



**SUPPORT PRICE POLICY  
FOR  
SEED COTTON, 2002-03 CROP**

**AGRICULTURAL PRICES COMMISSION  
GOVERNMENT OF PAKISTAN  
ISLAMABAD**

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## ABBREVIATIONS

AARI	:	Ayub Agricultural Research Institute
ALMA	:	Agricultural and Livestock Marketing Adviser
APCOM	:	Agricultural Prices Commission
APTMA	:	All Pakistan Textile Mills Association
BCR	:	Benefit Cost Ratio
BPS	:	Basic Pay Scale
CCAC	:	Cotton Crop Assessment Committee
CABI	:	Centre for Agriculture and Bio-Science International
CEC	:	Cotton Export Corporation
CIF	:	Cost, Insurance and Freight
CLCV	:	Cotton Leaf Curl Virus
COP	:	Cost of Production
CPI	:	Consumer price Index
CRIM	:	Cotton Research Institute, Multan
CRIS	:	Cotton Research Institute, Sakrand
ECC	:	Economic Coordination Committee
E&M	:	Economic & Marketing
FAQ	:	Fair Average Quality
FBS	:	Federal Bureau of Statistics
FCA	:	Federal Committee on Agriculture
FOB	:	Free on Board
FSCD	:	Federal Seed Certification Department
FYM	:	Farm Yard Manure
GCP	:	Ghee Corporation of Pakistan
GDP	:	Gross Domestic Product
GOT	:	Ginning Out-Turn
ICAC	:	International Cotton Advisory Committee
ICPM	:	Integrated Crop Production Management
IPM	:	Integrated Pest Management
IPNS	:	Integrated Plant Nutrition System
IRRI	:	International Rice Research Institute (group of rice varieties grown in Pakistan which were developed at this institute)
KCA	:	Karachi Cotton Association
MINFAL	:	Ministry of Food, Agriculture and Livestock
MOC	:	Ministry of Commerce
NCL	:	No Control Limit
NIAB	:	Nuclear Institute of Agriculture and Biology
NWFP	:	North West Frontier Province
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
RBC	:	Regional Biological Centre
SSC	:	Sindh Seed Corporation
TCP	:	Trading Corporation of Pakistan

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## SUPPORT PRICE POLICY FOR SEED COTTON, 2002-03 CROP

### **Introduction**

Cotton is the most important cash crop in Pakistan. Annually cultivated on an area of about 3 million hectares, cotton accounts for 13 per cent of the total cropped area and 30 per cent of the value added by major crops. Cotton farming is the principal source of raw material for textile sector - the largest agro-based industry, which provides employment to about 40 per cent of the industrial labour. Exports of cotton and its made ups provide for over 60 per cent of the foreign exchange earned from merchandise exports. An important complementary product of cotton farming is its seed, a valuable source of edible oil and livestock feed.

2. The domestic consumption of cotton in the textile sector has increased from 7 million bales in 1991-92 to 10 million in 2000-01. The capacity of the sector in terms of spindles has increased from 6.1 to 8.6 million. The production of cotton yarn has expanded from 1,171 million kgs in 1991-92 to 1,712 million in 2000-01 and that of cotton cloth from 308 to 488 million square meters.

3. Cotton production during the last 10 years has experienced many ups and downs. Having peaked at 12.8 million bales in 1991-92, cotton production was less than 9 million bales in 1993-94, 1994-95 and 1998-99. However it has ranged between 10 - 11 million bales in the recent past. The incidence of risk in cotton farming in the wake of recurring water shortages, weather changes, pest flare up etc. is on the rise. The uncertainty about the size of the harvest continues to characterise the situation throughout the season with attendant problem of wide fluctuations in its prices. In view of the all round importance of cotton through its forward and backward linkages in the economy, there is an urgent need to stabilise its production at a level which not only caters for the domestic requirements but also allows for a continuous foothold in export markets. Demand for cotton products for exports is likely to expand in the wake of expected increase in the access to European and American markets. Assured prices of seed cotton to the growers along with the attention to the emerging technological problems can help in maintaining investment in cotton farming.

4. The cotton production and marketing have been the subject of many public policy interventions which in the wake of increasing liberalisation have declined. The government intervention in the cotton sector is now confined to the fixation of minimum support price (intervention price). In the presentation on the recommendations of the Support Price Committee by the Advisor to the Chief Executive on Food, Agriculture and Livestock, held on 7<sup>th</sup> May 2001, the Chief Executive, inter alia, decided that support price system will continue for cotton along with wheat, rice and sugarcane crops. The Economic Co-ordination Committee (ECC) of the Cabinet in its meeting held on 8-6-2001, inter alia, decided to fix the intervention price for seed cotton at Rs 780 per 40 kgs for base grade 3 with staple length 1-1/32" and micronaire range of 3.8 - 4-9 NCL of seed cotton for the 2001-02 crop.

5. In connection with formulating the proposals for the support price of seed cotton for the 2002-03 crop, the APCom:

- i) Conducted farm surveys and field visits in January 2002 in the cotton producing areas and updated the prices of inputs and rates of field operations for estimating the cost of production of cotton. The senior officers of APCom conducting these surveys also met with ginners, crop experts and others concerned with cotton, holding detailed discussions on the issues concerning various sub-sectors of cotton economy.
- ii) Organized the annual meeting of its Standing Committee on Cotton on February 18, 2002 at Islamabad. The meeting, attended by the representatives of the farmers and their organizations, trade and industry and experts discussed at length the issues impacting on cotton production and marketing and made a number of suggestions to improve the situation. The farmers attending the meeting expressed serious concern about rising input prices and incidence of insect pest attack, its impact on cost of production and the quality of the produce, and low producer prices.
- iii) Compiled data on various aspects of domestic and world cotton production, trade, prices, etc. from domestic and international organizations. These data were analysed to highlight the problems of the sector and the results are incorporated in the Report.

6. The essence of policy formulation is the reconciliation of conflicting interests and viewpoints and price policy for cotton is no exception to this. The Commission has endeavoured to have a long term perspective of the situation. The announcement of the minimum guaranteed price for seed cotton with back up facilities for its implementation, in case of need, is in the

interest of all the sub sectors of cotton. The minimum price is not meant to replace the market driven price in the normal circumstances but essential in years of good crop and situations of market failure to protect farmers' investment in cotton farming. Increasing cotton production will also help in reducing dependence on the imports of edible oils and thus contribute in saving foreign exchange through import substitution. With its forward and backward linkages in the economy and potential for enhancing employment and income in the urban as well as rural sectors cotton crop offers a good hope for raising the growth rate in the economy and reducing poverty in the country. A number of recommendations in the Report are made to increase the efficiency of cotton production and marketing system in the country.

(Dr. Abdul Salam)  
Member (Economics)/also  
looking after the work of  
Chairman, APCOM

March 9, 2002.

## 2. SUMMARY OF FINDINGS AND RECOMMENDATIONS

### 2.1 Findings

#### Provincial Shares in Area and Production

7. The Punjab and Sindh are the major cotton producing provinces. Punjab accounts for 79 per cent in area and 78 per cent in Production. The corresponding shares of Sindh are estimated at 20 and 22 per cent.

#### Important Cotton Producing Districts

8. Districts of Rahim Yar Khan, Bahawalpur, Vehari, Khanewal, Lodhran, Rajan Pur, Bahawalnagar, Muzaffargarh and Sanghar, each producing more than half a million bales per year, altogether account for 70 per cent of the cotton produced in the country.

#### Area, Yield and Production

##### - Long term changes: 1991-92 to 2001-02

9. During the period of 1991-92 to 2001-02, cotton production at country level has increased @ 0.5 per cent per year as area expanded @ 0.9 per cent and yield declined by 0.4 per cent per year.

10. In the Punjab, cotton production during the period under review has been declining @ 0.8 per cent per year. This has been entirely due to decline in yield i.e. 1.3 per cent per year as area expanded @ 0.5 per cent per year.

11. The cotton production in Sindh has experienced a growth of 7.6 per cent per year on account of 2.1 per cent expansion in area and 5.4 per cent improvement in yield during 1992-2002.

### **Short term changes**

12. On the basis of second estimates,\* cotton production from the 2001-02 crop is expected at 10.556 million bales, which is 1.6 per cent short of the production of 10.732 million from the 2000-01 crop. Decrease in production is entirely due to 7.8 per cent fall in yield. Production in the Punjab reported at 8.057 million bales is short by 0.4 per cent as compared to last year, all due to 7.2 per cent fall in yield as the area increased by 7.3 per cent. In Sindh production is down by 9.9 per cent due to 9.5 per cent fall in yield and 0.4 per cent decrease in area.

13. The Cotton Crop Assessment Committee (CCAC) has reported 2001-02 cotton output at 10.5 million bales.

### **Targets Vs Achievements, 2001-02 Crop**

14. According to the second estimates, cotton production from the 2001-02 crop reported at 10.556 million bales has exceeded the target of 8.66 million bales by 21.9 per cent. Excess achievement in production is entirely due to over achievement of 22 per cent in area. Cotton production in the Punjab and Sindh have surpassed their targets by 21.5 and 23.7 per cent, respectively.

### **Domestic Supply, Demand and Stocks**

15. The cotton year 2001-02 (September-August) started with opening stocks of 2.84 million bales. Import of 1.00 million bales have been reported upto January 2002. Adding production of 10.56 million bales, total supplies of cotton lint come to 14.40 million bales. Accounting for domestic consumption of about 10.50 million bales (mill and non mill sectors) and exports of 0.03 million bales so far, end year stocks may be around 3.87 million bales.

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\* Second estimates for Punjab, Sindh and Balochistan and final estimates for the NWFP.

## Price Situation

### - Seed cotton (phutti prices)

16. In the Punjab, the monthly average wholesale prices of seed cotton (phutti) during 2001-02 crop season ranged between Rs 669 (in Vehari in January 2002) and Rs 912 per 40 kgs (in R.Y.Khan in November 2001). In Sindh the prices ranged between Rs 688 (in Hyderabad in October) and Rs 850 (in Mirpurkhas in December 2001).

### - Cotton (lint) prices

17. Monthly average spot rates for "Base Grade" with staple length 1-1/32" and mike values ranging between 3.8 - 0 4.9 NCL as announced by KCA for Karachi market, ranged between Rs 2,000 and Rs 2,465 per 40 kgs during the 2001-02 cotton season.

## Cost of Production

### - Punjab

18. The farm level cost of production of seed cotton during 2002-03 crop year works out to Rs 757 per 40. Adding marketing cost @ Rs 14 per 40 kgs, the market/procurement centre level cost of the produce would be Rs 771 per 40 kgs, higher by Rs 23 (3 per cent) than the corresponding cost of Rs 748 in 2001-02.

### - Sindh

19. The farm gate cost of production of seed cotton in Sindh for the 2002-03 crop is expected at Rs 685 per 40 kgs. Accounting for marketing charges @ Rs 14 per 40 kgs, the cost of produce at market/procurement centre works out to Rs 699 per 40 kgs, reflecting an increase of Rs 19 (3 per cent) over corresponding cost of Rs 680 per 40 kgs of the previous crop year.

20. The above increases in the cost of production of seed cotton in the Punjab and Sindh are attributable to increases in the custom hire rates of tractors, rises in the wage rate and land rentals.

### **Comparative Economics of Seed Cotton and Competing Crops**

#### **- Punjab**

21. Cotton farming is a profitable enterprise. It has a definite edge over IRRI rice crops in terms of all the economic criteria, viz. output-input ratio and returns to purchased inputs, crop duration and irrigation water. Cotton also edges out basmati rice in respect of all economic indicators except returns to crop duration where the latter marginally performs better.

22. The cotton combination with sunflower outperforms sugarcane in respect of output-input ratio, revenue per day of crop duration and per unit of irrigation water. However, economic analysis of cotton + wheat combination vis-a-vis sugarcane does not provide a clear cut picture. The cotton combinations both with sunflower and wheat lag behind sugarcane if the revenue per rupee of purchased inputs cost is taken into account to assess their economic performance.

#### **- Sindh**

23. In Sindh, cotton farming performs better than rice cultivation in terms of various criteria except output-input ratio. Cotton out-competes IRRI paddy in terms of revenue per rupee of purchased inputs cost, per day of crop duration and irrigation while it falls behind rice in respect of output-input ratio.

24. In case of indirect competition, the cotton combinations with wheat or sunflower out-compete sugarcane in terms of revenue per unit of irrigation water but lag behind in respect of other criteria, viz. output-input ratio, and revenue per rupee of purchased inputs cost and per day of crop duration. Higher prices of sugarcane in the current season have greatly influenced the position in favour of sugarcane as cotton prices in the province have been generally depressed.

## **Economics of Fertilizer Use**

25. To study the economics of fertilizer use on seed cotton two commonly known indicators viz benefit cost ratio (BCR) and parity ratio between the prices of fertilizer and seed cotton have been estimated.

### **Benefit Cost Ratio (BCR)**

26. BCR at all response ratios experienced a wide range during the period 1991 to 2002. These ratios show that fertilizer use was most profitable during 1994-95 resulted from remunerative prices of seed cotton in the open market. Since then, due to opposite trend in input-output prices, BCRs started to decline and reached the lowest level during 1999-00 (1.66 to 2.51 at various response ratios). During 2000-01, the economics of fertilizer use in cotton improved due to rise in the market prices but again deteriorated in 2001-02 resulting from low prices of seed cotton in the open market.

### **Parity Ratios Between Prices of Fertilizer and Seed Cotton**

27. The units of produce required to buy one unit of fertilizer reflect a wide range both for N and  $P_2O_5$  fertilizer during the period 1991-92 to 2001-02.

28. For nitrogenous fertilizer, parity ratio estimated at 1.00 in 1991-92 gradually improved in favour of the produce and reached to 0.50 in 1994-95. Afterwards, the purchasing power of seed cotton in terms of nitrogen declined and reached to 0.98 in 1999-00 due to opposite trend in the prices of nitrogen and seed cotton. During 2000-01, comparatively higher prices of phutti improved its purchasing power and only 0.62 units were needed to buy one unit of nitrogen. However, this position could not be sustained in 2001-02 due to rise in price of nitrogen and sharp decline in the price of seed cotton.

29. The parity between prices of phosphorus and seed cotton experienced similar trend as for nitrogen. It declined from 0.93 in 1991-92 to the minimum level of 0.55 in 1994-95 showing

improvement in the purchasing power of seed cotton. However, in the following years this position could not be maintained due to low prices of the produce and higher prices of phosphorus. During 1999-00, the sharp decline in the seed cotton price heavily weighed against the crop and 1.61 units of phutti were required to buy one unit of phosphatic fertilizer. In the year 2000-01, the position improved in favour of seed cotton but deteriorated in the following years as prices of P rose while those of seed cotton steeply declined.

### **Nominal and Real Prices of Seed Cotton (Phutti)**

#### **- Support prices**

30. The nominal support prices of seed cotton (phutti) have increased from Rs 245 per 40 kgs in 1990-91 to Rs 780 in 2001-02, an overall increase of 218 per cent. During the same period, the cumulative inflation in terms of CPI has been 144 per cent. Consequently, the real support price of seed cotton (phutti) for 2001-02 crop, estimated at Rs 320 in terms of 1990-91 rupees, reflects an overall increase of 31 per cent over Rs 245 for 1990-91 crop.

#### **- Market prices**

31. The nominal market price of seed cotton (phutti) averaging at Rs 330 per 40 kgs during the harvesting season of 1990-91 crop has risen to Rs 813 per 40 kgs during 2001-02, reflecting an overall increase of 146 per cent. During the same period, the cumulative inflation measured by CPI has been estimated at 144 per cent. Accordingly, the real market prices of seed cotton (phutti) in 2001-02, in terms of 1990-91 rupees, has been about the same as in the base year.

32. The market prices of seed cotton (phutti) have generally ruled higher than the support price. In terms of nominal prices, 2000-01 stands out to be the best year for cotton growers, as the highest market price of Rs 957 per 40 kgs was recorded in this year. In terms of real prices, 2000-01 comes eighth in the 12 years reviewed here. The highest real price of Rs 540.35 was

witnessed in 1994-95. For the 2001-02, the real market price of seed cotton has declined by 19 per cent to Rs 333 from Rs 410 per 40 kgs in 2000-01, almost at the same level as in the base year.

### **World Production, Consumption, Stocks and Trade**

33. The world production of cotton for the year 2002-03 is projected at 18.95 million tonnes, 2.1 million tonnes less than the previous year. After adding opening stocks of 10.21 million, the highest since 1985-86, the global supply of cotton in 2002-03 works out to 29.16 million tonnes, 0.65 million tonnes lower than the previous year. Total consumption in 2002-03 is projected at 19.92 million tonnes while end year stocks are expected 9.24 million tonnes. World export of cotton during the current year is forecast at 6.23 million tonnes.

### **International Prices**

34. The cif (North Europe) prices of Sindh/Punjab (Afzal 1-1/32"), Index 'B' and Orleans Texas (Strict Low Middling 1-1/32") cottons averaging at 56.76, 57.06 and 61.10 cents per lb respectively in 1991-92, touched their highest levels of 80.95, 80.48 and 88.65 cents in 1995-96. Having peaked in 1995-96, cotton prices were on the decline since 1996-97 averaging at 47.46, 49.28 and 50.87 cents per lb respectively in 1999-00. In 2000-01, prices recovered slightly and averaged at 55.98, 53.46 and 51.91 cents. However, in 2001-02, these prices have fallen sharply and reached 39.23, 37.76 and 37.27 cents. These are the lowest levels since 1986-87.

### **Parity Prices**

35. Parity prices of seed cotton worked back at ginnery level from various base prices are summarized below:

<b>Base</b>	<b>Worked back price of seed cotton at ginnery level</b>
<b>Domestic parity price</b>	
Actual price of yarn at Karachi during 2001-02 (Sept-Jan)	791
<b>Export parity price</b>	
1. Actual average export prices of Pakistani Cottons during:	
- During 2001-02 (Sept-Jan)	674
- During 1996-97 to 2000-01	1,050
2. Average cif (North Europe) values of Index-B cottons:	
- During 2001-02 (Sept-Jan)	633
- During 1996-97 to 2000-01	1,062
3. Average cif (North Europe) quotations of Pakistani Afzal 1-1/32":	
- During 2001-02 (Sept-Jan)	660
- During 1996-97 to 2000-01	1,025
4. Futures contract prices of New York No.2 cotton for deliveries In October 2002, December 2002 and March 2003	640
5. Average fob prices of Pakistani cotton yarn:	
- During 2001-02 (Sept-Jan)	754
- During 1996-97 to 2000-01	1,200
<b>Import Parity Price</b>	
1. Average cif North Europe prices of Orleans/Texas SLM 1-1/32":	
- During 2001-02 (Sept-Jan)	944
- During 1996-97 to 2000-01	1,445
2. Actual average cif (Karachi) prices of imported cotton:	
- During 2001-02 (Sept-Jan)	1,190
- During 1996-97 to 2000-01	1,200

## 2.2 Recommendations

### 2.2.1 The support price

36. According to the analysis of the relevant factors summarized in paras-134 to 149 of this Report, the support price for the 2002-03 seed cotton crop for base grade 3 with staple length 1-1/32" and micronaire range of 3.8 – 4.9 NLC is recommended at Rs 780 per 40 kgs i.e. the same as intervention price fixed for the crop of 2001-02.

### 2.2.2 Quality premium/discount

#### Seed cotton

37. The following premium/discount rates are recommended for higher/lower quality grades and staple length.

#### Premia (+)/Discounts(-) for Higher/Lower Grades and Staple Length

(Rupees per 40 kgs)

Grade	Staple length				
	1'	1-1/32"	1-1/16"	1-3/32"	1-1/8"
Super	25	42	59	76	94
One	10	28	45	62	80
Two	-2	16	33	50	67
Three	-17	Base	17	34	51
Four	-35	-18	-1	16	34
Five	-53	-36	-19	-2	16

38. The discounts for the micronaire beyond specified limits as given in para-155 are also recommended.

## Lint

39. The premia and discounts as announced by KCA every week for lint, should be enforced by TCP in its market operations.
40. The TCP should implement the support/minimum guaranteed price of cotton in letter and spirit to boost the production and provide stability in the incomes of cotton growers.
41. The APTMA and other buyers of cotton in domestic market ought to be encouraged to follow these premia/discount rates in purchases of cotton to improve quality of the produce.

## Review of Import Policy

- The Government should review its import policy with regard to agricultural commodities, so as to discourage their imports particularly in the beginning and during the harvesting seasons of the respective commodities.
- The Government should discourage the import of short staple cottons which are available in abundance in Pakistan. The cotton trade be so regulated as not to adversely affect the domestic production.
- Arrangements should be made to record the staple length of every imported consignment of cotton through PCSI.

### 2.2.2 Improving productivity

#### Improved Seed

- i) The Punjab Seed Corporation should enhance the supply of quality seed of disease resistant varieties and undertake aggressive marketing to strengthen the sale of certified seed.
- ii) Public and private seed distributing agencies be asked to multiply and distribute the seed of important varieties recommended for cultivation in sufficient quantity so that farmers benefit from the cotton research. The situation in Sindh needs special attention in this context.

- iii) Provincial Agricultural Extension Departments should educate growers to cultivate only the recommended varieties

### **Soil Management/Balanced Use of Nutrients**

42. Provincial Agricultural Research Institutes should develop various bio-fertilizers and area/crop rotation specific fertilizer recommendations and widely publicize through extension departments and mass media.

### **Integrated Pest Management (IPM)**

- i) The Government should strengthen the National IPM Programme for its effective implementation in the entire cotton growing areas of Punjab and Sindh.
- ii) The private companies should also be encouraged for commercial rearing and marketing of useful insects and other predators.
- iii) IPM programme should undertake research on microbial control of pests and introduce its findings among the growers for their adoption.
- iv) The research work to determine the effectiveness of insect growth regulators should be expedited and results so obtained be disseminated for practical utility.
- v) The use of sex-pheromones should be promoted by extension staff in collaboration with private pesticide companies.

### **2.2.3 Improving quality and marketing**

#### **Picking**

43. To improve and maintain quality of seed cotton, educational campaign informing the pickers about the proper methods of cotton picking, its timing and handling should be launched through all mass media.

**Ginning**

44. The Government should facilitate the establishment of a Ginning Research Institute by the private sector at Multan, preferably by the Pakistan Cotton Ginners Association to deal with the issues of cotton grades and other problems relating to the quality of lint.

**Contamination free cotton**

The combined efforts of Pakistan Cotton Standards Institute, Pakistan Cotton Ginners Association and growers have successfully produced 1.2 million bales of contamination free cotton during 2001-02 season in Rahim Yar Khan and Balochistan. The APTMA should persuade its members to purchase all such produce on premium prices and patronise such efforts in the future.

The Karachi Cotton Association and the Trading Corporation of Pakistan should provide patronage to the project for contamination free cotton to enable this important programme to be extended throughout the whole country.

**Underweight and undue deductions**

45. The deductions in cotton marketing for various quality considerations need to be standardised. Supervisory Committees consisting of representatives of growers, local market committees, cotton dealers and the Provincial Agriculture Departments should be constituted to check malpractices in cotton marketing.

**Packing & labelling**

46. The Government should launch a vigorous programme to ensure proper packing and truthful labelling of ginned cotton particularly for exports so that every bale is marked according to the contents of the package.

### 3. SOWING AND PICKING TIMES

#### 3.1 Sowing

47. The recommended sowing times of cotton for various districts of the Punjab and Sindh, the main cotton producing provinces, are given in Annex-I

48. In Punjab both desi (short staple) and American (medium and long staple) varieties of cotton are grown. The cultivation of desi cotton is prevalent in Sheikhpura, Mianwali, Khushab, Bhakkar and Bahawalnagar districts. The optimum sowing time for this cotton is the month of April. The American cotton is grown in the central and southern districts of the Punjab. In districts of Multan, Khanewal, Lodhran, Vchari, Muzaffargarh, D.G. Khan and Rajanpur sowing of American cotton is recommended from first May to end of June. In R.Y. Khan, Bahawalpur, Bahawalnagar, Faisalabad, Jhang, Pakpattan, Sahiwal and Okara districts optimum sowing time is from first May to 15<sup>th</sup> June. In rest of the cotton growing districts, sowing is recommended from 15<sup>th</sup> May to 15<sup>th</sup> June.

49. In Sindh, American cotton is grown with sowing time mainly extending from March to 10<sup>th</sup> of June. In Mirpurkhas and Umer Kot districts, recommended sowing time is first March to 15<sup>th</sup> April, whereas in Hyderabad and Sanghar districts it is from mid April to mid May. For Nawabshah cotton sowing is recommended in the month of May. In Dadu, Khairpur, Sukkur and Ghotki districts cotton sowing is recommended from mid of May to 10<sup>th</sup> of June.

50. In Balochistan, cotton farming is being promoted and it has given good results in the districts of Lesbela, Dera Murad Jamali and Nasirabad. Cotton sowing in these districts is recommended in the month of May.

51. In the NWFP, D.I. Khan has good prospects for cotton production where recommended sowing time is the month of May.

### 3.2 Picking

52. Picking of cotton in Sindh and in some parts of Punjab starts in August and may continue upto February in certain cases.

#### 4. PROVINCIAL SHARES IN AREA AND PRODUCTION

53. On the basis of three year's average i.e. 1998-99 to 2000-01, area under cotton works out at 2,945 thousand hectares (7,276 thousand acres) and production at 10,254 thousand bales per year. The provincial shares in area and production of cotton are given in Table-1.

**Table-1: Provincial Shares in Area and Production of Cotton:  
Average of 1998-99 to 2000-01**

Country/ Province	Area		Production	
	000 hectares	Per cent	000 bales	Per cent
Pakistan*	2,945	100	10,254	100
Punjab	2,333	79	7991	78
Sindh	596	20	2,218	22

Note: \* Country totals include area and production of NWFP and Balochistan as well.

Source: Worked out from the data given in Annexes-II and III.

54. Punjab accounts for 79 per cent of the area and 78 per cent of the cotton production in the country. The shares of Sindh in area and production are estimated at 20 and 22 per cent. The provincial shares in area and production of cotton are depicted in Figure-1.

## Provincial Shares in Area & Production of Cotton : Avg. of 1998-99 to 2000-01

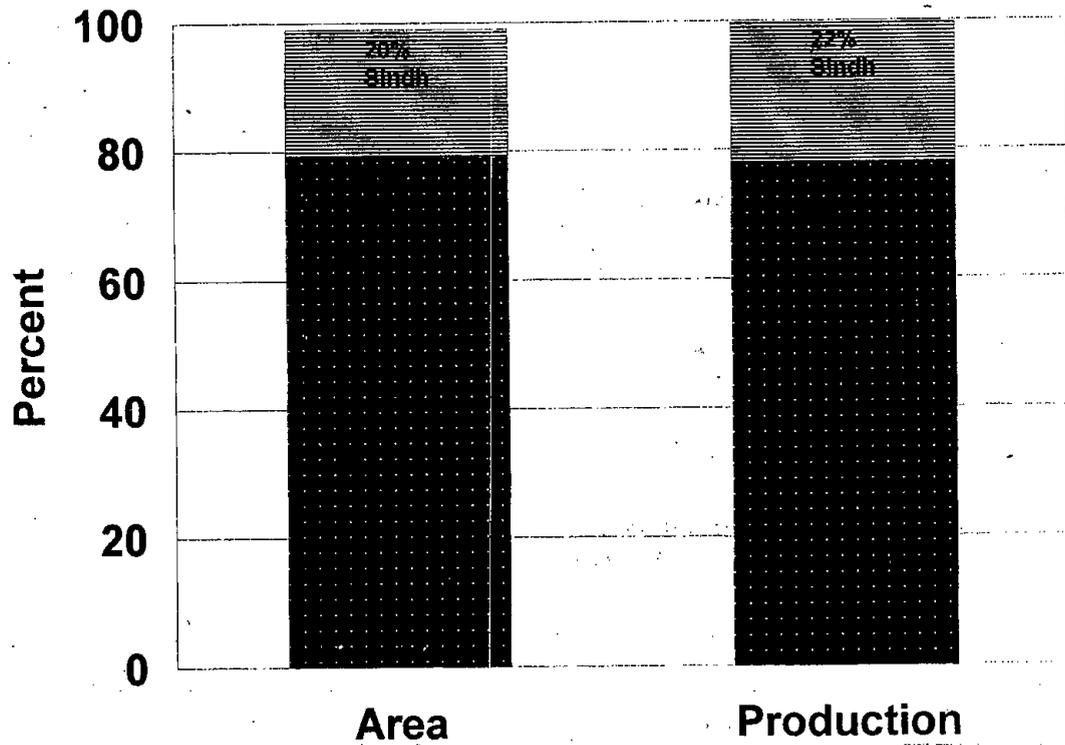


Fig-1: Shares of Area and Production

## 5. IMPORTANT COTTON PRODUCING DISTRICTS

55. District-wise data on area and production of cotton are given in Annex-IV. Districts producing over 100 thousand bales of cotton per year are Rahim Yar Khan, Bahawalpur, Vehari, Khanewal, Lodhran, Rajanpur, Bahawalnagar, Multan, Muzaffargarh, D.G.Khan, Sahiwal, Pakpattan, Jhang and T.T.Singh of the Punjab and Sanghar, Ghotki, Nawabshah, Khairpur, Hyderabad, N.Feroze, Mirpurkhas and Sukkur of Sindh. These 22 districts account for more than 95 per cent of the annual production of cotton in the country.

56. The districts of Rahim Yar Khan, Bahawalpur, Vehari, Khanewal, Lodhran, Rajanpur, Bahawalnagar, Multan, Muzaffargarh and Sanghar, each producing more than half a million bales per year, altogether account for 70 per cent of the cotton produced in the country.

## 6. CHANGES IN AREA, YIELD AND PRODUCTION

57. During the period of 1991-92 to 2001-02, area under cotton has ranged between 2,653 and 3,149 thousand hectares (6,555 to 7,781 thousand acres) while yield has fluctuated between 488 and 769 kgs (lint) per hectare (197 to 311 kgs per acre). The cotton production during the period under reference has ranged from 8 to 12.8 million bales. Long and short term changes in its area, yield and production are discussed below:

### 6.1 Long-term Changes: 1991-92 to 2001-02

58. During the period of 1991-92 to 2001-02, cotton production at country level, is estimated to have increased @ 0.5 per cent per year. Area under cotton during this period, expanded @ 0.9 per cent but yield declined by 0.4 per cent per year (Table-2).

**Table-2: Average Annual Growth Rates of Area, Yield and Production of Cotton: 1991-92 to 2001-2002**

Country/Province	Area	Yield	Production
----- Per cent per annum -----			
Pakistan	(+) 0.9	(-) 0.4	(+) 0.5
Punjab	(+) 0.5	(-) 1.3	(-) 0.8
Sindh	(+) 2.1	(+) 5.4	(+) 7.6

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

59. On the average, area under cotton in the Punjab, during the period under review, has been expanding @ 0.5 per cent per year. However, the yield has experienced a negative growth rate of 1.3 per cent per year. Accordingly, cotton production in the Punjab has been declining @ 0.8 per cent per year.

60. The cotton production in Sindh has experienced a positive growth rate of 7.6 per cent per year on account of 2.1 per cent expansion in area and 5.4 per cent improvement in yield during the reference period.

## 6.2 Short-term Changes: 2001-02 vs 2000-01 Crop

61. The cotton production at country level, from the 2001-02 crop is estimated at 10.56 million bales\* about 0.2 million bales, (1.6 per cent) less than that of the previous year. (Table-3). Decrease in production is entirely attributable to 7.8 per cent fall in yield as the area expanded by 6.7 per cent.

\* 2nd estimates for Punjab, Sindh and Baluchistan and final estimates for the NWFP.

**Table-3: Area, Yield and Production of Cotton: 2000-01 and 2001-02 Crops**

Country/ Province	Area		Change in 2001-02 over 2000-01	Yield		Change in 2001-02 over 2000-01	Production		Change in 2001-02 over 2000-01
	2000-01	2001-02		2000-01	2001-02		2000-01	2001-02	
	000 hectares <sup>2</sup>		Per cent	Kgs/hectare		Per cent	000 tonnes		Per cent
<b>Pakistan</b> <sup>1</sup>	<u>2927.5</u> (7234.1)	<u>3123.5</u> (7718.5)	(+) <u>6.7</u>	<u>624</u>	<u>575</u>	(-) <u>7.8</u>	10731.9	10556.2	(-) <u>1.6</u>
Punjab	2386.4 (5897.0)	2561.6 (6330.0)	(+) 7.3	609	565	(-) 7.2	8540.0	8507.0	(-) 0.4
Sindh	523.6 (1293.9)	521.4 (1288.4)	(-) 0.4	696	629	(-) 9.6	2141.1	1929.4	(-) 9.9
Balochistan	17.3 (42.8)	40.3 (99.6)	(+)132.9	496	504	1.6	50.4	119.3	(+)136.7

Notes:

1. Country totals include area and production of NWFP as well.
2. Figures in parentheses are in thousand acres.

Source: Annexes-II and III.

62. During 2001-02, cotton production in the Punjab has been estimated at 8,507 thousand bales, 0.4 per cent less than that of previous year. The short fall in production is solely due to decrease of 7.2 per cent in cotton yield.

63. In Sindh, area and yield of cotton in 2001-02 crop year are estimated to have decreased by 0.4 and 9.6 per cent, consequently production reported at 1,929 thousand bales reflects a decline of 9.9 per cent as compared to previous year. However, arrivals in ginneries in Sindh have shown increase over the last year. The reasons for this discrepancy in production need to be looked into and estimates firmed up.

64. In Balochistan, where Government has launched a special programme for promotion of cotton farming, production during 2001-02 is estimated at 119.3 thousand bales in comparison to 50.4 thousands bales last year.

65. The Cotton Crop Assessment Committee (CCAC) in its meeting held on 21-2-2002 at Lahore has estimated 2001-02 lint cotton output to 10.5 million bales.

66. Agriculture Departments of Punjab and Sindh Governments have provided following reasons for changes in area and production in 2001-02 over 2000-01.

### Punjab

#### Area:

- Area has increased due to good returns received by the growers from last year's crop.
- Shifting of rice area to cotton crop in cotton zone due to shortage of irrigation water.

#### Production

- Production has decreased due to attack of Jassid, thrips, spotted and American boll worms.
- Unfavourable climatic conditions during boll formation stages of the crop.
- Shortage of irrigation water adversely affected the yield.
- Pesticides proved ineffective to control the insect/pests.

### Sindh

#### Area

- Area decreased due to short supply of irrigation water.

#### Production

- Production decreased due to decrease in area and short supply of irrigation water.

## **7. TARGETS VS ACHIEVEMENTS: 2001-02 CROP**

67. For 2001-02 cotton crop, the Federal Committee on Agriculture (FCA) had set the production target at 8.66 million bales. The production reported at 10.56 million bales has surpassed

the target by 22 per cent (Table-4). Excess production is solely due to over achievement of area target.

**Table-4: Targets and Estimated Achievements of Area, Yield and Production of Cotton: 2001-02 Crop**

Country/ Province	Area		Devia- tion from target	Yield		Devia- tion from target	Production		Devia- tion from target
	Target	Achieve- ment		Target	Achieve- ment		Target	Achieve- ment	
	000 hectares		Per cent	Kgs/hectare		Per cent	000 bales		Percent
Pakistan*	2560.0	3123.5	(+)22.0	575.4	574.8	(-) 0.1	8660.0	10556.2	(+)21.9
Punjab	2020.0	2561.6	(+)26.8	589.4	564.9	(-) 4.2	7000.0	8507.0	(+)21.5
Sindh	500.0	521.4	(+) 4.3	530.7	629.4	(+)18.6	1560.0	1929.4	(+)23.7
Balochistan	40.0	40.3	0.7	425.2	503.5	(+)18.4	100.0	119.3	(+)19.3

Note: \* Country totals include area and production of NWFP as well.

Sources:

1. For targets: Minutes of the 75th meeting of FCA held on 29-10-2001 at Islamabad.
2. For achievements: Annex-II.

68. In the Punjab, production estimated at 8.5 million bales has exceeded the target of 7 million bales by 21.7 per cent, entirely due to 26.8 per cent over achievement in area as the yield fell short of the target by 4.1 per cent.

69. In Sindh, production estimated at 1.93 million bales is 23.7 per cent more than the target of 1.56 million bales. This is due to over achievements of 18.7 per cent in yield and 4.3 per cent in area.

70. In Balochistan, cotton production of 119.3 thousand bales has surpassed the target of 100 thousand bales by 19.3 per cent, all due to over achievement in yield.

## **8. DETERMINANTS OF SUPPORT PRICE**

71. The following factors have been considered and analysed in search of price policy options for seed cotton (phutti), 2002-03 crop.

- 8.1 Domestic Supply, Demand, Stocks and Price Situation
- 8.2 Cost of Production of Seed Cotton
- 8.3 Comparative Economics of Cotton and Competing Crops
- 8.4 Economics of Fertiliser use on Cotton
- 8.5 Nominal and Real Prices of Seed Cotton
- 8.6 World Supply, Demand, Stocks, Trade and Price Situation
- 8.7 Parity Prices of Seed Cotton

- 8.7.1 Domestic

- 8.7.2 Export

- 8.7.3 Import

### **8.1 Domestic Supply, Demand, Stocks and Price Situation**

#### **8.1.1 Domestic supply, demand and stocks**

72. Information regarding domestic situation of cotton production, demand and stocks for the years 1999-00 to 2001-02 (September-August) is presented in Table-5.

**Table-5: Domestic Supply, Demand, Stocks of Cotton (Lint): 1999-00 to 2001-02 (September-August)**

S.No.	Item	1999-00	2000-01	2001-02
----- Million bales <sup>(a)</sup> -----				
1.	Opening stocks as on 1 <sup>st</sup> September	1.40	2.53	2.84
2.	Production	11.24	10.73	10.56
3.	Imports	0.42	0.67	1.00 <sup>(b)</sup>
4.	Total supplies (items 1+2+3)	13.06	13.93	14.40
5.	Consumption:	9.94	10.38	10.50
	5.1) Reporting mills	9.44	9.88	10.00
	5.2) Non-mill sector	0.50	0.50	0.50
6.	Exports	0.59	0.71	0.03 <sup>(b)</sup>
7.	Total demand (items 5 + 6)	10.53	11.09	10.53
8.	Closing stocks as on 31 <sup>st</sup> August (item 4-7)	2.53	2.84	3.87

Notes:

- (a) One bale = 170.09 kgs = 375 lbs.  
 (b) Upto January 2002.

Sources:

1. PCCC, Karachi.
2. Textile Commissioner's Organisation, Karachi.
3. KCA, Karachi.

73. As per details in Table-5, 2000-01 cotton year (September-August) started with opening stocks of 2.53 million bales. Adding domestic production and imports of 10.73 and 0.67 million bales respectively, total availability of cotton during the year was 13.93 million bales. About 10.38 million bales are reported to have been used domestically. Exports of cotton during 2000-01 were 0.71 million bales. Thus, end year stocks stood at 2.84 million bales.

74. As per estimate of the Cotton Crop Assessment Committee, 10.56 million bales have been harvested from the 2001-02 crop. Adding carry over stocks of 2.84 million and imports of one million bales (upto January 2002), total availability of cotton during the year, at this stage, comes to 14.40 million bales, against the overall domestic requirements (mill as well as non-mill sectors) estimated at 10.53 million bales. According to PCCC, 0.03 million bales were exported upto end of January 2002. Thus, end year stocks may be around 3.87 million bales.

## 8.1.2 Price situation

### 8.1.2.1 Seed cotton (phutti) prices

75. Monthly average wholesale prices of seed cotton (phutti) prevailing in the markets of Multan, Okara, Rahim Yar Khan, Vehari, Khanewal, Hyderabad and Mirpur Khas during the post harvest period of 2001-02 crop (September to January) are given in Table-6.

**Table-6: Monthly Average Wholesale Prices of Seed Cotton (Phutti) in the Main Producing Area Markets During 2001-02 Crop Season**

Markets	September	October	November	December	January	Average
----- Rupees per 40 kgs -----						
Multan	719	719	872	900	759	794
Okara	721	722	844	819	734	768
R. Y. Khan	715	721	912	832	702	776
Vehari	678	752	880	883	669	772
Khanewal	684	716	886	834	737	771
Hyderabad	726	688	776	-	-	730
Mirpur Khas	712	706	732	850	-	750
Average	708	717	843	853	720	766

Note: (-) Not available.

Sources:

1. Directorate of Agriculture (E&M), Punjab, Lahore.
2. PCCC, Karachi.

76. The monthly average wholesale prices of seed cotton (phutti) during the current crop's harvesting season in the Punjab, ranged between Rs 669 per 40 kgs in Vehari in January 2002, and Rs 912 per 40 kgs in R.Y.Khan in November 2001 (Table-6). In Sindh, the prices ranged between Rs 688 in Hyderabad in October and Rs 850 in Mirpur Khas in December, 2001. In the Punjab prices of seed cotton (phutti) in the beginning of season i.e. September-October, were below the support price of Rs 780 per 40 kgs. However, during peak season i.e. November-December, the prices ruled higher than the support prices. In case of Sindh, prices of seed cotton generally remained below the support price during whole season.

### 8.1.2.2 Cotton (lint) prices

77. Since July 1, 2000, Karachi Cotton Association (KCA) has switched over to announcing cotton prices as per grades and staple length instead of varieties. Accordingly, daily spot rates of

cotton are now issued for "Base Grade" with staple length of 1-1/32" and micronaire values ranging between 3.8 – 4.9 NCL (No Control Limit). The premia/discounts for upper/lower grades/staples are also quoted. Monthly average spot prices of cotton (lint) at Karachi during September 2001 to January 2002 are presented in Table-7.

**Table-7: Monthly Average Spot Prices of Raw Cotton at Karachi, 2001-02 Crop Season**

Month	Base grade-3, staple length 1-1/32", micronaire value between 3.8 to 4.9 NCL*
Rupees per 40 kgs	
September	2404
October	2227
November	2463
December	2465
January	2000

Note:

- \* Prices include 15 per cent sales tax, and expenses from up-country @ Rs 50 per 40 kgs.

Source: Karachi Cotton Association (KCA), Karachi.

78. Table-7 shows that monthly average spot rates for "Base Grade", with staple length 1-1/32" and mike values ranging between 3.8 – 4.9 NCL, during September were Rs 2,404 per 40 kgs. During the month of October the prices declined to Rs 2,227 per 40 kgs but trended upward during November and December averaging at Rs 2,463 and Rs 2,465 respectively. In January 2002, prices again declined and were hovering around Rs 2,000 per 40 kgs. Since 1999, TCP has been involved in implementing the procurement prices for cotton but it has its own quality limitations as it has to sell the stuff on to the international market. During 2001-02 season, TCP was assigned a procurement target of one million bales. But the actual procurement remained as low as 0.156 million (while the contracts were made of 0.327 million bales) till the 1<sup>st</sup> week of March, 2002 due to rather cautious purchases by the Corporation. Active buying by TCP is necessary to stabilize the prices and encourage the growers.

## 8.2 Cost of Production

79. One of the important considerations in pricing of any commodity is its cost of production. Empirical estimation of a representative cost of production of field crops, however, entails a number of conceptual and practical difficulties.

80. To update the cost of production for the 2002-03 crop, physical input-output parameters have been adopted from the Support Price Policy for Seed Cotton, 2001-02 crop, in conjunction with latest inputs prices and rates of cultural operations. These prices and custom rates of field operations were collected by the APCom through a survey conducted in the major cotton growing areas of the Punjab and Sindh during January, 2002. Data on input prices were also supplemented with the information provided by the representatives of the farmers' organisations and others attending the meeting of Standing Committee, held at Islamabad on 18<sup>th</sup> February, 2002. Details of the COP estimates for the Punjab and Sindh are given in Annexes-V and VI, while a summary of the result is presented in Table-8.

**Table-8: Average Farmers' Cost of Production of Seed Cotton:  
2001-02 and 2002-03 Crops**

Item	Unit	2001-02 crop	2002-03 crop	Increase in 2002-03 over 2001-02
<b>Punjab</b>				
1. Cost of cultivation	Rs/acre	12305	12697	392
2. Yield	Kgs/acre	671	671	0
3. Cost of production at farm level	Rs/40 kgs	734	757	23
4. Marketing cost	"	14	14	0
5. Cost of production at market/ginnery	"	748	771	23
<b>Sindh</b>				
1. Cost of cultivation	Rs/acre	10025	10323	298
2. Yield	Kgs/acre	602	602	0
3. Cost of production at farm level	Rs/40 kgs	666	685	20
4. Marketing cost	"	14	14	0
5. Cost of production at market/ginnery	"	680	699	19

Source: Annexes-V and VI.

## **Punjab**

81. As per details given in Annexes-V and VI and summary information in Table-8, the cost of cultivation of cotton in the Punjab for the 2002-03 crop, at the current input prices, is expected at 12,697 per acre, inclusive of land rent. With the average yield of 671 kgs per acre, the farm level cost of production of seed cotton is estimated at 757 per 40 kgs. Adding Rs 14 as transport and marketing costs, the cost of the produce at market/procurement centre would work out to Rs 771 per 40 kgs, higher by Rs 23 (3 per cent) than the corresponding cost estimates of the 2001-02 crop.

82. In the Punjab, the major component of the cost of cultivation of cotton is land rent, accounting for 25 per cent of the total cost. Plant protection (18 per cent), chemical fertilizers (11 per cent), irrigation (10 per cent), picking charges (9 per cent), land preparation (8 per cent), interculture (5 per cent) and seed and sowing operations (5 per cent) are the other important constituents of the cost of cultivation.

## **Sindh**

83. Growing of seed cotton in Sindh during 2002-03 crop season is likely to cost Rs 10,323 per acre, including of land rent. Distributing per acre cost over the average yield of 602 kgs, COP at the farm level comes to Rs 685 per 40 kgs. Accounting for marketing expenses @ Rs 14 per 40 kgs, the cost of seed cotton at market/procurement centre would be Rs 699 per 40 kgs, indicating an increase of Rs 19 (3 per cent) over the corresponding cost estimates of Rs 670 per 40 kgs in 2001-02.

84. Land rent, accounting for 17 per cent of the cost of cultivation in 2002-03, is the largest cost item in cotton farming in Sindh as well. The other important constituents are: Plant protection (16 per cent), chemical fertilizers (13 per cent), picking charges (11 per cent), land preparation (9 per cent), interculture (9 per cent), seed and sowing operations (7 per cent) and irrigation (5 per cent).

85. The increases in the cost of production of seed cotton for the 2002-03 crop in the Punjab and Sindh are primarily attributable to increases in the rates of cultural operations, wage rate and land rentals.

### 8.3 Comparative Economics of Seed Cotton and Competing Crops

86. Allocation of resources among the competing enterprises is primarily governed by economic considerations reflected in gross cost, gross income, gross margin, net income, output-input ratio, returns to purchased inputs/irrigation, crop duration, etc. The estimation of such indicators may provide useful insights into the pattern of resource use at farm level. These indicators are derived from the farm management data and input-output prices, which are subject to change over time and space. Moreover, the use of multiple criteria in ascertaining the resource allocation patterns of farmers may provide conflicting signals, necessitating due care in the interpretation of results of such analysis.

87. Cotton, a kharif crop, competes with rice for land, water and other farm resources in the areas where the cultivation of both these crops is technically feasible. Cotton also faces indirect competition from sugarcane which, being an annual crop, occupies the land throughout the year. However, the combination of cotton and rabi crops would have to be considered. In such a situation, relevant combinations may be cotton + wheat and cotton + sunflower.

88. The economics of cotton and competing crops has been analysed in terms of prices realised by the growers during the 2001-02 crop year.

89. The details of the analysis are provided in Annex-VII, while a summary of the economic indicators like output-input ratio and returns to crop duration, purchased inputs and irrigation water for the Punjab and Sindh is presented in Table-9.

## Punjab

90. According to the results of economic analysis, cotton farming is a profitable enterprise. It has a definite edge over IRRI rice crops in terms of all the economic criteria, viz. output-input ratio and returns to purchased inputs, crop duration and irrigation water. Cotton also edges out basmati rice in respect of all economic indicators except returns to crop duration where the latter marginally performs better.

**Table-9: Comparative Economics of Cotton and Competing Crops at Prices Realized by the Growers: 2001-02 Crop**

Crops/ crop combinations	Output- input ratio	Gross revenue per		
		Rupee of purchased inputs cost	day of crop duration	acre-inch of irrigation water used
----- Rupees -----				
<b>Punjab</b>				
1. Cotton	1.04	2.37	54.38	593.27
2. Rice – Basmati	1.03	1.85	55.70	172.87
3. Rice - IRRI	0.95	1.73	44.04	127.85
4. Cotton+Wheat	1.00	2.30	50.38	542.56
5. Cotton+Sunflower	1.11	2.83	56.96	497.09
6. Sugarcane	1.03	3.16	42.89	384.07
<b>Sindh</b>				
1. Cotton	1.05	2.59	45.12	601.61
2. Rice - IRRI	1.07	2.35	41.67	133.95
3. Cotton+Wheat	1.03	2.54	43.50	553.58
4. Cotton+Sunflower	1.13	3.07	51.17	491.23
5. Sugarcane	1.42	3.64	51.56	433.81

Source: Annex-VII.

91. The cotton combination with sunflower outperforms sugarcane in respect of output-input ratio, revenue per day of crop duration, and per unit of irrigation water. However, economics of cotton+wheat combination against sugarcane does not provide a clear cut picture. The cotton

combinations both with sunflower and wheat lag behind sugarcane if the revenue per rupee of purchased inputs cost is taken into account to assess their economic performance.

### Sindh

92. In Sindh, cotton farming performs better than rice cultivation in terms of various criteria except output-input ratio. Cotton out-competes IRRI paddy in terms of revenue per rupee of purchased inputs cost, per day of crop duration and irrigation but falls behind in respect of output-input ratio.

93. In case of indirect competition, the cotton combinations with wheat or sunflower out-compete sugarcane in terms of revenue per unit of irrigation water but lag behind in respect of all other criteria, viz. output-input ratio, and revenue per rupee of purchased inputs and per day of crop duration. Higher prices of sugarcane in the current season have greatly influenced the position in favour of sugarcane viz-a-viz cotton whose prices have been generally depressed in the province.

### 8.4 Economics of Fertilizer Use

94. The use of chemical fertilizer in crop production, which has assumed a critical role in modern farming, depends to a large extent on the economics of its application. The economics of fertilizer use influenced, *inter alia*, by the output-input price relationship and the response of a given crop to the application of fertilizer nutrients has been worked out through estimating the Benefit Cost Ratio (BCR) and output-input price parity ratios. The research has shown that response of a crop to use of fertilizer varies across farms due to variations in soil, climate, crop rotation, variety, technology adopted, timing of application, management practices, etc. As information on cotton's response to the use of fertilizers, under all sorts of conditions obtaining at farmers fields is not available, the analysis has been carried out for a range of seed cotton response ratios i.e. 3.00:1, 3.75:1, 4.5:1 and 5.25:1. To capture the possible changes in the prices, the analysis has been conducted for the period from 1991-92 to 2001-02. The results are discussed below:

### 8.4.1 Benefit Cost Ratio (BCR)

95. BCR refers to a comparison of the gross value of marginal output inclusive of its by-products, realized from the additional dose of fertilizer and the marginal cost incurred in the use of additional fertilizers, including its handling and application, cost of picking of additional cotton and its marketing and mark up on the additional cost. The details of calculations are given in Annex-VIII while a summary is presented in Table-10.

**Table-10: Benefit Cost Ratios (BCRs) of Fertilizer Use on Seed Cotton: 1991-92 to 2001-02**

Year	Response Ratios (Seed Cotton: Nutrient) of			
	3.00:1	3.75:1	4.50:1	5.25:1
1991-92	2.39	2.86	3.29	3.68
1992-93	3.22	3.83	4.38	4.89
1993-94	2.92	3.46	3.96	4.41
1994-95	4.34	5.15	5.88	6.55
1995-96	3.39	4.03	4.61	5.13
1996-97	3.05	3.62	4.13	4.60
1997-98	2.47	2.94	3.36	3.74
1998-99	2.66	3.15	3.60	4.00
1999-00	1.66	1.97	2.25	2.51
2000-01	2.51	2.96	3.35	3.71
2001-02	1.87	2.22	2.53	2.81

Note: BCRs have been worked out at the average market prices of American cotton for the post harvest period in the important markets of the Punjab and Sindh. The average expenses on direct and indirect costs have been worked out by using the unit cost of various parameters used in COP estimates of the Punjab and Sindh for the respective crop years as given in the support price policy reports on seed cotton.

96. The data presented in the above Table reveal that at the lowest response ratio of 3:1, BCR increased from 2.39 in 1991-92 to 4.34 in 1994-95. Afterwards it continued declining, reaching 1.66 during 1999-00. Similar trend has been observed in BCRs for higher response ratios. The most remunerative BCRs during 1994-95, at all response ratios, were the result of high prices of seed cotton in that year. However, position could not be sustained in the following years, due to increase in fertilizer prices and deterioration in the prices of seed cotton. Having touched the lowest levels in 1999-00, as a result of low cotton prices, the BCRs improved in 2000-01 as prices of cotton rose while those of fertilizers declined by 7-10 per cent. Accordingly, the economics of fertilizer use improved in favour of the crop as compared with the previous year. The BCRs ranging from 1.87 to 2.81 at all response ratios estimated for 2001-02 crop year reflect a comparative decline in the profitability of fertilizer use on cotton and has resulted from low prices of seed cotton in the open market. The situation if unchecked may discourage the use of fertilizers.

#### **8.4.2 Parity ratios between prices of fertilizer and seed cotton**

97. Parity ratios between the input-output prices i.e. fertilizer and cotton prices are used in assessing the purchasing power of the produce in terms of fertilizers and attractiveness of fertilizer use on the crop. Rise in parity ratio implies that more units of the produce are needed to purchase one unit of fertilizer nutrients and vice versa, holding other factors constant. On cotton crop mostly nitrogenous and phosphatic fertilizers are being used. Therefore, parity ratios for both N and  $P_2O_5$  fertilizers have been worked out for the period 1991-92 to 2001-02 and are provided in Table-11.

**Table-11: Parity Ratio Between the Prices of Fertilizer and Seed Cotton: 1991-92 to 2001-02**

Crop year	Sale prices of		Market prices of seed cotton	Quantity of seed cotton (phutti) needed to buy one nutrient tonne of	
	Nitrogen (N)	Phosphorous P <sub>2</sub> O <sub>5</sub>		Nitrogen (N)	Phosphorous P <sub>2</sub> O <sub>5</sub>
	-----Rupees per tonne-----			-----Tonnes-----	
1991-92	8261	7637	8250	1.00	0.93
1992-93	8996	7902	9675	0.93	0.82
1993-94	9130	8253	11875	0.77	0.69
1994-95	10174	11236	20500	0.50	0.55
1995-96	10348	13212	18325	0.56	0.72
1996-97	13478	19509	21225	0.64	0.92
1997-98	15870	19573	20825	0.76	0.89
1998-99	15217	19828	22675	0.67	0.87
1999-00	15217	24914	15500	0.98	1.61
2000-01	14130	22300	22700	0.62	0.98
2001-02	16960	24230	19150	0.89	1.27

Notes:

1. The nutrient prices of nitrogen (N) and phosphorous (P<sub>2</sub> O<sub>5</sub>) have been worked out from the average sale prices of Urea and DAP as used in the COP estimates of the Punjab and Sindh in the support price policy for respective crop years.
2. Market prices are the average of monthly seed cotton prices which prevailed during the harvest season in important markets of the Punjab and Sindh as given in the respective Support Price Policy Reports.

98. Results of the analysis shown in the Table-11 reveal that parity ratio between the prices of nitrogen and that of seed cotton has ranged from 0.5 to one. The ratio estimated at 1.00 in 1991-92 gradually improved in favour of seed cotton and reached 0.50 in 1994-95, showing 50 per cent improvement in its purchasing power in terms of nitrogen. However, subsequently purchasing power of seed cotton has declined as parity increased to 0.98 in 1999-00. During 2000-01, in the aftermath of comparatively higher prices of phutti; parity ratio between prices of seed cotton and nitrogen improved in favour of the crop, only 0.62 tonnes of seed cotton were required to pay for one tonne of nitrogen. However, this situation could not be maintained in 2001-02 due to rise in price of nitrogen and sharp decline in price of seed cotton. The parity ratio

of 0.89 estimated for the current seed cotton crop indicates about 43.5 per cent erosion in its purchasing power as compared to that of the previous year.

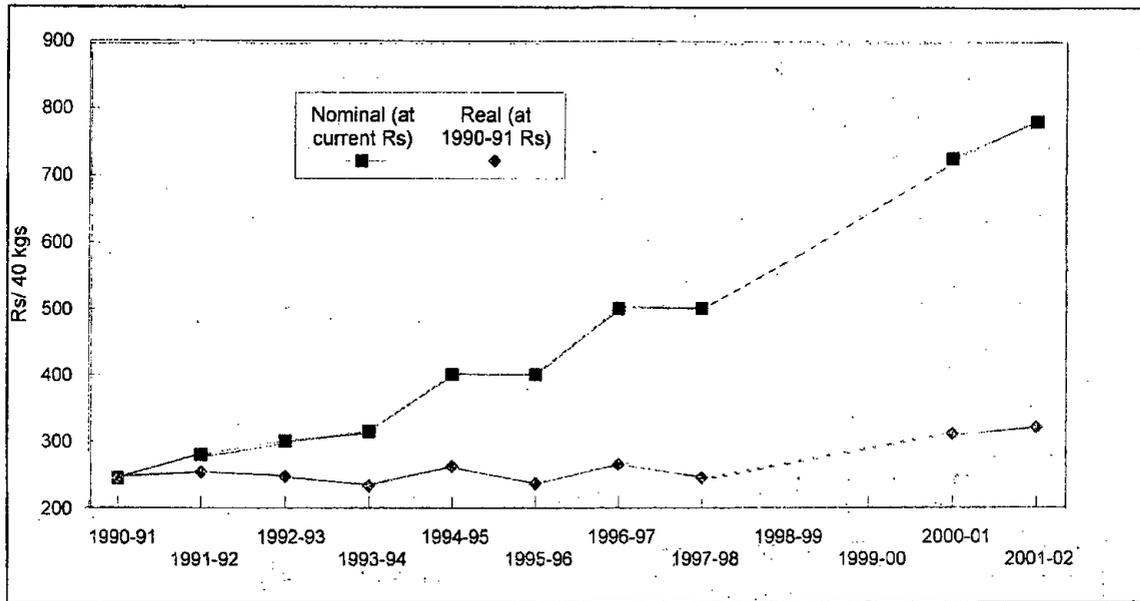
99. A similar trend in the parity between the prices of phosphorus and seed cotton has been observed during the period under reference. The parity between prices of phosphorus and seed cotton (Table-11) declined from 0.93 in 1991-92 to the minimum level of 0.55 in 1994-95 showing an improvement of 40 per cent in the purchasing power of seed cotton. However, this purchasing power could not be maintained in the following years as market prices of seed cotton started falling and those of P Fertilizer rising. Resultantly parity ratio in 1996-97 again reached the level of 1991-92. In the following two years prices of seed cotton showed some improvement and parity ratios declined to 0.89 and 0.87 in 1997-98 and 1998-99. However, prices of seed cotton fell sharply in 1999-00. As a result, the parity ratio increased to 1.61 which heavily weighed against seed cotton. In year 2000-01, the position improved in favour of seed cotton due to higher prices. However, the situation again deteriorated in 2001-02 as prices of P rose while those of seed cotton steeply declined.

#### **8.5 Nominal and Real Prices of Seed Cotton (Phutti) at Support and Market Prices: 1990-91 to 2001-02 Crops**

100. The changes in the prices of a commodity in relation to the general price level in economy influence its purchasing power, welfare and real income of its producers. To estimate the overtime changes in the real prices of seed cotton from 1990-91 to 2001-02, its nominal support and market prices were deflated by the Consumer Price Index (CPI), the most common measure of inflation in the economy. The results of the exercise are set out in Table-12 and depicted in Figures-2 and 3.

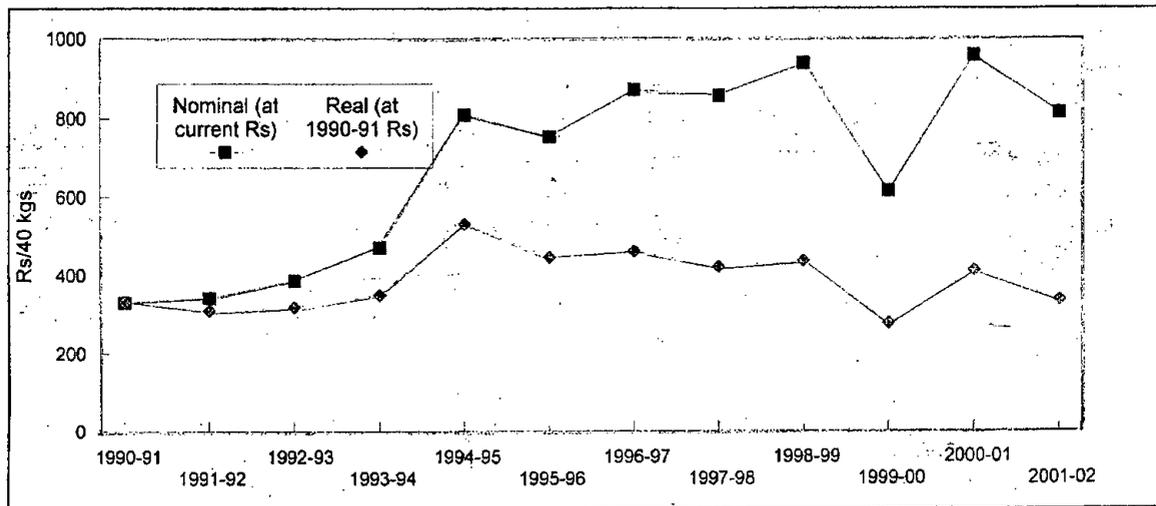
##### **8.5.1 Nominal and real support prices of seed cotton (phutti)**

The nominal and real support prices of seed cotton (phutti), 1990-91 to 2001-02, are set out in Table-12 and depicted in Figure-2.



**Fig-2: Nominal and Real Support Prices of Seed Cotton: 1990-91 To 2001-02**

Note: The Support Prices of Seed Cotton (Phutti) for 1998-99 and 1999-00 were not fixed by the Government



**Fig-3: Nominal and Real Market Prices of Seed Cotton: 1990-91 To 2001-02**

**Table-12: Nominal and Real Prices of Seed Cotton (Phutti): 1990-91 to 2001-02**

Crop year	Nominal prices (current rupees)		Consumer Price Index (CPI)	Real prices (1990-91 rupees)	
	Support	Market		Support	Market
1	2	3	4	$5=(2/4)\times 100$	$6=(3/4)\times 100$
	Rs per 40 kgs		1990-91=100	Rupees per 40 kgs	
1990-91	245	330	100.00	245.00	330.00
1991-92	280	342	110.58	253.21	309.28
1992-93	300	386	121.45	247.02	317.83
1993-94	315	471	135.14	233.09	348.53
1994-95	400	810	152.73	261.90	530.35
1995-96	400	753	169.21	236.39	445.01
1996-97	500	872	189.18	264.30	460.94
1997-98	500	857	203.96	245.15	420.18
1998-99	-	938	215.66	-	434.94
1999-00	-	614	223.39	-	274.86
2000-01	725	957	233.24	310.84	410.31
2001-02	780	813	243.92	319.78	333.31

## Sources:

- 1) Economic Survey of Pakistan, 2000-01: Statistical Supplement.
- 2) Directorate of Economics and Marketing (E&M) Punjab, Lahore.
- 3) APCom.

## Notes:

- 1) CPI for 2001-02 has been projected in view of the average rise in CPI during the last 3 years.
- 2) The support price of seed cotton (phutti) used here relates to the group of most commonly grown varieties like Niab-78, Niab-Krishma, CIM-240, Niab-86, FH-87, CRIS-9, CIM-109, Gohar-87, FH-682 and MNH-147 etc.
- 3) No support price fixed for 1998-99 and 1999-00 crops.
- 4) The support price for 2001-02 for the base grade three with staple length 1-1/32".
- 5) Market prices are the average of monthly wholesale prices of seed cotton (phutti) during October to January in Multan market.

102. The nominal support prices of seed cotton (phutti) have increased from Rs 245 per 40 kgs in 1990-91 to Rs 780 in 2001-02, an overall increase of 218 per cent. During the same period the cumulative inflation, in terms of CPI, has been 144 per cent. Consequently, the real support

price of seed cotton (phutti) for 2001-02 crop, estimated at Rs 319.78 per 40 kgs, in terms of 1990-91 rupees, reflects an overall increase of 31 per cent over the corresponding price of Rs 245 for the 1990-91 crop.

103. The nominal support price of seed cotton during 1990-91 to 1994-95 rose by 63 per cent and CPI by 53 per cent. As a result, the real support price of seed cotton increased by 7 per cent during these years. For next crop year i.e. 1995-96, the Federal Government did not revise the support price of seed cotton while CPI increased by 11 per cent over the previous year and 69 per cent against the base year's price level, resulting in 10 per cent loss in the real support price. In the wake of 25 per cent increase in the nominal support price of seed cotton in 1996-97, its real value jumped by 12 per cent. Again, in 1997-98, the support price of seed cotton was not increased while CPI rose by 8 per cent. Consequently, the real support price of seed cotton declined by 7 per cent as compared to that of 1996-97 crop.

104. For the next two crop years i.e 1998-99 and 1999-00, the government did not fix any support price of seed cotton (phutti). The nominal support price of seed cotton was fixed at Rs 725 per 40 kgs for the 2000-01 crop, its real value in terms of 1990-91 rupees, was Rs 310.84 per 40 kgs, the 2<sup>nd</sup> highest level during the period under reference. The support price of seed cotton was increased from Rs 725 to Rs 780 per 40 kgs for the 2001-02 crop. Its real value in terms of 1990-91 rupees is estimated at Rs 319.78 which happens to be the highest level during the period under review.

### **8.5.2 Nominal and real market prices**

105. The nominal and real market prices of seed cotton (phutti), from 1990-91 to 2001-02, are given in Table-12. These are also depicted in Figure-3

106. The nominal market price of seed cotton (phutti) averaging at Rs 330 per 40 kgs during the harvesting season of 1990-91 crop has risen to Rs 813 per 40 kgs during 2001-02, reflecting an overall increase of 146 per cent. During the same period, the cumulative inflation in terms of

CPI has been estimated at 144 per cent. Accordingly, the real market price of seed cotton (phutti), in terms of 1990-91 rupees, has been about the same as in the base year.

107. The market prices of seed cotton (phutti) have generally ruled higher than the support price. In terms of nominal prices, 2000-01 stands out to be the best year for cotton growers, as the highest market price of Rs 957 per 40 kgs was recorded in this year. In terms of real price, however, 2000-01 does not fare that well, coming eighth in the 12 years reviewed here. The highest real price of Rs 530.35, in terms of 1990-91 rupees was obtained in 1994-95.

108. The nominal market prices of seed cotton during the period 1990-91 to 1994-95, increased by 145 percent while CPI rose by 53 per cent. As a result, the real market prices of seed cotton (phutti) jumped 61 per cent to reach Rs 530.35 per 40 kgs in terms of 1990-91 rupees, the highest level recorded during the period under review. In subsequent years, the real market prices of seed cotton dwindled to decline to Rs 274.86 per 40 kgs in 1999-00 crop season, the lowest level observed during the period under reference.

109. In the wake of 56 per cent increase in nominal market price of seed cotton (phutti) during 2000-01 crop year, from Rs 614 to Rs 957 per 40 kgs, its real value increased by 49 per cent, reaching Rs 410.31 in terms of 1990-91 rupees. For the 2001-02, the real market price of seed cotton has declined by 19 per cent, i.e from Rs 410.31 to Rs 333.31 per 40 kgs almost to the same level as in the base year.

## **8.6 World Supply, Demand, Stocks, Trade and Price Situation**

### **8.6.1 World supply, demand, stocks and trade**

110. The world balance sheet of cotton for the period 1999-00 through 2001-02 is given in Table-13:

**Table-13: World Production, Consumption, Stocks and Trade in Cotton: 2000-01 to 2002-03**

S.No	Item	2000-01	2001-02 (Estimated)	2002-03 (Forecast)
-----Million tonnes				
1.	Opening stocks	9.03	8.76	10.21
2.	Production	19.41	21.05	18.95
3.	Total supply (1+2)	28.44	29.81	29.16
4.	Likely consumption	19.73	19.60	19.92
5.	Closing stocks	8.76	10.21	9.24
6.	Trade (exports)	5.76	6.25	6.23

Source: Cotton Review of the World Situation, ICAC, March 1, 2002.

111. The world production of cotton reported at 21.05 million tonnes during 2001-02, is 1.64 million tonnes (8.45%) higher than that in 2000-01. Adding the opening stocks of 8.76 million, total supply in 2001-02 worked out to 29.81 million tonnes, 1.37 million tonnes higher (4.82%) as compared to previous year. For 2002-03, cotton production has been projected at 18.95 million tonnes. Accounting for the opening stocks of 10.21 million tonnes, total supply during 2002-03 should be 29.16 million tonnes, 0.65 million (2.2%) less as compared to the last year.

112. The global consumption of cotton estimated at 19.60 million tonnes in 2001-02 was marginally less than that of 2000-01. For 2002-03, consumption is projected to rise to 19.92 million tonnes.

113. End year stocks estimated at 10.21 million tonnes in 2001-02, the highest since 1985-86 were higher by 1.45 million tonnes than those of previous year. These are forecast to decrease to 9.24 million tonnes by the end of 2002-03.

114. World trade (exports) in cotton reported at 6.25 million tonnes in 2001-02 is forecast to marginally decrease to 6.23 million tonnes in 2002-03.

### 8.6.2 International Prices

115. The cif North Europe prices of Sindh/Punjab (Afzal 1-1/32"), Index-B Cottons and Orleans Texas (SLM 1-1/32") for the period 1991-92 to 2001-02 are presented in Annex-IX and graphically shown in Figure-4.

116. The prices of Sindh/Punjab (Afzal 1-1/32") averaging at US cents 56.76 per pound in 1991-92 declined to 53.99 cents in 1992-93. During 1993-94 prices experienced increasing trend which continued till 1995-96 when price averaged at 80.95 cents, the highest level during the period under review. Having peaked in 1995-96 cotton prices were on the decline during 1996-97 to 1999-00, averaging at 47.46 cents per pound in 1999-00. During 2000-01 prices staged a recovery and averaged at cents 55.98. However, the prices in September-January 2001-02 have averaged at 39.23 cents per pound, the lowest level reported in the last 14 years.

117. The value of Index B cottons, and prices of Orleans Texas Strict Low Middling 1-1/32" have experienced a pattern similar to that for Pakistani cotton, Sindh/Punjab (Afzal 1-1/32"). The prices averaging at 57.06 and 61.10 cents per pound respectively in 1991-92, touched their highest levels of 80.48 and 88.65 cents in 1995-96. These prices also experienced a down word trend during 1996-97 to 1999-00. The value of Index B cottons and price of Orleans Texas SLM averaged at 49.28 and 50.87 cents per pound respectively in 1999-00. In 2000-01, prices recovered slightly, averaging at 53.46 and 51.91 cents respectively. However, in 2001-02, the prices have fallen sharply, and averaged at 37.76 cents in case of Index B and 37.27 cents for New Orleans Texas SLM. These are the lowest levels since 1986-87.

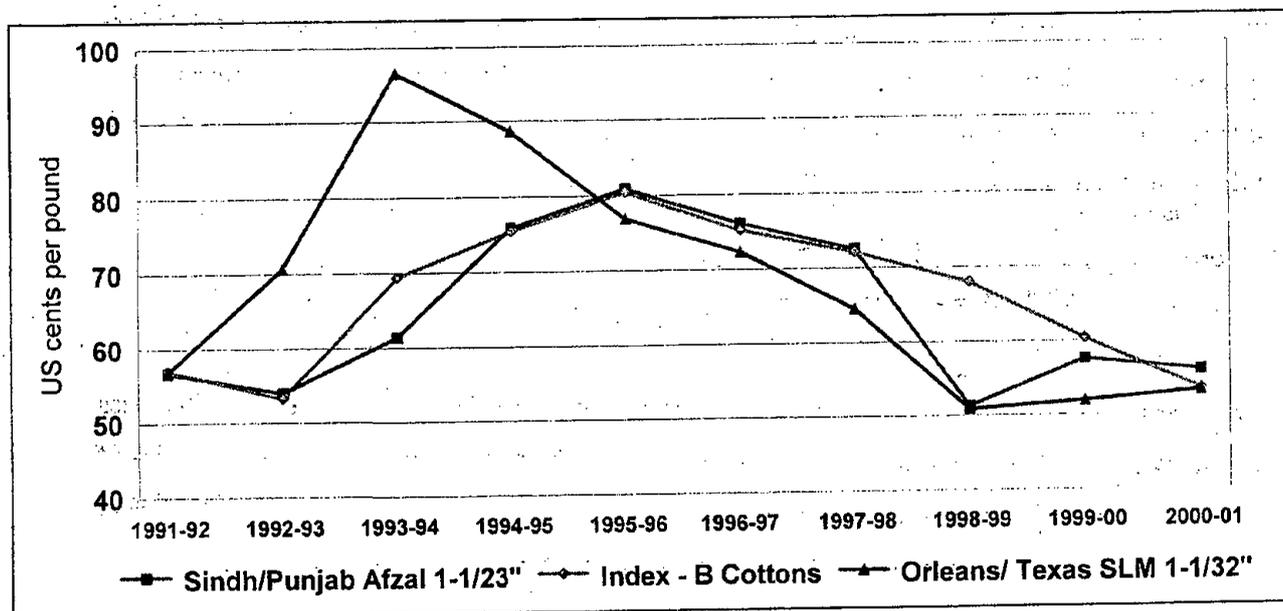


Fig- 4: CIF NORTH EUROPE PRICES OF VARIOUS COTTONS: 1990-91 TO 2000-2001

## 8.7 Parity Prices of Seed Cotton

### 8.7.1 Domestic parity price

118. A substantial proportion of cotton production is processed into yarn and used locally. Domestic prices of yarn, can provide a useful reference for working back the prices of cotton and seed cotton. The prices of cotton yarn (20's) in Karachi market during September 2001 to January 2002 averaged at Rs 438 per bundle of 4.54 kgs. Accounting for various costs involved in processing cotton into yarn, viz., conversion cost of lint into yarn, sales tax, storage and transportation costs, ginning charges, recoveries from the sale of cotton waste and cotton seed, price of seed cotton works back to Rs 791 per 40 kgs (Annex-X).

### 8.7.2 Export parity prices

119. The main objective of calculating the export parity prices is to assess the competitiveness of a commodity in the export markets. Pakistan is one of the major cotton exporting countries of the world therefore, in this section export parity prices of seed cotton have been calculated. These parity prices have been worked out on the following bases.

Actual Average export prices of Pakistani cottons during:

- 2001-02 (Sept-Jan)
- 1996-97 to 2000-01

Average cif North Europe quotations of Index-B cottons during

- 2001-02 (Sept-Jan)
- 1996-97 to 2000-01

Average cif North Europe quotations of Pakistani cotton, Afzal 1-1/32" during:

- 2001-02 (Sept-Jan)
- 1996-97 to 2000-01

Futures contract prices of New York No.2 cotton:

Average fob prices of Pakistani cotton yarn (20's) during:

- 2001-02 (Sept-Jan)
- 1996-97 to 2000-01

### 8.7.2.1 Based on average export prices of Pakistani cottons:

#### - During 2001-02 (Sept-Jan)

120. The fob (Karachi) price of Pakistani cotton during 2001-02 (Sept-Jan) has averaged at US cents 34 per pound. Applying the existing buying exchange rate of one US \$ = 59.90 Pak Rupees, the fob (Karachi) price in Pak currency works out to Rs 1,796 per 40 kgs. Accounting for the marketing expenses i.e. export and purchase incidentals, insurance & financial charges @ Rs 175 per 40 kgs, the ex-gin price of cotton (lint) calculates to Rs 1,621 per 40 kgs. Adding recovery of Rs 650 from the sale of 80 kgs of cotton seed and subtracting ginning charge of Rs 250 for 120 kgs of seed cotton, the economic price of 120 kgs of seed cotton at ginnery level works back to Rs 2,021, i.e. Rs 674 per 40 kgs. For details, Annex-XI is referred.

#### - During 1996-97 to 2000-01

121. The fob (Karachi) price of cotton has averaged at US cents 55.40 per pound for the period 1996-97 to 2000-01. Using the existing buying rate of one US \$ = 59.90 Pak Rupees the fob Karachi price calculates to Rs 2,926. Adopting the procedure for working back the price of seed cotton as discussed above, the economic price of seed cotton works out to Rs 1,050 per 40 kgs (Annex-XI).

### 8.7.2.2 Based on average cif North Europe value of Index 'B' Cottons:

#### - During 2001-02 (Sept-Jan)

122. The cif North Europe value of Index B\* cottons has averaged at US cents 37.67 per pound during 2001-02 (Sept-Jan). Subtracting the freight charges @ US cents 5 per pound, insurance, agent's commission and port handling charges @ 3% of export price (0.98 cents per pound), the net export price of lint at Karachi comes to 31.69 cents per pound. Using the existing buying exchange rate of one US \$ = 59.90 Pak rupees, the value of cotton lint calculates to Rs

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\* Index B is the average of the 3 cheapest cottons of Orleans/Texas (SLM 1-1/32"), Brazilian Type 5/6, (1-1/16"), Argentine Grade C - 1/2, (1-1/16"), Turkish Adna St. 1 White, (1-1/16"), RG, Central Asian, (SLM 1-1/16"). Pakistani Sindh/Punjab (SG Afzal 1-1/32"), Indian J-34 SG and Chinese (Type 527).

1,674 per 40 kgs. After accounting for marketing expenses and following the steps as detailed above, the ex-gin price of cotton (lint) comes to Rs 1,499 per 40 kgs. Adding recovery of Rs 650 from the sale of 80 kgs of cotton seed and subtracting ginning charges of Rs 250 for 120 kgs of seed cotton, economic price of 120 kgs of seed cotton works back to Rs 1,899 or Rs 633 per 40 kgs (Annex-XII).

- **During 1997-98 to 2001-02**

123. For the period, 1996-97 to 2000-01 the value of Index B cottons has averaged at 62.80 cents per pound. Following the procedure as discussed above, the economic price of seed cotton comes to Rs 1,062 per 40 kgs (Annex-XII).

**8.7.2.3 Based on average cif North Europe Quotations of Pakistani Cotton, Afzal 1-1/32"**

- **During 2001-02 (September-January)**

124. The cif North Europe quotations for Pakistani cotton, Afzal 1-1/32" during the period of 2001-02 (September-January) have averaged at US cents 39.23 per pound. Deducting the freight charges @ 5 cents per pound, insurance, agents commission and port handling charges @ 3% of export price (1.03 cents per pound), the net export price of lint at Karachi port comes to US cents 33.20 per pound or Pak Rs 1,754 per 40 kgs at current exchange rate of one US \$ = 59.90 Pak rupees. Accounting for the marketing expense, @ Rs 175 per 40 kgs as detailed earlier, ex-gin price of lint would come to Rs 1,579 per 40 kgs. Adding recovery of Rs 650 from the sale of 80 kgs cotton seed and subtracting ginning charges of Rs 250 per 120 kgs of seed cotton, ex-gin economic price of seed cotton works back to Rs 1,979 per 120 kgs or Rs 660 per 40 kgs. Details may be seen in Annex-XII.

- **During 1996-97 to 2000-01**

125. The cif North Europe quotations for Afzal 1-1/32" cotton during the period of 1996-97 to 2000-01 have averaged at US cents 53.24 per pound. Adopting the procedure as explained above, the ex-gin economic price of seed cotton comes to Rs 899 per 40 kgs (Annex-XII).

#### **8.7.2.4 Future contract prices of New York No.2 cotton**

126. The future prices of New York No.2 cotton for the deliveries in October, December, 2002 and March 2003 as quoted in Cotton Outlook March 6, 2002 averaged at 41.66 cents per pound. After subtracting the grade and staple discount and inland transportation charges, the parity prices for Pakistani cotton at Karachi works back to 32.11 cents per pound or Rs 1,696 per 40 kgs at the current exchange rate of one US \$ = Rs 59.90. Accounting for the export expenses, value of cotton seed and ginning charges, the economic price of seed cotton calculates to Rs 640 per 40 kgs (Annex-XIII).

#### **8.7.2.5 Based on average fob price of Pakistani cotton yarn (20's):**

##### **- During 2001-02 (September-January)**

127. The fob price of Pakistani cotton yarn (20's) during 2001-02 (Sep-Jan) has averaged at US cents 144.95 per kg or Rs 87 per kg. Accounting for the expenses entailed in buying and exports of yarn i.e. transport, wharfage, handling at port and forwarding, adhesive and EDC charges @ Rs 2, cost of export packing @ Re 1 per kg, recovery from sale of 0.16 kgs of cotton waste @ Re 1 per kg, conversion charges of lint into yarn @ Rs 30 per kg, transport cost from ginnery to mill for lint @ Rs 30 per 40 kgs, value of cotton seed @ Rs 650 per 80 kgs and ginning charges @ Rs 250 per 40 kgs of lint, the economic price of seed cotton at ginnery level works back to Rs 754 per 40 kgs. Details may be seen in Annex-XIV.

##### **- During 1996-97 to 2000-01**

128. The fob price of Pakistani cotton yarn (20's) during 1996-97 to 2000-01 averaged at US cents 217 per kg or Rs 130 per kg. Adopting the procedure mentioned earlier the economic price of seed cotton at ginnery level works back to Rs 1,200 per 40 kgs. Details may be seen in Annex-XIV.

### 8.7.3 Import parity prices

129. Calculation of import parity prices is helpful in assessing the opportunity cost of the resources used in its domestic production. As Pakistan has been importing cotton in recent years, its import parity prices have also been worked back and following basis have been used.

Average cif North Europe prices of Orleans/Texas Cotton, SLM 1-1/32" during:

- 2001-02 (Sept-Jan)
- 1996-97 to 2000-01

Actual average cif (Karachi) prices of imported cotton during:

- 2001-02 (Sept-Jan)
- 1996-97 to 2000-01

#### 8.7.3.1 Based on average cif North Europe Quotations of Orleans/Texas, SLM 1-1/32"

- **During 2001-02 (Sep to Jan)**

130. The average cif North Europe quotations of Orleans/Texas, SLM 1-1/32" during 2001-02 (Sep-Jan) averaged at US Cents 37.27 per pound. Adding freight charges @ US 5 cents per pound and forwarding charges @ US 0.56 cents per pound, insurance charges, agent's commission and port handling charges @ US 1.71 cents per pound, the landed cost at Karachi comes to US 44.54 cents per pound or Rs 2,372 per 40 kgs. Adding handling charges at port and transport cost from port to textile mill at Karachi @ 2.5 per cent of cif price (Rs 59), the ex-gin price of lint cotton calculates to Rs 2,432. After adding for the value of 80 kgs cotton seed i.e. Rs 650 and subtracting the ginning charges @ Rs 250, the economic price of seed cotton works back to Rs 2,832 per 120 kgs or Rs 944 per 40 kgs. Details may be seen in Annex-XV.

- **During 1996-97 to 2000-01**

131. The cif price of North Europe quotations of Orleans/Texas, SLM 1-1/32" during 1996-97 to 2000-01 averaged at US cents 63.34 per pound. Adopting the procedure as mentioned above, the economic price of seed cotton at ginnery level works back to Rs 1,445 per 40 kgs (Annex-XV).

### 8.7.3.2 Based on actual average cif (Karachi) price of imported cotton (September to January)

#### - During 2001-02

132. Actual Average cif (Karachi) price of imported cotton averaged at Rs 3,092 per 40 kgs during 2001-02 (Sept to Jan). Adding the handling charges at port and transport cost from port to textile mill at Karachi @ 2.5 per cent of cif price (Rs 77); ex-gin price of lint cotton calculates to Rs 3,169. After adding for the value of 80 kgs of cotton seed i.e. @ Rs 650 and subtracting the ginning charges @ Rs 250, the economic price of seed cotton works back to Rs 3,569 per 120 kgs or Rs 1,190 per 40 kgs. Details may be seen in Annex-XVI.

#### - During 1996-97 to 2000-01

133. Actual average cif (Karachi) price of imported cotton averaged at 3,122 per 40 kgs during 1996-97 to 2000-01. Adopting the procedure mentioned above, the economic price of seed cotton works back to Rs 1,200 per 40 kgs (Annex-XVI).

## 9. THE SUPPORT PRICE

134. Cotton production during the last decade has experienced many ups and downs. The record production of 12.8 million bales was achieved in 1991-92. However, in the recent past it has ranged between 10 – 11 million bales. A steady growth in its production is important to boost up the national economy which heavily depends on cotton due to its all round importance. In this respect, adoption of sound production and marketing policies is a *sin-qua-non*.

135. The domestic opening stocks of cotton in September 2001 were 2.84 million bales. Adding production of 10.56 million bales, and imports of one million, the total supplies during 2001-02 are expected around 14.40 million bales. After accounting for domestic consumption and exports at this stage, the end year stocks may exceed 3.5 million bales, one of the highest during the last decade.

136. During 2001-02, cotton production at the global level is estimated to increase by about 8.45 per cent. The total supplies are reported to rise to 29.81 million tonnes, as compared to 28.44 million in the previous year, i.e. an increase of 4.82 per cent. End year stocks projected to rise 10.21 million tonnes, would raise the stocks - consumption ratio to 52 per cent against 44 per cent in 2000-01. Accordingly, the prices are going to remain easy.

137. Based on the analysis of different domestic and international factors, domestic options about seed cotton prices are summarised as under:

Base	Worked back price of seed cotton at ginnery level <u>Rupees per 40 kgs</u>
A. Parity price of seed cotton based on the domestic price of yarn at Karachi (Annex-X)	791
B. Export parity prices based on:	
i) Actual average export price of Pakistani cotton (Annex-XI)	
- During 2001-02 (Sept-Jan)	674
- During 1996-97 to 2000-01	1,050
ii) Cif (North Europe) quotation of Index-B cottons: (Annex-XII)	
- During 2001-02 (Sept-Jan)	633
- During 1996-97 to 2000-01	1,062
iii) Afzal 1-1/32": (Annex-XII)	
- During 2001-02 (Sept-Jan)	660
- During 1996-97 to 2000-01	889
iv) Futures contract prices of New York No.2 cotton (average of October 2002, December 2002 and March 2003) (Annex-XIII)	640
v) Average fob prices of Pakistani cotton yarn (20's): (Annex-XIV)	
- During 2001-02 (Sept-Jan)	754
- During 1996-97 to 2000-01	1,200
C. Import parity prices based on:	
i) Actual average cif North Europe quotation of Orleans/Texas SLM 1-1/32" (Annex-XV)	
- During 2001-02 (Sept-Jan)	944
- During 1996-97 to 2000-01	1,445
ii) Cif Karachi prices of imported cotton: (Annex-XVI)	
- During 2001-02 (Sept-Jan)	1,190
- During 1996-97 to 2000-01	1,200
D. Average domestic market price of seed cotton in 2001-02 (September-January)	766
E. Cost of production for 2002-03 crop	
Punjab (Annex-V)	771
Sindh (Annex-VI)	699

138. The seed cotton price worked back from the cotton yarn (20's) price at Karachi during the current season calculates to Rs 791 per 40 kgs against the monthly average market prices of seed cotton ranging between Rs 669 to 912 per 40 kgs during the current season (September to January).

139. The worked back export parity prices of seed cotton when calculated from actual average export prices of Pakistani cottons, cif North Europe value of Index-B and Sindh/Punjab Afzal 1-1/32" cotton during 2001-02 ranged from Rs 633 to 691 per 40 kgs and when worked back from the average during 1996-97 to 2000-01, these ranged from Rs 889 to 1,062 per 40 kgs. The export parity price of seed cotton worked back from futures contract price of New York No.2 cottons (average of October 2002, December 2002 and March 2003) comes to Rs 640 per 40 kgs.

140. The export parity prices of seed cotton, when worked back from the export prices of cotton yarn (20's) in 2001-02 (September-January) calculates to Rs 754 and to Rs 1,200 per 40 kgs when calculated from the average of yarn prices during 1996-97 to 2000-01.

141. During post harvest period (September- January) 2000-01, the domestic market prices of seed cotton have ranged between Rs 669 and Rs 912 per 40 kgs in the main producing area markets of the Punjab and Sindh. In the beginning of the season, the market prices which were below the support price of Rs 780, during the peak season (November-December), ruled higher. During January and February again prices have been below the support price.

142. The import parity prices of seed cotton at ginnery level, based on cif North Europe quotations of Orleans/Texas SLM 1-1/32" during September to January 2001-02, and 1996-97 to 2000-01 come to Rs 944 and Rs 1,445 per 40 kgs. The import parity price of seed cotton as worked back from the actual average cif (Karachi) price of imported cotton works back to Rs 1,190 and Rs 1,200 per 40 kgs in 2001-02 and during 1996-97 to 2000-01 periods.

143. The real support price of seed cotton in 2001-02, in terms of 1990-91 rupees, has improved to Rs 320 per 40 kgs against Rs 245 in 1990-91 while the real market price in 2001-02 in terms of 1990-91 rupees was Rs 333 as compared to 330 per 40 kgs in 1990-91.

144. The cost of production (COP) of seed cotton at ginnery level for the 2002-03 crop is estimated at Rs 771 per 40 kgs for Punjab and Rs 699 for Sindh. These estimates represent increase of Rs 23 and 19 per 40 kgs or about 4 per cent over the corresponding estimates for 2001-02 crop.

145. Notwithstanding the marginal increase in cost of production, it remain somewhat less than the support price. Moreover, the results of export parity analysis based on the prices in 2001-02 season and the future outlook of export markets in the short run do not warrant any increase in the existing support price of seed cotton.

146. Keeping in view the relevant factors at domestic and international level and results of the analysis summarized above, the support/minimum guaranteed price of base grade seed cotton (Grade-3 with staple length 1-1/16") for 2002-03 crop is recommended below:

**Support/Minimum Guaranteed Price of Seed Cotton**

	Rs per 40 kgs
- During 2001-02 (actual)	780
- During 2002-03 (proposed)	780

147. The support/minimum guaranteed price is not meant to replace the market driven price in the normal circumstances, but is essential in the years of good crop and situations of market failure to protect the farmers' investment in cotton farming. Moreover, the confusion between the support/minimum and intervention price need to be removed for promoting healthy relationship between various sub-sectors of the cotton economy. Nonetheless, strict implementation of the support price by the TCP holds the key to the success of Government policy.

148. In addition to the above support/minimum guaranteed price, following rates of premia/discounts are proposed:

**Premia/Discounts for Various Grades/Staple Length of Seed Cotton  
at the Base Price of Rs 780 per 40 kgs**

(Rupees per 40 kgs)

Grade	Staple length				
	1"	1-1/32"	1-1/16"	1-3/32"	1-1/8"
Super	25	42	59	76	94
One	10	28	45	62	80
Two	-2	16	33	50	67
Three	-17	Base	17	34	51
Four	-35	-18	-1	16	34
Five	-53	-36	-19	-2	16

149. The support price of seed cotton is implemented indirectly through purchasing of lint by the designated agency. TCP had fixed lint price of base grade cotton lint (based on the price of Rs 780 per 40 kgs of seed cotton) at Rs 1,988 per 40 kgs (Rs 1,855 per maund of 37.324 kgs) in 2001-02 which may be implemented by it. In addition, the premia and discounts as announced by KCA every week should be enforced by TCP.

#### 10. PAYMENT OF QUALITY PREMIUM

150. In the past, the support prices of seed cotton were used to be fixed on the basis of variety. But at the marketing stage, variety was not that important as cotton (lint) price was affected by its grade, staple length, micronaire, etc. Thus, the issue of switching over from variety to grade was debated for a long time among the experts. The main hurdle in switching over to grade based price was that KCA as per its rules was announcing the spot prices of lint by variety. On APCom's initiative, the Ministry of Commerce moved an amendment in this respect which was approved by the government. So, since 1-7-2000, the KCA started announcing spot prices of lint on the basis of grade, staple length and micronaire. Accordingly, the ECC of the Cabinet in its meeting held on 8-6-2001, decided to fix the intervention price for 2001-02 seed cotton (phutti) crop for base grade 3 with staple length 1-1/32" and micronaire range from 3.8 – 4.9 NCL at Rs 780 per 40 kgs. Rates of premia/discounts were also announced.

151. Pakistan Cotton Standards Institute (PCSI) has provided premium/discount rates for various grades of seed cotton. These rates are provided in Table-14 below:

**Table-14: Premia/Discounts for Various Grades of Seed Cotton**

Grade	Lint technical differentials	Premia/discounts (Per cent)
Super	10.70/200	5.4
One	7.13/200	3.6
Two	3.95/200	2.0
Three	Base	Base
Four	-4.66/200	-2.3
Five	-9.25/200	-4.6

Source: Pakistan Cotton Standards Institute, Karachi.

152. KCA while announcing lint spot prices also announces premia and discounts for its various grades. These rates average at as given in Table-15 below:

**Table-15: Premia/Discounts for Various Grades of Lint**

Grade	Premia/discounts (Per cent)
Super	8.6
One	5.9
Two	3.0
Three	Base
Four	3.2
Five	6.4

153. Alongwith the above premia/discounts, the KCA provides Rs 54 per 40 kgs of cotton (lint) premium/discount for each 1-1/32" increase/decrease in staple length. Combining all the information presented above, the premia/discounts as worked out for various grades and staple lengths of seed cotton over and above the price of Rs 780 per 40 kgs are shown in Table-16.

**Table-16: Premia/Discounts for Various Grades/Staple Length of Seed Cotton at the Base Price of Rs 780 per 40 kgs**

(Rupees per 40 kgs)

Grade	Staple length				
	1"	1-1/32"	1-1/16"	1-3/32"	1-1/8"
Super	25	42	59	76	94
One	11	28	45	62	80
Two	-2	16	33	50	67
Three	-17	Base	17	34	51
Four	-35	-18	-1	16	34
Five	-53	-36	-19	-2	16

154. Since seed cotton is not directly purchased by the implementing agency i.e. Trading Corporation of Pakistan, the above premia/discounts serve only as indicative ones. TCP buys lint and to ensure that the above premia/discounts are applied in the open market, the TCP should offer equivalent premia/discounts on lint which calculate as under in Table-17.

**Table-17: Premia/Discounts for Various Grades/Staple Lengths for Lint Offered to the Procurement Agency**

(Rs per 40 kgs)

Grade	Staple length				
	1"	1-1/32"	1-1/16"	1-3/32"	1-1/8"
Super	113	172	231	288	347
One	61	118	175	231	288
Two	4	60	116	170	226
Three	-54	Base	54	107	161
Four	-116	-64	-12	40	92
Five	-178	-128	-77	-28	23

155. The discounts for various grades of seed cotton having micronaire values outside the acceptable range are given in Table-18.

**Table-18: Discounts for the Micronaire Beyond Specified Limits**

Micronaire below 3.8 in Grades Super, 1,2 and 3 and below 3.5 in Grades 4 and 5 or micronaire in excess of 4.9 for all grades	Per cent discount
0.1	0.5
0.2	1.0
0.3	2.0
0.4	3.0
0.5	4.0

Note: The varieties grown in Pakistan generally do not have problems of micronaire as it falls within the acceptable limits during most of the picking season except for very early or late pickings.

156. Thus, it is believed that if the TCP offers premia/discounts as provided in Tables-17 and 18 the growers would be encouraged to produce quality seed cotton. The market would also encourage the sale and purchase of quality lint.

#### 11. MARKETING OF COTTON, 2001-02 CROP

157. For the crop of 2001-02, the Federal Government fixed the support/intervention price of seed cotton at Rs 780 per 40 kgs and directed the TCP to implement this price indirectly through purchasing one million bales of lint, in case the market prices of seed cotton prevailed at lower than the fixed level. The TCP was provided credit of Rs 10 billion to procure cotton for the purpose of price stabilisation. Initially, the TCP announced the procurement price of lint as Rs 1,961 per 40 kgs (or Rs 1,830 per maund of 37.324 kgs) and then enhanced it to Rs 1,988 per 40 kgs (or Rs 1,855 per maund).

158. During the course of APCom's field survey in January 2002 and the meeting of its Standing Committee on cotton held on 18-2-2002, inter alia, the prices received by the growers, the issue of implementation of support price and other aspects of cotton marketing were discussed at length. The growers confirmed that during September and October, the prices of seed cotton in the main producing area markets of Sindh and Punjab remained around Rs 700

per 40 kgs. The prices in domestic market were quite bearish due to dull buying activity by the mills, expectations of a bumper crop, low international prices and considerable imports, global recession and the fall out from the 11<sup>th</sup> September terrorist attacks in USA. From mid-November onward, as the economic activities picked up, prices of seed cotton started increasing and ranged between Rs 750 – 900 per 40 kgs by end December. But as the purchases by the textile industry in January slowed down, the prices of seed cotton crashed in domestic market and hovered around Rs 600 per 40 kgs in mid-February. Thus, the market prices of seed cotton have remained much lower than the support price of Rs 780 per 40 kgs for a considerable period in the current season, resulting in huge income losses to the farming community.

159. The TCP was assigned a procurement target of one million bales which was about 9.5 per cent of the estimated production of cotton in the country. But the actual procurement remained as low as 0.203 million bales (while the contracts were made of 0.366 million bales) till the 20<sup>th</sup> March, 2002 due to rather cautious purchases by the Corporation. Instead of making aggressive purchasing to push up the market prices of cotton, the TCP seemed mostly to stick to procurement of contamination free cotton from Balochistan and Rahim Yar Khan district in the Punjab. On persuasion of KCA and the APTMA, the project of contamination free cotton was undertaken in these areas but ironically both these organizations did not show much enthusiasm to purchase 1.2 million bales of such cotton, which was to be lifted at a higher price of Rs 200 per maund in addition to normal market price of a specific grade of lint cotton. Practically, the procured quantities of cotton by TCP were so small that those could not improve the market prices significantly. Lack of interest on the part of TCP, KCA and APTMA in purchasing the contamination free cotton would discourage the ginning factories to continue this useful and long awaited programme during the next crop season.

160. A disappointing feature of cotton marketing in the season was that the APTMA in the beginning of the season imported one million bales from abroad. It increased the supply and depressed the price situation further in the country and the growers had to bear the brunt of this free trade policy. An other distressing aspect of cotton marketing in the 2001-02 season has been the lack of application of quality premia and discounts alongwith the fixed support prices of seed cotton and cotton lint. All the cotton buyers, particularly the APTMA, should adopt this practice

so that the price should be paid according to the quality of produce which will help improve the overall quality standard of Pakistani cottons.

161. Under the depressed market scenario as discussed above, the growers were not only paid lower than the fixed support price of seed cotton but their payments were also delayed by the ginning factories because of sluggish market and piling up of stocks. It was reported that by mid February, about 1.5 million bales were lying unsold in the ginneries and unginning cotton equal to more than one million bales was still in the hands of ginners and growers. The spinners were not making quick payments to ginning factories as due to abundant supply, the cotton market had become a buyers' market. Ultimate sufferers in this chain were the growers who were not paid by the ginners because of the unsold stocks and payments stuck with textile mills.

162. The domestic consumption is about 10.3 million bales of cotton against the total supplies of 14.39 million bales (i.e. opening stocks of 2.8 million bales plus imports of 1.0 million bales plus production of 10.55 million bales). In the meeting of APCom's Standing Committee on Cotton, the participants stressed upon strict implementation of support price and containing the imports to only lint of long staple cotton. In this connection, it was urged that Government should discourage the imports of short staples and make arrangement to record the staple length of every imported consignment of cotton. The Government should also review its import policy with regard to agricultural commodities particularly in the beginning of the harvesting season of each commodity.

163. Besides low prices and delayed payments of cotton, the farmers have to face a lot of problems in disposing of their produce to commission agents and 'beoparies'. They have complained that dealers and brokers are engaged in the practice of applying an arbitrary discount of 2 - 3 kgs per 40 kgs of seed cotton on the pretexts of higher moisture/impurities in the produce, thus lowering the net proceeds of the farmers by Rs 35 - 60 per 40 kgs of seed cotton. In order to improve the situation, the APCom reiterates its suggestion that the marketing system may be studied with reference to marketing costs, delayed payments, payments according to quality, underweighting and undue deductions from the growers.

### 11.1 Cotton Trade and Prices

164. The Government in recent years has allowed duty free imports and exports of cotton. Though it is in line with the current trend of globalization, the policy has however, resulted in large imports of cotton even during the peak of harvesting the domestic crop, and without much consideration of the quality of imports. The build up of large stocks has inter alia depressed the domestic prices of cotton.

165. Cotton fruiting and picking spread over several months requiring due care and attention by the growers. Depressed prices at the beginning of season discourage the growers in adopting adequate plant protection measures against the pests. Consequently, increased pest flare up in September-October have often caused large scale damage to the crop. The cost of plant protection weighs heavily on farmers' mind and if the prices of the produce are depressed, it discourages the farmers to adopt preventive/currative measures. Accordingly, it is imperative that the cotton trade is so regulated that it should discourage large scale imports and building of stocks in general and at the beginning of cotton season in particular. At the same time the government agency needs to be geared up for active intervention, right in the beginning of the season, if so warranted by the market.

## 12. IMPROVING PRODUCTIVITY, QUALITY AND MARKETING

166. Annually cultivated over an area of 3 million hectares, accounting for 60% of export earnings, 70% of the domestic production of edible oil and providing raw material to the largest industry in the country, cotton plays a crucial role in the economy of Pakistan. Notwithstanding its importance, the production and marketing of the crop is confronted with a number of bottlenecks impacting on the efficiency of the sector. In view of the rising input prices and falling prices of the produce it is imperative to enhance the productivity and efficiency of the cotton production and marketing systems to maintain competitiveness in the domestic and export markets. Therefore, a number of measures for improving productivity, quality and marketing of cotton are proposed in this section.

## 12.1 Improving Productivity

167. Enhancing cotton production in general and through improving per hectare yield in particular is an important objective of agricultural policy. The achievement of this objective requires an integrated campaign entailing; (i) adoption of high yielding disease resistant varieties; (ii) provision of improved certified seed in sufficient quantity; (iii) balanced and judicious use of fertilizers and (iv) protecting the crop from insect and pest attack through Integrated Pest Management (IPM) approach. These measures of improving productivity were discussed in the Support Price Policy for Seed Cotton, 2001-02 crop but did not get space in the summary presented by MINFAL to the ECC.

168. The APCom has reviewed its earlier recommendations on productivity issue in the light of the discussions held with the coordinator IPM, with the farmers during the course of field visits and in the meeting of the Standing Committee on Cotton. The conclusions drawn from these discussions have led to the view that all the measures relating to productivity issue including those highlighted in APCom's previous support price policies for seed cotton should become components of an integrated approach adopted for implementation. No doubt our breeders have evolved high yielding cotton varieties, but production and multiplication of their seed at commercial scale has not been carried to the desired level. Similarly, public and private sectors are actively involved in seed business but certified seed of approved varieties is not reaching to the growers in sufficient quantity. Moreover, adulterated seed and seed of unapproved varieties is also being sold by local seed agencies/traders. The growers are not aware of new varieties, sources of their pure seed and the production technology and agronomic practices. The following paragraphs entail a brief discussion on improved seed of resistant varieties, balanced use of plant nutrients/soil management and Integrated Pest Management (IPM) programme.

### 12.1.1 Improved seed

169. Improved seed of disease resistant high yielding varieties of cotton plays a vital role in enhancing its production. Experts recommend that every year entire area of cotton is an open

pollinated crop be planted with certified seed. Thus, annual seed requirement is directly related with the area under this crop which has ranged between 2,800 and 3,100 thousand hectares during the decade ending 2001-02. The situation regarding supply of certified seed during this period, however, has shown a wide variation. The province wise supply of certified seed by public and private sectors from 1991-92 to 2001-02 is given in Annexes-XVII and XVIII.

### **Punjab**

170. The data presented in Annex-XVII reveal that during the decade ending 2001-02, total annual requirement of certified seed of cotton, has ranged between 45 and 51 thousand tonnes. Against that supplies have sharply fluctuated. As mentioned earlier, both public and private sectors have been doing the seed business, the former mainly constituted by Punjab Seed Corporation. No doubt seed produced, multiplied and distributed by the Punjab Seed Corporation (PSC) has enjoyed an edge in quality over that supplied by the private sector but overtime supplies by PSC reduced from about 11.86 thousand tonnes in 1991-92 to only 3.30 thousand tonnes in 2001-02. This indicates the lack of resources with the corporation and also the overall policy environment for the public sector. The trading of private sector has though improved in the seed business but except in 2000-01 it was sufficient to make up for the reduced supplies from public sector. The problem at the moment is the quality standard which has remained the hall mark of the Punjab Seed Corporation.

171. The analysis of the data regarding variety wise seed supplies for sowing 2001-02 crop (Table-19), has revealed that Niab-78 still occupies the largest area under cotton in the Punjab (19.26%) followed by CIM-446 (9.28%), BH-118 (4.84%), FH-900 (3.87%), Krishma (3.26%), CIM-109 (3.14%), FH-901 (2.99%), and CIM-443 (2.15%). The other high yielding varieties include CIM-448, CIM-240, SLS-1, MNH-554 and BH-36 but due to non availability of their seed they could not expand much. The Table- further indicates that about 48 per cent of cotton area is still being cultivated with either un-approved varieties or with farm produced uncertified seed implying that encouraging the production of certified seed and making it available to the growers may enhance the cotton productivity to a considerable extent. Thus, government should

encourage both public as well as private sectors to enhance seed production of improved varieties of cotton. Moreover, growers should be persuaded to adopt new varieties of cotton.

**Table-19: Distribution of Cotton Seed in the Punjab by Variety: 2001-02**

Variety	Public Sector	Private Sector	Total	Area Covered
				Per cent
-----Tonnes-----				
N Karishma	573.5	1101.5	1675.0	3.26
CIM-443	103.6	999.7	1103.3	2.15
CIM-446	1333.0	3419.6	4752.6	9.28
Niab-78	1202.3	8667.5	9869.8	19.26
CIM-109	128.0	1479.5	1607.5	3.14
BH-36	143.0	399.0	542.0	1.06
CIM-448	32.0	116.0	148.0	0.29
CIM-240	-	91.0	91.0	0.18
FVH-53	0.0	8.0	8.0	0.02
SLS-1	-	164.0	164.0	0.32
MNH-554	-	46.0	46.0	0.09
BH-118	728.0	1751.5	2479.5	4.84
FH-901	205.2	1325.5	1530.7	2.99
CIM-482	1.3	866.9	868.2	1.69
FH-900	253.3	1729.5	1982.8	3.87
Total	4703.2	22165.1	26868.3	52.44

Source: FSC&RD Islamabad

Note: Rounding of figures may result in slight differences in total

### Sindh

172. The data regarding requirement and supply of certified seed of cotton in Sindh (Annex-XVIII) indicate that during the decade ending 2001-02 supply of certified seed has been very much disappointing. However, during 1997-98 and 1998-99 private sector was reported to have supplied 8.37 and 23.17 thousand tonnes of certified seed of relaxed standards respectively which resulted in covering 50 and 123 per cent of the cotton acreage implying that in 1998-99 seed supplies were 23 per cent more than the requirements. Apparently this situation looks encouraging but seed supplies dropping to even less than one thousand tonnes in the subsequent years do not support the statistics provided for 1998-99 crop season.

173. Variety-wise information regarding seed availability in Sindh during 2001-02 has been presented in Table-20. The analysis indicates that during this year only 9.48 per cent of cotton area was sown with certified seed. Table- indicates that major variety adopted in this province is also NIAB-78. The other varieties are CIM-446 and CRIS-9 but these varieties have hardly covered 0.16 per cent of the cotton acreage. Thus almost 90 per cent of cotton crop in the province is sown with un-certified seed or with varieties not specifically developed for cultivation in the province. However, higher yields of seed cotton observed in Sindh than in the Punjab show inverse relation between seed supplies and cotton production. The concerned agencies/departments may look into the matter and unveil real situation regarding supply of certified seed in Sindh.

**Table-20: Distribution of Cotton Seed in Sindh by Variety: 2001-02 Crop**

Variety	Public Sector	Private Sector	Total	Area covered with certified seed
-----Tonnes-----				Per cent
Niab-78	0.75	1458.0	1458.75	9.33
CIM-446	22.0	0.0	22.00	0.14
CRIS-9	1.0	2.0	3.00	0.02
Total	23.75	1460.0	1483.75	9.48

Source: FSC&RD Islamabad

Note: Rounding of figures may result in slight differences in total

174. The public and private sector seed distributing agencies need to be encourage multiply and distribute the seed of all important varieties recommended for cultivation in the province so that farmers could benefit from the fruits of cotton research.

### 12.1.2 Soil management/balanced use of nutrients

175. Intensive cropping, imbalanced use of chemical fertilizers, inadequate use of organic manure have caused continuous drain on soil nutrients resulting in soil depletion of both major and minor nutrients. Moreover, increasing salinity, sodicity, agro-chemical pollution and soil erosion have posed serious threat of soil de-gradation causing a decline in productive capacity of the land and reducing potential yields. Cotton, being a deep rooted crop, extracts nutrients from

different layers but hard pans developed in the soil are hindering the proper development of its roots resulting in retarded growth and lower yields. The productivity of cotton has also declined due to degradation of soil. The empirical results on nutrient uptake by cotton have shown that it annually removes about 73 kgs of N, 28 kgs of  $P_2O_5$ , 56 kgs of K per hectare. Assuming 50 per cent efficiency for applied fertilizers the doses of applied fertilizers are not only sub optimal but also imbalanced. This in turn is affecting the productivity and production of the crop.

176. To arrest further degradation/deterioration of soil and soil fertility and in turn crop productivity, there is an urgent need of launching a comprehensive and well coordinated campaign for adding organic as well as inorganic nutrients to the soil, reducing pollution by adopting non-toxic method of Integrated Pest Management (IPM), re-building top soil by soil amendments entailing periodic use of farm yard manure, adoption of green manuring practices and incorporation of crop residues, use of bio fertilizers, composts, balanced doses of fertilizers nutrients based on soil analysis etc. For better achievement on the subject provincial agricultural research institutes are required to develop various bio fertilizers and area/crop rotation specific fertilizer recommendations and their wide publicity through extension departments.

### **12.1.3 Integrated Pest Management (IPM)**

177. Before 1980 Jassid was the major pest in cotton farming. But the extensive use of pesticides overtime has changed the pest complex. Beside jassid, bollworm and whitefly have become major pests in cotton production. American bollworm, aphid and tea mites were originally not the pest of cotton in Pakistan. However, as a result of indiscriminate use of pesticides they have become important pests of cotton causing huge production losses. The losses due to insect pests increased from 250 thousand bales in 1992-93 to 3,050 thousand bales in 1998-99 (FAO-2001). Besides direct yield losses, the insects also cause indirect loss by transmitting diseases to other crops and impacting on the quality of produce.

178. Aggressive marketing of pesticides by private companies through electronic and other mass media and fear of pest outbreak have trapped the farmers in a pesticide treadmill of more frequent applications, which is the main reason of current crisis. The indiscriminate use of

pesticides pose a heavy threat to the human and animal life as well as the environment. The situation, inter alia, demands the adoption of an Integrated Pest Management (IPM) approach involving cultural, biological and chemical measures as no single method by itself may be able to achieve the desired objectives. These include: (i) sowing varieties resistant to insects and diseases; (ii) adoption of cultural practices (crop rotation, inter-cropping, timing of planting) that prevent build up of pests; (iii) trapping of pests with trap crop; (iv) selective and judicious use of pesticides including bio-pesticides; (v) biological control of insects by increasing the population of predators, parasitoids or insect pathogens; (vi) microbial control; (vii) insect growth regulators; (viii) sex-pheromones (ix) physical control (mechanical removal of pests). Some salient features of the IPM programme are highlighted below:

#### 12.1.3.1 Resistant Varieties

179. The hairy varieties of cotton are resistant to jassid attack. Moreover, Nectariless cotton provides resistance to bollworms and leaf hoppers. In Pakistan most of the cotton varieties evolved by the breeders possess these characters. The breeding of cotton varieties resistant to bacterial blight and root rot of cotton have also been advanced.

#### 12.1.3.2 Cultural Practices

180. These include hoeing and destruction of weeds, inter-cropping, changing planting times, crop rotation etc. The typical role of different practices in the control of pest attacks is given below:

- a) Hoeing and destruction of weeds and alternate host plants in cotton area before and after the sowing of cotton help in minimising the population of whitefly, American bollworm, spotted bollworm, army worm, mites and sucking pests.
- b) Early planting of cotton encourages attack of thrips and spotted bollworms, while its late planting results in late maturity and heavy infestation of pink bollworm.
- c) In cotton-wheat and cotton-fallow rotation a pest free period of almost six months helps to eliminate hibernating and diapausing larvae of bollworms.
- d) Maize helps in buildup of *H. armigera*. The planting of maize and sorghum around cotton fields also helps in multiplication of parasitoids and predators.

- e) Infestation of jassid in cotton is reduced during hot and dry seasons. High temperatures induce sterility in pink bollworm. The weather condition, though are not controllable yet it may induce pest warning.
- f) Lucern helps in conservation of predators to control sucking pests. The most important predators are the green lace wing (*Chrysoperla carnea*), flower bug (*Orius Sp*) and syrphid fly. Other predators include *Geocorus Sp.*, *Corams Sp.*, beetles, spiders and birds. Therefore, adjusting this crop in the existing crop nations may help reduce the attack of these pests.
- g) Animal grazing after last picking is recommended to avoid carry over, and control pink bollworm. Removal of cotton sticks and shedding of left over bolls and then their destruction alongwith burning of waste of ginning factories also minimise the pink bollworm infestation to coming crop.
- h) Post-harvest ploughing with furrow turning plough and early irrigation help in reducing the diapausing pink bollworm population in cotton fields.

#### 12.1.3.3 Biological Control

181. This method includes conservation, redistribution, augmentation and introduction of natural enemies i.e. parasites and predators. The predators are more important in Pakistan than parasites as they are more active in the early part of cotton season. The parasites multiply on bollworm larvae quite late in the season when the crop has already matured.

182. The research has found that in Pakistan about one hundred natural enemies are associated with different cotton pests. The main predators are chrysopa species, onion species, *Geocorus* spiders, *corams* species (already mentioned under cultural practices). These predators play an important role in regulating the sucking pests population and early bollworm damages. Early use of chemicals results in the destruction of these predators and causing resurgence of pests. The government should strengthen the National IPM programme for accelerating research and encourage the private companies for commercial rearing and marketing of useful insects and other predators.

#### 12.1.3.4 Microbial control

183. Micro-organisms, such as bacteria, viruses, fungi etc. cause diseases in pests and help in keeping their population at low levels. Environmental factors such as temperature, relative

humidity, rainfall, by affecting the behaviour of pests also play an important role in the development and dissemination of these organisms. IPM institute at Multan should undertake research on microbial control of pests and introduce its findings among the growers for their adoption.

#### **12.1.3.5 Insect growth regulators**

184. These are special groups of chemicals that alter growth and development of insects. These are commonly known as third generation insecticides and are selective, specific and non-toxic to human, wild life and environment. Consequently, they are compatible with IPM programmes. These pesticides/chemicals include acdysone, juvenile hormone, juvenile hormone mimic and juvenile hormone analoge. Some research work to determine the effectiveness of growth regulators viz. Atabron and Cascade against bollworms of cotton is reportedly in progress. This task should be completed expeditiously and results disseminated for practical utility.

#### **12.1.3.6 Sex-pheromones**

185. Insect pheromones are extremely powerful species specific attractants which are emitted by female insects to attract males for mating. The multi directional research has resulted in the development of behavioural control through sex-pheromones which are used in three ways; (a) monitoring of insect population; (b) mass trapping by using large numbers of traps to kill the male population; (c) direct control through disruption of mating by saturating the atmosphere with pheromones so that insects become unable to find a mate.

186. The pheromones have several advantages over conventional insecticides used for insect control. They are specific for the target species, non-toxic to plants and animals and do not contaminate the environment with poisonous residues. The species specific nature of pheromones preserves beneficial insects and thus prevents the outbreaks of other minor pests. The research has identified and synthesized such attractants for use as potential pest control agent. Their use should be promoted by extension staff in collaboration with private pesticide companies.

#### **12.1.4 National IPM for cotton**

187. In 1997 a project on "Cotton IPM Implementation through Training of Facilitators (ToF) and Farmers Field Schools (FFS) was done by CABI RBC Rawalpindi. Now, there is awareness and commitment at highest level in the Government to rationalize the use of pesticides and to adopt the alternative approaches. Recently IPM has been institutionalized and has moved from project approach to a viable and sustainable national programme. Thus a consultative process among potential stakeholders led to the establishment of a National Integrated Pest Management Programme (Nat-IPM) in December 2000 at National Agricultural Research Centre (NARC) Islamabad. In 2001, Nat-IPM conducted cotton IPM activities in cotton growing areas of Sindh and Punjab through ToF and FFS. Two ToF sites in Sindh province imparted IPM training to extension workers, researchers and 460 cotton farmers have been trained in Sindh, 206 in ToF Khairpur and 254 in ToF Sakrand while in Punjab at Vehari and Khanewal, 115 farmers have been trained, It is planned that during the coming years more ToFs and FFSs will be conducted in Punjab, Sindh and Balochistan.

188. In view of the achievements of the cotton IPM programmes currently in action in selected areas of the Punjab and Sindh, there is a need to strengthen and expand these programmes to entire cotton areas.

#### **12.2 Improving Quality and Marketing**

189. In order to get remunerative prices of seed cotton in domestic and international markets it is imperative to improve the quality of our cotton. In this context, APCom had recommended a number of non-price measures in its previous years' support price policy reports. But due to one or the other reason these recommendations have not been implemented properly by the concerned agencies. Therefore, these are reviewed and reiterated below for implementation during the 2002-03 crop year.

### **12.2.1 Improving quality**

#### **12.2.1.1 Picking**

190. Proper picking of seed cotton is essential for producing quality cotton. For the purpose of getting best results from the picking, cotton should be picked when about 60 per cent of the balls have matured and opened. Picking should be done after the dew has dried. The produce of each variety after picking should be kept separately at the dry place. The produce from dirty and infected bolls should not be mixed with other produce. In order to maintain good quality, produce from the first and last pickings should be kept separate.

#### **12.2.1.2 Ginning**

191. Better ginning is of utmost importance for improving the quality of lint and due care is needed to be exercised at this stage. The saw gins used by the industry are often of poor quality, which damage staple strength and length. To improve the quality, there is a need for installing pre-ginning cleaners and other such equipment at gins. For getting lint of best grades, research should be undertaken on different types of ginning and cleaning machines. For this purpose APCom in its support price policy reports for 1999-00, 2000-01 and 2001-02 crops recommended that "A ginning Research Institute should be established at Multan to deal with the issues of cotton grades and other problems relating to the quality of lint". It is understood that the Institute is to be established in the private sector but due to certain procedural bottlenecks, the decision has not been implemented yet. The recommendation is reiterated to be implemented during 2002-03.

#### **12.2.1.3 Contamination – free cotton**

192. Cotton produced in Pakistan is rated as one of the best cottons with respect to maturity and strength, however, there are complaints about its contamination with non-lint contents. Being hand-picked, the quality of Pakistani cotton should be better than the cotton of those competing countries where it is picked mechanically. But the factual position is in reverse

because of carelessness in picking, drying, handling, ginning and bundling. Various types of extraneous material is admixed in the produce, such as, immature and dry bolls, leaves, grass, dust, sand, paper, hair, threads of jute, polythene bags, etc. which deteriorates the quality of produce and causes huge losses to the national economy.

193. As a main user of domestic cotton, the APTMA was seriously concerned about its quality. On 25<sup>th</sup> June 2001, a meeting was held in the APTMA House Lahore which was attended by the representatives of various organisations, such as, TCP, PCCC, PCSI, APTMA and KCA. The meeting discussed the alarming situation and urged for remedial measures. So realising the complaints of domestic spinning industry and importers of Pakistani cotton regarding contamination, the Federal Government decided to launch a project in Rahim Yar Khan district of the Punjab, Ghotki in Sindh and Nasirabad in Balochistan during the cotton season 2001-02 and assigned the responsibility to PCSI for production of contamination free cotton through the implementation of cotton standardisation system.

194. The PCSI made extensive efforts to implement this project, including preparation of 100 sets of seed cotton grade boxes, 100 sets of lint cotton standard boxes, survey of ginning factories in all the three districts, training of the Classers and preparation of guidelines for the whole chain of functionaries, inter alia, the contractual buyers and sellers of cotton. In collaboration with APTMA, the level of contamination and premium on contamination free cotton was also determined. The Provincial Governments were requested to make necessary amendments in the Cotton Control Act 1966. Reportedly, the Government of Punjab has made the required amendments to facilitate the implementation of the project and banned the use of jute "boras"/hessian cloth for packing of cotton while in Sindh the same amendments are under consideration.

195. During the cotton season 2001-02, the PCSI has successfully tried to implement the project in Rahim Yar Khan and Nasirabad districts but due to one or the other reason it could not be carried out in Ghotki district. The efforts of Provincial Governments, cotton farmers, ginners and the PCSI have resulted in production of contamination free cotton to the tune of 1.2 million bales (i.e. 1.1 million in Rahim Yar Khan and 0.1 million bales in Nasirabad district) having

contamination level of as low as 0.5 gram to 2.5 grams per bale of 170 kgs. Even the APTMA has reported that contamination level has come down from 19 grams to only 5 grams per bale of lint.

196. No doubt the production of 1.2 million bales of cotton without impurities is a story of success which gives hope that Pakistan is capable to produce its full crop in clean and pure form within next 2-3 years. However, due to some bottlenecks being faced by producers in the disposal of contamination free cotton can turn the whole success in a gloomy picture. In this regard, the most serious lapse is on the part of spinning mills which have lost their enthusiasm to sign a contract of purchase with the ginning factories for contamination free cotton at an additional price of Rs 200 per maund and for cotton of 2.5 gram contamination per bale level at an additional price of Rs 75 per maund over the market price of a specific cotton grade.

197. According to field reports, thousands of bales of contamination free cotton are lying unsold and the ginning factories are facing serious liquidity problems, resulting in failure to make payment to farmers. Naturally, this grave situation would discourage the growers and ginners, and all efforts may be in vain. The APTMA should persuade its members to purchase all the contamination free cotton on premium prices so that the project undertaken on their initiative turns out to be a success. The KCA and TCP should also provide patronage to this programme which is of vital importance for the national economy.

### **12.2.2 Improving Marketing**

#### **12.2.2.1 Under-weighment and undue deductions**

198. Underweighment and undue deductions on the part of 'beoparies' and ginners/commission agents have been a common practice in case of cotton. During the APCom field survey in the main cotton growing areas and also in the meeting of Standing Committee on Cotton, held at Islamabad on 18-02-2002, the farmers complained about underweighment and undue deductions by the market intermediaries. In order to check these malpractices in cotton marketing, supervisory committees may be constituted at the district level. These committees

should consist of the representatives of provincial Agriculture Departments, local market committees, growers and cotton dealers.

#### **12.2.2.2 Proper packing and labeling**

199. Proper packing and labelling improves marketing process in the shape of good presentation and attracting the buyers' demand. False labelling in the past had brought bad name for the country. Therefore, it is urged upon that truthful labelling and proper packing be ensured. It should be ensured by the MINFAL that cotton lint variety in the pack be properly labelled according to the contents of that package.

### 13. ACKNOWLEDGEMENTS

200. The assistance of the following officers and staff in the preparation of Support Price Policy for Seed Cotton, 2002-03 Crop is acknowledged:

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27.	Mr. Muhammad Hussain	Stenotypist
28.	Mr. Muhammad Naeem	DMO
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30.	Mr. Muhammad Ashfaq	N/Q
<p>Dr. Abdul Salam Member (Economics)/ also looking after the work of Chairman, APCOM</p>		

## RECOMMENDED SOWING TIMES OF COTTON

S.No	Province	District	Variety	Time of sowing		
A.	Punjab	Lahore, Gujranwala, Hafizabad, Sialkot, Narowal, Gujrat, Sheikhupura	Desi	From last week of March to mid April		
			Desi	Mid March to Mid April		
		Rawalpindi, Attock, Jhelum, Chakwal, Kasur	American	10 <sup>th</sup> May to 15 <sup>th</sup> June		
			Desi	From last week of March to mid April		
		Faisalabad, Sargodha, Mandi Bahauddin, Khushab, Bhakkar	Desi	2 <sup>nd</sup> fortnight of April		
			American	20 <sup>th</sup> May to 15 <sup>th</sup> June		
		Jhang, T.T. Singh, Mianwal	American	1 <sup>st</sup> May to 15 <sup>th</sup> June		
			American	1 <sup>st</sup> May to 15 <sup>th</sup> June		
		Sahiwal, Pak Pattan, Okara, Multan, Lodhran, Vehari	American	15 <sup>th</sup> May to 15 <sup>th</sup> June		
			Desi	Mid March to early April		
		Khanewal, Bahawalpur, R. Y. Khan, Bahawalnagar	American	1 <sup>st</sup> May to 15 <sup>th</sup> June		
			American	1 <sup>st</sup> May to 20 <sup>th</sup> June		
		Muzaffargarh Layyah	Desi	Whole month of April		
			American	1 <sup>st</sup> May to last June		
		D.G. Khan, Rajanpur Thatta	American	-----do-----		
			American	-----do-----		
		B.	Sindh	Mirpur Khas, Umer Kot, Tharparkar	American	15 <sup>th</sup> Feb. To 15 <sup>th</sup> March
				Hyderabad, Badin	American	March to 15 <sup>th</sup> April
C.	NWFP	Sanghar	American	10 <sup>th</sup> April to 10 <sup>th</sup> May		
		Dadu, Khairpur Sukkur, Ghotki	American	Mid April to mid May		
D.	Balochistan	Nawabshah	American	Mid May to 10 <sup>th</sup> June		
		D.I. Khan	American	1 <sup>st</sup> May to 31 <sup>st</sup> May		
		Lasbela, Dera Murad Jamali, and Nasirabad	American	1 <sup>st</sup> May to 31 <sup>st</sup> May		

- Sources:
1. Cotton Resarch Station, Multan
  2. PCCC, Karachi
  3. Cotton Research Institute, Sakrand

**PROVINCE-WISE AREA(HECTARES), PRODUCTION AND YIELD OF COTTON  
IN PAKISTAN:1991-92 TO 2001-02**

Year	Punjab	Sindh	N.W.F.P	Balochistan	Pakistan
<b>AREA</b> ----- 000 hectares -----					
1991-92	2286.9	547.6	0.8	0.2	2835.5
1992-93	2437.8	397.4	0.5	0.2	2835.9
1993-94	2249.2	554.9	0.2	0.3	2804.6
1994-95	2244.4	405.6	0.3	2.5	2652.8
1995-96	2463.3	529.3	0.2	4.5	2997.3
1996-97	2540.2	601.2	0.3	6.9	3148.6
1997-98	2348.4	600.3	0.5	10.5	2959.7
1998-99	2282.8	630.2	0.4	9.4	2922.8
1999-00	2329.3	633.5	0.3	20.0	2983.1
2000-01	2386.4	523.6	0.2	17.3	2927.5
2001-02	2561.6	521.4	0.2	40.3	3123.5
<b>YIELD</b> ----- Kgs per hectare -----					
1991-92	849	436	361	425	769
1992-93	575	349	238	425	543
1993-94	493	465	340	397	488
1994-95	562	538	227	313	558
1995-96	602	598	255	495	601
1996-97	476	637	340	493	506
1997-98	494	662	272	494	528
1998-99	494	576	298	496	512
1999-00	643	638	340	493	641
2000-01	609	696	340	496	624
2001-02	565	629	425	504	575
<b>PRODUCTION</b> ----- 000 bales -----					
1991-92	11416.8	1403.2	1.7	0.5	12822.2
1992-93	8237.1	815.5	0.7	0.5	9053.8
1993-94	6523.0	1517.9	0.4	0.7	8042.0
1994-95	7410.0	1282.1	0.4	4.6	8697.1
1995-96	8720.0	1861.5	0.3	13.1	10594.9
1996-97	7103.4	2250.2	0.6	20.0	9374.2
1997-98	6817.0	2335.5	0.8	30.5	9183.8
1998-99	6628.0	2134.1	0.7	27.4	8790.2
1999-00	8804.0	2377.4	0.6	58.0	11240.0
2000-01	8540.0	2141.1	0.4	50.4	10731.9
2001-02	8507.0	1929.4	0.5	119.3	10556.2

**Note:** Cne bale = 170.09 kgs = 375 lbs

- Sources:**
1. For 1991-92 to 1998-99: Agricultural Statistics of Pakistan, 1999-00, MINFAL, Islamabad.
  2. For 2000-01: Final estimates supplied by MINFAL, Islamabad
  3. For 2001-02: Second estimates of Punjab, Sindh and Balochistan and final estimates of NWFP supplied by Provincial Agriculture Departments.

**PROVINCE-WISE AREA(HECTARES), PRODUCTION AND YIELD OF COTTON  
IN PAKISTAN:1991-92 TO 2001-02**

Year	Punjab	Sindh	N.W.F.P	Balochistan	Pakistan
<b>AREA</b> ----- 000 hectares -----					
1991-92	2286.9	547.6	0.8	0.2	2835.5
1992-93	2437.8	397.4	0.5	0.2	2835.9
1993-94	2249.2	554.9	0.2	0.3	2804.6
1994-95	2244.4	405.6	0.3	2.5	2652.8
1995-96	2463.3	529.3	0.2	4.5	2997.3
1996-97	2540.2	601.2	0.3	6.9	3148.6
1997-98	2348.4	600.3	0.5	10.5	2959.7
1998-99	2282.8	630.2	0.4	9.4	2922.8
1999-00	2329.3	633.5	0.3	20.0	2983.1
2000-01	2386.4	523.6	0.2	17.3	2927.5
2001-02	2561.6	521.4	0.2	40.3	3123.5
<b>YIELD</b> ----- Kgs per hectare -----					
1991-92	849	436	361	425	769
1992-93	575	349	238	425	543
1993-94	493	465	340	397	488
1994-95	562	538	227	313	558
1995-96	602	598	255	495	601
1996-97	476	637	340	493	506
1997-98	494	662	272	494	528
1998-99	494	576	298	496	512
1999-00	643	638	340	493	641
2000-01	609	696	340	496	624
2001-02	565	629	425	504	575
<b>PRODUCTION</b> ----- 000 bales -----					
1991-92	11416.8	1403.2	1.7	0.5	12822.2
1992-93	8237.1	815.5	0.7	0.5	9053.8
1993-94	6523.0	1517.9	0.4	0.7	8042.0
1994-95	7410.0	1282.1	0.4	4.6	8697.1
1995-96	8720.0	1861.5	0.3	13.1	10594.9
1996-97	7103.4	2250.2	0.6	20.0	9374.2
1997-98	6817.0	2335.5	0.8	30.5	9183.8
1998-99	6628.0	2134.1	0.7	27.4	8790.2
1999-00	8804.0	2377.4	0.6	58.0	11240.0
2000-01	8540.0	2141.1	0.4	50.4	10731.9
2001-02	8507.0	1929.4	0.5	119.3	10556.2

**Note:** One bale = 170.09 kgs = 375 lbs

- Sources:**
1. For 1991-92 to 1998-99: Agricultural Statistics of Pakistan, 1999-00, MINFAL, Islamabad.
  2. For 2000-01: Final estimates supplied by MINFAL, Islamabad
  3. For 2001-02: Second estimates of Punjab, Sindh and Balochistan and final estimates of NWFP supplied by Provincial Agriculture Departments.

**PROVINCE-WISE AREA (IN ACRES), PRODUCTION AND YIELD OF COTTON  
IN PAKISTAN :1991-92 TO 2001-02**

Year	Punjab	Sindh	N.W.F.P	Balochistan	Pakistan
<b>AREA</b> ----- 000 acre -----					
1991-92	5651.2	1353.2	2.0	0.5	7006.8
1992-93	6024.0	982.0	1.2	0.5	7007.8
1993-94	5558.0	1371.2	0.5	0.7	6930.4
1994-95	5546.1	1002.3	0.7	6.2	6555.3
1995-96	6087.1	1308.0	0.5	11.1	7406.6
1996-97	6277.1	1485.6	0.7	17.1	7780.5
1997-98	5803.1	1483.4	1.2	25.9	7313.7
1998-99	5641.0	1557.3	1.0	23.2	7222.5
1999-00	5755.9	1565.4	0.7	49.4	7371.5
2000-01	5897.0	1293.9	0.5	42.8	7234.1
2001-02	6330.0	1288.4	0.5	99.6	7718.5
<b>YIELD</b> ----- Kgs per acre -----					
1991-92	344	176	146	172	311
1992-93	233	141	96	172	220
1993-94	200	188	138	161	197
1994-95	227	218	92	127	226
1995-96	244	242	103	200	243
1996-97	192	258	138	200	205
1997-98	200	268	110	200	214
1998-99	200	233	120	201	207
1999-00	260	258	138	200	259
2000-01	246	281	138	201	252
2001-02	229	255	172	204	233
<b>PRODUCTION</b> ----- 000 bales -----					
1991-92	11416.8	1403.2	1.7	0.5	12822.2
1992-93	8237.1	815.5	0.7	0.5	9053.8
1993-94	6523.0	1517.9	0.4	0.7	8042.0
1994-95	7410.0	1282.1	0.4	4.6	8697.1
1995-96	8720.0	1861.5	0.3	13.1	10594.9
1996-97	7103.4	2250.2	0.6	20.0	9374.2
1997-98	6817.0	2335.5	0.8	30.5	9183.8
1998-99	6628.0	2134.1	0.7	27.4	8790.2
1999-00	8804.0	2377.4	0.6	58.0	11240.0
2000-01	8540.0	2141.1	0.4	50.4	10731.9
2001-02	8507.0	1929.4	0.5	119.3	10556.2

**Note:** One bale = 170.09 kgs = 375 lbs

- Sources:**
1. For 1991-92 to 1998-99: Agricultural Statistics of Pakistan, 1999-00, MINFAL, Islamabad.
  2. For 2000-01: Final estimates supplied by MINFAL, Islamabad
  3. For 2001-02: Second estimates of Punjab, Sindh and Balochistan and final estimates of NWFP supplied by Provincial Agriculture Departments.

**AREA, YIELD AND PRODUCTION OF SEED COTTON BY DISTRICT:  
AVERAGE OF 1998-99 TO 2000-01**

Area = 000 hectares  
Production = 000 bales  
Yield = Kgs/ha

S.No.	Province/District	Area	Percentage	Production	Percentage	Yield
<b>PUNJAB</b>						
1	R.Y.Khan	309.58	10.52	1102.97	10.76	606
2	Bahawalpur	261.69	8.89	1007.55	9.83	655
3	Vehari	237.55	8.07	862.82	8.42	618
4	Khanewal	191.28	6.50	703.19	6.86	625
5	Lodhran	197.05	6.69	700.53	6.83	605
6	Rajanpur	142.18	4.83	631.61	6.16	756
7	Bahawalnagar	187.93	6.38	610.46	5.95	553
8	Multan	163.49	5.55	558.97	5.45	582
9	M.Garh	184.80	6.28	513.45	5.01	473
10	D.G.Khan	99.15	3.37	404.17	3.94	693
11	Sahiwal	77.97	2.65	215.77	2.10	471
12	Pakpattan	49.37	1.68	132.94	1.30	458
13	Jhang	58.37	1.98	131.13	1.28	382
14	T.T.Singh	41.14	1.40	110.84	1.08	458
15	Layyah	41.17	1.40	99.11	0.97	409
16	Faisalabad	38.47	1.31	94.15	0.92	416
17	Okara	19.16	0.65	46.57	0.45	413
18	Kasur	9.07	0.31	18.99	0.19	356
19	Bhakkar	5.82	0.20	14.63	0.14	428
20	Sargodha	8.37	0.28	14.43	0.14	293
21	Mianwali	4.95	0.17	11.17	0.11	384
22	M.B.Din	2.28	0.08	2.70	0.03	202
23	Sheikhupura	0.80	0.03	1.20	0.01	254
24	Khushab	0.54	0.02	0.70	0.01	221
25	Jhelum	0.40	0.01	0.36	0.00	153
26	Chakwal	0.27	0.01	0.27	0.00	170
<b>PUNJAB Sub-total</b>		<b>2332.83</b>	<b>79.23</b>	<b>7990.66</b>	<b>77.93</b>	<b>583</b>
<b>SINDH</b>						
1	Sanghar	120.94	4.11	509.78	4.97	717
2	Ghotki	100.65	3.42	355.41	3.47	601
3	Nawab shah	67.28	2.29	279.56	2.73	707
4	Khairpur	76.84	2.61	266.42	2.60	590
5	Hyderabad	57.02	1.94	218.39	2.13	651
6	N.Feroze	52.03	1.77	195.29	1.90	638
7	Mirpurkhas	49.42	1.68	162.04	1.58	558
8	Sukkur	33.00	1.12	117.66	1.15	606
9	Umer Kot	32.80	1.11	97.47	0.95	505
10	Dadu	3.08	0.10	10.59	0.10	585
11	Badin	2.60	0.09	4.77	0.05	312
12	Thatta	0.08	0.00	0.12	0.00	237
13	Jacobabad	0.01	0.00	0.02	0.00	421
14	Shikarpur	0.01	0.00	0.01	0.00	340
<b>SINDH Sub-total</b>		<b>595.77</b>	<b>20.23</b>	<b>2217.53</b>	<b>21.63</b>	<b>633</b>
<b>NWFP Sub-total</b>		<b>0.30</b>	<b>0.01</b>	<b>0.55</b>	<b>0.01</b>	<b>311</b>
<b>BALUCH. Sub-total</b>		<b>15.60</b>	<b>0.53</b>	<b>45.27</b>	<b>0.44</b>	<b>494</b>
<b>PAKISTAN Total</b>		<b>2944.50</b>	<b>100.00</b>	<b>10254.00</b>	<b>100.00</b>	<b>592</b>

- Notes:**
1. Data have been arranged in descending order of production.
  2. Percentage share calculated on the basis of country total.
  3. Districts in which Seed Cotton is not grown or for which the data are not available are excluded.

**Source:** Ministry of Food, Agriculture and Livestock, Islamabad.

**AVERAGE FARMERS' COST OF PRODUCTION ESTIMATES OF SEED COTTON  
IN THE PUNJAB: 2001-02 AND 2002-03 CROPS**

No.	Operations / Inputs	Average No. of operations	2001-02 crop		2002-03 crop		Change in 2002-03 over 2001-02
			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	0.386	350.00	135.10	380.00	146.68	11.58
	1.2 Ploughing	2.154	130.00	280.02	140.00	301.56	21.54
	1.3 Planking	0.318	65.00	20.67	70.00	22.26	1.59
	1.4 Ploughing+planking	2.828	130.00	367.64	140.00	395.92	28.28
	1.5 Levelling (tractor hrs)	0.597	175.00	104.48	185.00	110.45	5.97
2.	Seed and sowing operations:						
	2.1 Seed (kgs)	9.866	35.00	345.31	35.00	345.31	0.00
	2.2 Delinting of seed	-	-	100.00	-	100.00	0.00
	2.3 Sowing						
	2.3.1 Drilling	0.939	130.00	122.07	140.00	131.46	9.39
	2.3.2 Ploughing+planking	0.076	130.00	9.88	140.00	10.64	0.76
	2.3.3 Manual labour for sowing, bund making and gap filling (m.days)	0.319	90.00	28.71	95.00	30.31	1.60
3.	Irrigation: * (Nos)						
	3.1 Canal	2.888	-	93.02	-	93.02	0.00
	3.2 Private tubewell	2.922	225.00	657.45	225.00	657.45	0.00
	3.3 Mixed	1.093	162.00	177.07	162.00	177.07	0.00
4.	Labour for irrigation and water course cleaning (m.days)	4.157	90.00	374.13	95.00	394.92	20.79
5.	Interculture:						
	5.1 With tractor	1.667	130.00	216.71	140.00	233.38	16.67
	5.2 With bullocks	1.508	130.00	196.04	140.00	211.12	15.08
	5.3 Manual weeding/thinning (m.days)	2.404	90.00	216.36	95.00	228.38	12.02
6.	Plant Protection including application (weedicides + pesticides)	5.779	400.00	2311.60	402.00	2323.16	11.56
7.	Farm Yard Manure including transport and application 50% (trolley load)	0.319	550.00	87.73	570.00	90.92	3.19
8.	Fertilizers: (bags)						
	8.1 DAP	0.628	710.00	445.88	716.00	449.65	3.77
	8.2 SSP	0.057	260.00	14.82	263.00	14.99	0.17
	8.3 NP	0.262	475.00	124.45	530.00	138.86	14.41
	8.4 TSP	0.001	572.00	0.57	546.00	0.55	-0.03
	8.5 SOP	0.007	686.00	4.80	797.00	5.58	0.78
	8.6 Urea	1.780	390.00	694.20	385.00	685.30	-8.90
	8.7 CAN	0.102	260.00	26.52	270.00	27.54	1.02
	8.8 Gypsum	0.017	40.00	0.68	40.00	0.68	0.00
	8.9 NPK	0.012	665.00	7.98	665.00	7.98	0.00
9.	Fertilizer transport and application	2.866	15.00	42.99	16.00	45.86	2.87
10.	Mark up on investment @ 14 % per annum for 8 months on items 1 to 9 minus 3(1)	-	-	663.96	-	680.21	16.25
11.	Management charges for 8 months	-	-	260.00	-	290.00	30.00
12.	Land rent for 8 months	-	4500.00	3000.00	4750.00	3166.67	166.67
13.	Land revenue including local rate, chaukidara, etc.	-	-	-	-	5.00	5.00
14.	Payment to pickers (Rs/ 40 kgs)	16.770	70.00	1173.90	70.00	1173.90	0.00
15.	Cutting of cotton sticks	-	-	173.00	-	185.00	12.00
16.	Gross cost (item 1 to 15)	-	-	12477.73	-	12881.74	404.01
17.	Value of cotton sticks	-	-	173.00	-	185.00	12.00
18.	Net cultivation cost (item 16-17)	-	-	12304.73	-	12696.74	392.01
19.	Yield per acre (kgs)	-	-	670.80	-	670.80	0.00
20.	Cost per 40 kgs at farm level	-	-	-	-	-	-
	20.1 including land rent	-	-	733.73	-	757.11	23.38
	20.2 excluding land rent	-	-	554.84	-	568.28	13.44
21.	Marketing expenses: (Rs/40 kgs)	-	-	14.00	-	14.00	0.00
22.	Cost per 40 kgs at market/ginnery:	-	-	-	-	-	-
	22.1 including land rent	-	-	747.73	-	771.11	23.38
	22.2 excluding land rent	-	-	568.84	-	582.28	13.44

\* hrs/irrigation.

Canal=2.27 T.well=2.89 Mixed=2.07

**AVERAGE FARMERS' COST OF PRODUCTION ESTIMATES OF SEED COTTON  
IN SINDH: 2001-02 AND 2002-03 CROPS**

S.No	Operations / Inputs	Average No. of operations	2001-02 crop		2002-03 crop		Change in 2002-03 over 2001-02
			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	0.336	360.00	120.96	370.00	124.32	3.36
	1.2 Ploughing	2.786	190.00	529.34	200.00	557.20	27.86
	1.3 Planking	0.022	95.00	2.09	100.00	2.20	0.11
	1.4 Ploughing+planking	0.730	190.00	138.70	200.00	146.00	7.30
	1.5 Levelling (tractor hrs)	0.843	190.00	160.17	200.00	168.60	8.43
2.	Seed and sowing operations:						
	2.1 Seed (kgs)	11.638	35.00	407.33	35.00	407.33	0.00
	2.2 Delinting of seed			120.00		120.00	0.00
	2.3 Sowing						
	2.3.1 Ridging	0.184	190.00	34.96	200.00	36.80	1.84
	2.3.2 Drilling	0.816	190.00	155.04	200.00	163.20	8.16
	2.3.3 Manual labour for sowing, bund making and gap filling (m. days)	0.531	90.00	47.79	95.00	50.45	2.66
3.	Irrigation: * (Nos)						
	3.1 Canal	4.882	-	93.09	-	93.09	0.00
	3.2 Private tubewell	0.344	145.00	49.88	145.00	49.88	0.00
	3.3 Mixed	0.368	127.00	46.74	127.00	46.74	0.00
4.	Labour for irrigation and water course cleaning (m.days)	3.312	90.00	298.08	95.00	314.64	16.56
5.	Interculture:						
	5.1 With tractor	0.351	190.00	66.69	200.00	70.20	3.51
	5.2 With bullocks	0.815	190.00	154.85	200.00	163.00	8.15
	5.3 Manual weeding/thinning (m.days)	7.069	90.00	636.21	95.00	671.56	35.34
6.	Plant Protection including application (weedicides + pesticides)	3.651	476.00	1737.88	479.00	1748.83	10.95
7.	Farm Yard Manure (including transport and application) 50% (trolley load)	0.157	1300.00	102.05	1345.00	105.58	3.53
8.	Fertilizers: (bags)						
	8.1 DAP	0.835	710.00	592.85	717.00	598.70	5.84
	8.2 NP	0.088	475.00	41.80	547.00	48.14	6.34
	8.3 SOP	0.014	686.00	9.60	750.00	10.50	0.90
	8.4 Urea	1.708	390.00	666.12	386.00	659.29	-6.83
	8.5 CAN	0.202	260.00	52.52	270.00	54.54	2.02
	8.6 AS	0.002	303.00	0.61	318.00	0.64	0.03
	8.7 NPK	0.007	665.00	4.66	665.00	4.66	0.00
9.	Fertilizer transport and application	2.856	15.00	42.84	16.00	45.70	2.86
10.	Mark up on investment @ 14 % per annum for 8 months on items 1 to 9 minus 3(1)			580.51		594.41	13.90
11.	Management charges for 8 months			260.00		290.00	30.00
12.	Land rent for 8 months		2500.00	1666.67	2650.00	1766.67	100.00
13.	Land revenue including local rate, chaukidara, etc.					5.00	5.00
14.	Payment to pickers (Rs/ 40 kgs)	15.060	80.00	1204.80	80.00	1204.80	0.00
15.	Cutting of cotton sticks			272.00		285.00	13.00
16.	Gross cost (item 1 to 15)			10296.81		10607.63	310.82
17.	Value of cotton sticks			272.00		285.00	13.00
18.	Net cultivation cost (item 16-17)			10024.81		10322.63	297.82
19.	Yield per acre (kgs)			602.40		602.40	0.00
20.	Cost per 40 kgs at farm level						
	20.1 including land rent			665.66		685.43	19.78
	20.2 excluding land rent			554.99		568.12	13.14
21.	Marketing expenses: (Rs/40 kgs)			14.00		14.00	0.00
22.	Cost per 40 kgs at market/ginnery:						
	22.1 including land rent			679.66		699.43	19.78
	22.2 excluding land rent			568.99		582.12	13.14

\* hrs/irrigation

Canal=1.85 T.well=2.19 Mixed=1.924

**Notes for Annex-V and VI**

1. The physical input-output parameters for estimating cost of production of Seed Cotton, 2002-03 crop, have been adopted from the Support Price Policy for Seed cotton, 2001-02 Crop, ACom Series No. 194.
2. The custom hire rates of field operations and inputs prices involved in cotton cultivation have been revised in the light of data collected through mini field survey conducted by the ACom during January, 2002 in major cotton producing regions of the Punjab and Sindh, 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 18<sup>th</sup> February, 2002 at Islamabad.
3. The rates of fertilizers have been revised in light of retail prices of fertilizers for the week ended on 31<sup>st</sup> January, 2002 supplied by the Federal Bureau of Statistics, Islamabad.
4. The material cost (90 per cent) of pesticides/weedicides has been kept at last year's level in view of the discussion made by the Director, Plant Protection, Deptt, Karachi in the meeting of standing committee that rising trend in the prices of pesticides and weedicides has been arrested on account of the availability of new generic and low cost pesticides/weedicides. The balance 10 per cent of the cost for application has been revised in the light of wage rate.
5. The cost of FYM has been revised in view of changes in the prices of fertilizers and wage rate.
6. 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 @ Rs 3620 per month salary for a Field Assistant at the 10th stages of 2001 revise scales in BPS-6, including special additional allowance @ 25 per cent.
7. The land rents have been revised in view of the observations during the mini field survey, conducted by the ACom, in the major seed cotton growing regions of the Punjab and Sindh and discussion made with the knowledgeable growers and crop experts in the meeting of the Standing Committee on Seed Cotton.

**ECONOMICS OF SEED COTTON AND COMPETING CROPS  
AT PRICES REALIZED BY GROWERS: 2001-02 CROPS**

Crops/ crop combinations	Crop duration	Water used	Gross cost	Cost of purcha- sed inputs	Gross revenue	Gross margin	Net income	Output- input ratio	Revenue per		
									Rupees of Purchased inputs cost	Crop day	Acre inch of irrigation water used
1	2	3	4	5	6	7=6-5	8=6-4	9=6/4	10 = 6/5	11=6/2	12 = 6/3
		Days	Acre inches	--- Rupees per acre ---				--- Rupees ---			
<b>Punjab</b>											
1 Seed cotton	240	22	12584	5518	13052	7534	468	1.04	2.37	54.38	593.27
2 Basmati paddy	180	58	9762	5406	10027	4621	265	1.03	1.85	55.71	172.88
3 IRRI paddy	180	62	8344	4594	7927	3333	-417	0.95	1.73	44.04	127.85
4 Wheat	180	17	8631	3681	8108	4427	-523	0.94	2.20	45.04	476.94
5 Sunflower (spring)	144	22	7038	2223	8820	6597	1782	1.25	3.97	61.25	400.91
6 Cotton + wheat	420	39	21215	9199	21160	11961	55	1.00	2.30	50.38	542.56
7 Cotton + sunflower	384	44	19622	7741	21872	14131	2250	1.11	2.83	56.96	497.09
8 Sugarcane	394	44	16467	5340	16899	11559	432	1.03	3.16	42.89	384.07
<b>Sindh</b>											
1 Seed cotton	240	18	10311	4177	10829	6652	518	1.05	2.59	45.12	601.61
2 IRRI paddy	180	56	7005	3194	7501	4307	496	1.07	2.35	41.67	133.95
3 Wheat	180	15	7353	3013	7439	4426	86	1.01	2.47	41.33	495.93
4 Sunflower (Spring)	144	22	7038	2223	8820	6597	1782	1.25	3.97	61.25	400.91
5 Cotton+Wheat	420	33	17664	7190	18268	11078	604	1.03	2.54	43.50	553.58
6 Cotton + Sunflower	384	40	17349	6400	19649	13249	2300	1.13	3.07	51.17	491.23
7 Suagarcane	488	58	17728	6910	25161	18251	7433	1.42	3.64	51.56	433.81

## Notes for Annex-VII

1. The economic analysis presented in the above exercise is based on the input-output prices for 2001-02 crops.
2. The data regarding input-output parameters have been adopted from the APCom's support price policy papers for sugarcane, seed cotton, rice paddy and wheat, 2001-02 crops. However, the relevant data for sunflower and canola were adopted from the support price policy for non-traditional oilseeds, 2000-01 crops with necessary amendments in input prices. To incorporate the escalations in input prices which occurred during the growing period of 2001-02 crops, some marginal revisions have been made as under:
  - 2.1 The cost of supplementary irrigation for sugarcane has been adjusted in view of 14.50 percent rise in electric power in March 2001, for cotton in view of 14.50 percent increase in electric power and 11 percent in diesel prices in June 2001, for rice in view of 11 percent rise in diesel prices and for wheat in view of 16.48 percent decline in diesel prices in November 2001. The ratio of diesel and electric tubewells in the Punjab is 85 and 15 percent and in Sindh 28 and 72 percent. Based on these ratios, the expenses on supplementary irrigation have been revised by applying the weighted average increase in energy charges at 2.18 percent in the Punjab and 10.44 percent in Sindh for sugarcane, at 11.53 percent in the Punjab and 13.52 percent in Sindh for cotton, at 9.35 percent in the Punjab and 3.08 percent in Sindh for rice while at 14.01 percent decline in Punjab and 4.61 percent in Sindh for wheat.
  - 2.2 The cost of fertilizers has been revised in view of their prices prevailed at the time of their application for the respective crops in 2001-02 season.
  - 2.3 The value of kind payments has been revised in view of prices applicable during the post harvest for the respective crops.
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 2001-02 wheat crop is yet to be harvested. Therefore the support price of wheat at Rs 300 per 40 kgs for 2001-02 crop has been adopted for the current analysis.
  - 4.2 The rice paddy is primarily transacted by the private sector in the open market. The data on wholesale prices of rice paddy were available from different sources at farm-gate and market levels during the post-harvest months of Oct 2001 to Jan 2002 in the major producing areas. Secondly, the super basmati occupies 56 per cent and (basmati-385) 29 per cent of total rice area in the Punjab as reported by the Director, Rice Research Institute, Kalashah Kaku. Accordingly, the weighted average wholesale farm gate prices for basmati paddy during November 2001 to January 2002 calculate to Rs 420 per 40 kgs with the ratio of 2:1 for super basmati and basmati-385. The farm gate prices for IRRI paddy average at Rs 226 per 40 kgs during October 2001 to January 2002 in the Punjab. In Sindh, the average wholesale market prices of IRRI paddy in the main producer area markets during the post-harvest months are reported at Rs 205 per 40 kgs in the APCom's field survey.

- 4.3 The wholesale market prices of seed cotton during the post-harvest months of Sep, 2001 to Jan, 2002 in the main producer area markets have averaged at Rs 782 per 40 kgs in the Punjab as reported by the Directorate of Agriculture (E&M), Lahore. In Sindh, the corresponding prices are reported at Rs 715 per 40 kgs by the PCCC, Karachi during Sep to Nov, 2001.
- 4.4 The 2001-02 sunflower and canola crops are yet to be harvested. The market prices of these crops are not regularly reported by any agency. Therefore, the average market prices of 2000-01 crops as reported by the PO DB at Rs 600 per 40 kgs for sunflower and Rs 650 for canola have been adopted in this analysis.
- 4.5 The market prices of sugarcane are not available from any agency. However the average mill-gate prices in the major cane producing areas were reported at Rs 37 per 40 kgs in the Punjab and Rs 47 in Sindh in view of the APCom's field survey.
5. The market prices the have been adjusted for the marketing expenses to make them effective at the farm level. These expenses amount to Rs 4.90 per 40 kgs for sugarcane, Rs 14 for seed cotton and Rs 12 for rice paddy, wheat and oilseed crops.
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.

**PROFITABILITY OF FERTILIZER USE ON SEED COTTON AT THE POST  
HARVEST MARKET PRICE FOR 2001-02 CROP**

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 21.40 per nutrient kg (i.e. Rs 16.96, 24.23 and 27.44 per nutrient kg of N, P and K at the recommended NPK ratio of 2:1:1 (a)	214.00	214.00	214.00	214.00
3	Indirect cost due to the application of additional fertilizer as detailed below (b)	93.43	110.12	126.81	143.54
	3.1 Transportation and application charges of 19.15 kgs of fertilizer @ Rs 16.00 per bag of fertilizer	6.13	6.13	6.13	6.13
	3.2 Picking charges for additional produce @ Rs 75.00 per 40 kgs	56.25	70.31	84.38	98.48
	3.3 Marketing charges for additional produce @ Rs 14.00 per 40 kgs	10.50	13.13	15.75	18.38
	3.4 Mark up on direct cost of fertilizer (item 2+3.1) for 8 months @ 14% per annum	20.55	20.55	20.55	20.55
4	Total additional cost (item 2+3)	307.43	324.12	340.81	357.54
5	Value of additional produce @ Rs 766 per 40 kgs (c)	574.50	718.13	861.75	1005.38
6	Benefit cost ratio (item 5 divided by item 4)	1.87	2.22	2.53	2.81

Notes: (a) The prices of N, P and K have been worked out from average of the prices of Urea, DAP and SOP used in COP estimates of the Punjab and Sindh for 2001-02 crop taken respectively as Rs 390, 710 and 686 per bag of 50 kgs each.

(b) The rates of indirect cost items are the average of the rates used in the COP estimates of the Punjab and Sindh for 2002-03 crop

(c) Average of the market price of 2001-02 crop for different varieties exclusive of "Desi" varieties for the period September, 2001 to January, 2002 have been used.

### CIF NORTH EUROPE PRICES OF VARIOUS COTTONS:1991-92 to 2001-02

Years	Months	Sindh/ Punjab Afzal 1-1/32"	Index- B Cottons	Orleans/ Texas Middling SLM 1-1/32"	Difference between Sindh/ Punjab Afzal 1-1/32"	
					Index- B Cottons	Orleans/Texas SLM 1-1/32"
----- US Cents per pound -----						
1991-92		56.67	57.06	61.10	-0.39	-4.43
1992-93		53.99	53.25	56.84	0.74	-2.85
1993-94		61.45	69.39	70.65	-7.94	-9.20
1994-95		75.89	75.44	96.57	0.45	-20.68
1995-96		80.95	80.48	88.65	0.47	-7.70
1996-97		76.23	75.27	76.98	0.96	-0.75
1997-98		72.23	68.00	72.38	4.23	-0.15
1998-99		51.28	68.00	64.57	-16.72	-13.29
1999-00		47.46	49.28	50.87	-1.83	-3.42
2000-01		55.98	53.46	51.91	2.52	4.07
2001-02		39.23	37.67	37.27	1.56	1.96
	September	48.38	39.30	38.50	9.08	9.88
	October	34.50	34.50	34.00	0.00	0.50
	November	33.42	35.35	37.90	-1.93	-4.48
	December	39.33	39.35	37.50	-0.02	1.83
	January	40.50	39.85	38.44	0.65	2.06

- Sources:
1. Upto 1995-96: Support Price Policy for Seed Cotton, 1997-98 Crop.
  2. For 1996-97: Reuters.
  3. For 1997-98: (i) Cotton Outlook (various issues) for Sindh/Punjab Afzal 1-1/32".  
(ii) Index - B Cottons
  4. For 1998-99:
  5. For 1999-00: Reuters.
  6. For Orleans Texas SLM 1-1/32" from 1991- 92 to 2001-02 Cotton Outlook (various issues).

**PRICE OF SEED COTTON AS WORKED BACK FROM COTTON YARN  
(20's ) PRICE AT KARACHI (SEPTEMBER, 2001 TO JANUARY, 2002)**

	<u>Rupees</u>
1 Average price of cotton yarn (20's) per bundle of 4.54 kgs	438.00
2 Average price of cotton yarn (20's) per kg	96.48
3 Recovery from sale of 0.16 kgs of cotton waste	1.34
4 Conversion charges from lint to yarn per kg	30.00
5 Value of 1.16 kgs of lint (item 2 + 3 minus item 4) (a)	67.82
6 Value of one kg of lint (item 5 divided by 1.16)	58.46
7 Value of 40 kgs lint	2338.47
8 Sales tax @ 15 % of item 9	305.02
9 Net value of 40 kgs lint after deducting sales tax (item 7 minus 8)	2033.46
10 Storage and transport cost from gin to mill per 40 kgs	30.00
11 Ex-gin price of 40 kgs lint (item 9 minus 10)	2003.46
12 Value of 80 kgs of cotton seed (b)	650.00
13 Ginning charges for 120 kgs seed cotton	250.00
14 Seed cotton price for 120 kgs (item 11+12 minus item 13) (c)	2403.46
15 Seed cotton price per 40 kgs (item 14 divided by 3)	801.15

- Notes:**
- (a) 1.16 kgs of lint = 1 kg of yarn + 0.16 kgs of waste
  - (b) Average price of cotton seed for the period September, 2001 to January, 2002 at Multan market was Rs 325 per 30 kgs.
  - (c) 120 kgs of seed cotton = 80 kgs of cotton seed + 40 kgs of lint

**Sources:**

- 1 Karachi Cotton Association (KCA), Karachi.
- 2 Pakistan Central cotton Committee (PCCC), Karachi.
- 3 Pakistan Cotton Ginners Association (PCGA), Karachi
- 4 All Pakistan Textile Mills Association (APTMA), Karachi.

**EXPORT PARITY PRICE OF SEED COTTON AS WORKED BACK FROM ACTUAL  
AVERAGE EXPORT PRICE OF PAKISTANI COTTON**

S. No	Item	2001-02 Sept - Jan	1996- 97 to 2000-01
		US Cents per pound	
1.	Actual average export price	34.00	55.40
		OR	
		Rupees (a)	
	Actual average export price per 40 Kgs	1796	2926
2.	Marketing expenses (.export & purchase incidentals, insurance & financial expenses) per 40 Kgs	175	175
3.	Ex- gin price of lint per 40.Kgs (item 1- item 2 )	1621	2751
4.	Value of 80 kgs of cotton seed (b)	650	650
5.	Ginning charges for 120 kgs of seed cotton (c)	250	250
6.	Value of 120 kgs of seed cotton (d) (items 3 +4 - item 5)	2021	3151
7.	Seed cotton price per 40 kgs ( item 6 / 3 )	674	1050

## Notes:

- a) Buying exchange rate of one US \$ = 59.90 Pak rupees, announced by National Bank of Pakistan as on Feb, 13, 2002.
- b) At the average price of Rs 325 per 40 kgs of cotton seed in Multan market during September , 2001 to January, 2002.
- c) Previously ginning charges and ginning loss together were taken at Rs 325 per 40 kgs of lint. Now it has been reported that increase in ginning out turn over time has compensated the ginning loss. Thus ginning charges @ Rs 250 per 40 kgs of lint have been used.
- d) 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. Sindh Govt has notified ginning charges @ Rs 260 per 40 Kgs of lint.
4. Pakistan Central Cotton Committee, Karachi for cotton seed price.

**EXPORT PARITY PRICE OF SEED COTTON AS WORKED BACK FROM THE CIF NORTH  
EUROPE QUOTATIONS OF INDEX B COTTONS AND PAKISTANI AFZAL 1-1/32"**

S. No	Item	Index B Cottons		Afzal 1-1/32"	
		2001-02 Sept - Jan	1996-97 to 2000-01	2001-02 Sept - Jan	1996-97 to 2000-01
-----US Cents per pound-----					
1	Average cif North Europe quotations	37.67	62.80	39.23	60.64
2	Freight charges	5.00	5.00	5.00	5.00
3	Export price ( item 1 - item 2 )	32.67	57.80	34.23	55.64
4	Insurance, agents commission, and port handling charges @ 3% of export price	0.98	1.73	1.03	1.67
5	Net export price ( item 3 - item 4)	31.69	56.07	33.20	53.97
OR -----Rupees (a)-----					
6	Marketing expenses ( export & purchase incidentals, insurance & financial expenses) per 40 kgs	1674 175	2962 175	1754 175	2851 175
7	Ex- gin price of lint per 40 kgs ( item 5 - item 6)	1499	2787	1579	2676
8	Value of 80 kgs of cotton seed (b)	650	650	650	650
9	Ginning charges for 120 kgs of seed cotton(c)	250	250	250	250
10	Value of 120 kgs of seed cotton (d) ( items 7 + 8 - item 9 )	1899	3187	1979	3076
11	Seed cotton price per 40 kgs ( item 10 / 3 )	633	1062	660	1025

## Notes:

- a) Buying exchange rate of one US \$ = 59.90 Pak rupees, announced by National Bank of Pakistan as on Feb, 13, 2002.
- b) At the average price of Rs 325 per 40 kgs of cotton seed in Multan market during September, 2001 to January, 2002.
- c) Previously ginning charges and ginning loss together were taken at Rs 325 per 40 kgs of lint. Now it has been reported that increase in ginning out turn over time has compensated the ginning loss. Thus ginning charges @ Rs 250 per 40 kgs of lint have been used.
- d) 120 kgs of seed cotton = 80 kgs of cotton seed + 40 kgs of lint.

## Sources:

1. Cif quotations calculated from Annex- IX.
2. KCA, Karachi for marketing expenses.
3. Pakistan Cotton Ginners Association, Karachi for ginning charges. Sindh Govt has notified ginning charges @ Rs 260 per 40 Kgs of lint.
4. Pakistan Central Cotton Committee Karachi, for cotton seed price.

**EXPORT PARITY PRICE OF SEED COTTON AS WORKED BACK FROM THE FUTURE  
CONTRACT PRICE OF NEW YORK NO. 2 COTTON ( AVERAGE OF  
OCTOBER, 2002, DECEMBER, 2002 AND MARCH, 2003)**

S. No	Item	Prices calculations		
		US Cents per pound		
1.	Futures contract price as on March, 6, 2002			41.66
2.	Grade and staple discount			3.55
3.	Discount on account of inland transportation and certification of stocks			6.00
4.	Parity price of Afzal 1-1/32" at Karachi			32.11
		<b>OR</b>	<b>Rupees</b>	<b>(a)</b>
	Parity price per 40 kgs			1696
5.	Marketing expenses ( export & purchase incidentials, insurance & financial expenses per 40 kgs			175
6.	Ex- gin price of lint per 40 kgs ( item 4 - item 5)			1521
7.	Value of 80 kgs of cotton seeds (b)			650
8.	Ginning charges for 120 kgs of seed cotton (c)			250
9.	Value of 120 kgs of seed cotton (d) ( items 6 + 7 - item 8 )			1921
10.	Seed cotton price per 40 kgs ( item 9 / 3 )			640

## Notes:

- Buying exchange rate of one US \$ = 59.90 Pak rupees, announced by National Bank of Pakistan as on Feb, 13, 2002.
- At the average price of Rs 325 per 40 kgs of cotton seed in Multan market during September, 2001 to January, 2002.
- Previously ginning charges and ginning losses together were taken at Rs 325 per 40 kgs of lint. Now it has been reported that increase in ginning out turn over time has compensated the ginning loss. Thus ginning charges @ Rs 250 per 40 kgs of lint have been used.
- 120 kgs of seed cotton = 80 kgs of cotton seed + 40 kgs of lint.

## Sources:

- Cotton Outlook of Feb, 8, 2002 for future contract price.
- KCA, Karachi for marketing expenses.
- Pakistan Cotton Ginners Association, Karachi for ginning charges. Sindh Govt has notified ginning charges @ Rs 260 per 40 Kgs of lint.
- Pakistan Central Cotton Committee, Karachi for cotton seed price.

**EXPORT PARITY PRICE OF SEED COTTON AS WORKED BACK FROM THE  
AVERAGE FOB PRICE OF PAKISTANI COTTON YARN (20'S)**

S. No	Item	2001-02 Sept - Jan	1996- 97 to 2000-01
		US Cents per kg	
1.	Average fob price	144.95	217.00
		OR	(a)
		Rupees	
		87	130
2.	Fob expenses per kg ( transport cost, wharfage, port handling & forwarding, adhesive & EDC charges)	2	2
3.	Export packing cost per kg	1	1
4.	Value of 1 kg yarn ( item 1 - (items 2 + 3)	84	127
5.	Recovery from 0.16 kgs cotton waste	1	1
6.	Conversion charges of lint into yarn per kg	30	30
7.	Value of 1.16 kgs cotton lint (b) (items 4 +5 -item 6 )	55	98
8.	Price of one kg cotton lint (item7/1.16)	47	84
	OR		
	Price of 40 kgs cotton lint	1891	3379
9.	Transport cost from ginnery to mill, local tax(per 40kgs)	30	30
10.	Ex-gin price of 40 kgs lint ( item 8 - item 9 )	1861	3349
11.	Value of 80 kgs cotton seed (c)	650	650
12.	Ginning charges for 120 kgs of seed cotton including ginning losses (d)	250	250
13.	Seed cotton price of 120 kgs (item10+11- item12)(e)	2261	3599
	OR		
14.	Seed cotton price per 40 kgs ( item 13/3 )	754	1200

## Notes:

- Buying exchange rate of one US \$ = 59.90 Pak rupees, announced by National Bank of Pakistan as on Feb, 13, 2002.
- 1.16 kgs of lint = 1 kg of waste
- At the average price of Rs 325 per 40 kgs of cotton seed in Multan market during September , 2001 to January, 2002.
- Previously ginning charges and ginning losses together were taken at Rs 325 per 40 kgs of lint. Now it has been reported that increase in ginning out turn over time has compensated the ginning loss. Thus ginning charges @ Rs 250 per 40 kgs of lint have been used.
- 120 kgs of seed cotton = 80 kgs of cotton seed + 40 kgs of lint.

## Sources:

- Cotton Outlook for fob prices (various issues).
- APTMA, Karachi for items, 2, 3 and 9.
- Annex X for items 5 and 6.
- Pakistan Cotton Ginners Association, Karachi for ginning charges. Sindh Govt has notified ginning charges @ Rs 260 per 40 Kgs of lint.
- Pakistan Central Cotton Committee Karachi, for cotton seed price.

**IMPORT PARITY PRICE OF SEED COTTON AS WORKED BACK FROM THE ACTUAL  
AVERAGE CIF NORTH EUROPE PRICE OF ORLEANS/ TEXAS SLM 1-1/32"**

S. No	Item	2001-02 Sept - Jan	1996-97 to 2000-01
		<b>US cent per pound</b>	
1.	Average cif North Europe quotations	37.27	63.34
2.	Freight charges	5.00	5.00
3.	Forwarding charges @ 1.5% cif (North Europe Quotations)	0.56	0.95
4.	Cif (Karachi) price	42.83	69.29
5.	Insurance, agents commission, and port handling charges @ 4% of cif (Karachi) price	1.71	2.77
6.	Landed cost at Karachi	44.54	72.06
		<b>OR Rupees per 40 kgs (b)</b>	
7.	Net cif(Karachi ) price	2372	3838
8.	Handling charges at port and transport cost from port to textile at Karachi @ 2.5 % of cif price	59	96
9.	Ex- gin price of lint (item 7 + item 8 )	2432	3934
10.	Value of 80 kgs of cotton seeds (a)	650	650
11.	Ginning charges for 120 kgs of seed cotton including ginning losses (c)	250	250
12.	Value of 120 kgs of seed cotton ( item 9 +item 10 - item 11 )	2832	4334
13.	Seed cotton price per 40 kgs ( item 12/ 3 )	944	1445

**Notes:**

- a) At the average price of Rs 325 per 40 kgs of cotton seed in Multan market during September, 2001 to January, 2002.
- b) Selling exchange rate of one US \$ = 60.40 Pak rupees, announced by National Bank of Pakistan as on Feb, 13, 2002.
- c) Previously ginning charges and ginning losses together were taken at Rs 325 per 40 kgs of lint. Now it has been reported that increase in ginning out turn over time has compensated the ginning loss. Thus ginning charges @ Rs. 250 per 40 kgs of lint have been used.

**Sources:**

1. Cif ( North Europe) price Annex - IX.
2. KCA, for incidentals charges.
3. Pakistan Cotton Ginners Association for ginning charges. Sindh Govt has notified ginning charges @ Rs 260 per 40 Kgs of lint.
4. Pakistan Central Cotton Committee, Karachi for cotton seed price

**IMPORT PARITY PRICE OF SEED COTTON AS WORKED BACK FROM THE  
ACTUAL AVERAGE CIF ( KARACHI ) PRICE OF IMPORTED COTTON**

S. No	Item	2001-02 Sep - Jan	1996-97 to 2000-1
		<b>Rupees per 40 kgs</b>	
1.	Actual average cif ( Karachi ) price	3092	3122
2.	Handling charges at port and transport cost from port to textile mill at Karachi @ 2.5 % of cif price	77	78
3.	Ex- gin price of lint (Item 1+ item 2)	3169	3200
4.	Value of 80 kgs of cotton seeds (a)	650	650
5.	Ginning charges for 120 kgs of seed cotton including ginning losses (b)	250	250
6.	Value of 120 kgs of seed cotton ( item 3 +item 4 - item 5 )	3569	3600
7.	Seed cotton price ( item 6/ 3 )	1190	1200

## Notes:

- a) At the average price of Rs 325 per 40 kgs of cotton seed in Multan market during September, 2001 to January, 2002.
- b) Previously ginning charges and ginning losses together were taken at Rs 325 per 40 kgs of lint. Now it has been reported that increase in ginning out turn over time has compensated the ginning loss. Thus ginning charges @ Rs. 250 per 40 kgs of lint have been used.

## Sources:

1. FBS, for cif ( Karachi price).
2. KCA, for incidentals charges.
3. Pakistan Cotton Ginners Association for ginning charges. Sindh Govt has notified ginning charges @ Rs 260 per 40 Kgs of lint.
4. Pakistan Central Cotton Committee, Karachi for cotton seed price

**REQUIREMENT AND SUPPLY OF CERTIFIED COTTON SEED  
BY THE PUBLIC AND PRIVATE SECTOR IN PUNJAB:  
1991-92 TO 2001-02**

Crop year	Seed Certified at				Total	Total requirement	Area covered with certified seed
	NSC standard (a)		Relaxed standard (b)				
	Public	Private	Public	Private			
	-----Thousand tonnes-----					Per cent	
1991-92	11.69	1.19	0.17	0.01	13.06	45.74	28.6
1992-93	11.38	2.75	1.52	0.35	16.00	48.76	32.8
1993-94	6.60	2.65	1.29	0.68	11.22	44.98	24.9
1994-95	6.44	6.30	1.46	3.95	18.15	44.89	40.4
1995-96	8.43	6.74	3.68	5.79	24.64	49.27	50.0
1996-97	4.50	4.12	-	-	8.62	50.80	17.0
1997-98	7.20	7.50	0.24	5.68	20.62	46.97	43.9
1998-99	0.24	2.65	4.03	8.20	15.12	45.66	33.1
1999-00	0.24	2.88	3.97	6.35	13.44	46.59	28.8
2000-01	3.14	27.85	1.73	-	32.72	48.67	67.2
2001-02	3.30	16.83	-	-	20.13	51.23	39.3

- Notes: a) National Seed Council (NSC) standards has minimum 70 per cent germination and 98 per cent purity, and maximum 0.2 per cent off-types.
- b) The relaxed standard varied from year to year depending on the climatic and other specific conditions pertaining to each year.
- c) The total seed requirement for each year has been calculated @ 20 kgs/ha.

Source: Federal Seed Certification and Registration Department (FSC&RD), MINFAL, Islamabad

**REQUIREMENT AND SUPPLY OF CERTIFIED COTTON SEED  
BY THE PUBLIC AND PRIVATE SECTOR IN SINDH:  
1991-92 TO 2001-02**

Crop year	Seed Certified at				Total	Total requirement	Area covered with certified seed
	NSC standard (a)		Relaxed standard (b)				
	Public	Private	Public	Private			
	-----Thousand tonnes-----					Per cent	
1991-92	0.03	-	0.82	-	0.85	16.43	5.2
1992-93	0.57	-	-	-	0.57	11.92	4.8
1993-94	0.08	-	-	-	0.08	16.65	0.5
1994-95	0.07	-	-	-	0.07	12.17	0.6
1995-96	0.08	-	0.40	0.46	1.94	15.88	12.2
1996-97	-	0.30	-	-	0.30	18.04	1.7
1997-98	0.22	0.38	-	8.37	8.97	18.01	49.8
1998-99	0.05	-	0.05	23.17	23.27	18.91	123.1
1999-00	0.01	-	0.05	0.80	0.86	19.01	4.5
2000-01	-	0.63	-	0.46	1.09	15.71	7.0
2001-02	0.02	1.46	-	-	1.48	15.64	

- Notes: a) National Seed Council (NSC) standards has minimum 70 per cent germination and 98 per cent purity, and maximum 0.2 per cent off-types.
- d) The relaxed standard varied from year to year depending on the climatic and other specific conditions pertaining to each year.
- e) The total seed requirement for each year has been calculated @ 30 kgs/ha.

Source: Federal Seed Certification and Registration Department (FSC&RD), MINFAL, Islamabad