each) and Plant protection (6 %).

## **9. ECONOMICS OF COTTON AND COMPETING CROPS**

37. The 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.

38. 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.

39. The economics of cotton and competing crops has been analyzed in terms of input-output prices paid and received by the growers during the 2013-14 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 12 & 13 and depicted at Figures 3 & 4:



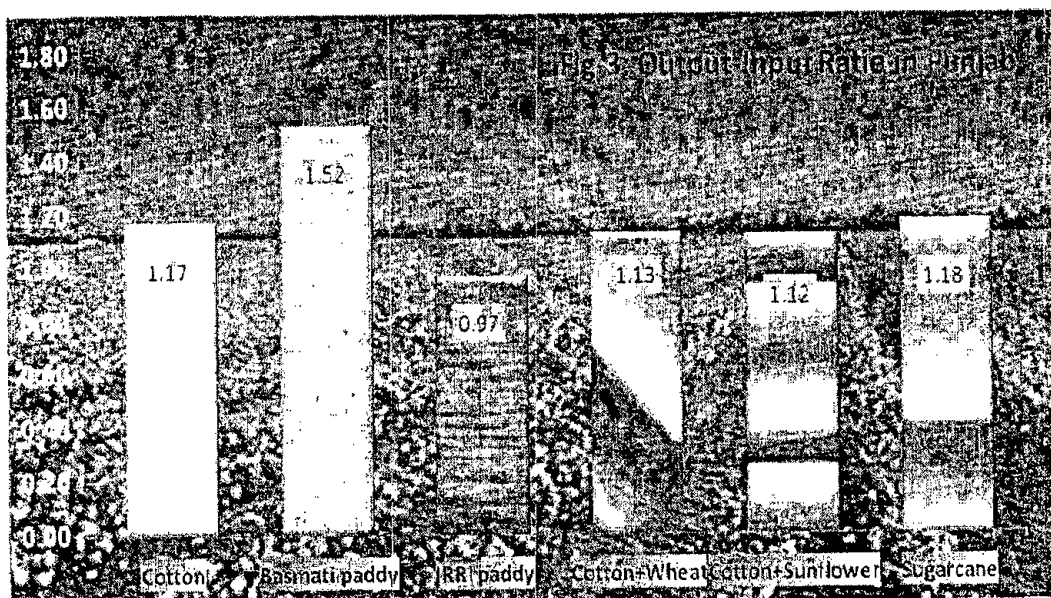
**Punjab****Table-12 : Economics of Cotton and Competing Crops at Prices Realized by the Growers in the Punjab: 2013-14 Crop**

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	1.17	3.31	238	2594
2. Basmati paddy	1.52	3.24	362	1123
3. IRRI paddy	0.97	2.09	205	595
4. Cotton + Wheat	1.13	3.10	228	2811
5. Cotton + Sunflower	1.12	2.91	232	2215
6. Sugarcane	1.18	3.72	222	1825

Source: Annex-VI

40.. Cotton in Punjab remained low as compared to Basmati Paddy in terms of returns to overall investment, despite the fact that growers received 19 per cent higher price of seed cotton during current season over the last year. In terms of crop duration too, the cotton performance was lower than basmati. In other two criteria of purchased inputs and irrigation water, cotton crop distinctly excelled over basmati paddy. However, cotton crop maintained its upper hand over IRRI paddy in respect of all economic indicators adopted in this analysis.

41. In case of indirect competition, sugarcane paid better returns over both the cotton combinations in respect of input-out ratio and purchased inputs. While in terms of remaining two indicators, cotton combinations paid better returns to farmers over sugarcane.



### Sindh

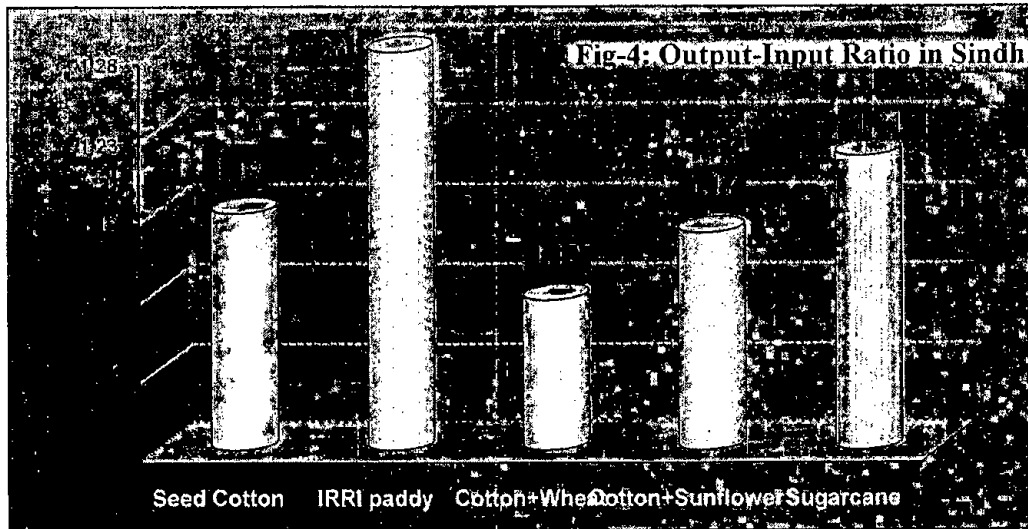
42. In Sindh, cotton farming performed better than IRRI paddy in terms of purchased inputs and irrigation water, while IRRI paddy out competed cotton in terms of output-input ratio and crop duration.

**Table-13: Economies of Cotton and Competing Crops at Prices Realized by the Growers in Sindh: 2013-14 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	1.18	3.58	220	2938
2. IRRI paddy	1.28	3.41	255	818
3. Cotton+Wheat	1.12	3.22	211	2952
4. Cotton+Sunflower	1.17	3.56	233	2445
5. Sugarcane	1.21	3.70	221	1520

Source: Annex-VI

43. In case of indirect competition, sugarcane farming has shown better returns over the cotton combinations with wheat or sunflower in respect of all the economic criteria except irrigation water where both the cotton combinations have edge over sugarcane. The cotton + sunflower combination also performed better than sugarcane in respect of crop duration.



## 10. ECONOMICS OF FERTILIZER USE ON COTTON CROP

44. The economics of fertilizer use on 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)

45. 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-14.

**Table-14: Benefit Cost Ratio (BCR) of Fertilizer Use on Cotton: 2004-05 to 2013-14**

Year	Response Ratios (Seed Cotton: Nutrient) of			
	3.00:1	3.75:1	4.50:1	5.25:1
2004-05	1.75	2.09	2.39	2.67
2005-06	1.95	2.32	2.67	2.99
2006-07	1.53	1.84	2.13	2.41
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

Sources: 1. For 2004-05 to 2012-13: Cotton Policy Analysis Report for 2013-14 crop, by API.  
2. For 2013-14: Annex-VII.

46. 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

47. 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 2004-05 to 2013-14 and presented in Table-15. The quantity of seed cotton needed to buy one nutrient tonne of N fertilizer has ranged between 0.39 to 1.22 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.

**Table-15: Parity Ratio between the Prices of Fertilizer and Seed Cotton: 2004-05 to 2013-14**

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-----	
2004-05	18400	34000	22550	0.82	1.51
2005-06	19700	37900	25075	0.79	1.51
2006-07	21600	39000	27400	0.79	1.42
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

- 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

48. 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 marketing 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 2013-14 are presented in Table-16 and 17.

### 11.1 At Market Prices of Seed Cotton in the Punjab

49. The nominal and real market prices of seed cotton for 2007-08 to 2013-14 are shown in Table-16 below and depicted in Figure-5.

**Table-16: Nominal and Real Market Prices of Seed Cotton (Phutti) in the Punjab: 2007-08 to 2013-14**

Crop year	Nominal Market Prices	Consumer Price Index (CPI)	Real Market Prices
	Rs per 40 kgs	2007-08= 100	---- Rs per 40 kgs - $4 = (2/3) \times 100$
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

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

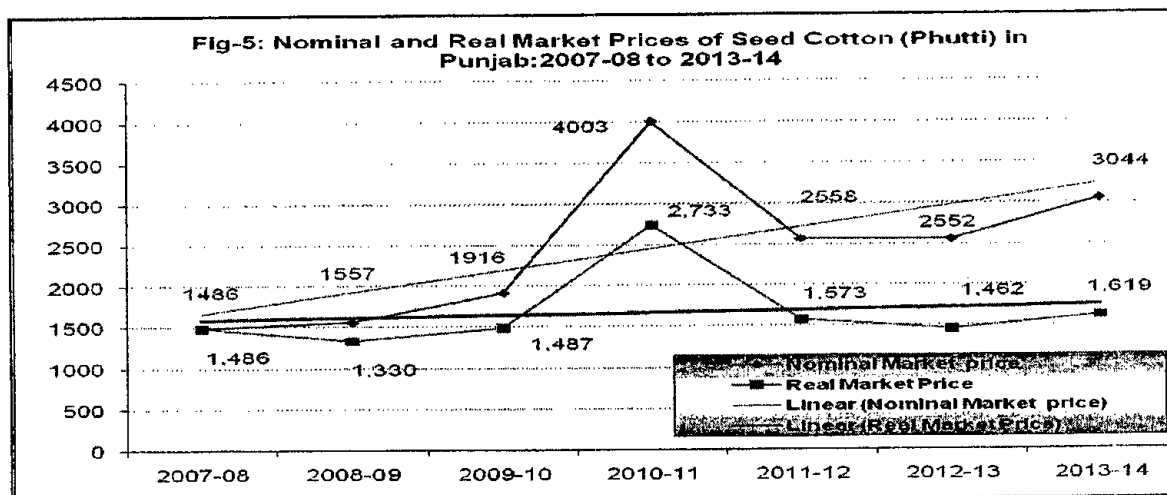
**Sources:** 1. Price Policy Reports of Seed Cotton by API (various issues).

2. For CPI 2013-14 Economic Survey of Pakistan, 2013-14.

50. The nominal market price of seed cotton averaging at Rs 1486 per 40 kgs for 2007-08 crop had peaked all-time highest level of Rs 4003 per 40 kgs in 2010-11, which however declined in the following two years to Rs.2558 and Rs 2552 per 40 kgs in 2011-12 and 2012-13, respectively.

51. During the period, the real market price has experienced fluctuations, touching the lowest level of Rs 1330 per 40 kgs in 2008-09 and the highest of Rs 2733 per 40 kgs in 2010-11. Like the nominal, the real prices responded identically and dropped in following two years consecutively.

52. During 2013-14, the nominal market price in Punjab averaged at Rs 3044 per 40 kgs, increased by about one-fifth over the previous year. However, the real value of seed cotton improved only by 10 per cent over the last year. Despite an overwhelmingly 105 percent increase of nominal price over the base-year level the real price showed a mere 9 percent change in real terms, which indicates that due to constant increase in inflationary trend during the period under review, the cotton farmers could not gain much in terms of real economic returns from the crop over the years.



## 11.2 At Market Prices of Seed Cotton in Sindh

53. The nominal and real market prices of seed cotton for 2007-08 to 2013-14 are presented in Table-17 and depicted in Figure-6.

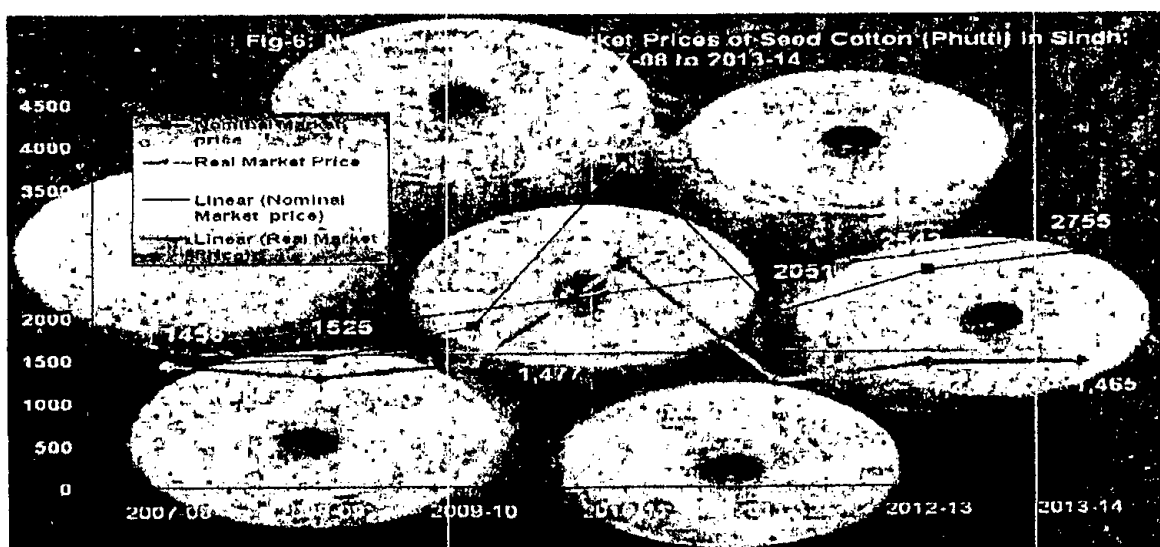
**Table-17: Nominal and Real Market Prices of Seed Cotton (Phutti) in Sindh: 2007-08 to 2013-14**

Crop year	Nominal Market Prices	Consumer Price Index (CPI)	Real Market Prices
	Rs per 40 kgs	2007-08= 100	----- Rs per 40 kgs ----- $4 = (2/3) \times 100$
1	2	3	4
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

**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 2013-14 Economic Survey of Pakistan, 2013-14.

54. It may be seen from Table-17, that there seems a steady growth trend during 2007-10 in the prices of seed cotton in Sindh Province. The degree of fluctuations 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 had risen to Rs 3874 per 40 kgs in 2010-11, which however dropped to Rs 2051 per 40 kgs and regained a rising trend in the last two years. The real market price has experienced fluctuations, touching the highest of Rs 2645 per 40 kgs in 2010-11 and the lowest level of Rs 1262 per 40 kgs in 2011-12.



55. It is important to note that for only two years, the real value of seed cotton remained lower against the base year level. Similarly, due to a high inflationary trend throughout the period under review, the real price in 2013-14 remained marginally lower than the base year which indicates that cotton growers in Sindh have received lower levels of real economic returns from the crop.

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

56. The global production of cotton during 2013-14 is estimated at 25.72 million tonnes. It is about 4.14 percent lower than the production of 26.83 million in 2012-13. During 2014-15, the world production is forecast to decline further by 1.56 percent to the level of 25.32 million tonnes. After adding the opening stocks of 20.04 million tonnes, total supply in 2014-15 work to



45.36 million tonnes, 4.06 percent higher than 2013-14. Although the production has slightly declined during 2014-15 but due to higher opening stocks, the world cotton supply is forecast to increase to the level of 45.36 million tonnes during 2014-15 (Table-18).

57. The world consumption of cotton during 2013-14 estimated at 23.55 million tonnes is 0.90 percent higher than the last year level. For 2014-15, cotton consumption projected at 24.33 million tonnes would be 3.31 percent higher than 2013-14.

58. The end year stocks during 2013-14 estimated at 20.04 million tonnes are about 12.14 percent higher than the last year, which are projected to increase further to 21.03 million in 2014-15.

**Table-18: World Production, Consumption, Stocks and Trade in Cotton: 2012-13 to 2014-15**

S.No.	Item	2012-13	2013-14	2014-15
		(Actual)	(Estimated)	(Projection)
----- Million tones -----				
1.	Opening stocks	14.61	17.87	20.04
2.	Production	26.83	25.72	25.32
3.	Total supply (1+2)	41.44	43.59	45.36
4.	Likely consumption	23.34	23.55	24.33
5.	Trade imbalance and stocks adjustment *	(-)0.23	0.00	0.00
6.	Closing stocks (3-4+5)	17.87	20.04	21.03*

**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, March 25, 2014.

### **13. INTERNATIONAL PRICES**

59. The international prices of Index- A and Orleans/Texas Cottons during 2004-05 to 2013-14 are placed in Annex-VIII.

60. The prices of both the cottons were volatile and widely fluctuated with the lowest level of 52.20 US Cents per lb of Index-A cottons and 51.19 of Orleans /Texas during 2004-05. The highest prices were reported at 165.13 Cents /lb for Index-A cottons in 2010-11 while the highest prices of Orleans/ Texas were reported in 2011-12 at 100.53 US Cents/ lb.

61. During 2013-14, the Orleans/Texas Cotton has not been traded in the international market while the Index-A cottons have followed a declining trend during Aug-Nov and upward trend during Dec-Feb.

### **14. EXPORT AND IMPORT PARITY PRICES**

62. Estimation of export parity price of a commodity is helpful in ascertaining its competitiveness in the world 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 the price policy options for the next crop season.

63. 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 XII and summarized in Table-19.

**Table-19: 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
<b>1. Export parity prices based on average:</b>			
i) Actual export price of Pakistani cotton			
	- During 2013-14 (Aug-Feb)	80.29	2,640
	- During 2010-11 to 2012-13	88.04	2,863
ii) Future's contract prices of New York No.2 cotton (average of Oct, Dec 2014 and March 2015)			
		82.45	2,268
<b>2. Import parity prices based on average:</b>			
i) Actual cif (Karachi) prices of imported cotton: Rs/40 kgs			
	- During 2013-14 (Aug-Feb)	8,928	3,609
	- During 2010-11 to 2012-13	9,525	3,818
ii) CFR Far Eastern quoted price of Index-A Cottons US cents/lb			
	- During 2013-14 (Aug-Feb)	89.75	3,122
	- During 2010-11 to 2012-13	117.62	3,986

Sources: Annex-IX to XII.

## 15. ECONOMIC EFFICIENCY OF RESOURCE USE IN SEED COTTON PRODUCTION

64. Seed cotton is an important cash crop of Pakistan and occupies considerable proportion of the cropped area in the country. On national basis, the valuable resources in the form of land, water, capital and labour are employed in the production of a crop. Therefore, it is very important to estimate efficiency of resources used for producing the crop. Most commonly used measures for this estimation are the Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost Coefficient (DRC). These coefficients are estimated by constructing a Policy Analysis Matrix (PAM). The analysis is based on cost of seed cotton production in Punjab and Sindh provinces. A summary of the estimated coefficients is presented in Tables-20 and 21.

### **15.1 Nominal and Effective Protection Coefficients**

65. Nominal Protection Coefficient refers to the ratio between domestic output prices and social prices that measure the impact of output pricing policies without including interventions/ distortions in the input market. However, the EPC accounts for both the input and output costs and analyses the cumulative effect of both the input and output prices on the profitability of a crop. If the NPC is greater than one it indicates level of protection granted to a particular crop. It encourages farmers to produce more. If the NPC is less than one it reflects an implicit taxation to the domestic producers. The latter situation implies outflow of resources from agriculture through the seed cotton crop. Similar criterion holds for the EPC too.

### **15.2 Domestic Resource Cost Coefficient**

66. Domestic Resource Cost (DRC) refers to the ratio of domestic factors' cost at social prices to the value added at social prices. DRC less than one implies comparative advantage since the domestic production can save foreign exchange at costs less than the cost of corresponding imports. A situation where DRC value is less than one, indicates comparative advantage in the crop and vice versa. It may, however, be pointed out that DRC would vary with the changes in the opportunity cost of non-tradable inputs and social value of output.

### **15.3 Economic Efficiency Under Export Situation**

67. Economic efficiency analyses of seed cotton production in Pakistan are presented in Table-20. These analyses represent economic efficiency estimates under export situation.

68. It may be seen from the referred Table that NPC estimates both for Punjab and Sindh provinces have been fluctuating during the period under study. During 2010-11 and 2011-12 these were slightly less than one both in the Punjab and Sindh. However, the NPC estimates exceeded one during the years of 2012-13 and 2013-14 indicating that seed cotton crop remained implicitly protected during the period.

69. Like NPCs, EPCs are also found greater than one in both provinces except for 2010-11 and 2011-12 in the Punjab when the estimates were slightly less than one. Thus the EPC results

endorse NPC estimates representing the existence of implicit policy protection to cotton growers in Pakistan.

70. The Domestic Resource Cost 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 these coefficients are widely different across the years which may be the result of varying export prices. It implies that Pakistan has a comparative advantage in cotton production. More investment in cotton production and marketing will benefit the nation.

**Table -20: Economic Efficiency Coefficients for Seed Cotton under Export situation: 2010-11 to 2013-14**

Crop/ year	NPC	EPC	DRC	Cost of DRC to earn/ save Forex
<b>Seed cotton (Punjab)</b>				
2010-11	0.936	0.916	0.26	22.2
2011-12	0.965	0.932	0.63	56.8
2012-13	1.148	1.272	1.06	104
2013-14	1.147	1.240	0.84	83.3
<b>Seed cotton (Sindh)</b>				
2010-11	0.906	1.010	0.26	21.8
2011-12	0.773	1.021	0.59	53.5
2012-13	1.144	1.034	0.94	92.5
2013-14	1.026	1.025	0.77	76.2

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

71. Last column in Table-20 provides DRCs implications for earning Forex. 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.

#### **15.4 Economic Efficiency Under Import Situation**

72. Under importing situation the NPCs as well as EPCs for Punjab are less than one throughout the period under analyses indicating no economic protection to seed cotton growers in the Punjab. It means that under importing scenario cotton growers are implicitly taxed and resources outflow from agriculture through cotton cultivation. However, the situation is different

for Sindh province. The EPC values for Sindh are found higher than one which means that in Sindh policy protection is available to cotton growers.

73. 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. It will be wise to invest in cotton production than to import (Table-21):

**Table -21: Economic Efficiency Coefficients for Seed Cotton under Import situation: 2010-11 to 2013-14**

Crop/ year	NPC	EPC	DRC	Cost of DRC to earn/ save Forex
<b>Seed cotton (Punjab)</b>				
2010-11	0.763	0.723	0.19	16.35
2011-12	0.641	0.537	0.33	30.15
2012-13	0.840	0.742	0.56	55.34
2013-14	0.836	0.75	0.47	46.43
<b>Seed cotton (Sindh)</b>				
2010-11	0.739	1.008	0.20	17.21
2011-12	0.514	1.011	0.34	31.26
2012-13	0.836	1.023	0.63	62.12
2013-14	0.747	1.015	0.48	47.54

Source: Annex-XIII to XIV.

## 16. COTTON YIELD AMONG COMPETING COUNTRIES

74. According to the FAO estimates the latest data on the cotton yield among competing countries is available for 2012 only. The area, yield and production among competing countries are detailed in Annex-XV, while a summary of these factors is presented in Table - 22.

75. Globally, the cotton crop occupied an area of 34.700 million hectares during 2012 with a total production of 76.530 million tonnes. The world top 29 cotton producing countries contribute 96 per cent of total area and 98 per cent of total production.

76. India ranks on the top with 11.700 million hectares, followed by China and USA with 4.700 and 3.793 million hectares respectively. Pakistan occupies 4<sup>th</sup> position in this regard. In terms of cotton production, China is on the top with 20.520 million tonnes, followed by India with 16.600 million tonnes

and USA with 8.910 million tonnes. However, Pakistan retains 4<sup>th</sup> position in cotton production with 6.640 million tonnes in the world.

**Table-22: Area, Yield and Production of Seed Cotton Among competing Countries: 2012**

S.No	Country	Area (million ha)	Yield (tonnes/ha)	Production (million tonnes)
1	China, mainland	4.700	4.366	20.520
2	India	11.700	1.419	16.600
3	United States of America	3.793	2.349	8.910
4	Pakistan	2.879	2.306	6.640
5	Brazil	1.382	3.596	4.969
6	Uzbekistan	1.350	2.361	3.188
7	Australia	0.596	4.812	2.870
8	Turkey	0.489	4.708	2.300
9	Greece	0.290	2.931	0.850
10	Argentina	0.528	1.342	0.709
11	Mexico	0.155	4.314	0.669
12	Burkina Faso	0.531	1.143	0.607
13	Turkmenistan	0.525	1.143	0.600
14	Syrian Arab Republic	0.168	3.525	0.593
15	Mali	0.540	0.926	0.500
16	Tajikistan	0.200	2.090	0.418
17	Egypt	0.142	2.901	0.412
18	Myanmar	0.300	1.350	0.405
19	Kazakhstan	0.152	2.620	0.398
20	United Republic of Tanzania	0.487	0.722	0.352
21	Nigeria	0.300	1.017	0.305
22	Zimbabwe	0.430	0.660	0.284
23	Zambia	0.314	0.857	0.270
24	Cameroon	0.200	1.345	0.269
25	Mozambique	0.189	1.386	0.262
26	Côte d'Ivoire	0.225	1.158	0.261
27	Malawi	0.252	0.968	0.244
28	Benin	0.335	0.716	0.240
29	Iran (Islamic Republic of)	0.110	1.818	0.200
<b>Total of 29 top producing countries</b>		<b>33.263</b>	<b>2.250</b>	<b>74.843</b>
<b>World Total</b>		<b>34.700</b>	<b>2.205</b>	<b>76.530</b>

Source: Annex-XV.

77. World cotton production for 2012 was estimated at 76.530 million tonnes as against 76.912 million tonnes in 2011 with decline of 0.382 million tonnes over the last year. High cotton production in 2011 was primarily attributed to significant increase in China and India. In 2012 the cotton production slightly decreased due to decline in area over the last year.

78. India has the largest area under cotton in the world representing almost 34 percent of the world cotton area. However its production is very low as compared to other major cotton producing countries. The main reason is its low productivity. Similarly, Pakistan ranks 4<sup>th</sup> in terms of both area and production of cotton but lies at 20<sup>th</sup> position in terms of yield during 2012. It implies that there is a lot of potential to boost cotton productivity per hectare in Pakistan. It is an alarming situation and deserves special attention by all concerned quarters. The cotton yield in Pakistan is at 2.306 tonnes per hectare against 1.419 tonnes in India. While the world average Yield of cotton is 2.205 tonnes per hectare. (Annex- XV).

## 17. COTTON VARIETIES AND YIELD POTENTIAL IN PAKISTAN

79. Cotton being a cash crop contributes significantly in foreign exchange earnings. Cotton is a natural fiber that finds use in many products. It accounts for 6.7 per cent of the value added in agriculture sector and about 1.4 per cent in the GDP according to the Economic Survey of Pakistan 2013-14. Around two-third of the country's export earnings are from the cotton made-ups and textiles.

80. In spite of the world's 4<sup>th</sup> largest cotton producer and a leading exporter of yarn in the world, Pakistan ranked 20<sup>th</sup> in the world in terms of yield during 2012. As a result, Pakistan annually **imports up to 2 million 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.

81. Various cotton varieties sown in Pakistan in various ecological zones alongwith the yield potential are presented at Annex-XVI. The data indicate that in the country over hundred varieties are grown. Among those varieties, 93 are upland varieties, 3 hybrid and 13 desi varieties. The yield potential of these varieties ranges from 600 kgs to 4500 kgs per hectare or 15 to 113 maunds of 40 kgs per acre.

82. Several Bt cotton varieties have been approved for commercialization in Pakistan. These include IR-1524 developed by the Nuclear Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad, FH-113 by the Cotton Research Institute, Faisalabad, CEMB-1 and CEMB-2 by the Centre of Excellence in Molecular Biology Institute of the Punjab University, Lahore, Ali Akbar-802 of M/s Ali Akbar Seed, Multan and Neelam-121 of M/s Neelam Seed, Multan. Two hybrid varieties, GN-2085 and



GN-31 developed by M/s Guard Agricultural Research Services, Raiwind Road also received an endorsement for planting.

83. According to the Annual Field Survey Report of API for 2012-13 crop, Bt cotton dominated the farmers' choice for cultivation. Major cotton varieties sown in the Punjab were CIM-496, CIM-499, CIM-473, CIM-506, S-2000, MNH-786, MNH 886 and MNH 121, 889, 986, 142, 146, 806, 131, SJ-1, 3701, 777, 2011, 526, 555, 666, 452, 472, Z-31, Z-33, Tarzan-1, CIP 446 and 482.

## 18. COTTON SUBSIDIES UNDER THE WTO REGIME

84. Several major cotton producing countries protect their cotton sector by providing direct and indirect support to their farmers. Cotton farmers in China, USA and EU receive the highest level of direct income and price support. The U.S. cotton program supports producers through several mechanisms: a direct payment (DP), a counter-cyclical payment (CCP), a loan deficiency payment (LDP), marketing loan gain (MLG), and crop insurance. During 2011/12 and 2012/13, the only subsidy received by producers under the U.S. cotton program was for crop insurance. In 2012/13, cotton insurance subsidies declined to an estimated \$562 million or 7 cents per pound.

85. Out of ten (10) countries that provided subsidies to cotton sector in 2012-13, China stood 1<sup>st</sup> with USD 5813 million, followed by USA with USD 562 million. The subsidies for all countries averaged at 26 cents per pound in 2012-13 as compared to 14 cents per pound in 2011-12. Developing countries that grow cotton for export have been raising voice against developed countries for granting trade-distorting subsidies to cotton growers. For West African nations including Mali, Burkina Faso, Chad and Benin, the revenue drawn from exporting cotton represents most of their national income; hence, it is critical for them to receive a price that covers the cost of production incurred by their cotton growers. These countries argue that payments made to U.S and European farmers encourage over production and lead to depressed world prices for cotton, thus pushing their cotton production back to uncompetitive and unable to get due share. Table-23 and Fig.-7 illustrates level of direct assistance provided by various governments to the cotton sector through production programs:

Table-23: **Level of Direct Assistance Provided by Governments to the Cotton Sector through Production Programs\***

Country	2011-12			2012-13**		
	Cotton Production	Average Assistance per pound	Assistance to production	Cotton Production	Average Assistance per pound	Assistance to production
	000 tonnes	US cents	US\$ Millions	000 tonnes	US cents	US\$ Millions
Burkina Faso	694	1	10	260	14	80
China	7,400	14	2,217	7300	36	5813
Colombia	182	9	38	21	49	22
Cote D'Ivoire	59	11	14	140	5	14
Greece	750	26	433	251	47	262
Mali	45	26	26	189	12	50
Senegal	50	3	4	63	4	6
Spain	60	68	90	57	70	87
Turkey	280	44	270	550	26	312
USA	3,387	11	818	3770	7	562
All countries	12,906	14	3,919	12601	26	7209

\* Income and price support programs only. Credit and other assistance not included

\*\* Preliminary.

86. Responding to the international pressure to cut their farm subsidies, the US and the European cotton programmes were set to decline slightly over a period of time, like reduction in USA by almost a third. However, the total volume of assistance has increased by 84%. The largest contributor seems China which provided 162% increased level of assistance to its cotton producers. For a decade long, Brazil and United States have been involved in a dispute over cotton subsidies. The disputes regarding subsidies and trade issues are being investigated and settled by the World Trade Organization.

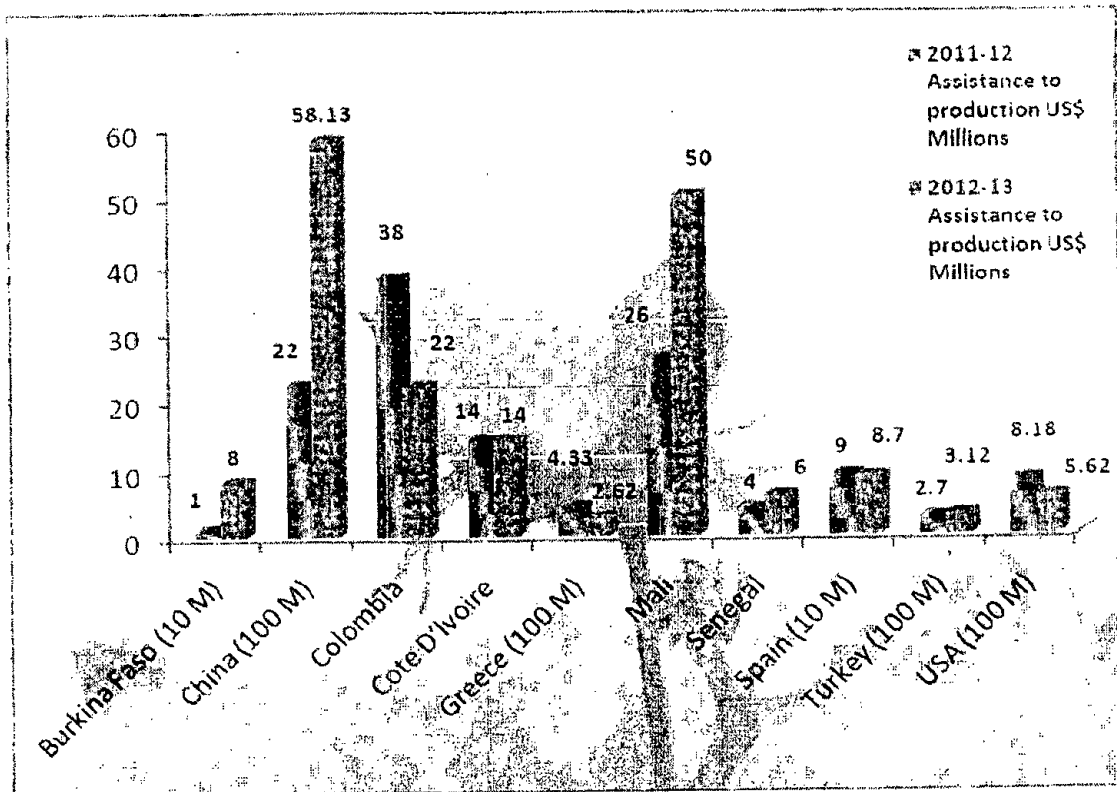


Fig-7: Assistance to Production of Cotton by Various Governments.

## 19. COST OF PRODUCTION OF SEED COTTON IN COMPETING COUNTRIES

87. The cost of production is the most important part of the multiple criteria used for making price policy proposals. It varies from country to country particularly owing to different price structure, farm incentives and level of input use and technologies. In this section, the cost of production of seed cotton in Pakistan and other competing countries like China, India, Iran, Turkey and USA will be discussed. The cost of production of seed cotton in competing countries for 2012-13 crop is provided by the International Cotton Advisory Committee (ICAC). The cost of production of seed cotton has been presented in Pak Rupees by using the average exchange rate during 2012-13 in Table-24 and also depicted in Fig-8.

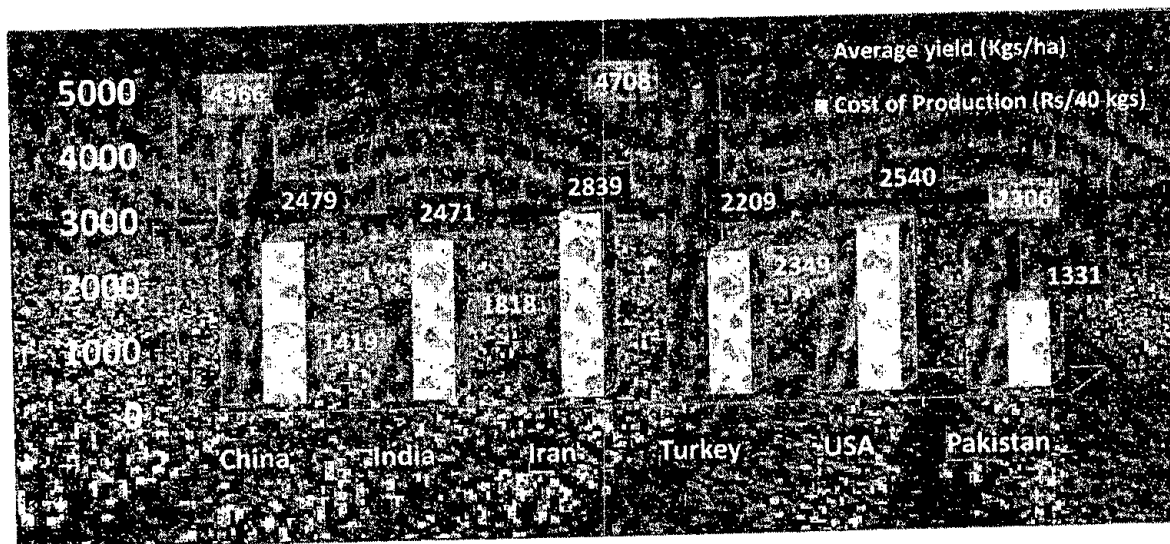
**Table-24: Cost of Production of Seed Cotton in Competing Countries During 2012-13**

Country	Average yield per hectare		Cost of cultivation per hectare		Cost of production per 40 kgs	
	Kgs	40 Kgs	US \$*	Pak Rupees	US \$*	Pak Rupees
China	4,365.96	109.15	2,806.62	270,558.17	25.71	2,478.80
India	1,418.80	35.47	909.26	87,652.66	25.63	2,471.17
Iran	1,818.18	45.45	1,338.75	129,055.50	29.45	2,839.22
Turkey	4,708.26	117.71	2,697.71	260,059.24	22.92	2,209.39
USA	2,349.26	58.73	1,547.24	149,153.71	26.34	2,539.59
Pakistan	2,310.00	57.75	1,155.67	111,406.65	20.01	1,929.12

**Note:** \* One US \$ = Pak Rs 96.4 (average of 2012-13)

**Sources:** 1. International Cotton Advisory Committee (ICAC), Washington DC, USA.  
2. Cotton Policy Analysis for 2013-14 crop, API.

88. The cost of production of seed cotton calculated at Pak Rs 2839 per 40 kgs in Iran is the highest among competing countries followed by Rs 2540 in USA, Rs 2479 in China and Rs 2471 in India. The lowest production cost is reported in Pakistan at Rs 1929 per 40 kgs, while in Turkey, it is Rs 2209.39 per 40 kgs, the nearest country producing cotton at lower cost.



**Fig-8: Average Yield and Cost of Production of Seed Cotton in Competing Countries**

## 20. ACKNOWLEDGEMENT

89. The efforts of the following staff members are highly appreciated in completion of Cotton Policy Analysis Report for 2014-15 Crop:

<i>Officers</i>
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1.	<b>Mr. Sher Zada Khan (Coordinator)</b>	<b>Chief</b>
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3.	Mr. Sardar Ali Khan	Deputy Chief
4.	<b>Mr. Abdul Karim (Deputy Coordinator)</b>	Deputy Chief
5.	Mr. Muhammad Ijaz Ahmed	Deputy Chief
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13.	Mr. Muhammad Altaf	Assistant Private Secretary
14.	Mr. Muhammad Naeem	Machine Operator

---

**Abdul Rauf Chaudhry**  
**Chairman, API**

## PROVINCE-WISE AREA (HECTARES), PRODUCTION AND YIELD OF COTTON

IN PAKISTAN : 2003-04 TO 2013-14

YEAR	PUNJAB	SINDH	KHYBER PUKHTUNKHWA	BALUCHISTAN	PAKISTAN
<b>AREA</b> ----- 000 hectares -----					
2003-04	2386.8	561.4	2.00	39.1	2989.3
2004-05	2518.3	635.1	2.10	37.1	3192.6
2005-06	2426.0	637.1	2.10	37.8	3103.0
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	2140.8	568.0	0.31	38.4	2747.5
<b>YIELD</b> ----- Kgs per hectare -----					
2003-04	549	680	425	426	572
2004-05	753	808	421	432	760
2005-06	720	707	421	440	714
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	704	1007	483	442	763
<b>PRODUCTION</b> ----- 000 bales -----					
2003-04	7702.0	2242.8	5.00	97.9	10047.7
2004-05	11149.0	3016.7	5.20	94.3	14265.2
2005-06	10268.0	2648.0	5.20	97.7	13018.9
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	8866.0	3361.6	0.88	99.7	12328.2

**Sources:**

- 1- For 2003-04 to 2011-12 : Agricultural Statistics of Pakistan 2011-12, MNFSR Islamabad.
- 2- For 2012-13: Final estimates provided by respective Provincial Agriculture Departments.
- 3- For 2013-14: Second estimates provided by respective Provincial Agriculture Departments.

**PROVINCE-WISE AREA (ACRES), PRODUCTION AND YIELD OF COTTON  
IN PAKISTAN : 2003-04 TO 2013-14**

YEAR	PUNJAB	SINDH	KHYBER PUKHTUNKHWA	BALUCHISTAN	PAKISTAN
<b>AREA</b> ----- 000 acres -----					
2003-04	5898.0	1387.3	4.94	96.6	7386.9
2004-05	6223.0	1569.4	5.19	91.7	7889.2
2005-06	5994.9	1574.3	5.19	93.4	7667.8
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	5290.1	1403.6	0.77	94.9	6789.4
<b>YIELD</b> ----- Kgs per acre -----					
2003-04	222	275	172	172	231
2004-05	305	327	170	175	308
2005-06	291	286	170	178	289
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	285	407	195	179	309
<b>PRODUCTION</b> ----- 000 bales -----					
2003-04	7702.0	2242.8	5.00	97.9	10047.7
2004-05	11149.0	3016.7	5.20	94.3	14265.2
2005-06	10268.0	2648.0	5.20	97.7	13018.9
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	8866.0	3361.6	0.88	99.7	12328.2

**Sources:**

- 1- For 2003-04 to 2011-12 : Agricultural Statistics of Pakistan 2011-12, MNFSR, Islamabad.
- 2- For 2012-13: Final estimates provided by respective Provincial Agriculture Departments.
- 3- For 2013-14: Second estimates provided by respective Provincial Agriculture Departments.

**DISTRICT- WISE AREA, YIELD AND PRODUCTION OF SEED COTTON;  
AVERAGE OF 2011-12 TO 2013-14**

ANNEX-III

Area: 000 ha

Production: 000 bales

Yield: Kgs/ha

S.No	Province/ District/ Agency	Area	Production	Share In total production	Yield
<b>PUNJAB</b>					
1	Bahawalpur	273.83	1225.36	9.44	761
2	Bahawalnagar	234.85	1115.36	8.59	807
3	Vehari	221.62	1016.19	7.83	779
4	R.Y.Khan	222.71	968.15	7.46	739
5	Khanewal	199.77	964.71	7.43	821
6	Lodhran	193.84	849.19	6.54	745
7	Multan	168.21	781.34	6.02	790
8	Muzaffargarh	163.35	618.70	4.76	644
9	Rajanpur	108.05	427.30	3.29	672
10	Sahiwal	86.61	393.24	3.03	772
11	D.G.Khan	85.25	313.52	2.41	625
12	Pakpattan	43.98	198.08	1.53	766
13	Jhang	57.06	154.32	1.19	460
14	T.T.Singh	46.00	150.79	1.16	557
15	Layyah	50.04	146.80	1.13	499
16	Okara	28.06	127.17	0.98	771
17	Faisalabad	47.75	125.30	0.97	446
18	Mianwali	38.71	109.39	0.84	480
19	Bhakkar	23.87	79.73	0.61	568
20	Kasur	13.35	33.54	0.26	427
21	Sargodha	10.79	23.60	0.18	372
22	Chiniot	3.24	7.14	0.05	374
23	Khushab	2.84	5.84	0.04	350
24	M.B.Din	1.88	2.53	0.02	228
25	Nankana Sahib	1.22	1.73	0.01	241
26	Sheikhupura	0.27	0.78	0.01	489
27	Jhelum	0.41	0.43	0.00	180
28	Chakwal	0.14	0.14	0.00	170
<b>Sub Total Punjab</b>		<b>2327.71</b>	<b>9840.33</b>	<b>75.78</b>	<b>719</b>
<b>SINDH</b>					
1	Sanghar	86.11	735.03	5.66	1451
2	Khairpur	66.01	370.52	2.85	954
3	Ghotki	62.40	351.22	2.70	957
4	Matiari	31.62	248.93	1.92	1338
5	Nawabshah	38.84	239.94	1.85	1050
6	Mirpurkhas	27.07	204.65	1.58	1285
7	N.Feroze	31.70	177.04	1.36	949
8	Sukkur	28.04	156.31	1.20	948
9	Umerkot	17.57	113.78	0.88	1101
10	Tando Allaahyar	15.40	109.22	0.84	1206
11	Badin	11.36	92.31	0.71	1382
12	Jamshoro	12.91	87.19	0.67	1148
13	Dadu	7.72	42.59	0.33	938
14	Hyderabad	5.27	38.96	0.30	1258
15	Thatta	4.57	31.31	0.24	1164
16	Tando Muhammad Khan	2.64	21.78	0.17	1401
17	Larkana	1.85	10.48	0.08	963
18	Tharparkar	0.74	4.81	0.04	1105
19	Karachi	0.59	3.41	0.03	984
20	Shikarpur	0.02	0.11	0.00	873
21	Kashmore	0.01	0.03	0.00	903
<b>Sub Total Sindh</b>		<b>452.43</b>	<b>3039.61</b>	<b>23.41</b>	<b>1143</b>
<b>Sub Total of Khyber Pukhtunkhwa</b>		<b>0.26</b>	<b>0.74</b>	<b>0.01</b>	<b>478</b>
<b>Sub Total of Balochistan</b>		<b>39.87</b>	<b>103.93</b>	<b>0.80</b>	<b>443</b>
<b>Total of Pakistan</b>		<b>2620.26</b>	<b>12984.62</b>	<b>100.00</b>	<b>783</b>

Notes:

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

Sources:

- 1- Respective Provincial Agriculture Departments



**AVERAGE FARMERS' COST OF PRODUCTION ESTIMATES OF SEED COTTON  
IN THE PUNJAB: 2013-14 AND 2014-15 CROPS**

S. No.	Operations / Inputs	Average No. of ops/ units/acre	2013-14 Crop		2014-15 Crop		Change in 2014-15 over 2013-14
			Cost per unit	Cost per acre	Cost per unit	Cost per acre	
1	2	3	4	5 = 3 * 4	6	7 = 3 * 6	8 = 7-5
-----Rupees-----							
1	Land preparation:						
	1.1 Deep ploughing	0.228	1300.00	296.40	1400.00	319.20	22.80
	1.2 Rotavator	0.233	1500.00	349.50	1600.00	372.80	23.30
	1.3 Ploughing	3.200	650.00	2080.00	700.00	2240.00	160.00
	1.4 Planking	0.421	325.00	136.83	350.00	147.35	10.53
	1.5 Ploughing+planking	1.341	650.00	871.65	700.00	938.70	67.05
	1.6 Levelling (tractor hrs)	0.537	650.00	349.05	700.00	375.90	26.85
2	Seed and sowing operations:						
	2.1 Seed (kgs)	7.643	200.00	1528.60	250.00	1910.75	382.15
	2.2 Sowing:						
	2.2.1 Ploughing+planking	0.394	650.00	256.10	700.00	275.80	19.70
	2.2.2 Ridging	0.228	650.00	148.20	700.00	159.60	11.40
	2.2.3 Drilling	0.772	650.00	501.80	700.00	540.40	38.60
	2.2.4 Manual labour for sowing, bund making and gap filling (m.days)	0.369	300.00	110.70	350.00	129.15	18.45
3	Irrigation: (Nos)						
	3.1 Canal	2.156	-	85.00	-	95.72	10.72
	3.2 Private tubewell	1.706	850.00	1450.10	900.00	1535.40	85.30
	3.3 Mixed	2.739	650.00	1780.35	700.00	1917.30	136.95
	3.4 Labour for irrigation and water course cleaning (m.days)	3.462	300.00	1038.60	350.00	1211.70	173.10
4	Interculture:						
	4.1 With tractor	2.640	650.00	1716.00	700.00	1848.00	132.00
	4.2 Manual weeding/thinning (m.days)	4.600	300.00	1380.00	350.00	1610.00	230.00
5	Plant Protection including application (weedicides + pesticides)	5.769	600.00	3461.40	700.00	4038.30	576.90
6	Farm Yard Manure including transport and application 50%	-	-	600.00	-	650.00	50.00
7	Fertilizers: (bags)						
	7.1 DAP	0.731	3909.00	2857.48	3587.00	2622.10	-235.38
	7.2 SSP	0.071	1107.00	78.60	967.00	68.66	-9.94
	7.3 SOP	0.029	3963.00	114.93	4367.00	126.64	11.72
	7.4 NPK	0.046	3208.00	147.57	3048.00	140.21	-7.36
	7.5 Urea	2.297	1714.00	3937.06	1824.00	4189.73	252.67
	7.6 CAN	0.224	1690.00	378.56	1547.00	346.53	-32.03
	7.7 NP	0.069	2522.00	174.02	2462.00	169.88	-4.14
	7.8 Fertilizer transport and application	3.467	40.00	138.68	45.00	156.02	17.34
8	Mark up on investment @ 15 % per annum for 8 months on items 1 to 7 minus 3(1)	-	-	2070.57	-	2804.01	733.44
9	Management charges for 8 months	-	-	1294.00	-	1375.00	81.00
10	Land rent for 8 months	-	21000.00	14000.00	25000.00	16666.67	2666.67
11	Average weighted land tax @ Rs 132/acre/annum for 8 months	-	132.00	88.00	132.00	88.00	0.00
12	Land revenue including local rate, chaukidara, etc	-	-	5.00	-	5.00	0.00
13	Payment to pickers (Rs/ 40 kgs)	-	250.00	4675.00	300.00	5700.00	1025.00
14	Cutting of cotton sticks	-	-	550.00	-	600.00	50.00
15	Gross cost (item 1 to 14)	-	-	48649.73	-	55374.50	6724.77
16	Value of cotton sticks	-	-	800.00	-	1000.00	200.00
17	Net cultivation cost (item 15-16)	-	-	47849.73	-	54374.50	6524.77
18	Yield per acre (kgs)	-	-	748.00	-	760.00	12.00
19	Cost of production at farm level: (Rs/40 kgs)						
	19.1 Including land rent	-	-	2558.81	-	2861.82	303.01
	19.2 Excluding land rent	-	-	1810.15	-	1984.62	174.48
	20 Marketing expenses (Rs/40 kgs)	-	-	35.00	-	40.00	5.00
21	Cost of production at market/ginnery: (Rs/40 kgs)						
	21.1 Including land rent	-	-	2593.81	-	2901.82	308.01
	21.2 Excluding land rent	-	-	1845.15	-	2024.62	179.48

Note: In light of changes in Mark-up rate and Yield overtime, these have been revised for 2014-15 crop accordingly.

**AVERAGE FARMERS' COST OF PRODUCTION ESTIMATES OF SEED COTTON  
IN SINDH: 2013-14 AND 2014-15 CROPS**

S. No.	Operations / Inputs	Average No. of ops/ units/acre	2013-14 Crop		2014-15 Crop		Change in 2014-15 over 2013-14
			Cost per unit	Cost per acre	Cost per unit	Cost per acre	
1	2	3	4	5 = 3 * 4	6	7 = 3 * 6	8 = 7-5
-----Rupees-----							
1	Land preparation:						
	1.1 Deep ploughing	0.553	1500.00	829.50	1600.00	884.80	55.30
	1.2 Ploughing	2.071	1000.00	2071.00	1100.00	2278.10	207.10
	1.3 Planking	0.030	500.00	15.00	550.00	16.50	1.50
	1.4 Ploughing+planking	1.333	1000.00	1333.00	1100.00	1466.30	133.30
	1.5 Levelling ( tractor hrs)	0.859	1000.00	859.00	1100.00	944.90	85.90
2	Seed and sowing operations:						
	2.1 Seed (kgs)	10.279	200.00	2055.80	250.00	2569.75	513.95
	2.2 Sowing:						
	2.2.1 Ploughing + planking	0.160	1000.00	160.00	1100.00	176.00	16.00
	2.2.2 Ridging	0.236	1000.00	236.00	1100.00	259.60	23.60
	2.2.3 Drilling	0.763	1000.00	763.00	1100.00	839.30	76.30
	2.2.4 Manual labour for sowing, bund making and gap filling (m. days)	0.988	300.00	296.40	350.00	345.80	49.40
3	Irrigation: (Nos)						
	3.1 Canal	3.148	-	93.09	-	93.09	0.00
	3.2 Private tubewell	2.454	650.00	1595.10	700.00	1717.80	122.70
	3.3 Mixed	0.413	550.00	227.15	600.00	247.80	20.65
	3.4 Lift irrigation	0.251	170.00	42.67	200.00	50.20	7.53
	3.5 Labour for irrigation and water course cleaning (m.days)	3.732	300.00	1119.60	350.00	1306.20	186.60
4	Interculture:						
	4.1 With tractor	0.524	1000.00	524.00	1100.00	576.40	52.40
	4.2 With bullocks	1.259	1000.00	1259.00	1100.00	1384.90	125.90
	4.3 Manual weeding/thinning (m.days)	4.700	300.00	1410.00	350.00	1645.00	235.00
5	Plant Protection including application (weedicides + pesticides)	4.200	600.00	2520.00	700.00	2940.00	420.00
6	Farm Yard Manure including transport and application 50 %	-	-	500.00	-	550.00	50.00
7	Fertilizers: (bags)						
	7.1 DAP	0.893	3867.00	3453.23	3467.00	3096.03	-357.20
	7.2 Urea	1.834	1701.00	3119.63	1805.00	3310.37	190.74
	7.3 CAN	0.016	1433.00	22.93	1533.00	24.53	1.60
	7.4 NPK	0.056	3100.00	173.91	3000.00	168.30	-5.61
	7.5 NP	0.076	2540.00	193.04	2370.00	180.12	-12.92
	7.6 Fertilizer transport and application	2.880	40.00	115.20	45.00	129.60	14.40
8	Mark up on investment @ 15 % per annum for 8 fmonths on items 1 to 7 minus 3(1)	-	-	1991.53	-	2710.83	719.30
9	Management charges for 8 months	-	-	1294.00	-	1375.00	81.00
10	Land rent for 8 months	-	16000.00	10666.67	20000.00	13333.33	2666.67
11	Land revenue including local rate, chaukidara, etc	-	-	5.00	-	5.00	0.00
12	Land tax @ Rs 200/acre/annum for 8 months	-	200.00	133.33	200.00	133.33	0.00
13	Drainage cess @ Rs 24/acre/annum for 8 months	-	24.00	16.00	24.00	16.00	0.00
14	Payment to pickers (Rs/ 40 kgs)	-	250.00	4768.75	300.00	5977.50	1208.75
15	Cutting of cotton sticks	-	-	925.00	-	1000.00	75.00
16	Gross cost (item 1 to 15)	-	-	44787.54	-	51752.39	6964.85
17	Value of cotton sticks	-	-	1000.00	-	1000.00	0.00
18	Net cultivation cost (item 16-17)	-	-	43787.54	-	50752.39	6964.85
19	Yield per acre (kgs)	-	-	763.00	-	797.00	34.00
20	Cost of production at farm level: (Rs/40 kgs)						
	20.1 Including land rent	-	-	2295.55	-	2547.17	251.63
	20.2 Excluding land rent	-	-	1736.35	-	1878.00	141.65
21	Marketing expenses (Rs/40 kgs)	-	-	35.00	-	40.00	5.00
22	Cost of production at market/ginnery: (Rs/40 kgs)						
	22.1 Including land rent	-	-	2330.55	-	2587.17	256.63
	22.2 Excluding land rent	-	-	1771.35	-	1918.00	146.65

Note: In light of changes in Mark-up rate and Yield overtime, these have been revised for 2014-15 crop accordingly.

**Notes for Annex- IV and V**

1. The input-output parameters for estimating cost of production of Seed Cotton, 2014-15 Crop have been adopted from the Report of Cotton Policy Analysis for 2013-14 crop, API's Series No 245.
2. The inputs prices, hiring rates of field operations, wage rate and picking charges have been revised in the light of data collected through annual field survey conducted by the API in the major cotton producing areas during March 2014 in the Punjab and Sindh, discussions made and information provided by the representatives of Provincial Agriculture Departments and Farmers' Association in the meeting of the Standing Committee on Seed Cotton, held on 25<sup>th</sup> February 2014 at Islamabad.
3. The prices of chemical fertilizers have been revised in the light of fertilizer prices published by the Pakistan Bureau of Statistics, Islamabad for the week ending on 8<sup>th</sup> May, 2014.
4. The cost of plant protection has been revised keeping in view of rising trend in the prices of insecticides and pesticides and wage rate.
5. The cost of supplementary irrigation has been adjusted in view of the rises in the prices of diesel from Rs 109.21 to Rs. 109.34/lit and power tariff from Rs 6.77 to 10.35/kwh during February 2013 to May 2014 based on the ratios of electric and diesel tubewells of 13:87 in the Punjab and 23:77 in Sindh as reported in the Agriculture Statistics of Pakistan, 2011-12.
6. The management charges for a manager looking after a 25-acre farm and devoting one-fourth of his time to the managerial activities have been worked out at Rs 17189 per month for a Field Assistant at the 15<sup>th</sup> stage in BPS-6 as per revised scale of July 2011, including 15 & 10 % Ad hoc Relief in 2012 and 2013 respectively.
7. Land rent is a very important component of the cost of production in both provinces. It is inclined by several factors and widely varies from field to field and region to region. For updating the land rentals, there is no precise measure available at hand. However, keeping in view the observations obtained during the field survey during March 2014 and discussion made in the meeting of the API's Standing Committee on Cotton, the land rentals have been adjusted accordingly.

**ECONOMICS OF SEED COTTON AND COMPETING CROPS AT  
PRICES REALIZED BY THE GROWERS: 2013-14 CROPS**

S #	Province/ crops/ crop combination	Crop dura tion	Water used	Gross cost	Cost of purchased inputs	Gross revenue	Gross margin	Net income	Output- input ratio	Revenue per		
		Days	Acre Inches	.....Rupees per acre.....					Ratio	.....Rupees.....		
				1	2	3	4	5		6	7=6-5	8=6-4
<b>Punjab</b>												
1	Seed cotton	240	22	48701	17218	57068	39850	8368	1.17	3.31	238	2594
2	Basmati paddy	180	58	42714	20134	65137	45004	22423	1.52	3.24	362	1123
3	IRRI paddy	180	62	38122	17685	36887	19202	-1235	0.97	2.09	205	595
4	Wheat	180	12	35832	13596	38518	24922	2687	1.07	2.83	214	3210
5	Sunflower (spring)	180	22	38414	16272	40400	24129	1986	1.05	2.48	224	1836
6	Seed cotton + wheat	420	34	84532	30814	95587	64772	11054	1.13	3.10	228	2811
7	Seed cotton+ sunflower	420	44	87115	33490	97468	63979	10353	1.12	2.91	232	2215
8	Basmati paddy+ wheat	360	70	78545	33730	103656	69926	25110	1.32	3.07	288	1481
9	Basmati paddy+ sunflower	360	80	81128	36405	105537	69132	24409	1.30	2.90	293	1319
10	IRRI paddy + wheat	360	74	73954	31281	75406	44125	1452	1.02	2.41	209	1019
11	IRRI paddy+ sunflower	360	84	76536	33956	77287	43331	751	1.01	2.28	215	920
12	Sugarcane	394	48	74550	23533	87598	64065	13048	1.18	3.72	222	1825
<b>Sindh</b>												
1	Seed cotton	240	18	44854	14793	52884	38091	8030	1.18	3.58	220	2938
2	IRRI paddy	180	56	35725	13433	45821	32388	10096	1.28	3.41	255	818
3	Wheat	180	12	33867	12710	35665	22955	1798	1.05	2.81	198	2972
4	Sunflower (spring)	180	22	38955	16006	44900	28895	5945	1.15	2.81	249	2041
5	Seed cotton + wheat	420	30	78721	27502	88549	61046	9828	1.12	3.22	211	2952
6	Seed cotton + sunflower	420	40	83809	27502	97784	70282	13975	1.17	3.56	233	2445
7	IRRI paddy+ wheat	360	68	69592	26143	81486	55344	11894	1.17	3.12	226	1198
8	IRRI paddy+ sunflower	360	78	74680	29438	90721	61283	16041	1.21	3.08	252	1163
9	Sugarcane	488	71	88853	29138	107947	78809	19094	1.21	3.70	221	1520

**Notes for Annex - VI**

1. The economic analysis presented in the above exercise is based on the input-output prices applicable for 2013-14 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, 2013-14 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 2013-14 crops. To incorporate the escalations in input prices, which occurred during the growing period of 2013-14 crops, some marginal revisions have been made as under:
  - 2.1 The cost of supplementary irrigation has been adjusted in accordance with the variation in the electric charges @ 3.37 percent for wheat, while for sugarcane, seed cotton and rice paddy there is no any change in the cost. Diesel rates have also been adjusted @ 14.29 percent for wheat crop.
  - 2.2 The cost of fertilizers has been revised in view of their prices prevailed at the time of application for the respective crops in 2013-14 season.
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 support price of Rs 1200 per 40 kgs, as maintained by the government for 2013-14 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 have averaged at Rs 2286 and Rs 924 per 40 kgs, respectively. While, the average price of IRRI paddy in Sindh is reported at Rs 901 per 40 kgs.
  - 4.3 The wholesale market prices of seed cotton during the post-harvest months of Aug - Feb 2013-14 in the main producer area markets have averaged at Rs 3044 per 40 kgs in the Punjab. In Sindh, the corresponding prices are averaged at Rs 2755 per 40 kgs.
  - 4.4 The sunflower 2013-14 crop is yet to be harvested. However, it was reported by the PO DB Islamabad that All Pakistan Solvent Extraction Association may purchase sunflower and canola at Rs 2250 per 40 kgs during the season.
  - 4.5 The market prices of sugarcane at mill-gate in the major cane producing areas are reported to hover-around Rs 170 per 40 kgs in the Punjab and Rs 174 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 13.5 per 40 kgs in Punjab and Rs 7.32 in Sindh for sugarcane, Rs 25 for seed cotton in Punjab and Rs 27 in Sindh, Rs 20 for rice paddy, and Rs 18 for wheat and oilseeds.
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.
8. Gross margin = Gross income minus cost of purchased inputs.
9. Net income = Gross income minus gross cost.
10. Output-input ratio = Gross income divided by gross cost
11. Revenue per rupee of purchased inputs cost = Gross income divided by cost of purchased inputs
12. Revenue per crop day = Gross income divided by crop duration in days.
13. Revenue per acre-inch of water used = Gross income divided by irrigation water used in acre inches.

## ANNEX-VII

**PROFITABILITY OF FERTILIZER USE ON SEED COTTON  
AT THE MARKET PRICE: 2013-14**

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 1117.76 per nutrient kg (i.e. Rs 74.26, 139.98 and Rs.158.52 per nutrient kg of N,P and K at the recommended NPK ratio of 2:1:1(a))	1117.6	1117.6	1117.6	1117.6
3	Indirect cost due to the application of additional fertilizer as detailed below(b)	320.5	373.9	427.3	480.7
	3.1 Transportation and application charges of 20 kgs of fertilizer @ Rs 40.0 per bag of fertilizer	16.0	16.0	16.0	16.0
	3.2 Picking charges for additional produce @ Rs 250.0 per 40 kgs	187.5	234.4	281.2	328.1
	3.3 Marketing charges for additional produce @ Rs 35.0 per 40 kgs	26.3	32.8	39.4	45.9
	3.4 Mark up on direct cost of fertilizer (item2+3.1) for 8 months @ 12 % per annum	90.7	90.7	90.7	90.7
4	Total additional cost (item 2+3)	1438.1	1491.5	1544.9	1598.3
5	Value of additional produce @ Rs 2900 per 40 kgs (c)	2175.0	2718.8	3262.5	3806.2
6	Benefit cost ratio (item 5 divided by item 4)	1.51	1.82	2.11	2.38

## Notes:

- 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 2013-14 crop taken respectively as Rs 1708, 3888 and 3963 per bag of 50 kgs.
- The rates of indirect cost items are the average of the rates used in the COP estimates of the Punjab and Sindh for 2013-14 crop.
- Average market prices of seed cotton for 2013-14 crop in the Punjab and Sindh during August to January, 2014 have been used.

ANNEX- VIII

INTERNATIONAL PRICES OF COTTONS: 2004-05 TO 2013-14

Years Aug-Jul	Index- A Cottons	Orleans/ Texas SLM 1-1/32"
----US Cent per pound----		
2004-05	52.2	51.19
2005-06	56.15	54.39
2006-07	59.15	56.13
2007-08	72.90	69.83
2008-09 *	61.14	56.05
2009-10	70.80	77.58
2010-11	165.13	89.00
2011-12	99.75	100.53
2012-13	87.84	88.32
<b>2013-14</b>	<b>89.75</b>	<b>N.Q</b>
August	92.00	N.Q
September	90.00	N.Q
October	89.00	N.Q
November	85.00	N.Q
December	87.00	N.Q
January	91.10	N.Q
February	94.16	N.Q

Note:

\* From 2008-09, the prices of Orleans/ Texas 1-1/32" and Index-A cottons are for CFR Eastren Quotation.

Source: Cotton Outlook ( various issues).



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

S.No	Item	2013-14 (Aug-Feb)	2010-11 to 2012-13
1.	Actual average export price	US Cents per pound 80.29	88.04
		OR Rupees (a)	
	Actual average export price per 40 Kgs	6940	7610
2.	Marketing expenses ( export & purchase incidentals, insurance & financial expenses) per 40 Kgs	475	475
3.	Ex- gin price of lint per 40 Kgs (item 1- item 2 )	6465	7135
4.	Value of 80 kgs of cotton seed (b)	2054	2054
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)	7919	8589
7.	Seed cotton price per 40 kgs ( item 6 / 3 )	2640	2863

## Notes:

- a) One US \$ = 98.02 Pak rupees.
- b) Average price of cotton seed for Sept 2013 to January, 2014 in Multan, R.Y.Khan, Bahawalpur and D.G Khan markets was Rs 1027 per 40 kgs.
- 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.

**EXPORT PARITY PRICE OF SEED COTTON ON THE BASIS OF FUTURE'S  
CONTRACT PRICE OF NEW YORK NO. 2 COTTON ( AVERAGE OF  
OCTOBER, DECEMBER, 2014 AND MARCH, 2015 )**

S.No	Item	Price calculations
		US Cents per pound
1.	Future's contract price as reported by KCA March 26, 2014	82.45
2.	Grade and staple discount	4.5
3.	Discount on account of inland transportation and certification of stocks	5.5
4.	Parity price of Afzal 1-1/32" at Karachi	72.45
		OR Rupees (a)
	Parity price per 40 kgs	6262
5.	Marketing expenses ( export & purchase incidentials, insurance & financial expenses) per 40 kgs	475
6.	Ex- gin price of cotton lint per 40 kgs ( item 4 - item 5)	5787
7.	Value of 80 kgs of cotton seed (b)	1616
8.	Ginning charges for 120 kgs of seed cotton	600
9.	Value of 120 kgs of seed cotton (c) ( items 6 + 7 - item 8 )	6803
10.	Seed cotton price per 40 kgs ( item 9 / 3 )	2268

**Notes:**

- a) One US \$ = 98.02 Pak rupees.
- b) Average price of cotton seed for Sept 2013 to January, 2014 in Multan, R.Y.Khan, Bahawalpur and D.G Khan markets was Rs 1027 per 40 kgs.
- c) 120 kgs of seed cotton = 80 kgs of cotton seed + 40 kgs of lint.

**Sources:**

1. Cotton Outlook of January 14, 2014 for future contract price.
2. KCA, Karachi for marketing expenses.
3. Pakistan Cotton Ginners Association, Karachi for ginning charges.

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

S. No	Item	2013-14 (Aug-Feb)	2010-11 to 2012-13
		Rupees per 40 kgs	
1.	Actual average cif ( Karachi ) price	8928	9525
2.	Handling charges at port and transport cost from port to textile mill at Karachi @ 5 % of cif price	446	476
3.	Ex- gin price of cotton lint (Item 1+ item 2)	9374	10001
4.	Value of 80 kgs of cotton seed (a)	2054	2054
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 )	10828	11455
7.	Seed cotton price ( item 6/ 3 )	3609	3818

**Note:**

- a) Average price of cotton seed for Sept 2013 to January, 2014 in Multan, R.Y.Khan, Bahawalpur and D.G Khan markets was Rs 1027 per 40 kgs.

**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.

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

S. No	Item	2012-13 (Aug-Feb)	2010-11 to 2011-12
		US cent per pound	
1.	Index-A cottons assumed as cif (Karachi) price	89.75	117.62
2.	Insurance, agents commission, and port handling charges @ 5% cif price	4.49	5.88
3.	Landed cost at Karachi	94.24	123.50
		OR Rupees (a)	
	Landed cost at Karachi per 40 kgs	8146	10675
4.	Handling charges at port and transport cost from port to textile mills at Karachi @ 2.5 % of cif price	204	267
5.	Ex- gin price of cotton lint (item 3 + item 4 )	8349	10942
6.	Value of 80 kgs of cotton seed (b)	1616	1616
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 )	9365	11958
9.	Seed cotton price per 40 kgs ( item 8/ 3 )	3122	3986

**Notes:**

- a) One US \$ = 98.02 Pak rupees.
- b) Average price of cotton seed for Sept 2013 to January, 2014 in Multan, R.Y.Khan, Bahawalpur and D.G Khan markets was Rs 1027 per 40 kgs.

**Sources:**

1. CFR Far Eastren Quoted price Annex - VIII
2. KCA, for incidental charges.
3. Pakistan Cotton Ginners Association, Karachi for ginning charges.

ECONOMIC EFFICIENCY OF RESOURCE USE IN SEED COTTON BASED  
ON EXPORT PARITY PRICES

(POLICY ANALYSIS MATRIX)

Province/Year	Gross Revenue	Traded cost	Domestic Factors Cost	Profits
<b>PUNJAB</b>				
Rupees per acre				
<b>2010-11</b>				
Private Prices	68626	13163	15467	39997
Social Prices	73301	12739	15909	44653
Transfers	-4675	424	-443	-4656
<b>2011-12</b>				
Private Prices	44186	16115	18346	9724
Social Prices	45784	15673	18837	11274
Transfers	-1598	442	-490	-1550
<b>2012-13</b>				
Private Prices	44184	20019	19570	4595
Social Prices	38591	19595	20118	-1122
Transfers	5593	424	-548	5717
<b>2013-14</b>				
Private Prices	51596	20604	20463	10529
Social Prices	45085	20100	21014	3971
Transfers	6511	504	-551	6558
<b>SINDH</b>				
<b>2010-11</b>				
Private Prices	78314	11719	16469	50126
Social Prices	77738	11789	16970	48979
Transfers	576	-70	-501	1147
<b>2011-12</b>				
Private Prices	49291	14772	19364	15155
Social Prices	48661	14850	19918	13893
Transfers	630	-78	-554	1262
<b>2012-13</b>				
Private Prices	41644	18243	20701	2700
Social Prices	41014	18388	21313	1313
Transfers	630	-145	-612	1387
<b>2013-14</b>				
Private Prices	48520	18806	21697	8016
Social Prices	47890	18910	22317	6664
Transfers	630	-103	-619	1353

**Note:** The calculations are based on the analysis of data from the respective cost of production and export parity price estimates made in the previous Price Policy Analysis Reports of the API, Islamabad.

ECONOMIC EFFICIENCY OF RESOURCE USE IN SEED COTTON BASED  
ON IMPORT PARITY PRICES

## (POLICY ANALYSIS MATRIX)

Province/Year	Gross Revenue	Traded cost	Domestic Factors Cost	Profits
<b>PUNJAB</b>				
Rupees per acre				
<b>2010-11</b>				
Private Prices	72629	13163	15467	44000
Social Prices	94967	12739	15909	66319
Transfers	-22338	424	-443	-22319
<b>2011-12</b>				
Private Prices	46619	16115	18346	12157
Social Prices	72431	15673	18837	37921
Transfers	-25812	442	-490	-25764
<b>2012-13</b>				
Private Prices	46511	20019	19570	6922
Social Prices	55277	19595	20118	15564
Transfers	-8766	424	-548	-8642
<b>2013-14</b>				
Private Prices	54359	20604	20463	13292
Social Prices	64907	20100	21014	23793
Transfers	-10548	504	-551	-10501
<b>SINDH</b>				
<b>2010-11</b>				
Private Prices	95702	11719	16469	67514
Social Prices	95126	11789	16970	66367
Transfers	576	-70	-501	1147
<b>2011-12</b>				
Private Prices	73321	14772	19364	39185
Social Prices	72745	14850	19918	37977
Transfers	576	-78	-554	1208
<b>2012-13</b>				
Private Prices	56332	12425	26519	17388
Social Prices	55756	12847	27157	15752
Transfers	576	-422	-638	1636
<b>2013-14</b>				
Private Prices	65962	18806	21697	25458
Social Prices	65386	18910	22317	24160
Transfers	576	-103	-619	1299

**Note:** The calculations are based on the analysis of data from the respective cost of production and import parity price estimates made in the previous Price Policy Analysis Reports of the API, Islamabad.

**AREA, YIELD AND PRODUCTION OF SEED COTTON AMONG COMPETING COUNTRIES: 2012**

ANNEX-XV

					Area	(million ha)		Yield	(tonnes/ha)		Prod.	(million tonnes)	
S.No	Country	Area	Yield	Production	S.No	Country	Area	Yield	Production				
1	Australia	0.5965	4.8120	2.8703	30	Nicaragua	0.0022	1.8182	0.0040				
2	Turkey	0.4885	4.7083	2.3000	31	Colombia	0.0400	1.7000	0.0680				
3	Israel	0.0085	4.4571	0.0379	32	Morocco	0.0001	1.6667	0.0002				
4	China, mainland	4.7000	4.3660	20.5200	33	India	<b>11.7000</b>	<b>1.4188</b>	<b>16.6000</b>				
5	Mexico	0.1550	4.3141	0.6687	34	Mozambique	0.1890	1.3862	0.2620				
6	South Africa	0.0090	3.6228	0.0326	35	Viet Nam	0.0065	1.3585	0.0088				
7	Brazil	1.3819	3.5958	4.9691	36	Myanmar	0.3000	1.3500	0.4050				
8	Syrian Arab Republic	0.1681	3.5247	0.5927	37	Cameroon	0.2000	1.3450	0.2690				
9	Bangladesh	0.0162	3.5185	0.0570	38	Argentina	0.5282	1.3416	0.7087				
10	Guatemala	0.0011	3.1818	0.0035	39	Ethiopia	0.0800	1.3000	0.1040				
11	Lao People's Democratic Republic	0.0019	3.0688	0.0058	40	Cambodia	0.0002	1.3000	0.0003				
12	Greece	0.2900	2.9310	0.8500	41	Ecuador	0.0033	1.2769	0.0042				
13	Egypt	0.1420	2.9014	0.4120	42	Sudan (former)	0.1520	1.2313	0.1872				
14	Spain	0.0698	2.7450	0.1916	43	Paraguay	0.0180	1.1667	0.0210				
15	Kyrgyzstan	0.0309	2.7401	0.0847	44	Yemen	0.0178	1.1580	0.0206				
16	Kazakhstan	0.1518	2.6199	0.3977	45	Côte d'Ivoire	0.2250	1.1578	0.2605				
17	Iraq	0.0140	2.5000	0.0350	46	Thailand	0.0065	1.1538	0.0075				
18	Uzbekistan	1.3500	2.3615	3.1880	47	Turkmenistan	0.5250	1.1429	0.6000				
19	United States of America	3.7927	2.3493	8.9100	48	Burkina Faso	0.5312	1.1426	0.6070				
20	<b>Pakistan</b>	<b>2.8790</b>	<b>2.3064</b>	<b>6.6400</b>	49	Albania	0.0007	1.1081	0.0008				
21	Botswana	0.0005	2.2222	0.0010	50	Guinea-Bissau	0.0047	1.0638	0.0050				
22	Peru	0.0505	2.2048	0.1114	51	Afghanistan	0.0330	1.0606	0.0350				
23	Tajikistan	0.2000	2.0899	0.4180	52	Ghana	0.0270	1.0370	0.0280				
24	Democratic People's Republic of Korea	0.0190	2.0842	0.0396	53	Madagascar	0.0150	1.0333	0.0155				
25	Azerbaijan	0.0292	1.9494	0.0570	54	Senegal	0.0337	1.0302	0.0348				
26	El Salvador	0.0004	1.9471	0.0007	55	Nigeria	0.3000	1.0167	0.3050				
27	Honduras	0.0016	1.8750	0.0030	56	Nepal	0.0001	0.9852	0.0001				
28	Angola	0.0030	1.8333	0.0055	57	Guinea	0.0430	0.9767	0.0420				
29	Iran (Islamic Republic of)	0.1100	1.8182	0.2000	58	Malawi	0.2521	0.9684	0.2442				
<b>World Avg. Yield</b>				<b>2.205</b>									

Source: World Statistics Year Book 2012

## COTTON VARIETIES AND YIELD POTENTIAL IN PAKISTAN

ANNEX-XVI

S.No.	Name of variety	Yield (Kgs/hect.)	S.No.	Name of variety	Yield (Kgs/hect.)
<b>Upland</b>					
1	Sindh-1, ARI, Taando Jam	4500	57	FH 634, CRI, Faisalabad	2800
2	CRIS-134, CCRI-Sakrand	4500	58	Gomal 93, CRS, D.I.Khan	2800
3	Malma, ARI, Tando Jam	4238	59	NIAB 86, NIAB, Faisalabad	2800
4	CRIS-342, CCRI-Sakrand	4000	60	CRIS 134, CRI, Sakrand	2700
5	CRIS-121, CCRI-Sakrand	4000	61	Niab 111 Nhiab, Faisalabad	2600
6	Hari Dost, ARI, Tando Jam	3948	62	Sohani NIA, Tandojam	2500
7	Marvi, CCRI-Sakrand	3900	63	Reshmi, ARI, Tando Jam	2290
8	S 12, CRS, Multan	3900	64	BH 160 CRS, Bahawalpur	2500
9	CRIS-467, CCRI-Sakrand	3800	65	Marvi, CRI, Sakrand	2500
10	Chandi-95, NIA, Tando Jam	3800	66	Shahbaz 95 ARI, Tandojam	2500
11	Sadori, ARI, Tando Jam	3500	67	B557, CRI, Faisalabad	2500
12	Sohni, NIA, Tando Jam	3500	68	Shaheen, CRS, Ghotki	2200
13	SLS 1, CRS, Sahiwal	3500	69	SLH 41, CRS, Sahiwal	2200
14	NIAB 78, NIAB, Faisalabad	3500	70	MS 84, CRS, Multan	2100
15	MNH 93, CRS, Multan	3500	71	K 68/9, CRS, Ghotki	2000
16	MNH 147, CRS, Multan	3300	72	Qalandari, CRS, Tandojam	2000
17	NIA-Ufaq, NIA, Tando Jam	3200	73	149 F, CRS, Multan	2000
18	FH 682, CRI Faisalabad	3200	74	Sar,ast. CRS. Tandojam	1800
19	CRIS-9, CCR-Sakrand	3100	75	MS 40, CRS, Multan	1700
20	CRIS 9, CRI, Sakrand	3100	76	MS 39, CRS, Multan	1650
21	BH36, CRS, Bahawalpur	3100	77	AC 134, CRI, Faisalabad	1600
22	CIM 70, CCRI, Multan	3100	78	Lasani 11, CRI, Faisalabad	1600
23	CIM 496, CCRI, Multan	3000	79	M 100, CRS, Tandojam	1500
24	CRIS 467 CRI Sakrand	3000	80	362 F, CRI, Faisalabad	1500
25	CIM 707 CCRI, Multan	3000	81	B51 CRSS, Khanpur	1200
26	CIM 506 CCRI, Multan	3000	82	238F, CRI, Faisalabad	1000
27	CIM 499 CCRI, Multan	3000	83	268F, CRI, Faisalabad	1000
28	FH 1000, Faisalabad	3000	84	216F, CRI, Faisalabad	1000
29	NIAB 78, NIAB, Faisalabad	3000	85	LSS, CRI, Faisalabad	1000
30	CIM 473, CCRI, Multan	3000	86	289F/K25, BCGA, Khanewal	1000
31	FH 118, CRS, Bahawalpur	3000	87	289F, CRI, Faisalabad	950
32	CIM 482, CCRI, Multan	3000	88	199F, CRS, Multan	900
33	FH 900, CRI, Faisalabad	3000	89	124 F, CRI, Faisalabad	900
34	FH 901, CRI, Faisalabad	3000	90	M 4, CRS, Tandojam	900
35	CIM 443 CCRI, Multan	3000	91	289 F/43, CRI, Faisalabad	900
36	CIM 446 CCRI, Multan	3000	92	4F, CRI, Faisalabad	800
37	FVH 53, CRS, Vehaj	3000	93	3F, CRI, Faisalabad	600
38	Chandi 95, NIA Tandojam	3000		<b>Hybrid</b>	
39	CIM 448, CCRI, Multan	3000	1	H151, Alseemi, Multan	3500
40	CIM 1100, CCRI, Multan	3000	2	H115, Alseemi, Multan	3500
41	Krishma, NIAB, Faisalabad	3000	3	H160, Alseemi, Multan	3500
42	MNH 329, RS, Multan	3000		<b>Desi</b>	
43	RH 112, CRS, R.Y. Khan	3000	1	FDH 170, CRI, Faisalabad	2500
44	S 14, CRS, Multan	3000	2	FDH 228, CRI, Faisalabad	2000
45	CIM 240, CCRI, Multan	3000	3	Rohi, CRI, Bahawalpur	2000
46	NIAB 26N, NIAB, Faisalabad	3000	4	Ravi, CRI, Faisalabad	1900
47	Rehmani 90, CRO, Tandojam	3000	5	SKD 10/19, CRI Sakrand	1700
48	CIM 109, CCRI, Multan	3000	6	D9, CRI, Faisalabad	1400
49	Gohar 87, CRS, Bahawalpur	3000	7	TD 1, CRS Tandijam	1000
50	RH1, CRS, R.Y.Khan	3000	8	231 R, CRI, Multan	1000
51	FH 87, CRI, Faisalabad	3000	9	119 S, CRI, Multan	800
52	MNH 129, CRS, Multan	3000	10	SNR, CRS, Tandojam	800
53	Rehmani, CRS, Tandojam	3000	11	39 M, CRI, Faisalabad	650
54	Shahbaz, ARI, Tando Jam	2992	12	15 M, CRI, Faisalabad	600
55	MNH 552, CRS, Multan	2900	13	SNR, CRS, Tandojam	800
56	MNH 554, CRS, Multan	2800			

Sources: 1) Cotton Varieties of Pakistan, Published by FSC &amp; RD, 2009 Islamabad.

2) Punjab Cotton Research Station Multan. 3) Central Cotton Research Institute Sakrand, Sindh