API SERIES NO. 236

COTTON POLICY ANALYSIS FOR 2011-12 CROP

AGRICULTURE POLICY INSTITUTE
MINISTRY OF FOOD AND AGRICULTURE
GOVERNMENT OF PAKISTAN
ISLAMABAD

JUNE, 2011

CONTENTS

ANNEXES

FIGURES

ABBREVIATIONS

AARI	:	Ayub Agricultural Research Institute
ALMA	:	Agricultural and Livestock Marketing Adviser
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
FBS	:	Federal Bureau of Statistics
FCA	:	Federal Committee on Agriculture
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 Pakhtun Khwa
MINFA	:	Ministry of Food and Agriculture
MOC	:	Ministry of Commerce
NARC	:	National Agricultural Research Centre
NCL	:	No Control Limit
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
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 about 69 and 30 per cent in cotton production while the share of both KPK and Balochistan is less than one.
- During the last decade, cotton production has increased @ 1.6 per cent per annum due to 2.0 per cent improvement in yield while the area has contracted @ 0.40 per cent.
- Cotton production in 2010-11 is estimated at 11.46 million bales, showing a decline of 11.30 per cent from 12.91 million bales in 2009-10.
- Cotton production has also fallen short by 18 per cent against the target fixed by the FCA.

Domestic Prices

- Monthly average market prices of seed cotton for 2010-11 crop have generally remained below the export parity prices.
- The wholesale prices of seed cotton ranged from Rs 2969 to Rs 5166 per 40 kgs during the post harvest season in major producing areas of the Punjab and Rs 3079 to Rs 4850 per 40 kgs in Sindh.
- Monthly wholesale prices of seed cotton during the post harvest period averaged at Rs 4003 per 40 kgs in the Punjab and Rs 3874 in Sindh.
- Monthly average spot prices of cotton lint at Karachi have risen to Rs 9754 per 40 kgs in 2010-11 from Rs 4555 in 2009-10.

Cost of Production

- In Punjab, cost of cotton cultivation during 2010-11 season is estimated at Rs 40,391 per acre.
- The cost of production at the market/ginnery level would be Rs 2195 per 40 kgs, reflecting a rise of 28 per cent over the last year.
- In Sindh, the cost of cotton cultivation for 2010-11 crop is expected at Rs 36,025 per acre.
- The cost of production at market/ginnery level would come to Rs 1924 per 40 kgs, showing an increase of 22 per cent over the last year.

Economics of Cotton and Competing Crops

- The economics of cotton has an edge over basmati and Irri during 2010-11 in respect of economic indicators adopted in this analysis.
- In case of indirect competition with sugarcane, the cotton combinations with wheat or sunflower lag far behind sugarcnae in both the provinces.
- In Sindh, cotton farming also excelled over IRRI papddy in terms of all the economic indicators.

Economics of Fertilizer Use on Cotton Crop

- Benefit Cost Ratio refers to the ratio between value of additional produce obtained by using a certain dose of fertilizer and additional costs incurred. In view of remunerative prices of Seed Cotton, these ratios have moved in favour of cotton crop during 2010-11.
- The quantity of seed cotton needed to buy one nutrient tonne of N fertilizer has fluctuated from 0.52 to 0.89 tonnes while that of P fertilizer from 0.78 to 3.16 during 2001 to 2011.

Nominal and Real Intervention Prices

- The nominal intervention prices of seed cotton have experienced overall rise of 102 per cent during 2000-01 to 2010-11 while the real prices have deteriorated by 17.50 per cent during the same period.

Nominal and Real Market Prices

- The nominal market prices of seed cotton indicate an overall surge of 271 per cent while the real market prices have gained 52 per cent over the base year during the last decade.

World Production and Prices

- World cotton production estimated at 24.79 million tonnes in 2010-11 is projected to rise to 27.56 million in 2011-12.
- The world prices of cotton have fluctuated widely dipping as low as 51 cents per pound in 2002-03 and rising as high as 78 cents per pound in 2009-10.

Export/Import Parity Prices

- The export parity price comes to Rs 4771 per 40 kgs on the basis of Futures contract prices of New York No.2 Cotton for 2010-11.
- Based on actual export price of Pakistani cotton during 2010-11, the export parity price of seed cotton calculates to Rs 4308 per 40 kgs and Rs 3204 during 2007 to 2010.
- Based on cotton yarn prices at Karachi during 2010-11, the price of seed cotton works to Rs 5043 per 40 kgs.
- Based on actual cif (Karachi) price of imported cotton during 2010-11, the import parity price of seed cotton calculates to Rs 5274 per 40 kgs.
- Based on CFR Far Eastern quoted price of Orleans/Texas SLM 1-1/32", the import parity price comes to Rs 6230 per 40 kgs during 2010-11.

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 but above one under export scenario during 2008-09 to 2010-11.
- Similarly, the EPCs are below one under import scenario, but above one under export scenario.
- 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. It implies a Comparative Advantage in domestic cotton production.
- The findngs 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 4th largest cotton producer in terms of area and production but holds 18th position in terms of yield.
- According to the Annual Progress Report of Central Cotton Research Institute, Multan for 2009-10, mjaor cotton varieties sown in Punjab were Bt cotton, CIM-496, CIM-499, CIM-473 CIM-506, S-2000 and MNH-786 covering around 87 per cent of cotton area.
- Among 6 competing countries, cost of production of seed cotton was estimated at Pak Rs 2450 per 40 kgs in USA while in Uzbekistan it was reported at Pak Rs 1145 per 40 kgs during 2006-07.
- The cost of production of seed cotton is estimated at Pak Rs 2265 per 40 kgs in China, Rs 1211 in India, Rs 2246 in Turkey and Rs 1347 in Pakistan.
- Turkey has provided the highest direct assistance to cotton sector through production programmes at Pak Rs 2297 per 40 kgs during 2009-10 followed by USA and China at Rs 1037 and Rs 963 per 40 kgs. No such direct assistance is reported in Pakistan and India during 2009-10.

Policy Options

Based on the analysis of relevant factors covered in the main text of the Report, the likely policy options for seed cotton 2011-12 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 2010-11 (Aug-Dec)	4308	
	- During 2007-08 to 2009-10	3204	
	ii) Futures contract prices of New York No.2 cotton (average of October, December 2010 and March 2011	4771	
	iii) Fob prices of Pakistani cotton yarn (20's):		
	- During 2010-11 (Aug-Dec)	5043	
	- During 2007-08 to 2009-10	3556	
2	Import parity prices based on average:		
	i) Actual cif Karachi prices of imported cotton:		
	- During 2010-11 (Aug-Dec)	5274	
	- During 2007-08 to 2009-10	3717	
	ii) Index-A cotton		
	- During 2010-11 (Aug-Jan)	6230	
	- During 2007-08 to 2009-10	3820	
3	Average domestic market price of seed cotton in 2010-11 (Aug-Jan)		
	- Punjab	4003	
	- Sindh	3874	
4	Cost of production for 2011-12 crop		
	- Punjab	2195	
	- Sindh	1924	
5	Cost of domestic resources involved in:	At exchange rate Pak rupee 85 = one US $	
		Punjab	Sindh
	i) Producing cotton for import substitution based on 2008-11 prices of cotton	36	34
	ii) Producing cotton for export based on 2008-11 prices of cotton	57	53

- Recommendations

In view of the field information, consultation with the stakeholders in the API's Standing 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 the intervention price of seed cotton (Base grade 3 with staple length 1-1/16″) for 2011-12 crop, in view of upward trend in world prices and high input costs, if deem necessary.

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

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

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

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

Improving Productivity

- There is a dire need to strengthen coordination among the Provincial and Federal Research Institutes 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.

- Public and private seed companies may be encouraged to multiply and distribute the seed of the appoved cotton varieties.

- 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 needs.

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

- Pest Warning System shold be further strengthened enabling the farmers to take timely action.

- To ensure quality control of pesticides, Provincial Agriculture Departments should devise a mechanism for quick disposal of adulteration cases.

- There is a need to encourage Pest Scouting and Soil Testing to assess the need of appropriate pesticides and fertilizers.

- A comprehensive educational campaign should be launched to educate the growers about improved practices of cotton picking.

- The new seed variety should be auctioned in the open maket to encourage the genuine breeders.

- There is a dire need for early introduction of Genetically Modified Cottons for control of Boll Worm and CLCV by using both locally developed and imported technologies.

- The cotton production potential existing in the KPK and Balochistan may be tapped through cotton supporting activities. The provincial governments should lauch Awareness Campaign to take special care of cotton production activities.

- NIBGE in collaboration with Cotton Research Institutes should work hard on heat / drought resistance to avoid excessive boll shedding and increasing boll weight.

- The Government should emphasize the strategy to control the Mealy Bug through management practices and biological control.

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

- To promote cotton cultivation, there should be restriction on establishing new sugarmills in the cotton region.

Improving Quality and Marketing

- A Ginning Research Institute may be established at Multan to deal with the issues of cotton ginning and related matters.

- 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 Regulartory Authority may be established to control prices and quality of agriculture inputs.
- The recent amendment in Cotton Control Act for qualitative improvement may be religiously implemented.
- Cotton Standardization and Grading System may be implemented in accordance with the provisions of the Pakistan Cotton Standardization Ordinance, 2002.

Chairman, API

June 15, 2011

COTTON POLICY ANALYSIS FOR 2011-12 CROP

INTRODUCTION

Cotton is the most important cash crop of Pakistan known as "White gold". It is annually cultivated on an area of about 3 million hectares accounting for 14 per cent of the cropped area in the country. It contributes 8.6 per cent of the value added in agriculture sector and about 1.8 per cent to GDP. Cotton farming is a significant source of income for rural labour class especially women as pickers. The cotton sticks are also used as fire wood almost round the year at village level. Hundreds of ginneries are spread all over the country especially at village/town level in remote areas and their seasonal/permanent labour depend on cotton. It also provides raw material to oil extraction mills and the cotton seed cake which is a principle 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 heavily depend upon cotton employing millions of skilled and unskilled labour along the entire cotton value added chain, from weaving to textile and garment export. Accordingly, the Ministry of Food and Agriculture has prepared a long term Cotton Vision for sustained growth in cotton sector and the possible improvement in the quality of raw cotton with envisaged target of 20.70 million bales by 2015.

3. The foreign exchange earned from export of cotton and its made ups constitute about 60 per cent of earnings from merchandise exports. 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.

4. Pakistan produced an all time record cotton crop of 14.3 million bales in 2004-05 followed by second largest crop of 13 million in 2005-06 and 2006-07. It has averaged around 12 million bales during the last three years. Since the production of cotton is vulnerable to a host of insect/pests, its cultivation is a risky proposition. Even in good crop years, farmers have suffered because of low prices. The sowing in cotton production and prices have adversely affected all the cotton related sub-sectors of the economy. In view of the importance of cotton, there is an urgent need to minimize incidence of these fluctuations and reverse the set back suffered in cotton production.

5. 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 seed cotton market price moves below the intervention price level. Such an intervention was however not needed during 2010-11 season as the market prices had remained significantly higher throughout the season.

6. In preparing this Report for seed cotton 2011-12 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 conducted by the API during Dec-Jan, 2010-11 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 policy analysis.
- Meeting of the API's Standing Committee on Cotton was held on 17th January, 2011 at API, Islamabad. It was attended by the representatives of growers associations, chambers of agriculture, KCA, TCP, progressive growers, cotton experts and officials of Federal and Provincial Governments concerned with cotton production and marketing. 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 policy proposals.

7. Under the WTO regime, the cotton trade has become increasingly quality conscious. Even the local manufacturers of textiles demand standardized cotton for producing quality goods. In future, these challenges are expected to become serious. There are also challenges of CLCV, Mealy bug and wide spread cultivation of unapproved Bt cotton in domestic production. 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. For improving quality of cotton, Amendment in Cotton Control Act and implementation of Cotton Standardization and Grading System are to be given priority.

8. In order to improve yields, quality and marketing of cotton, the MINFA is planning to take several steps. These include introduction of cotton in other potential areas and bridging the yield gap through adequate supply of certified seed, balanced use of fertilizer and optimal plant population. Measures are also being taken to develop the disease/heat/drought resistant and Genetically Modified cotton varieties. Pest scouting and Early Warning system is being strengthened by the provincial governments. The private sector will be facilitated for production of Bt-cotton hybrid seeds through technical and financial assistance.

2. SOWING AND PICKING

9. In major cotton growing districts of the Punjab and Sindh, sowing is generally recommended from 1st May to end June in the Punjab, 1 March to 10th June in Sindh and 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
Punjab	
Faisalabad Sargodha	1st May to 15th June
Jhang, Toba Tek Sindh	1st May to 15th June
Mianwali	10th May to 15th June
Sahiwal, Pak Pattan, Okara,	1st May to 15th June
Multan, Lodhran, Vehari	1st May to end of June
Khanewal	15th May to 15th June
Bahawalpur, R.Y.Khan	1st May to 15th June
Bahawalnagar	1st May to 20th June
Muzaffargarh, Layyah, D.G.Khan, Rajanpur	1st May to end of June
Sindh	
Mirpur Khas, Tharparkar	1st March to 15th April
Hyderabad, Badin	10th April to 10th May
Sanghar	Mid April to mid May
Dadu, Khairpur, Sukkur, Ghotki	Mid May to 10th June
Nawabshah	1st May to 31st May
Khyber Pakhtunkhwa	
D.I.Khan	1st May to 31st May
Balochistan	
Lasbela, Dera Murad Jamali, Nasirabad	1st May to 31st May

Sources:

1. Central Cotton Research Institute, Multan.
2. Cotton Research Institute, Sakrand.

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.

3. PROVINCIAL SHARES IN AREA AND PRODUCTION

11. Provincial shares in area and production of cotton during 2008-09 to 2010-11 are provided in Table-2. During this period, cotton production averaged at 11.637 million bales from 2.846 million hectares (7.033 million acres).

Table-2: Provincial Shares in Area and Production of Cotton: Average of 2008-09 to 2010-11

Country/ Province	Area		Production	
	000 hectares	Per cent	000 bales	Per cent
Pakistan	**2846.2**	**100.0**	**12064.2**	**100.0**
Punjab	2286.7	79.6	8385.7	69.7
Sindh	551.1	19.2	3595.3	29.8
Khyber Pakhtunkhwa	0.1	*	0.3	*
Balochistan	33.7	1.2	82.9	0.7

Source: Annex-I.
*Negligible

12. Punjab and Sindh account for 79.6 and 19.2 per cent of cotton area and 69.7 and 29.8 per cent of cotton production (Figures 1 and 2). Cotton yield in Sindh is higher than Punjab that is why its production share exceeds the area share. Combined production of Khyber Pakhtunkhwa and Balochistan is 0.7 per cent from 1.2 per cent area. Cotton yield in these provinces is much lower than Punjab and Sindh.

4. IMPORTANT COTTON GROWING DISTRICTS

13. The district-wise data on area and production of cotton are given in Annex-III. The districts producing more than one million bales of cotton per annum each are Bahawalpur and Rahim Yar Khan. The districts producing more than 100 thousands bales of cotton per year each are Bahawalnagar, Vehari, Lodhran, Multan, Khanewal, Muzzafargarh, Rajanpur, D.G.Khan, Sahiwal, Pakpattan, Jhang, T.T.Singh, Faisalabad, and Layyah from the Punjab province and Sanghar, Hyderabad, Khairpur, Mirpurkhas, Ghotki, Nawabshah, Naushero Feroze, Sukkur and Badin from Sindh Province. These 25 districts account for more than 97 per cent of the cotton production in the country.

Provincial Shares in Area of Seed Cotton:
(Average of 2008-09 to 2010-11)

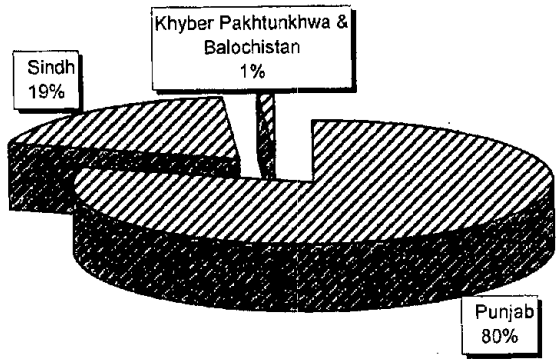


Figure-1: SHARES IN AREA

Provincial Shares in Production of Seed Cotton:
(Average of 2008-09 to 2010-11)

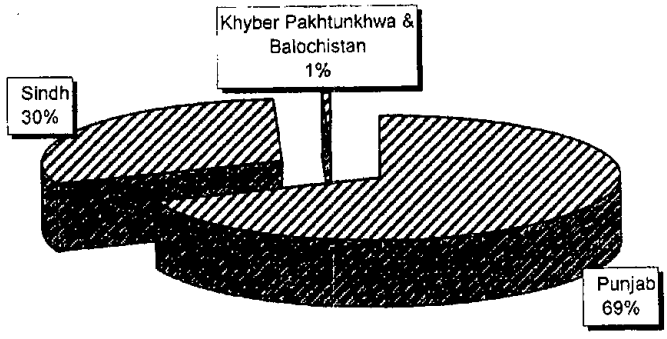


Figure-2: SHARES IN PRODUCTION

14. The districts of Bahawalpur, Rahim Yar Khan, Bahawalnagar, Vehari, Lodhran, Multan,Khanewal, Sanghar and Hyderabad each producing more than half million bales per year altogether account for 62.2 per cent of the cotton in the country.

5. CHANGES IN AREA, YIELD AND PRODUCTION

15. During the period of 2000-01 to 2010-11, the cotton area has ranged between 2.79 and 3.19 million hectares (6.65 and 7.89 million acres) and yield between 572 and 760 kgs per hectare (231 to 308 kgs per acre). Therefore, cotton production fluctuated between 10.0 and 14.3 million bales. Long term and short term changes in area, yield and production are discussed below:

5.1 Long-term Changes: 2000-01 to 2010-11

.16. During the period under reference, cotton production at country level increased @ 1.6 per cent per annum solely due to 2.0 per cent improvement in yield as the area under the seed cotton has reduced @ 0.4 per cent per annum during the period under consideration (Table-3).

Table-3: Average Annual Growth Rates of Area, Yield and Production of Cotton: 2000-01 to 2010-11

Country/ Province	Area	Yield	Production
	---------- Per cent ----------		
Pakistan	**(-) 0.4**	**(+) 2.0**	**(+) 1.6**
Punjab	(-) 0.5	(+) 0.9	(+) 0.4
Sindh	(+) 0.1	**(+) 5.0**	**(+) 5.1**

Source: Annex-I.

Notes:

1. 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.
2. Pakistan growth rates are inclusive of Khyber Pakhtunkhwa and Balochistan provinces.

17. In the Punjab, cotton production has turned down @ 0.5 per cent per annum but its production has increased @ 0.4 per cent annually based upon 0.9 per cent improvement in yield. In Sindh cotton production increased @ 5.1 per cent per annum due to 5.0 percent improvement in yield and 0.1 per cent in area.

5.2 Short-term Changes: 2009-10 to 2010-11

.18. According to estimates provided by provincial Agricultural Departments cotton production from 2010-11 crop at country level is worked out at 11.460 million bales, considerably less than 12.913 million bales produced in 2009-10. The slightly decline in production is solely due to13.4 per cent fall in area as the yield improved by 2.5 per cent (Table-4).

Table-4: Area, Yield and Production of Cotton: 2009-10 and 2010-11 Crops

Country/ Province	Area		Changes in 2010-11 over 2009-10	Yield		Changes in 2010-11 over 2009-10	Production		Changes in 2010-11 over 2009-10
	2009-10	2010-11		2009-10	2010-11		2009-10	2010-11	
	-- 000 hectares --		Per cent	--Kgs/hectare --		Per cent	-- 000 bales --		Per cent
Pakistan	**3105.6**	**2689.1**	**(-) 13.4**	**707**	**725**	**2.5**	**12913.5**	**11460.1**	**(-) 11.3**
Punjab	2435.8	2200.6	(-) 9.7	597	607	1.7	8552.0	7854.0	(-) 8.2
Sindh	634.7	457.0	(-) 28.0	1144	1316	15.0	4270.7	3536.8	(-) 17.2
Khyber Pakhtunkhwa	*	0.2	325.0	340	340	26.5	0.1	0.4	300.0
Balochistan	35.1	31.3	(-) 10.8	440	374	(-)15.0	90.7	68.9	(-) 24.0

*Less than 50 hectares

Source: Annex-I.

19. Cotton production in the Punjab estimated at 7.854 million bales is 8.2 per cent lower than 8.552 million bales produced in 2009-10. Decrease in production is only due to decreased in area by 9.7 per cent while the yield has improved by 1.7 per cent.

20. In Sindh cotton production of 3.537 million bales is also 17.2 per cent lower than 4.271 million bales produced in 2009-10. Decrease in production is due to decline in area by 28.0 per cent while per unit yield has increased @ 15 per cent over 2009-10.

5.3 Factors Responsible for Variation in Cotton Production

21. Provincial Agricultural Departments of the Punjab and Sindh have provided following reasons for changes in area, yield and production.

* **Punjab**

Area

22. Cotton area decreased by 9.7 per cent over the previous year which is due to:

i) Floods and excessive rains widely damaged the crop in cotton growing zone. About 7.0 lac acres were washed away by floods in the province. D.G. Khan Division, R.Y. Khan and Jhang districts were badly affected.

ii) Severe CLCV/insect attack on previous year crop also discouraged growers to put more area under cotton crop.

iii) Shifting of area to sugarcane crop.

* **Sindh**

23 Cotton area decreased by 28.0 per cent over the previous year is due to:

i) Super flood in Indus River bed, heavy and continuous rains on left bank of Indus, alongwith breaches in canals, the considerable area was damaged.

Production

* **Punjab**

24. Production declined in the Punjab province which is due to the following factors:

i) Corresponding decrease in area due to floods.

ii) Wide attack of CLCV and sucking pest/insect in core and non-core areas.

* **Sindh**

i) Production decreased due to decrease in area.

6. TARGETS VS ACHIEVEMENTS: 2010-11 CROP

25. FCA (Federal Committee on Agriculture) had fixed cotton production target for 2010-11 crop at 14.010 million bales. As per final estimates of Provincial Agricultural Departments, cotton production is reported at 11.460 million bales, a shortfall of 18.2 per cent. Lower achievement is attributed to 16.0 per cent shortfall in area and 2.7 per cent in yield (Table-5).

Table-5: Targets and Estimated Achievements of Area, Yield and Production of Seed Cotton: 2010-11 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
Pakistan	**3200.0**	**2689.1**	**(-)16.0**	**745**	**725**	**(-) 2.7**	**14010.0**	**11460.1**	**(-)18.2**
Punjab	2500.0	2200.6	(-) 12.0	660	607	(-) 8.0	9700.0	7854.0	(-) 19.0
Sindh	650.0	457.0	(-) 29.7	1099	1316	19.8	4200.0	3536.8	(-) 15.8
Khyber Pakhtunkhwa	10.0	0.2	(-) 98.3	170	430	152.9	10.0	0.4	(-) 95.7
Balochistan	40.0	31.3	(-) 21.8	425	374	(-)11.9	100.0	68.9	(-) 31.1

Sources:

1. For targets: Working paper of the 92nd Meeting of FCA.
2. For achievements: Annex-I.

26. In the Punjab, production lagged behind the target by 19.0 per cent due to short area by 12.0 per cent and low yield by 8.0 per cent. Similarly in Sindh cotton production fell short of its fixed target @ 15.8 per cent solely due to29.7 per cent decline in area under the crop because per hectare yield has surpassed its target @ 19.8 per cent in the province.

7. DOMESTIC SUPPLY, DEMAND, STOCKS AND PRICE SITUATION

7.1 Domestic Supply, Demand and Stocks

27. Domestic production of cotton lint from 2010-11 crop reported at 11.46 million bales is about 11.3 percent lower than the last year's production of 12.91 million bales. Adding the opening stocks of 1..06 million bales which is 49.3 percent higher than that of 2009-10, the total supply is calculated at 12.52 million bales. Accounting for the likely consumption, imports and exports, the closing stocks of 2010-11 show a shortfall of 0.58 million bales. Due to this shortfall, import of cotton will increase and the prices of seed cotton in coming cotton season may firm up.

Table-6: Domestic Production, Demand and Stocks of Cotton (Lint): 2008-09 to 2010-11 (August-July)

Item	2008-09	2009-10 (estimated)	2010-11 (Provisional)
	------- Million bales * -------		
1. Opening stocks	2.27	0.71	1.06
2. Production	11.82	12.91	11.46
3. Total supply	**14.09**	**13.62**	**12.52**
4. Likely Consumption	**15.38**	**13.65**	**14.20**
5. Imports**	2.46	2.03	1.72
6. Exports**	0.46	1.99	0.62
7. Closing stocks	**0.71**	**1.06**	**-0.58**

* One bale = 170 kgs = 375 lbs.
** Import and Export upto November 2010.

Sources:

a) PCCC, Karachi.
b) Provincial Agriculture Departments for production.
c) FBS, Karachi for import and export.

7.2 Domestic Price Situation

Seed cotton (phutti)

28. Monthly average wholesale prices of seed cotton in the main producing area markets of Punjab and Sindh during the post harvest period of 2010-11 crop are detailed in Table-7.

Table-7: Monthly Average Wholesale Prices of Seed Cotton (Phutti) in the Main Producer Area Markets During 2010-11 Crop (Sept-Feb)

Sr. No.	Market	Sep	Oct	Nov	Dec	Jan	Feb	Avg
	Punjab	----------Rupees per 40 kgs----------						
1	Multan	3075	3228	3710	3916	4644	4794	3895
2	Khanewal	3056	3243	3874	4134	4886	5063	4043
3	Vehari	3125	3316	3911	4088	4923	5166	4088
4	R. Y. Khan	2969	3286	3747	4052	4824	5074	3992
5	Bahawalpur	3059	3316	3988	3938	4800	4878	3997
	Average	**3057**	**3278**	**3846**	**4026**	**4815**	**4995**	**4003**
	Sindh							
1	MirpurKhas	3079	3375	3700	3938	4250	4850	3865
2	Sanghar	3107	3381	3766	3875	4150	4600	3813
3	Hyderabad	3099	3454	3825	3850	4050	4300	3763
4	Nawabshah	-	3294	3700	3775	4250	4250	3854
5	Ghotki	-	3483	3963	4033	4450	4450	4076
	Average	**3095**	**3397**	**3791**	**3894**	**4230**	**4490**	**3874**

Sources:

1. Directorate of Agriculture (E&M), Punjab, Lahore.
2. D.G. Agriculture Extension, Hyderabad, Sindh.

29. Monthly wholesale prices of seed cotton during the post harvest period averaged at Rs 4003 per 40 kgs in the Punjab and Rs 3606 in Sindh.

Cotton lint

30. Monthly average spot prices of raw cotton at Karachi during 2009-10 and 2010-11 are presented in Table-8. The spot price during 2010-11 averaged at Rs 9754 per 40 kgs which is substantially higher than that of last year.

Table-8: Monthly Average Spot Prices of Raw Cotton at Karachi, 2009-10 and 2010-11 Crops (August-March)

Month	Base Grade -3, staple length 1-1/16", Micronaire Value 3.8 to 4.9 NCL (No Control Limit)	
	2009-10	2010-11
	Rupees per 40 kgs	
August	3893	7042
September	3712	7282
October	3855	8080
November	4259	9405
December	4767	9770
January	4935	10742
February	5083	12408
March	5938	13301
Average	**4555**	**9754**

Source: Karachi Cotton Association (KCA).

8. COST OF PRODUCTION OF SEED COTTON

31. In composing the price proposals for the farm produce, the cost of production is one of the fundamental factors. However, its empirical estimation involves several conceptual and practical difficulties because of widespread disparity in agro- climatic conditions, use level of inputs and farm management resulting in wide variations in the yield of a crop.

32. For updating cost of production estimates of seed cotton for 2011-12 crop in the Punjab and Sindh, the input-output parameters as used in the Cotton Policy Analysis Report for 2010-11 crop have been employed alongwith the latest inputs prices and hiring rates of different field operations. To revise the inputs prices and hiring rates of different field operations involved in cotton cultivation, the API conducted annual field survey in the major cotton producing areas of the Punjab and Sindh during December 2010. These rates were also discussed in the meeting of the API's Standing Committee on Cotton, held on 17th January 2011 in the Agriculture Policy Institute, Islamabad and supplemented with the information provided by the committee members. The detailed cost estimates of the Punjab and Sindh are given in Annex-IV and V respectively, while a summary of the results is offered in Table-9.

Table-9: Average Farmers' Cost of Production of Seed Cotton: 2010-11 and 2011-12 Crops

S. No	Items	Unit	2010-11 crop	2011-12 crop	Increase in 2011-12 over 2010-11
	Punjab				
1.	Cost of cultivation	Rs/acre	29421	40391	10970
2.	Yield	Kgs/acre	696	748	52
3.	Cost of production at farm level	Rs/40 kgs	1691	2160	469
4.	Marketing cost	Rs/40 kgs	30	35	5
5.	Cost of production at market/ ginnery	Rs/40 kgs	1721	2195	474
	Sindh				
1.	Cost of cultivation	Rs/acre	27126	36025	8899
2.	Yield	Kgs/acre	700	763	63
3.	Cost of production at farm level	Rs/40 kgs	1550	1889	339
4.	Marketing cost	Rs/40 kgs	32	35	3
5.	Cost of production at market/ ginnery	Rs/40 kgs	1582	1924	342

Note: The figures have been rounded off.
Source: Annex-IV and V.

Punjab

33. It is evident from the Table-9 that the cost of cultivating one acre of seed cotton in the Punjab during 2011-12 is anticipated at Rs 40391, including land rent. Based on the average yield of 748 kgs per acre, the cost of production works to Rs. 2160 per 40 kgs. Adding up the marketing charges @ Rs. 35 per 40 kgs, the market/ginnery level cost of production come to Rs. 2195 per 40 kgs, higher by Rs. 474 (28 per cent) than the cost of 2010-11 crop.

Sindh

34. The cost of cultivating one acre of seed cotton in Sindh during 2011-12 crop season is likely to be Rs 36025, including land rent. Based on average yield of 763 kgs per acre, the farm level cost of production of seed cotton works to Rs. 1889 per 40 kgs. Adding marketing cost @ Rs. 35 per 40 kgs, the market/ginnery level cost of production would be Rs. 1924 per 40 kgs, higher the equivalent cost of 2010-11 crop by Rs. 342 (22 per cent).

35. The increases in the cost of production of seed cotton in both provinces are mainly attributed to increase in the hiring rates of tractors, cost of supplementary irrigation and

transportation on account of rising prices of diesel and power tariff. The rises in the prices of fertilizers, seed, wage rates, land rent and picking charges will also add in the cost of production of seed cotton for 2011-12 crop.

8.1 Cost of major operations

36. The cost of major items in the total cost of cultivation of seed cotton during 2010-11 and 2011-12 crops is presented in Table-10 below:

Table-10: Costs of Major Operations/Inputs in the Total Cost of Cultivation of Seed Cotton: 2010-11 and 2011-12 crops

		2010-11 crop	2011-12 crop	Shares in increased cost
		Rs/acre		Per cent
	Punjab			
1.	Land preparation	2650 (9)	3226 (8)	5
2.	Seed and sowing operations	1414 (5)	2336 (6)	8
3.	Irrigation	3220 (11)	3602 (9)	3
4.	Interculture	2206 (7)	2700 (7)	5
5.	Plant protection	3058 (10)	3173 (8)	1
6.	Fertilizers including FYM	4697 (16)	5928 (14)	11
7.	Land rent	8000 (27)	13333 (32)	48
8.	Picking charges	2175 (7)	3480 (8)	12
9.	Others	2576 (9)	3313 (8)	7
10.	Gross cost	29996(100)	41091(100)	100
	Sindh			
1.	Land preparation	3230(12)	3928(11)	8
2.	Seed and sowing operations	2022 (7)	3221 (9)	13
3	Irrigation	2299 (8)	2601 (7)	3
4.	Interculture	2245 (8)	2747 (7)	6
5.	Plant protection	2100 (8)	2205 (6)	1
6.	Fertilizers including FYM	4411 (16)	5520 (15)	12
7.	Land rent	6667 (24)	10000 (27)	37
8.	Picking charges	2051 (7)	3038 (8)	11
9.	Others	2871 (10)	3690 (10)	9
10.	Gross cost	27896 (100)	36950 (100)	100

Notes:

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

Punjab

37. Land rent is the most significant constituent of the cost of cultivation of seed cotton in the Punjab for 2011-12 crop, contributing 32 per cent. The other ingredients are: fertilizers including FYM (14 %), irrigation and picking charges (9 per cent each), land preparation, plant protection and others (8 % each), interculture (7 %) and seed and sowing operations (6 per cent).

Sindh

38. Major components of the cost of cultivation of seed cotton in Sindh during 2011-12 crop year are: land rent (27 %), fertilizer including FYM (15 %), land preparation (11 %), seed/sowing operations (9 per cent), picking charges (8 per cent), irrigation and interculture (7 % each) and plant protection (6 %).

8.2 Prices of major farm inputs

39. The average market prices of the major farm inputs used in calculating the cost of production of seed cotton for the 2010-11 and 2011-12 crops are given below:

Items	Units	2010-11 crop	2011-12 crop	Per cent change
Punjab				
1. HSD	Rs/litre	72.65	78.48	8.02
2. Power tariff	Rs/kwh	4.75	5.31	11.79
3. DAP	Rs/bag	2575	3170	23.11
4. Urea	Rs/bag	800	1053	31.63
5. Seed	Rs/kg	100	200	100.00
Sindh				
1. HSD	Rs/litre	72.65	78.48	8.02
2. Power tariff	Rs/kwh	4.75	5.31	11.79
3. DAP	Rs/bag	2575	3117	21.05
4. Urea	Rs/bag	810	1107	36.67
5. Seed	Rs/kg	105	200	90.48

9. ECONOMICS OF COTTON AND COMPETING CROPS

40. The farmer's priorities and decisions regarding resource allocation among the competing crops are primarily governed by the economic considerations as reflected in their gross cost, gross income, gross margin, net income, output-input ratio, etc. The estimation of these indicators may provide useful insights into the pattern of resource use at the farm level, both by individual as well as the whole farming community.

41. 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.

42. The economics of cotton and competing crops has been analyzed in terms of input-output prices paid and received by the growers during the 2010-11 crop year. The details of the analysis are provided in Annex-VI. While a summary of various economic indicators for the Punjab and Sindh is presented in Tables 11 & 12 and depicted at Figures 3 & 4:

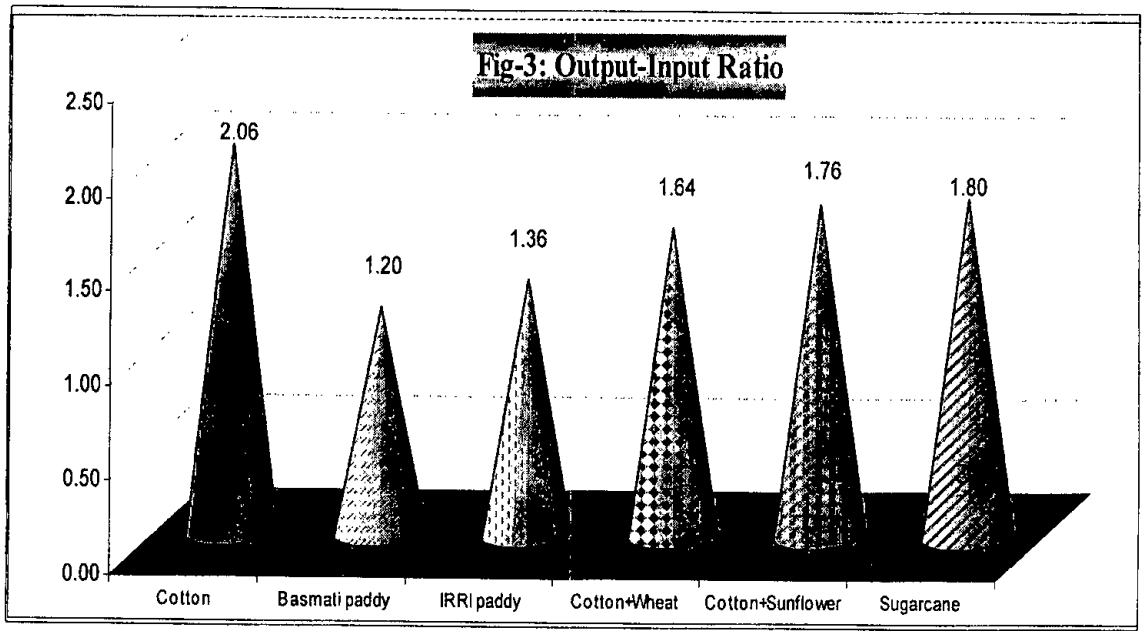
Table-11 : Economics of Cotton and Competing Crops at Prices Realized by the Growers in the Punjab: 2010-11 Crops

Province/Crop/ Crop combination	Output-input ratio	Gross revenue per		
		rupee of purchased inputs cost	day of crop duration	acre-inch of irrigation water used
		-------- Rupees --------		
1. Cotton	2.06	5.46	258	2812
2. Basmati paddy	1.20	2.31	178	551
3. IRRI paddy	1.36	2.74	181	527
4. Cotton+Wheat	1.64	4.27	214	2649
5. Cotton+Sunflower	1.76	5.19	218	2080
6. Sugarcane	1.80	5.34	236	1940

Source: Annex-VI

Punjab

43. Due to very remunerative market prices during the current season, the cotton crop firmed its superiority this year again over basmati and IRRI paddy crops in respect of all economic indicators adopted in this analysis.



44. In case of indirect competition, sugarcane gave better returns over the cotton + wheat and cotton + sunflower combinations in respect of all the economic criteria, except in terms of irrigation water where the performance of cotton + wheat and cotton + sunflower combinations is much better than that of sugarcane.

Sindh

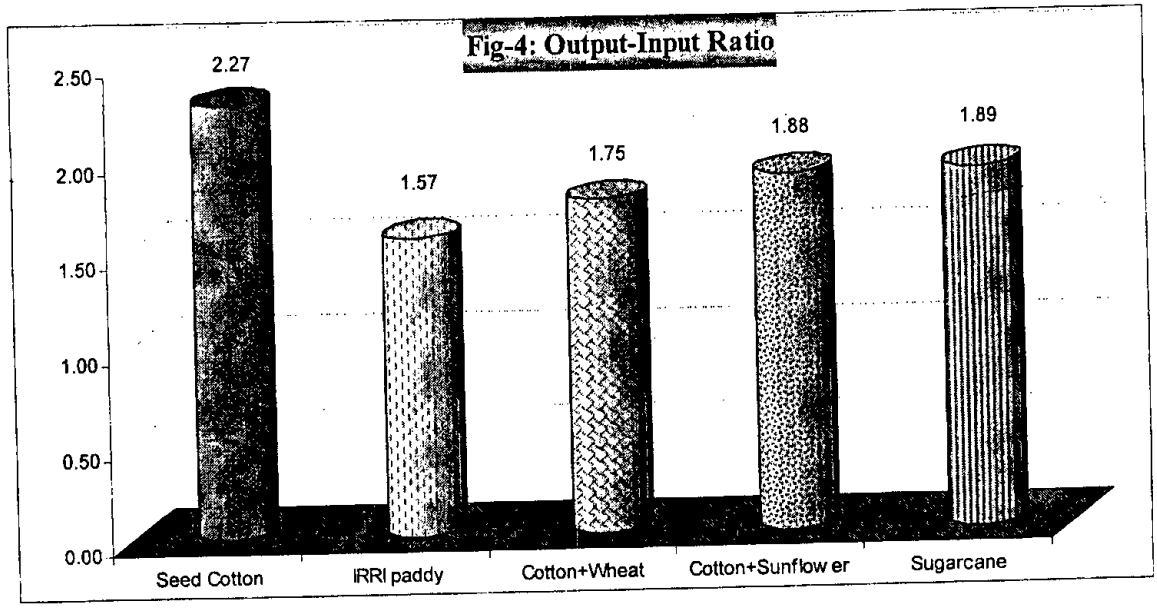
45. In Sindh too, cotton farming has maintained its superiority over IRRI paddy in terms of all the indicators adopted for economic analysis of competing crops (Table-12).

Table-12: Economics of Cotton and Competing Crops at Prices Realized by the Growers in Sindh: 2010-11 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	2.27	6.61	264	3518
2. IRRI paddy	1.57	3.95	194	623
3. Cotton+Wheat	1.75	4.85	210	2934
4. Cotton+Sunflower	1.88	5.13	221	2325
5. Sugarcane	1.89	5.70	242	1663

Source: Annex-VI

46 In case of indirect competition, sugarcane farming has shown better returns over the cotton + wheat and cotton + sunflower combinations in respect of all the economic criteria except in terms of irrigation water where both the cotton combinations have an edge over sugarcane. Overall performance of cotton + wheat and cotton + sunflower is equally good and close to that of sugarcane in Sindh province (Table-12).



10. ECONOMICS OF FERTILIZER USE ON COTTON CROP

47. 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)

48. BCR refers to the ratio between value of additional produce which can be 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. 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-13.

Table-13: Benefit Cost Ratio (BCR) of Fertilizer Use on Cotton: 2001-02 to 2010-11

Year	Response Ratios (Seed Cotton: Nutrient) of			
	3.00:1	3.75:1	4.50:1	5.25:1
2001-02	1.87	2.22	2.53	2.81
2002-03	1.97	2.45	2.79	3.11
2003-04	*2.79*	*3.32*	*3.79*	*4.23*
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

Sources: 1. For 2001-02 to 2009-10: Cotton Policy Analysis Report for 2010-11 crop by API.
2. For 2010-11: Annex-VII.

10.2 Parity Ratio Between Prices of Fertilizer and Seed Cotton

49. 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 2001-02 to 2010-11 and presented in Table-14. The quantity of seed cotton needed to buy one nutrient tonne of N fertilizer has ranged between 0.39 to 0.89 tonnes. The parity ratios between prices of seed cotton and those of phosphatic fertilizer have fluctuated from 0.78 to 1.51 during the period of analysis except2008-09 where the parity ratio jumped to 3.16 because of exorbitant rise in world prices of DAP.

Table-14: Parity Ratio between the Prices of Fertilizer and Seed Cotton: 2001-02 to 2010-11

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_2O_5		Nitrogen N	Phosphorous P_2O_5
	----------Rupees per tonne----------			----------Tonnes---------	
2001-02	16960	24230	19150	0.89	1.27
2002-03	16760	24590	21875	0.77	1.12
2003-04	18040	25550	30950	0.58	0.83
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

Notes: 1. The prices of N and P_2O_5 have been worked out from Urea and DAP which were used in estimating the cost of production of seed cotton for the respective crop year by API.

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

11. NOMINAL AND REAL PRICES OF SEED COTTON AT INTERVENTION AND MARKET PRICES: 2000-01 TO 2010-11

50. The intervention price of seed cotton is reviewed by the government well before sowing time, mainly with the purpose to regulate the market in the light of prevailing situation and the economic priorities. Fluctuation in the prices of a commodity in relation to general price level in the economy influences the purchasing power/real income of its producers. To ascertain overtime changes in the purchasing power of seed cotton, the nominal and real prices of seed cotton at intervention and market prices are being deflated by the Consumer Price Index (CPI), the most common measure of inflation in the economy. In this context, the analysis has been made for the period 2000-01 to 2010-11 and discussed in the following paragraphs.

11.1 Intervention Price of Seed Cotton

51. The nominal intervention price of Seed Cotton during the period 2000-01 to 2010-11 indicates a cumulative increase of 102 per cent, from Rs 725 per 40 kgs in 2000-01 to Rs 1465 in 2008-09, which remained unchanged for the following two years. During the same period, the cumulative CPI has spiraled by 145 per cent. Consequently, the real intervention price of Seed Cotton, which for 2008-09 was Rs 763 per 40 kgs, 5.2 per cent increase over the real price of Rs 725 per 40 kgs in the base year, started a declining trend continuously to Rs. 690 and 598, respectively for 2009-10 and 2010-11. Hence, keeping the nominal intervention price stagnant for following two years caused losing more than one-fifth of real value of the commodity over that of 2008-09, while 17 percent against the base-year. To maintain the real price at 2008-09 level, the nominal price should have been at the level of Rs. 1869 per 40 kgs.

52. The nominal and real intervention prices of Seed Cotton for 2000-01 to 2010-11 are set out in Table-15 and depicted in Figure-5.

Table- 15: Nominal and Real Intervention Prices of Seed Cotton (Phutti): 2000-01 to 2010-11

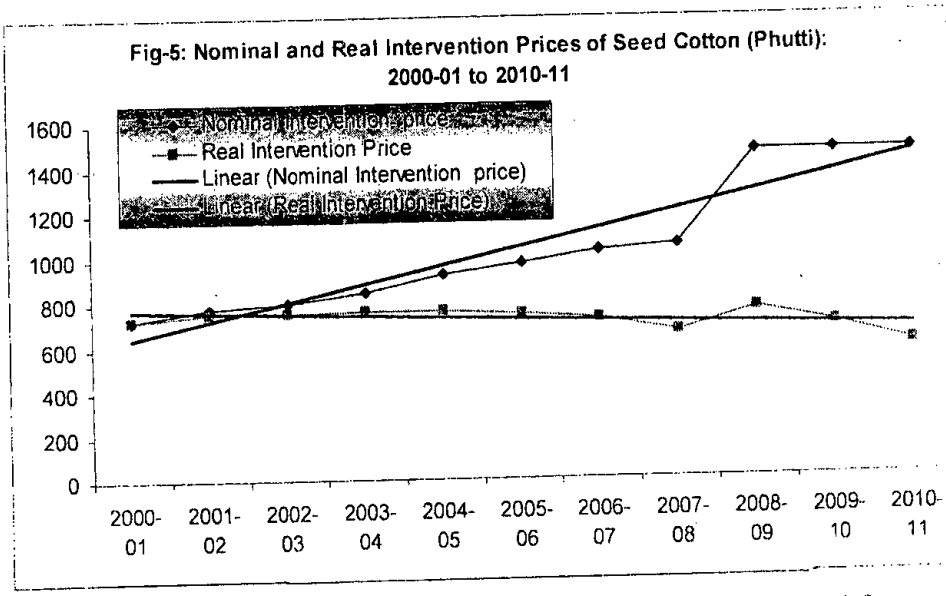
Crop year	Nominal Intervention Price	Consumer Price Index(CPI)	Real Intervention Price
	Rs per 40 kgs	2000-01=100	Rs per 40 kgs
1	2	3	4=(2/3)x100
2000-01	725	100.00	725
2001-02	780	103.54	753
2002-03	800	106.75	749
2003-04	850	111.63	761
2004-05	925	121.98	758
2005-06	975	131.18	741
2006-07	1025	141.87	722
2007-08	1050	158.90	661
2008-09	1465	191.90	763
2009-10	1465*	212.44	690
2010-11	1465*	244.84	598

Note: The Intervention Price of Seed Cotton relates to the group of most commonly grown varieties like, Niab-78, CIM-496, CIM-473, CIM-506, CIM-499, CRIS-9, CRIS-134, S-467, Shahbaz and Haridost, etc.

* : Not announced.

Sources: 1. For 2000-01 to 2009-10: Pakistan Economic Survey, 2009-10.
2. For 2010-11: Federal Bureau of Statistics, Islamabad.

53. During the whole period, the real price of the commodity peaked at Rs 763 per 40 kgs during 2008-09. However, the price evidenced a sliding trend and dipped to the lowest ebb for the whole period under consideration, even below the base year level (Rs 598 per 40 kgs in 2010-11), mainly for keeping the intervention price unchanged for the last two years.



11.2 Market Prices of Seed Cotton

54. The nominal and real market prices of seed cotton for 2000-01 to 2010-11 are presented in Table- 16 below and depicted in Figure-6.

Table-16: Nominal and Real Market Prices of Seed Cotton (Phutti): 2000-01 to 2010-11

Crop year	Nominal Market Price	Consumer Price Index(CPI)	Real Market Price
	Rs per 40 kgs	2000-01=100	Rs per 40 kgs
1	2	3	4=(2/3)x100
2000-01	957	100.00	957
2001-02	813	103.54	785
2002-03	921	106.75	863
2003-04	1370	111.63	1227
2004-05	885	121.98	726
2005-06	1017	131.18	773
2006-07	1110	141.87	782
2007-08	1468	158.90	924
2008-09	1557	191.90	811
2009-10	1910	212.44	918
2010-11	3552	244.84	1450

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. Pakistan Economic Survey, 2009-10.
2. For 2010-11: Federal Bureau of Statistics, Islamabad.
3. Directorate of Economics and Marketing (E&M) Punjab, Lahore.

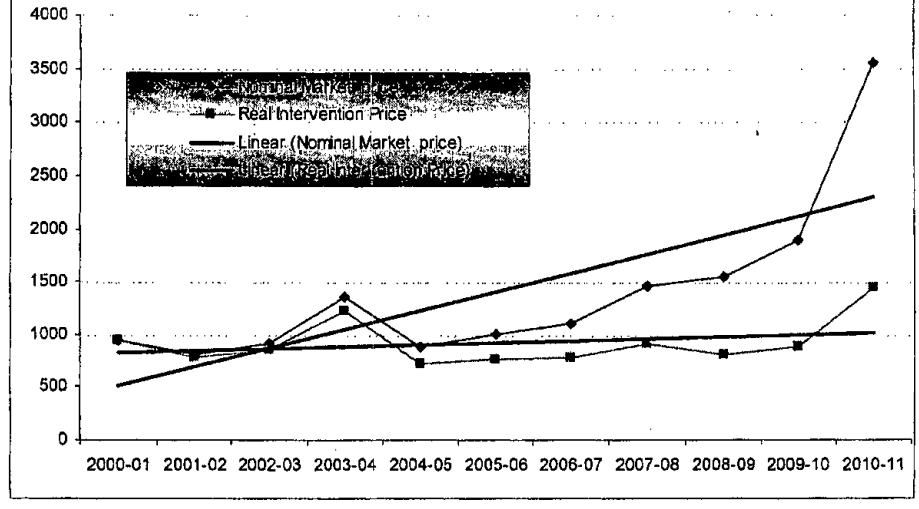
55. The nominal market price of seed cotton averaging at Rs 957 per 40 kgs for 2000-01 crop has risen to Rs 3552 per 40 kgs in 2010-11, indicating an overall surge of 271 per cent, in the main producing area markets of the Punjab. Deflating against the cumulative increase in CPI by 145 per cent, the real market price has increased over the base-year level by 52 per cent. In the meanwhile, the real market price has experienced fluctuations, touching the lowest level of Rs 726 per 40 kgs in 2004-05 and the highest of Rs 1451 per 40 kgs in 2010-11 crop.

56. In all the crop years except 2004-05, the market prices of seed cotton have ruled higher than the intervention price fixed by the government. The year 2003-04 was a

significant year for the growers in real terms as the real market price jumped to Rs 1227 per 40 kgs second highest after 2010-11. However, in the immediate next year of 2004-05, the market price declined to Rs 885 per 40 kgs, showing 35 per cent erosion over the last year and 4 per cent over the intervention price. After that the market prices of seed cotton showed a rising trend and remained above the fixed intervention price.

57. For 2010-11 crop, the nominal market price averaged at Rs 3552 per 40 kgs, the highest ever market price for the whole period under study. The real value of the crop improved over the last year by 15 per cent. It may be noted that the real value of seed cotton remained much lower against the base year during the period under review except 2003-04 and 2010-11. This indicates that over the years, cotton farmers have lost in terms of real economic returns from the crop. However, the comparative analysis of real value of both the intervention and market prices reveals that market forces have paid favourable returns to the farmers.

Fig-6: Nominal and Real Market Prices of Seed Cotton (Phutti): 2000-01 to 2010-11



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

58. The global production of cotton during 2010-11 is estimated at 24.79 million tonnes. It is about 13 percent higher than the production of 22.01 million in 2009-10. During 2011-12, the world production is forecast to increase by 11.17 percent to the level

of 27.56 million tonnes. After adding the opening stocks of 8.88 million tonnes, total supply in 2010-11 worked to 33.42 million tonnes, 1.47 percent higher than 2009-10 level. However, the world cotton supply is forecast to increase to 35.92 million tonnes during 2011-12.

59. The world consumption of cotton during 2010-11 estimated at 25.11 million tonnes is 0.24 percent higher than the last year level of 25.05 million. For 2011-12, cotton consumption projected at 25.83 million tonnes would be 2.86 percent higher than 2010-11.

60. The end year stocks during 2010-11 estimated at 8.36 million tonnes are about 3.13 percent higher than the last year of 8.63 million, which are projected to increase significantly to 10.09 million tonnes in 2011-12 (Table-17).

Table-17: World Production, Consumption, Stocks and Trade in Cotton: 2009-10 to 2011-12

S.No.	Item	2009-10 (Actual)	2010-11 (Estimated)	2011-12 (Projection)
		---------- Million tones ----------		
1.	Opening stocks	11.91	8.63	8.36
2.	Production	22.01	24.79	27.56
3.	Total supply (1+2)	33.92	33.42	35.92
4.	Likely consumption	25.05	25.11	25.83
5.	Trade imbalance and stocks adjustment *	(-)0.24	(-)0.05	0.00
6.	Closing stocks (3-4+5)	8.63	8.36	10.09

Note: *Trade imbalance i.e. 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, April 26, 2011.

13. INTERNATIONAL PRICES

61. The international prices of Afzal, Index- A and Orleans/Texas Cottons during 2002-03 to 2010-11 are placed in Annex-VIII.

62. The prices of all three cottons were volatile and widely fluctuated with the lowest level of 46.10 US cents per lb of Afzal during 2004-05 and 51.16 of Orleans/Texas in 2002-03. The highest prices were reported at 69.21 cents per lb of Afzal, 72.90 for Index-A cotton in 2007-08 while the highest prices of Orleans/ Texas were reported in 2009-10 at 77.58 US cent/lb. During 2010-11 (Aug-March) Afzal 1-1/16" and Orleans/ Texas 1-1/32" were not traded in the international market while the prices of Index-A cotton were showing a sharp upward trend and traded at 158.39 cents/lb.

14. EXPORT AND IMPORT PARITY PRICES

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

64. The export and import parity prices of seed cotton have been calculated on the basis of their actual and quoted prices. Detailed calculations in this regard are given at Annex-IX to XIII and summarized in Table-18.

Table-18: Export/Import Parity Prices of Seed Cotton as Worked Back from Various Reference Prices

S.No.	Base/period	Reference price	Worked back price of seed cotton at gin
		US cents/lb	Rs/40 kgs
1.	**Export parity prices based on average:**		
	i) Actual export price of Pakistani cotton		
	- During 2010-11 (Aug-March)	102.51	4,308
	- During 2007-08 to 2009-10	58.10	3,204
	ii) Futures contract prices of New York No.2 cotton (average of Oct- Dec 2010 and March 2011)	131.16	4,771
		US cents/kg	
	iii) Fob prices of Pakistani cotton yarn (20's):		
	- During 2010-11 (Aug-March)	377.00	5,043
	- During 2007-08 to 2009-10	224.00	3,556
2.	**Import parity prices based on average:**		
	i) Actual cif (Karachi) prices of imported cotton:	Rs/40 kgs	
	- During 2010-11 (Aug-March)	9,599	5,274
	- During 2007-08 to 2009-10	5,043	3,717
	ii) Index-A Cottons	US ents/lb	
	- During 2010-11 (Aug-March)	158.39	6,230
	- During 2007-08 to 2009-10	68.28	3,820

Sources: Annex-IX to XIII

15. ECONOMIC EFFICIENCY OF RESOURCE USE IN SEED COTTON PRODUCTION

65. Most widely used parameters of economic efficiency – resource use efficiency, are Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost (DRC) Coefficient. These measures are based on cost of production (private cost as well as social cost data). Social costs are derived by converting private costs into equivalent costs on the basis of import parity and export parity prices. Pakistan is exporter as well as importer of cotton. Accordingly economic efficiency of resources employed in cotton production is assessed under both export and import scenarios. Detailed data on the background of the findings presented in Table-19 are given in Annex-XIV and XV.

Table-19: ECONOMIC EFFICIENCY OF COTTON PRODUCTION POLICY ANALYSIS MATRIX (PAM)

Exporting scenario					Importing scenario			
Province/ Year	NPC	EPC	DRC	Cost of DRC to earn/ save forex	NPC	EPC	DRC	Cost of DRC to earn/ save forex
PUNJAB				**Rs per US $**				**Rs per US $**
2008-09	1.10	1.17	1.00	80.05	0.72	0.60	0.52	41.39
2009-10	1.12	1.15	0.71	60.67	0.84	0.78	0.48	40.86
2010-11	1.14	1.16	0.36	30.89	0.80	0.76	0.24	20.21
Average	**1.12**	**1.16**	**0.69**	**57.20**	**0.79**	**0.71**	**0.41**	**34.15**
SINDH								
2008-09	1.08	1.14	0.93	74.92	0.70	0.61	0.50	39.83
2009-10	1.11	1.12	0.69	59.44	0.83	0.75	0.47	40.08
2010-11	1.15	1.21	0.37	31.46	0.82	0.80	0.24	20.76
Average	**1.10**	**1.14**	**0.66**	**53.02**	**0.84**	**0.79**	**0.49**	**35.89**

Source: Annex XIV and XV.

15.1 Nominal Protection Coefficient

66. Nominal Protection Coefficient (NPC) is an indicator of policy protection extended to the growers. It reflects the extent to which growers of a particular crop are protected/ unprotected in lieu of the output price policy. It is estimated by dividing private market price of the crop by the respective social price. It does not take into consideration prices of inputs employed in the production of the crop.

67. As a rule of thumb if value of the NPC is less than one it means the referred crop does not have policy protection and the vice versa.

68. It can be seen from Table-19 that under export scenario, the value of NPC during the period under study (2008-09 through 2010-11) has been greater than one both in Punjab as well as Sindh province. It indicates that cotton growers are getting price for their cotton higher than the respective economic price. It implies an incentive for more cotton production. On the other hand under importing situation values of NPC coefficient have been substantially less than one. These range between 0.70 and 0.84. The situation indicates that import of raw cotton is expensive than domestic production.

15.2 Effective Protection Coefficient

69. Effective Protection Coefficient (EPC) is a more meaningful indicator of domestic protection than the NPC because NPC only considers price of the output while EPC studies net effect of both input and output prices. EPC measures level of protection or taxation to a crop more accurately. It is the ratio of the difference between the revenue earned from a commodity and the cost of tradable inputs. It is obtained by dividing the difference of the revenue earning and the traded inputs costs at private market prices by the difference of the value of revenue and traded inputs costs on the basis of social prices.

70. Data in Table-19 maintain the pattern observed in the NPC values. Respective values of EPCs remained above one under export situation whereas they remained below one under import situation. The conclusion is the same that on the whole input output prices offer an incentive for producing more cotton within the country than to import it for the domestic textile industry.

15.3 Domestic Resource Cost Coefficient (DRC)

71. Domestic Resource Cost coefficient (DRC) indicates the opportunity cost of domestic resources used per unit of the value added in the production of a commodity. It is estimated by dividing the opportunity cost of non-tradable inputs on the value addition calculated at social prices. DRC coefficient greater than one indicates disadvantage in domestic production as the cost associated with its domestic production is greater than the economic cost of corresponding imports.

72. The results produced in Table-19 are less than one both under export and import situation. These findings support that Pakistan has comparative advantage in cotton production.

73. DRC estimates under importing situation are less than those estimated for the export situation. As per these estimates cost of domestic factors to save one unit of foreign exchange through increased cotton production is 69-72 % of its market price. It implies that cotton production for import substitution is a cost effective and worthwhile proposition.

16. COTTON YIELD AMONG COMPETING COUNTRIES

74. To compare Pakistani position with the world, the area, yield and production of major cotton producing countries are detailed in Annex-XVI, while a summary of these factors is presented in Table-20:

Table-20: Area, Yield and Production of Seed Cotton among competing countries: 2009

S.No	Country	Area (million hect.)	Yield (tonnes/hect.)	**Production** (million tonnes)
1	China	5.590	4.114	23.000
2	**India**	10.100	**1.127**	11.382
3	United States of America	3.112	2.034	6.330
4	**Pakistan**	**3.106**	**1.987**	**6.171**
5	Uzbekistan	1.317	2.232	2.940
6	Brazil	0.808	3.625	2.928
7	Turkey	0.420	4.108	1.725
8	Australia	0.182	4.405	0.802
9	Greece	0.190	3.763	0.715
10	Syrian Arab Republic	0.165	3.952	0.652
11	Egypt	0.240	2.292	0.550
12	Burkina Faso	0.420	1.286	0.540
13	Nigeria	0.427	1.152	0.492
14	Argentina	0.290	1.341	0.389
15	Tajikistan	0.170	1.741	0.296
16	Mexico	0.072	3.819	0.275
17	Kazakhstan	0.139	1.942	0.270
18	Iran (Islamic Republic of)	0.108	2.454	0.265
19	Mali	0.288	0.819	0.236
20	Benin	0.150	1.527	0.229
	Total of 20 top producing Countries	**27.294**	2.205	**60.187**
	World total	**29.162**	2.121	**61.859**

Source: Annex-XVI.

75. Globally, the cotton crop occupied an area of 29.162 million hectares during 2009 with a total production of 61.859 million tonnes. The world top 20 producing countries contribute 94 per cent of total area and 97 per cent of total production.

76. In terms of cotton area, India is on the top with 10.100 million hectares, followed by China with 5.590 million and USA with 3.112 million hectares. Pakistan lies at 4th number in this regard.

77. In terms of cotton production, China is on the top with 23 million tonnes, followed by India with 11.382 million tonnes and USA with 6.330 million tonnes. However, Pakistan with 6.171 million tonnes retains 4th position in cotton production of the world as well.

78. Although Pakistan ranks 4th in terms of both area and production of cotton but lies at 18th position in terms of yield during 2009. It implies that there is a lot of potential to raise cotton productivity per hectare in Pakistan. It is an alarming situation and deserve special attention by all concerned quarters. The cotton yield in Pakistan at 1.987 tonnes per hectare is higher than India at 1.206 tonnes per hectare but lags behind the world average at 2.121 tonnes per hectare. (Annex-XVI).

17. COTTON VARIETIES AND YIELD POTENTIAL IN PAKISTAN

79. Cotton crop is believed to be the life line of the national economy. It accounts for 8.6 per cent of the value added in agriculture sector and about 1.8 per cent in the GDP. Around two-thirds of the country's export earnings are from the cotton made-ups and textiles.

80. Inspite of the world's 4th largest cotton producer and a leading exporter of yarn in the world, Pakistan ranked 18st in the world in terms of yield during 2009. As a result, Pakistan annually imports around 1.5 – 2.00 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. There are several factors for low yield of cotton crop in Pakistan. These are high price of agriculture inputs, higher intensity of insect and pest attack, shortage of quality seed, lack of awareness to advanced technologies and adulteration in pesticides, fertilizers and seeds.

82. Seed is the most important factor playing a critical role in improving farm productivity. Seed together with environment determines the upper limit of the productivity. It has been learnt that today all major cotton producing countries are benefiting from the cultivation of Bt Cotton. It is expected that within two years more than half the world's cotton would be grown from genetically modified crops.

83. In Pakistan, various cotton varieties being sown in various ecological zones along with yield potential are presented at Annex-XVII. The data indicate that in the country about one hundred varieties are grown. Among those varieties, 78 are upland varieties, 3 hybrid and 13 desi varieties. The yield potential of these varieties ranges from 600 kgs to 3900 kgs per hectare or 6 to 39 maunds of 40 kgs per acre.

84. According to the Annual Summary Progress Report of Central Cotton Research Institute, Multan for 2009-10, Bt cotton dominated the farmers choice for cultivation on 66 percent as compared to last year 43 percent are as reported by Crop Reporting Service, Government of the Punjab, Lahore. In the presence of Bt cotton varieties in the Punjab, CIM-496 covered 11% against 23% area on overall basis. Similarly all the CIM varieties were planted on an area of around 16% against 36% during last year in the Punjab. During 2009-10 , major cotton varieties sown in the Punjab were Bt cotton, CIM-496, CIM-499, CIM-473, CIM-506, S-2000 and MNH-786 covering around 87% of area under cotton.

85. The Government of Pakistan has officially approved genetically modified crops for cultivation in the country. The Bt. Cotton varieties like CEMB-1 and CEMB-2,were developed by the scientists at the Centre of Excellence in Molecular Biology of the Punjab University Lahore. These varieties were recommended by PCCC after more than two years of testing.

18. COST OF PRODUCTION OF SEED COTTON IN COMPETING COUNTRIES

86. The cost of production is the most important part of the multiple criteria used for making price policy proposals. It varies across the countries particularly due to input price structure, use level of farm inputs and technologies. This section covers the cost of production of seed cotton in Pakistan and in other competing countries like. China, India, Turkey, USA and Uzbekistan. The data on latest cost of production of seed cotton in competing countries is not available. Therefore, the cost of production of seed cotton for 2006-07 crop is reproduced. The data is updated in Pak Rupees by using the average exchange rates during 2009-10 (Table-21).

Table-21: Cost of Production of Seed Cotton in Competing Countries During 2006-07

Country	Average yield per hectare		Cost of production of seed cotton			
	Kgs	40 Kgs	US $/ha*	US $/40 kgs	Pak Rs/ha	Pak Rs/40 kgs
China	276.3	69.1	1863.00	26.96	156492	2265
India	1575	39.4	568.15	14.42	47725	1211
Turkey	3800	95.0	2540.01	26.74	213361	2246
USA	1846	46.2	1347.31	29.16	113174	2450
Uzbekistan	3000	75.0	1022.35	13.63	85877	1145
Pakistan**	1725	43.1	690.94	16.03	58039	1347

Note: * One US $ = Pak Rs 84.00 average of 2009-10)
** Average of Punjab and Sindh during 2009-10.

Source: International Cotton Advisory Committee (ICAC), Washington DC, USA.

87. The cost of production of seed cotton calculated at Pak Rs 2450 per 40 kgs in USA is the highest among the countries while in Uzbekistan, it is reported at Rs 1145 as the lowest. The cost of production of seed cotton in India, Turkey and Pakistan is Rs 1211, 2246 and Rs 1347 per 40 kgs, respectively.

19. DIRECT ASSISTANCE TO COTTON SECTOR THROUGH PRODUCTION PROGRAMMES IN COTTON PRODUCING COUNTRIES

88. The farm inputs are generally subsidized in various countries to indue crop production. The subsidy on cotton production provided to cotton growers in cotton producing countries is given in Table-22.

Table-22: Direct Assistance Provided to Cotton Sector Through Production Programs

Country	Average Assistance to Cotton Producer							
	2008-09				2009-10			
	Production	US cents per pound	US $ per 40 kgs	Pak Rs per 40 kgs	Production	US cents per pound	US $ per 40 kgs	Pak Rs per 40 kgs
China	8025	11	9.70	761	6850	13	11.46	963
India	4930	3	2.65	208	5100	-	0	0
USA	2790	50	44.09	3461	2654	14	12.35	1037
Pakistan	1977	0.2	0.18	14	2125	0	0	0
Brazil	1214	7	6.17	484	1171	4	3.53	297
Turkey	440	23	20.28	1592	380	31	27.34	2297

* Income and Price Support Programs only, credit and other assistance not included.
** Preliminary
Note: Average exchange rates of One US $=Pak Rs 78.5 for 2008-09 and Rs 84 for 2009-10.
Source: International Cotton Advisory Committee (ICAC), Washington DC, USA.

89. During 2008-09 the highest subsidy on cotton production to farmers was provided by the USA at US $ 44.09 (Pak Rs 3461) per 40 kgs. In 2009-10, the highest subsidy is provided by Turkey at US $ 27.34 (Pak Rs 2297) per 40 kgs followed by USA and China at Rs 1037 and Rs 963 per 40 kgs. The subsidy provided during 2009-10 to cotton growers in Brazil is calculated at Pak Rs 297 per 40 kgs, while, no subsidy is granted to Pakistani and Indian cotton growers.

90. During 2009-10, Turkey provided about 2 per cent more than cost of production to the cotton sector in the shape of direct assistance. In USA, the amount of subsidy was 42.3 per cent of the cost of production of seed cotton during 2009-10 while for China, it is calculated at 42.5 per cent.

20. ACKNOWLEDGEMENTS

91. The assistance and cooperation of the following staff members is appreciated in preparation of the Report on Cotton Policy Analysis for 2011-12 crop:

	Officers	
1.	Mr. Abdul Rauf Chaudhry **(Coordinator)**	Chief
2.	Mr. Sohail Muhammad Khan	Deputy Chief
3.	Mr. Sherzada Khan **(Deputy Coordinator)**	Deputy Chief
4.	Mr. Muhammad Ikram	Deputy Chief
5.	Mr. Sardar Ali Khan	Deputy Chief
6.	Mr. Abdul Karim	Assistant Chief
7.	Mr. Muhammad Ijaz Ahmed	Assistant Chief
8.	Mr. Muhammad Saleem Butt	Systems Analyst
9.	Mr. Hussain Ali Turi	Assistant Chief
10.	Mr. Muhammad Amin	Assistant Chief
11.	Mr. Muhammad Azim Hakro	Computer Programmer
12.	Syed Riaz Ali Shah	Assistant Chief
	Staff	
13.	Mr. Hafeez Ahmed **(Composed the Report)**	Stenographer
14.	Mr. Muhammad Altaf	Stenographer
15.	Mr. Muhammad Naeem	DMO

Mussadaq Mohammad Khan
Chairman, API

ANNEX-I

PROVINCE-WISE AREA (HECTARES),PRODUCTION AND YIELD OF COTTON IN PAKISTAN : 2000-01 TO 2010-11

YEAR	PUNJAB	SINDH	KHYBER PAKHTUNKHWA	BALOCHISTAN	PAKISTAN
AREA	---------- 000 hectares ----------				
2000-01	2386.4	523.6	0.20	17.3	2927.5
2001-02	2526.4	547.4	1.60	40.4	3115.8
2002-03	2208.3	542.6	1.90	40.8	2793.6
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
YIELD	---------- Kgs per hectare ----------				
2000-01	609	696	340	496	624
2001-02	542	759	436	502	579
2002-03	590	756	412	543	622
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
PRODUCTION	---------- 000 bales ----------				
2000-01	8540.0	2141.1	0.40	50.4	10731.9
2001-02	8046.0	2443.2	4.10	119.3	10612.6
2002-03	7664.0	2411.8	4.60	130.2	10210.6
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

Sources:
1- For 2000-01 to 2008-09 : Agricultural Statistics of Pakistan 2008-09,MINFA, Islamabad.
2- For 2009-10 and 2010-11: Final estimates provided by respective provincial Agricultural Departments.

ANNEX-II

PROVINCE-WISE AREA (HECTARES),PRODUCTION AND YIELD OF COTTON IN PAKISTAN : 2000-01 TO 2010-11

YEAR	PUNJAB	SINDH	KHYBER PUKH.	BALOCHISTAN	PAKISTAN
AREA	---------- 000 acres ----------				
2000-01	5897.0	1293.9	0.49	42.8	7234.1
2001-02	6243.0	1352.7	3.95	99.8	7699.5
2002-03	5456.9	1340.8	4.70	100.8	6903.3
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
YIELD	---------- Kgs per acre ----------				
2000-01	246.32	281.47	137.66	200.53	252 33
2001-02	219.21	307.22	176.38	203.26	234.44
2002-03	238.88	305.95	166.65	219.65	251.58
2003-04	222.11	274.98	172.08	172.34	231.36
2004-05	304.73	326.95	170.44	174.95	307.55
2005-06	291.33	286.09	170.44	177.91	288.79
2006-07	289.26	289.55	137.66	177.70	287.79
2007-08	257.24	287.41	172.08	177.27	262.66
2008-09	270.88	365.10	172.08	177.96	288.49
2009-10	241.67	463.15	137.66	177.86	286.21
2010-11	1500.1	3252.8	1063.1	925.2	6741.3
PRODUCTION	---------- 000 bales ----------				
2000-01	8540.0	2141.1	0.40	50.4	10731.9
2001-02	8046.0	2443.2	4.10	119.3	10612.6
2002-03	7664.0	2411.8	4.60	130.2	10210.6
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

Sources: 1- For 2000-01 to 2009-10 : Agricultural Statistics of Pakistan 2008-09,MINFA, Islamabad.
2- For 2010-11: Final estimates provided by respective Provincial Agriculture Departments.

ANNEX-III

Area: 000 ha

Production: 000 bales

Yield: Kgs/ha

DISTRICT- WISE AREA, YIELD AND PRODUCTION OF SEED COTTON: AVERAGE OF 2008-09 TO 2010-11

S.No	Province/ District/ Agency	Area	Production	Share in total production	Yield
	PUNJAB				
1	Bahawalpur	280.43	1088.70	9.02	660
2	R.Y.Khan	257.88	1057.11	8.76	697
3	Bahawalnagar	226.10	937.40	7.77	705
4	Vehari	206.47	834.12	6.91	687
5	Lodhran	203.03	723.71	6.00	606
6	Multan	170.60	664.45	5.51	662
7	Khanewal	184.97	664.07	5.50	610
8	Muzaffargarh	147.33	418.53	3.47	483
9	Rajanpur	104.66	407.39	3.38	662
10	D.G.Khan	86.83	308.32	2.56	604
11	Sahiwal	81.82	284.85	2.36	592
12	Pakpattan	47.88	185.47	1.54	659
13	Jhang	63.03	165.74	1.37	447
14	T.T.Singh	48.98	144.92	1.20	503
15	Faisalabad	47.53	143.69	1.19	514
16	Layyah	42.28	113.25	0.94	455
17	Okara	27.57	85.16	0.71	525
18	Mianwali	19.56	64.84	0.54	563
19	Bhakkar	14.64	38.41	0.32	446
20	Kasur	14.34	33.40	0.28	396
21	Sargodha	7.77	17.83	0.15	390
22	M.B.Din	2.19	2.89	0.02	224
23	Khushab	0.41	0.98	0.01	404
24	Jhelum	0.41	0.44	0.00	179
	Sub Total Punjab	**2286.70**	**8385.66**	**69.51**	**624**
	SINDH				
1	Sanghar	129.33	942.34	7.81	1239
2	Hyderabad	78.30	593.19	4.92	1288
3	Khairpur	72.48	408.94	3.39	959
4	Mirpurkhas	59.77	381.12	3.16	1084
5	Ghotki	67.19	371.00	3.08	939
6	Nawabshah	50.09	309.66	2.57	1051
7	N.Feroze	35.28	213.80	1.77	1030
8	Sukkur	28.27	157.09	1.30	945
9	Badin	17.36	149.65	1.24	1465
10	Dadu	7.95	38.61	0.32	826
11	Thatta	1.60	12.65	0.10	1340
12	Larkana	2.31	10.55	0.09	776
13	Tharparkar	0.93	5.62	0.05	1022
14	Karachi	0.12	0.56	0.00	802
15	Shikarpur	0.10	0.47	0.00	770
	Sub Total Sindh	**551.10**	**3595.26**	**29.80**	**1110**
	Sub Total of Khyber Pakhtunkhwa	**0.14**	**0.34**	**0.00**	**419**
	Sub Total of Balochistan	**33.63**	**82.93**	**0.69**	**419**
	Total of Pakistan	**2871.57**	**12064.20**	**100.00**	**715**

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

Sources:
1- MINFA, Islamabad
2- Respective provincial Agricultural Departments

ANNEX- IV

AVERAGE FARMERS' COST OF PRODUCTION ESTIMATES OF SEED COTTON IN THE PUNJAB: 2010-11 AND 2011-12 CROPS

S. No.	Operations / Inputs	Average No. of oprs/units/ acre	2010-11 crop		2011-12 crop		Change in 2011-12 over 2010-11
			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	1000.00	228.00	1100.00	250.80	22.80
	1.2 Rotavator	0.233	1200.00	279.60	1300.00	302.90	23.30
	1.3 Ploughing	3.200	400.00	1280.00	500.00	1600.00	320.00
	1.4 Planking	0.421	200.00	84.20	250.00	105.25	21.05
	1.5 Ploughing+planking	1.341	400.00	536.40	500.00	670.50	134.10
	1.6 Levelling (tractor hrs)	0.537	450.00	241.65	550.00	295.35	53.70
2	Seed and sowing operations:						
	2.1 Seed (kgs)	7.643	100.00	764.30	200.00	1528.60	764.30
	2.2 Sowing:						
	2.2.1 Ploughing+planking	0.394	400.00	157.60	500.00	197.00	39.40
	2.2.2 Ridging	0.228	400.00	91.20	500.00	114.00	22.80
	2.2.3 Drilling	0.772	400.00	308.80	500.00	386.00	77.20
	2.2.4 Manual labour for sowing, bund making and gap filling (m.days)	0.369	250.00	92.25	300.00	110.70	18.45
3	Irrigation: * (Nos)						
	3.1 Canal	2.156	-	85.00	-	85.00	0.00
	3.2 Private tubewell	1.706	600.00	1023.60	650.00	1108.90	85.30
	3.3 Mixed	2.739	455.00	1246.25	500.00	1369.50	123.26
	3.4 Labour for irrigation and water course cleaning (m.days)	3.462	250.00	865.50	300.00	1038.60	173.10
4	Interculture:						
	4.1 With tractor	2.640	400.00	1056.00	500.00	1320.00	264.00
	4.2 Manual weeding/thinning (m.days)	4.600	250.00	1150.00	300.00	1380.00	230.00
5	Plant Protection including application (weedicides + pesticides)	5.769	530.00	3057.57	550.00	3172.95	115.38
6	Farm Yard Manure including transport and application 50%	-	-	400.00	-	500.00	100.00
7	Fertilizers: (bags)						
	7.1 DAP	0.731	2575.00	1882.33	3170.00	2317.27	434.95
	7.2 SSP	0.071	710.00	50.41	870.00	61.77	11.36
	7.3 SOP	0.029	2630.00	76.27	2566.00	74.41	-1.86
	7.4 NPK	0.046	1980.00	91.08	2224.00	102.30	11.22
	7.5 Urea	2.297	800.00	1837.60	1053.00	2418.74	581.14
	7.6 CAN	0.224	685.00	153.44	853.00	191.07	37.63
	7.7 NP	0.069	1480.00	102.12	2047.00	141.24	39.12
	7.8 Fertilizer transport and application	3.467	30.00	104.01	35.00	121.35	17.34
8	Mark up on investment @ 12 % per annum for 8 months on items 1 to 7 minus 3(1)	-	-	1372.81	-	1670.34	297.52
9	Management charges for 8 months	-	-	650.00	-	1000.00	350.00
10	Land rent for 8 months	-	12000.00	8000.00	20000.00	13333.33	5333.33
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)	17.400	125.00	2175.00	200.00	3480.00	1305.00
14	Cutting of cotton sticks	-	-	460.00	-	550.00	90.00
15	Gross cost (item 1 to 14)	-	-	29995.98	-	41090.88	11094.90
16	Value of cotton sticks	-	-	575.00	-	700.00	125.00
17	Net cultivation cost (item 15-16)	-	-	29420.98	-	40390.88	10969.90
18	Yield per acre (kgs)	-	-	696.00	-	748.00	
19	Cost of production at farm level: (Rs/40 kgs)						
	19.1 Including land rent	-	-	1690.86	-	2159.94	469.08
	19.2 Excluding land rent	-	-	1231.09	-	1446.93	215.84
20	Marketing expenses (Rs/40 kgs)	-	-	30.00	-	35.00	5.00
21	Cost of production at market/ginnery: (Rs/40 kgs)						
	21.1 Including land rent	-	-	1720.86	-	2194.94	474.08
	21.2 Excluding land rent	-	-	1261.09	-	1481.93	220.84

Note:

The yield estimates have been adjusted in view of recent improvements.

ANNEX- V

AVERAGE FARMERS' COST OF PRODUCTION ESTIMATES OF SEED COTTON IN SINDH: 2010-11 AND 2011-12 CROPS

S. No.	Operations / Inputs	Average No. of oprs/units/ acre	2010-11 crop		2011-12 crop		Change in 2011-12 over 2010-11
			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	1200.00	663.60	1300.00	718.90	55.30
	1.2 Ploughing	2.071	600.00	1242.60	750.00	1553.25	310.65
	1.3 Planking	0.030	300.00	9.00	375.00	11.25	2.25
	1.4 Ploughing+planking	1.333	600.00	799.80	750.00	999.75	199.95
	1.5 Levelling (tractor hrs)	0.859	600.00	515.40	750.00	644.25	128.85
2	Seed and sowing operations:						
	2.1 Seed (kgs)	10.279	105.00	1079.30	200.00	2055.80	976.51
	2.2 Sowing:						
	2.2.1 Ploughing + planking	0.160	600.00	96.00	750.00	120.00	24.00
	2.2.2 Ridging	0.236	600.00	141.60	750.00	177.00	35.40
	2.2.3 Drilling	0.763	600.00	457.80	750.00	572.25	114.45
	2.2.4 Manual labour for sowing, bund making and gap filling (m. days)	0.988	250.00	247.00	300.00	296.40	49.40
3	Irrigation: * (Nos)						
	3.1 Canal	3.148	-	93.09	-	93.09	0.00
	3.2 Private tubewell	2.454	445.00	1092.03	485.00	1190.19	98.16
	3.3 Mixed	0.413	375.00	154.88	410.00	169.33	14.46
	3.4 Lift irrigation	0.251	105.00	26.36	115.00	28.87	2.51
	3.5 Labour for irrigation and water course cleaning (m.days)	3.732	250.00	933.00	300.00	1119.60	186.60
4	Interculture:						
	4.1 With tractor	0.524	600.00	314.40	750.00	393.00	78.60
	4.2 With bullocks	1.259	600.00	755.40	750.00	944.25	188.85
	4.3 Manual weeding/thinning (m.days)	4.700	250.00	1175.00	300.00	1410.00	235.00
5	Plant Protection including application (weedicides + pesticides)	4.200	500.00	2100.00	525.00	2205.00	105.00
6	Farm Yard Manure including transport and application 50 %	-	-	310.00	-	400.00	90.00
7	Fertilizers: (bags)						
	7.1 DAP	0.893	2575.00	2299.48	3117.00	2783.48	484.01
	7.2 TSP	0.009	1540.00	13.86	2400.00	21.60	7.74
	7.3 Urea	1.834	810.00	1485.54	1057.00	1938.54	453.00
	7.4 CAN	0.016	700.00	11.20	850.00	13.60	2.40
	7.5 AS	0.010	1150.00	11.50	1150.00	11.50	0.00
	7.6 NPK	0.042	1980.00	83.16	2209.00	92.78	9.62
	7.7 NP	0.076	1450.00	110.20	2075.00	157.70	47.50
	7.8 Fertilizer transport and application	2.880	30.00	86.40	35.00	100.80	14.40
8	Mark up on investment @ 12% per annum for 8 months on items 1 to 7 minus 3(1)	-	-	1297.16	-	1610.33	313.17
9	Management charges for 8 months	-	-	650.00	-	1000.00	350.00
10	Land rent for 8 months	-	10000.00	6666.67	15000.00	10000.00	3333.33
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)	15.190	135.00	2050.65	200.00	3038.00	987.35
15	Cutting of cotton sticks	-	-	770.00	-	925.00	155.00
16	Gross cost (item 1 to 15)	-	-	27896.39	-	36949.83	9053.44
17	Value of cotton sticks	-	-	770.00	-	925.00	155.00
18	Net cultivation cost/farm (16-17)	-	-	27126.39	-	36024.83	8898.44
19	Yield per acre (Kgs)	-	-	500.00	-	763.00	263.00
20	Cost of production at farm level: (Rs/40 kgs)						
	20.1 Including land rent	-	-	1550.08	-	1888.59	338.51
	20.2 Excluding land rent	-	-	1169.13	-	1364.34	195.22
21	Marketing expenses (Rs/40 kgs)	-	-	32.00	-	35.00	3.00
22	Cost of production at market/ginnery: (Rs/40 kgs)						
	22.1 Including land rent	-	-	1682.08	-	1923.59	341.51
	22.2 Excluding land rent	-	-	1201.13	-	1399.34	198.22

Note:

The yield estimates have been adjusted in view of recent improvements.

Notes for Annex-IV and V

1 The input-output parameters for estimating cost of production of Seed Cotton, 2011-12 crop have been taken from the Report of Cotton Policy Analysis for 2010-11 crop, API's Series No 233.

2 The inputs prices, hiring rates of field operations, wage rate and picking charges have been modified in the light of data collected through mini field survey conducted by the API in the major cotton producing areas during December 2010 in the Punjab and Sindh, the discussion made and information provided by the Provincial Agriculture Departments and Farmers' Associations in the meeting of the Standing Committee on Seed Cotton, held on 17th January 2011 at Islamabad.

3 On account of Bt. varieties, the prices of seed as reported by the growers in the field survey and representatives of the cotton growers in the Standing Committee meeting vary widely. Hence, the prices of seed have been revised in light of escalation in the market prices of seed cotton over the last year.

4 The prices of chemical fertilizers have been revised in light of the fertilizers prices published by the Federal Bureau of Statistics, Islamabad for the week ending 13th January 2011. As the market price of NPK fertilizer is not available, therefore, its average price is worked out on the basis of increase in prices of Urea, DAP and SOP fertilizers.

5 The material cost (90 per cent) of the plant protection has not been revised on account of reporting from various quarters that the rising trend in the prices of insecticides and pesticides has been arrested owing to new generic and low cost brands. However, the cost of labour component (10 per cent of the total cost) has been modified in light of new wage rate.

6 The cost of supplementary irrigation has been revised in view of the rises @ 8.02 per cent in the prices of diesel and 11.79 per cent in the power tariff during February 2010 to January 2011. Based on the ratios of electric and diesel tube-wells of 10: 90 in the Punjab and 23:77 in Sindh as reported in the Agriculture Statistics of Pakistan, 2008-09, the average increases worked out to 8.33 per cent in the Punjab and 8.99 per cent in Sindh.

7 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 at Rs. 12452 per month for a Field Assistant at the 15th stage in BPS-6 as per revised scale of July 2010.

8 Land rent is influenced by several parameters and extensively varies from place to place. However, land rent is the imperative constituent of the cost of production in both the provinces. For updating the land rentals, there is no precise measure available at hand. Keeping in view the observations obtained during the annual API's field survey during December 2010 and discussion made in the meeting of the API's Standing Committee on Cotton, the land rentals have been adjusted.

Annex-VI

ECONOMICS OF SEED COTTON AND COMPETING CROPS AT PRICES REALIZED BY THE GROWERS: 2010-11 CROPS

S #	Province/crops/crop combination	Crop duration	Water used	Gross cost	Cost of purchased inputs	Gross revenue	Gross margin	Net income	Output input ratio	Revenue per Rupee of purchased inputs	Revenue per Crop day	Revenue per Acre inch of water used
		Days	Acre inches	.....Rupees per acre.....					Ratio	.....Rupees.....		
	1	2	3	4	5	6	7-6-5	8-6-4	9-6/4	10-6/5	11-6/2	12-6/3
	Punjab											
1	Seed cotton	240	22	29996	11339	61858	50518	31862	2.1	5.5	258	2812
2	Basmati paddy	180	58	26652	13838	31983	18146	5332	1.2	2.3	178	551
3	IRRI paddy	180	62	24029	11918	32646	20729	8618	1.4	2.7	181	527
4	Wheat	180	12	24953	9746	28206	18460	3252	1.1	2.9	157	2350
5	Sunflower (spring)	180	22	21935	6281	29670	23389	7735	1.4	4.7	165	1349
6	Seed cotton + wheat	420	34	54949	21085	90063	68978	35114	1.6	4.3	214	2649
7	Seed cotton + sunflower	420	44	51931	17620	91528	73907	39597	1.8	5.2	218	2080
8	Basmati paddy+wheat	360	70	51605	23583	60189	36606	8584	1.2	2.6	167	860
9	Basmati paddy+sunflower	360	80	48587	20119	61653	41535	13067	1.3	3.1	171	771
10	IRRI paddy + wheat	360	74	48982	21663	60852	39189	11870	1.2	2.8	169	822
11	IRRI paddy+sunflower	360	84	45964	18199	62316	44118	16353	1.4	3.4	173	742
12	Sugarcane	394	48	51728	17450	93108	75658	41380	1.8	5.3	236	1940
	Sindh											
1	Seed cotton	240	18	27896	9580	63315	53735	35419	2.3	6.6	264	3518
2	IRRI paddy	180	56	22282	8842	34916	26074	12633	1.6	3.9	194	623
3	Wheat	180	12	22287	8563	24703	16140	2416	1.1	2.9	137	2059
4	Sunflower (spring)	180	22	21664	6269	29670	23401	8006	1.4	4.7	165	1349
5	Seed cotton + wheat	420	30	50184	18143	88018	69875	37835	1.8	4.9	210	2934
6	Seed cotton + sunflower	420	40	49561	18143	92985	74842	43424	1.9	5.1	221	2325
7	IRRI paddy+ wheat	360	68	44569	17405	59619	42214	15049	1.3	3.4	166	877
8	IRRI paddy+sunflower	360	78	43946	15111	64586	49475	20639	1.5	4.3	179	828
9	Sugarcane	488	71	62328	20704	118087	97383	55759	1.9	5.7	242	1663

Notes for Annex - VI

1. The economic analysis presented in the above exercise is based on the input-output prices applicable for 2010-11 crops.

2. The data regarding input-output parameters have been adopted from the API's Crop Policy Analysis Reports for sugarcane, seed cotton, rice paddy and wheat, 2010-11 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 2010-11 crops. To incorporate the escalations in input prices, which occurred during the growing period of 2010-11 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; @ 22 % for sugarcane, seed cotton, & rice paddy and 8.23% for wheat. Similarly, diesel rates have also been adjusted @ 34% for sugarcane, 7% for seed cotton, 17.85 % for rice paddy and 11 % 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 2010-11 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. 950 per 40 kgs as announced by the Government for 2010-11 wheat crop has been used for 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 1377 and Rs 963 per 40 kgs for Punjab. The market prices of IRRI paddy are averaged at Rs. 935 per 40 kgs for Sindh..

   4.3 The wholesale market prices of seed cotton during the post-harvest period of 2010-11 in the main producer area markets of Punjab have averaged at Rs 3552 per 40 kgs. In Sindh, the corresponding prices are averaged at Rs 3606 per 40 kgs.

   4.4 The support price of Rs. 2000 per 40 kgs for sunflower 2010-11 crop as reported by PODB is used for current analysis.

4.5 The market prices of sugarcane at mill-gate for 2010 - 11 crop in the major cane producing areas are reported to hover around Rs 175 per 40 kgs in the Punjab and Rs 185 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 10.25 per 40 kgs in Punjab and Rs 10.32 in Sindh for sugarcane, Rs 30 for seed cotton in Punjab and Rs 32 in Sindh, Rs 25 for rice paddy, and Rs 22 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: 2010-11

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 68.4 per nutrient kg (i.e. Rs 35.0, 98.3 and Rs.105.2 per nutrient kg of N,P and K at the recommended NPK ratio of 2:1:1(a)		684.0	684.0	684.0	684.0
3	Indirect cost due to the application of additional fertilizer as detailed below(b)		188.5	218.7	248.8	279.0
	3.1	Transportation and application charges of 20 kgs of fertilizer @ Rs 30.0 per bag of fertilizer	12.0	12.0	12.0	12.0
	3.2	Picking charges for additional produce @ Rs 130.0 per 40 kgs	97.5	121.9	146.2	170.6
	3.3	Marketing charges for additional produce @ Rs 31.0 per 40 kgs	23.3	29.1	34.9	40.7
	3.4	Mark up on direct cost of fertilizer (item2+3.1) for 8 months @ 12 % per annum	55.7	55.7	55.7	55.7
4	Total additional cost (item 2+3)		872.5	902.7	932.8	963.0
5	Value of additional produce @ Rs 3579 per 40 kgs(c)		2684.2	3355.3	4026.4	4697.4
6	Benefit cost ratio (item 5 divided by item 4)		3.08	3.72	4.32	4.88

Notes:

a) The prices of N,P and K have been worked out from average prices of Urea, DAP and SOP used in COP estimates of the Punjab and Sindh for 2010-11 crop taken respectively as 805, 2575 and 2630 per bag of 50 kgs.

b) The rates of indirect cost items are the average of the rates used in the COP estimates of the Punjab and Sindh for 2010-11 crop.

c) Average market prices of seed cotton for 2010-11 crop in the Punjab and Sindh during September to December 2010 has been used.

ANNEX- VIII

INTERNATIONAL PRICES OF COTTON: 2002-03 to 2010-11

Years Aug-Jul	Sindh/ Punjab Afzal 1-1/16"	Index- A Cottons	Orleans/ Texas SLM 1-1/32"
	---------- US Cents per pound----------		
2002-03	51.36	55.4	51.16
2003-04	63.10	68.3	65.85
2004-05	46.10	52.2	51.19
2005-06	54.59	56.15	54.39
2006-07	58.63	59.15	56.13
2007-08	69.21	72.90	69.83
2008-09 *	-	61.14	56.05
2009-10	-	70.80	77.58
2010-11	-	158.39	-
August	-	90.35	-
September	-	104.73	-
October	-	126.55	-
November	-	155.47	-
December	-	168.22	-
January	-	178.93	-
February	-	213.18	-
March	-	229.67	-

Note:

* From 2008-09, the prices of Orleans/ Texas 1-1/32" are for CFR Eastren Quotations, Index A while Sindh/ Punjab Afzal 1-1/16" are not quoted during the year 2008-09 to 2010-11 and Orleans/Texas during 2010-11.

Source: Cotton outlook (various issues).

ANNEX-IX

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

S.No	Item	2010-11 (Aug-Mar)	2007-08 to 2009-10
		US Cents per pound	
1.	Actual average export price	102.51	58.10
		OR Rupees (a)	
	Actual average export price per 40 Kgs	7641	4331
2.	Marketing expenses (export & purchase incidentals, insurance & financial expenses) per 40 Kgs	700	700
3.	Ex- gin price of lint per 40 Kgs (item 1- item 2)	6941	3631
4.	Value of 80 kgs of cotton seed (b)	6482	6482
5.	Ginning charges for 120 kgs of seed cotton	500	500
6.	Value of 120 kgs of seed cotton (c) (items 3 +4 - item 5)	12923	9613
7.	Seed cotton price per 40 kgs (item 6 / 3)	4308	3204

Notes:

a) One US $ = 84.53 Pak rupees.

b) Average price of cotton seed for August 2010 to March, 2011 in main producing area markets of Punjab and Sindh was Rs 3241 per 40 kgs.

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

Sources:

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

ANNEX- X

EXPORT PARITY PRICE OF SEED COTTON ON THE BASIS OF FUTURE'S CONTRACT PRICE OF NEW YORK NO. 2 COTTON (AVERAGE OF OCTOBER, DECEMBER, 2011 AND MARCH, 2012)

S.No	Item	Price calculations
		US Cents per pound
1.	Future's contract price as on March 30, 2011	131.16
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	121.16
		OR Rupees (a)
	Parity prices per 40 kgs	9032
5.	Marketing expenses (export & purchase incidentials, insurance & financial expenses per 40 kgs	700
6.	Ex- gin price of lint per 40 kgs (item 4 - item 5)	8332
7.	Value of 80 kgs of cotton seed (b)	6482
8.	Ginning charges for 120 kgs of seed cotton	500
9.	Value of 120 kgs of seed cotton (c) (items 6 + 7 - item 8)	14314
10.	Seed cotton price per 40 kgs (item 9 / 3)	4771

Notes:

a) One US $ = 84.53 Pak rupees.

b) Average price of cotton seed for August 2010 to March, 2011 in main producing area markets of Punjab and Sindh was Rs 3241 per 40 kgs.

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

Sources:

1. Cotton Outlook of Apri 01, 2011 for future contract price.
2. KCA, Karachi for marketing expenses.
3. Pakistan Cotton Ginners Association, Karachi for ginning charges.
4. Directorate of Agriculture (E&M), Punjab, Lahore.

ANNEX - XI

EXPORT PARITY PRICE OF SEED COTTON ON THE BASIS OF AVERAGE FOB PRICE OF PAKISTANI COTTON YARN (20'S)

S.No	Item	2010-11 (Aug-Mar)	2007-08 to 2009-10
		US Cents per kg	
1.	Average fob price	377.00	224.00
		OR Rupees (a)	
		318.68	189.35
2.	Fob expenses per kg (transport cost, wharfage, port handling & forwarding, adhesive & EDS)	2.69	2.69
3.	Export packing cost per kg	3.88	3.88
4.	Sales tax @ 15% of item-5	15.00	15.00
5.	Value of 1 kg yarn (item 1 - (items 2+3+4)	297.11	167.78
6.	Recovery from 0.16 kgs cotton waste	5.62	5.62
7.	Conversion charges of lint into yarn per kg	36.58	36.58
8.	Value of 1.16 kgs cotton lint (b) (items 5 +6 -item 7)	266.15	136.82
9.	Price of one kg cotton lint (item7/1.16)	229.44	117.95
	Price of 40 kgs cotton lint	9177.52	4717.83
10.	Transport cost from ginnery to mill, local tax(per 40kgs)	32.00	32.00
11.	Ex-gin price of 40 kgs lint (item 9 - item 10)	9145.52	4685.83
12.	Value of 80 kgs cotton seed (c)	6482.00	6482.00
13.	Ginning charges for 120 kgs of seed cotton	500.00	500.00
14.	Seed cotton price of 120 kgs (item11+12- item13) (d)	15127.52	10667.83
15.	Seed cotton price per 40 kgs (item 14/3)	5042.51	3555.94

Notes:

a) One US $ = 84.53 Pak rupees.

b) Average price of cotton seed for August 2010 to March, 2011 in main producing area

c) area markets of Punjab and Sindh was Rs 3241 per 40 kgs.

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

Sources:

1. Cotton Outlook varuios issues for fob price.
2. APTMA, Karachi for items, 2, 3 and 9.
3. Annex X for items 5 and 6.
4. Pakistan Cotton Ginners Association, Karachi for ginning charges.
5. Directorate of Agriculture (E&M), Punjab, Lahore.

ANNEX- XII

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

S. No	Item	2010-11 (Aug-Mar)	2007-08 to 2009-10
		Rupees per 40 kgs	
1.	Actual average cif (Karachi) price	9599	5043
2.	Handling charges at port and transport cost from port to textile mill at Karachi @ 2.5 % of cif price	240	126
3.	Ex- gin price of lint (Item 1+ item 2)	9839	5169
4.	Value of 80 kgs of cotton seed (a)	6482	6482
5.	Ginning charges for 120 kgs of seed cotton including ginning losses	500	500
6.	Value of 120 kgs of seed cotton (item 3 +item 4 - item 5)	15821	11151
7.	Seed cotton price (item 6/ 3)	5274	3717

Note:

a) Average price of cotton seed for August 2010 to March, 2011 in main producing area area markets of Punjab and Sindh was Rs 3241 per 40 kgs.

Sources:

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

ANNEX- XIII

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

S. No	Item	2009-10 (Aug-Mar)	2007-08 to 2009-10
		US cent per pound	
1.	Index-A cottons assumed as cif (Karachi) price (Karachi) price	158.39	68.28
2.	Insurance, agents commission, and port handling charges @ 5% cif (Karachi)Price	7.92	3.41
3.	Landed cost at Karachi	166.31	71.69
		OR Rupees (a)	
	Landed cost at Karachi per 40 kgs	12397	5344
4.	Handling charges at port and transport cost from port to textile mills at Karachi @ 2.5 % of cif price	310	134
5.	Ex- gin price of lint (item 3 + item 4)	12707	5478
6.	Value of 80 kgs of cotton seeds (b)	6482	6482
7.	Ginning charges for 120 kgs of seed cotton including ginning losses	500	500
8.	Value of 120 kgs of seed cotton (item 5 +item 6 - item 7)	18689	11460
9.	Seed cotton price per 40 kgs (item 8/ 3)	6230	3820

Notes:

a) One US $ = 84.53 Pak rupees.
b) Average price of cotton seed for August 2010 to March, 2011 in main producing area area markets of Punjab and Sindh was Rs 3241 per 40 kgs.

Sources:

1. CFR(Far Eastren Quoted) price Annex-VIII.
2. KCA, for incidentals charges.
3. Pakistan Cotton Ginners Association, Karachi for ginning charges.
4. Directorate of Agriculture (E&M), Punjab, Lahore.

Annex-XIV

Economic Efficiency of Resource Use in Seed Cotton Production Based on Export Parity Prices (Policy Analysis Matrix)

Province/ Year	Gross Revenue	Traded cost	Domestic Factors Cost	Profits
	----------Rupees per acre----------			
PUNJAB				
2008-09				
Private Prices	27437	11328	12983	3126
Social Prices	24496	11065	13398	33
Transfers	2941	263	-415	3093
2009-10				
Private Prices	34948	11110	13961	9877
Social Prices	30862	10612	14359	5890
Transfers	4086	498	-398	3987
2010-11				
Private Prices	64511	13163	15304	36044
Social Prices	56375	12739	15747	27889
Transfers	8136	424	-443	8155
SIND				
2008-09				
Private Prices	27148	9853	13283	4011
Social Prices	24715	9993	13745	978
Transfers	2433	-139	-462	3034
2009-10				
Private Prices	33918	9604	14328	9986
Social Prices	30981	9693	14790	6498
Transfers	2937	-88	-462	3487
2010-11				
Private Prices	65678	11719	15945	38014
Social Prices	56534	11789	16446	28300
Transfers	9144	-70	-501	9715

Annex-XV

Economic Efficiency of Resource Use in Seed Cotton Production

Ba[illegible]t Parity Prices Basis

Province/ Year	Gross Revenue	Traded cost	Domestic Factors Cost	Profits
	----------Rupees per acre----------			
PUNJAB				
2008-09				
Private Prices	27437	11328	12983	3126
Social Prices	37045	11065	13398	12582
Transfers	-9608	263	-415	-9456
2009-10				
Private Prices	34948	11110	13961	9877
Social Prices	40680	10612	14359	15708
Transfers	-5732	498	-398	-5831
2010-11				
Private Prices	64511	13163	15304	36044
Social Prices	79433	12739	15747	50947
Transfers	-14922	424	-443	-14903
SIND				
2008-09				
Private Prices	27148	9853	13283	4011
Social Prices	37683	9993	13745	13945
Transfers	-10535	-139	-462	-9934
2009-10				
Private Prices	33918	9604	14328	9986
Social Prices	41259	9693	14790	16776
Transfers	-7342	-88	-462	-6791
2010-11				
Private Prices	65678	11719	15945	38014
Social Prices	79592	11789	16446	51358
Transfers	-13914	-70	-501	-13343

Annex-XVI

Area, Yield and Production of Seed Cotton Among Competing Countries: 2009

S.No	Country	Area (million hect.)	Yield (tonnes/hect.)	Production (million tonnes)	S.No	Country	Area (million hect.)	Yield (tonnes/hect.)	Production (million tonnes)
1	Israel	0.006	4.433	0.027	25	Tunisia	0.002	1.500	0.003
2	Australia	0.182	4.405	0.802	26	Argentina	0.290	1.341	0.389
3	China	5.590	4.114	23.000	27	Viet Nam	0.005	1.327	0.007
4	Turkey	0.420	4.108	1.725	28	Sudan	0.129	1.308	0.169
5	Syrian Arab Republic	0.165	3.952	0.652	29	Burkina Faso	0.420	1.286	0.540
6	Mexico	0.072	3.819	0.275	30	Yemen	0.020	1.266	0.025
7	Greece	0.190	3.763	0.715	31	Cameroon	0.147	1.156	0.170
8	Brazil	0.808	3.625	2.928	32	Nigeria	0.427	1.152	0.492
9	Kyrgyzstan	0.017	2.911	0.049	33	**India**	10.100	1.127	**11.382**
10	Spain	0.059	2.504	0.147	34	Afghanistan	0.050	1.110	0.056
11	Iran (Islamic Republic of)	0.108	2.454	0.265	35	Zambia	0.127	1.102	0.140
12	Peru	0.042	2.312	0.096	36	Bolivia (Plurinational State of)	0.080	1.000	0.080
13	Egypt	0.240	2.292	0.550	37	Senegal	0.023	0.971	0.022
14	Uzbekistan	1.317	2.232	2.940	38	Uganda	0.070	0.943	0.066
15	United States of America	3.112	2.034	6.330	39	Albania	0.001	0.900	0.001
16	South Africa	0.012	2.000	0.023	40	Côte d'Ivoire	0.141	0.887	0.125
17	Niger	0.005	2.000	0.010	41	Mali	0.288	0.819	0.236
18	**Pakistan**	**3.106**	**1.987**	**6.171**	42	Madagascar	0.021	0.810	0.017
19	Kazakhstan	0.139	1.942	0.270	43	Ethiopia	0.085	0.765	0.065
20	Iraq	0.013	1.795	0.024	44	Myanmar	0.300	0.660	0.198
21	Colombia	0.040	1.772	0.071	45	Paraguay	0.030	0.600	0.018
22	Tajikistan	0.170	1.741	0.296	46	Central African Republic	0.014	0.532	0.007
23	Azerbaijan	0.021	1.545	0.032	47	Dtic Republic of the Congo	0.060	0.417	0.025
24	Benin	0.150	1.527	0.229	48	Utd Republic of Tanzania	0.350	0.000	0.000
						World Avg. Yield		**2.121**	

Source:- FAO

ANNEX-XVII

COTTON VARIETIES AND YIELD POTENTIAL IN PAKISTAN

S.No.	Name of variety	Yield (Kgs/hect.)	S.No.	Name of variety	Yield (Kgs/hect.)
	Upland				
1	S 12, CRS, Multan	3900	49	BH 160 CRS, Bahawalpur	2500
2	SLS 1, CRS, Sahiwal	3500	50	Marvi, CRI, Sakrand	2500
3	NIAB 78, NIAB, Faisalabad	3500	51	Shahbaz 95 ARI, Tandojam	2500
4	MNH 93, CRS, Multan	3500	52	B557, CRI, Faisalabad	2500
5	MNH 147, CRS, Multan	3300	53	Shaheen, CRS, Ghotki	2200
6	FH 682, CRI Faisalabad	3200	54	SLH 41, CRS, Sahiwal	2200
7	CRIS 9, CRI, Sakrand	3100	55	MS 84, CRS, Multan	2100
8	BH36, CRS, Bahawalpur	3100	56	K 68/9, CRS, Ghotki	2000
9	CIM 70, CCRI, Multan	3100	57	Qalandari, CRS, Tandojam	2000
10	CIM 496, CCRI, Multan	3000	58	149 F, CRS, Multan	2000
11	CRIS 467 CRI Sakrand	3000	59	Sar,ast. CRS. Tandojam	1800
12	CIM 707 CCRI, Multan	3000	60	MS 40, CRS, Multan	1700
13	CIM 506 CCRI, Multan	3000	61	MS 39, CRS, Multan	1650
14	CIM 499 CCRI, Multan	3000	62	AC 134, CRI, Faisalabad	1600
15	FH 1000, Faisalabad	3000	63	Lasani 11, CRI, Faisalabad	1600
16	NIAB 78, NIAB, Faisalabad	3000	64	M 100, CRS, Tandojam	1500
17	CIM 473, CCRI, Multan	3000	65	362 F, CRI, Faisalabad	1500
18	FH 118, CRS, Bahawalpur	3000	66	BS1 CRSS, Khanpur	1200
19	CIM 482, CCRI, Multan	3000	67	238F, CRI, Faisalabad	1000
20	FH 900, CRI, Faisalabad	3000	68	268F, CRI, Faisalabad	1000
21	FH 901, CRI, Faisalabad	3000	69	216F, CRI, Faisalabad	1000
22	CIM 443 CCRI, Multan	3000	70	LSS, CRI, Faisalabad	1000
23	CIM 446 CCRI, Multan	3000	71	289F/K25, BCGA, Khanewal	1000
24	FVH 53, CRS, Vehai	3000	72	289F, CRI, Faisalabad	950
25	Chandi 95, NIA Tandojam	3000	73	199F, CRS, Multan	900
26	CIM 448, CCRI, Multan	3000	74	124 F, CRI, Faisalabad	900
27	CIM 1100, CCRI, Multan	3000	75	M 4, CRS, Tandojam	900
28	Krishma, NIAB, Faisalabad	3000	76	289 F/43, CRI, Faisalabad	900
29	MNH 329, RS, Multan	3000	77	4F, CRI, Faisalabad	800
30	RH 112, CRS, R.Y. Khan	3000	78	3F, CRI, Faisalabad	600
31	S 14, CRS, Multan	3000		**Hybrid**	
32	CIM 240, CCRI, Multan	3000	1	H151, Alseemi, Multan	3500
33	NIAB 26N, NIAB, Faisalabad	3000	2	H115, Alseemi, Multan	3500
34	Rehmani 90, CRO, Tandojam	3000	3	H160, Alseemi, Multan	3500
35	CIM 109, CCRI, Multan	3000		**Desi**	
36	Gohar 87, CRS, Bahawalpur	3000	1	FDH 170, CRI, Faisalabad	2500
37	RH1, CRS, R.Y.Khan	3000	2	FDH 228, CRI, Faisalabad	2000
38	FH 87, CRI, Faisalabad	3000	3	Rohi, CRI, Bahawalpur	2000
39	MNH 129, CRS, Multan	3000	4	Ravi, CRI, Faisalabad	1900
40	Rehmani, CRS, Tandojam	3000	5	SKD 10/19, CRI Sakrand	1700
41	MNH 552, CRS, Multan	2900	6	D9, CRI, Faisalabad	1400
42	MNH 554, CRS, Multan	2800	7	TD 1, CRS Tandljam	1000
43	FH 634, CRI, Faisalabad	2800	8	231 R, CRI, Multan	1000
44	Gomal 93, CRS, D.I.Khan	2800	9	119 S, CRI, Multan	800
45	NIAB 86, NIAB, Faisalabad	2800	10	SNR, CRS, Tandojam	800
46	CRIS 134, CRI, Sakrand	2700	11	39 M, CRI, Faisalabad	650
47	Niab 111 Nhiab, Faisalabad	2600	12	15 M, CRI, Faisalabad	600
48	Sohani NIA, Tandojam	2500	13	SNR, CRS, Tandojam	800

Source: A booklet titled as "Cotton Varieties of Pakistan", FSC & RD, Islamabad.