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WHEAT POLICY ANALYSIS FOR 2011-12 CROP

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

AARI	Ayub Agriculture Research Institute
AJ&K	Azad Jammu and Kashmir
API	Agriculture Policy Institute
APW	Australian Premium White
C&F	Cost and Freight
COP	Cost of Production
CPI	Consumer Price Index
CWRS	Canada Western Red Spring
DAP	Di Ammonium Phosphate
DRC	Domestic Resource Cost
ECC	Economic Coordination Committee
E&M	Economics and Marketing
EPC	Effective Protection Coefficient
EU	European Union
FAO	Food and Agriculture Organization
FBS	Federal Bureau of Statistics
FOB	Free on Board
FYM	Farm Yard Manure
GDP	Gross Domestic Product
GMR	Grain Market Report
GST	General Sale Tax
HIES	Household Integrated Economic Survey
HRW	Hard Red Winter
HSD	High Speed Diesel
HYVs	High Yielding Varieties
IRRI	International Rice Research Institute
KPK	Khyber Pakhtunkhwa
MINFA	Ministry of Food and Agriculture
N	Nitrogen
NAs	Northern Areas
NFDC	National Fertilizer Development Centre
NP	Nitrogen and Phosphatic
NPC	Nominal Protection Coefficient
P	Phosphatic
PAM	Policy Analysis Matrix
PARC	Pakistan Agricultural Research Council
PASSCO	Pakistan Agricultural Storage and Services Corporation
USA	United States of America
USDA	United States Department of Agriculture

SUMMARY OF FINDINGS AND RECOMMENDATIONS

- Findings

Area and Production

- Punjab and Sindh contribute about 76 and 16 per cent in wheat production while the share of KPK and Balochistan is 5 and 3 per cent, respectively.
- During the last decade, wheat production has risen @ 3 per cent per annum due to 1.7 per cent improvement in yield and 1.3 per cent expansion in area.
- Wheat production from 2010-11 crop is estimated at 25.21 million tonnes, showing increase of 8 per cent over 23.31 million tonnes in 2009-10.

Domestic Requirements

- Assuming the per capita consumption at 120 kgs per annum, the domestic requirement comes to 25 million tonnes including allownace for seed, feed and wastage.
- Based on 3-year average per capita availability of 112 kgs per annum, the domestic requirement comes to 23.5 million tonnes including allownace for seed, feed and wastage.
- Including one million tonnes as food security reserve, total domestic requirement will range between 24.5 to 26 million tonnes.

Domestic Prices

- Monthly average market prices of wheat for 2010-11 crop have remained below the support price in the Punjab and Sindh.
- The wholesale prices of wheat averaged at Rs 927 per 40 kgs in the Punjab and Rs 883 in Sindh during the post harvest season in major producing areas.
- The wholesale prices of wheat collected through API field survey in major wheat producing areas have averaged at Rs 850 per 40 kgs in Punjab and Rs 886 in Sindh during the post harvest period of 2010-11 crop.

Cost of Production

- In the Punjab, cost of wheat cultivation during 2011-12 season is expected at Rs 27898 per acre.
- The cost of production at market/procurement centre level would be Rs 1032 per 40 kgs, reflecting a rise of about 24 per cent over the last year.
- In Sindh, the cost of wheat cultivation for 2011-12 crop is estimated at Rs 24569 per acre.
- The cost of production at market/procurement centre level would come to Rs 1040 per 40 kgs, showing a rise of about 22 per cent over the last year.

Economics of Wheat and Competing Crops

- The economics of wheat vs oilseeds like sunflower and canola during 2010-11 has shown poor performance in terms of all economic criteria adopted in the analysis except of irrigation water.
- In terms of revenue per crop day in Punjab, wheat has performed equal to canola.
- In case of indirect competition with sugarcane, wheat combinations have earned poor returns as compared to sugarcane in both the provinces.
- Cotton+wheat rotation out performed rice combination in all respects.

- The cotton+sunflower combination performed better than sugarcane and other crop combinations in both provinces.

Economics of Fertilizer Use

- The quantity of wheat needed to buy one nutrient tonne of N fertilizer has fluctuated from 1.29 to 2.41 tonnes during 2001-11.
- During 2010-11, the parity ratio between market prices of N and wheat improved in favour of wheat due to remunerative market prices of wheat.
- The quantity of wheat needed to buy one nutrient tonne of P fertilizer has fluctuated from 2.70 to 5.21 tonnes during 2001-11.
- During 2010-11, the parity ratio between market prices of P and wheat was not in favour of wheat due to high prices of P fertilizers.

Nominal and Real Support Prices

- The nominal support prices of wheat during 2001 to 2011 have experienced overall rise of 217 per cent, while the real support prices have shown an increase of 31 per cent.
- During 2010-11, the nominal support price indicates no change over the last year, while the real price has shown a decline of 12 per cent.

Nominal and Real Market Prices

- The nominal market prices of wheat have shown an overall surge of 237 per cent while the real market prices have gained by 39 per cent during th last decade.
- During 2010-11, the nominal market price has risen by 3 per cent only, so the real market price has deteriorated by 10 per cent.

World Production and Prices

- World wheat production estimated at 651 million tonnes in 2010-11 is 28 million less than the last year while it is forecast to rise to 684 million tonnes in 2011-12.

- The closing stocks at 199 million tonnes in 2009-10 are estimated to decline as 195 million tonnes in 2010-11 but are forecast at 202 million for 2011-12

- The average fob (Gulf) prices of US No.2 Hard Red Winter (HRW) wheat fluctuated widely dipping as low as US $ 150 per tonne in 2004-05 and rising as high as $ 319 per tonne in 2010-11.

- During first four months of 2011-12, international prices of US HRW wheat have averaged at US $ 315 per tonne.

Export/Import Parity Prices

- Based on fob Gulf of US No. 2 HRW wheat prices during 2010-11, the export parity price works to Rs 962 per 40 kgs. The export parity price calculates to Rs 840 per 40 kgs on the basis of average fob price during 2009-10 to 2011-12.

- Based on fob Gulf price of 2011-12 (July-October), the export parity price of wheat works back to Rs 948 per 40 kgs.

- Based on average fob Gulf prices during 2010-11 and during 2009-10 to 2011-12, the import parity prices work to Rs 1422 and 1290 per 40 kgs at Multan, while Rs 1342 and 1210 at Karachi.

- Based on fob price during 2011-12 (July-October), the import parity prices work back to Rs 1407 per 40 kgs at Multan and Rs 1327 per 40 kgs at Karachi.

Economic Efficiency

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

- The NPCs have been below one under the importing scenario for 2006-07 to 2010-11 except 2009-10 in Sindh when it is equal to one.

- The EPCs below one during 2006-11 except 2009-10 imply that wheat remained implicitly taxed. However, the EPC values above one in 2009-10 in both the provinces show higher prices of wheat during this particular year.

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

- The DRCs are substantially below one during 2006-11, indicating a Comparative Advantage in domestic wheat production for import substitution.

World Comparison

- Pakistan is the 8th largest wheat producer in terms of area and production but ranks at 57th position in terms of yield.

- Among the major wheat producing countries, Pakistan lies at the bottom in the context of yield.

- Since 2002, 16 high yielding wheat varieties have been developed by research institutes in Punjab, while 4 varieties of wheat are released by research institutes in Sindh.

- India announced lower support price for 2008-09 to 2010-11 as compared to Pakistan in vew of huge subsidies on farm inputs.

- The National Food Security Mission (NFSM) has been launched by India in August, 2007, with a total outlay of around Indian Rs.49 billion during 2007 - 12.

- The scheme provides for upto 100 per cent cost of seeds of the respective crops as subsidy and 50 per cent of cost of other inputs/tools like fertilizers, drills/rotavators and installation of diesel tubewells.

Impact of Support Price on CPI and Household Expenditure

- In case the support price of wheat is enhanced by Rs 100 per 40 kgs over the existing level of Rs 950 per 40 kgs, the CPI is likely to rise by 0.6 per cent.

- Like-wise, the increases of Rs 100 per 40 kgs over the existing support price would bring additional expenditure of Rs 300 per capita per year or Rs 1974 per household, respectively.

Policy Options

Based on the analysis of relevant factors covered in the main text of the Report, the likely policy options for wheat 2011-12 crop would be as under:

Base	Likely price of domestic wheat at procurement center
	Rs per 40 kgs
1. Export parity price on the basis of:	
a) Fob (Gulf) price of US No.2 HRW wheat during 2010-11, if exported from procurement centre	962
b) Fob (Gulft) average price of US No.2 HRW wheat during 2009-10 to 2011-12, if exported from procurement centre	840
c) Fob (Gulf) price of US No.2 HRW wheat during 2011-12 (Jul-Oct), if exported from procurement centre	948
2. Import parity price on the basis of:	
a) Fob (Gulf) price of US No.2 Hard Red Winter (HRW) wheat during 2010-11, if consumed at:	
- Karachi	1342
- Multan	1422
b) Fob (Gulf) price of US No.2 HRW wheat during 2009-10 to 2011-12, if consumed at:	
- Karachi	1210
- Multan	1290
c) Fob (Gulf) price of US No.2 HRW wheat during 2011-12 (July-October), if consumed at:	
- Karachi	1327
- Multan	1407
3. Monthly average wholesale market prices of wheat in major producing areas during the post-harvest period of 2010-11 crop:	
- Punjab	927
- Sindh	883
4. Cost of production at market/procurement centre level for 2011-12 crop	
- Punjab	1032
- Sindh	1040

- Recommendations

In view of the field information, consultation with the stakeholders in the API's Standing Committee meeting on wheat and analysis of relevant factors, following recommendations are made regarding the support price, improving productivity and marketing of wheat 2011-12 crop:

Support Price

- The API strongly feels that the country should emphasize on sustainable wheat production as the crop is not only a staple food but also a major food security concern in the country.
- The Ministry of Natinal Food Security and Research may consider for increase in support price of wheat to Rs 1050 per 40 kgs for 2011-12 crop in view of high input costs, economics of competing crops and food security concerns.
- It should provide remunerative margin of returns over the cost of production at current input prices which would help Productivity Enhancement Programme of the Government through balanced inputs use, better management and optimal technology adoption.
- It provides a reference point for procurement by the public sector agency to meet the food security requirements of the country.
- In view of free market and active role of private sector, the actual incentive to wheat growers should come through the market forces.
- The government policy of encouraging the role of private sector in wheat marketing may be continued.
- The PASSCO and Provincial Food Departments equipped with pre-requisites for procuring wheat should enter well in time in the field especially in Sindh province where the harvesting starts early.

Improving Productivity

- There is a dire need to study the impact of climate change on land use, crop maturity and cropping pattern for the sake of future food security.
- The coordinated efforts should be made for fast tracking the national wheat breeding programme for resistant varieties to UG 99 Stem Rust, drought, salinity, heat and frost.

- Molecular breeding for development of low input but high responsive varieties of wheat should be strengthened.
- Awareness should be created for rational use of fertilizers through soil and water testing.
- The technologies like laser levelling, zero tillage, raised bed planting and high efficiency irrigation systems should be promoted.
- There should be a national programme for seed fertilizer drills multiplication and dissemination on subsidized rate to improve the fertilizer use efficiency in case of phosphate.
- The Government should emnphasize on availability of certified seed and grading of farm seed for wheat cultivation.
- Measures should be taken for strict quality control to check adulteration of weedicides, herbicides, pesticides and fertilizer to enhance their efficiency.
- For the efficient use of fertiizer, the Government should control the black marketing of DAP and Urea to keep the prices at optimal level to maintain certain level of ratio in prices of fertilizer and wheat.
- Feasibility of processing of city wastes and its utilization as source of nutrients, soil conditioners etc be undertaken.
- Agriculture Extension Departments should have close coordintion with the Research Institutes and annually publicise the seed availability of new high yielding varieties well before the sowing season.

Improving Statistics and Marketing

- Provincial Government should emphasize more on crop cutting experiments being conducted in the Punjab and Sindh. The KPK and Balochistan Governments should also adopt the crop cutting experiments in line with the Punjab and Sindh.
- A committee of experts should be constituted to examine the current system of crop estimation and suggest ways and means to improve the provincial estimates.
- To encourage mechanical harvesting, import of second hand machinery should be regulated under some quality standards.

- The Government should give more attention to enhance storage capacity both in public and private sectors particularly at grassroots level.

- A strategic reserve of the 1-2 million tonnes needs to be maintained for the seek of food security.

- The Government should stress on value addition in wheat produce to improve its export competitiveness in the world market.

Chairman, API

October, 30 2011.

WHEAT POLICY ANALYSIS FOR 2011-12 CROP

INTRODUCTION

Wheat is the main staple food and the largest crop of the country. On the average, it contributes by 13 per cent to the value added in agriculture and 2.8 per cent to GDP. Wheat crop occupies around 38 per cent of total cropped area. It is cultivated over 9 million hectares with an annual average production of 23.9 million tonnes. During the decade ending 2010-11, wheat production has increased @ 2.9 per cent per annum. About 87 per cent of wheat area is irrigated which accounts for about 94 per cent of the annual production. The record wheat production during 2008-09 and 2010-11 has turned the economy into exporter from importer of wheat.

2. During 2010-11, wheat production at 25.21 million tonnes established a new record and crossed the figure of 25 million tonnes first time in the history of Pakistan. It is about 1.9 million tonnes (5%) higher than the record wheat production during 2008-09 and 8.2 per cent more than the last year 23.31 million tonnes. This increase in production was solely due to 11 percent improvement in yield over the last year as the area under wheat has contracted by 2.5 per cent.

3. Among the world wheat producing countries, Pakistan ranks 8th in terms of both area and production of wheat but lies way behind at 57th in terms of yield per hectare (FAO 2009). The yield potential of high yielding wheat varieties is 6 tonnes per hectare at Research Farms in Pakistan, while the national average yield is only about 2.7 tonnes per hectare. This huge gap in per hectare yield can be narrowed through adoption of optimal technology and better management on general field conditions. If the 60 per cent of the yield potential is achieved at farm level the country can spare around 2 million hectares for oilseed production after meeting national wheat requirement.

4. The Government of Pakistan annually reviews the support price of wheat in order to reduce the uncertainty and price risk in wheat farming and to ensure food security in

the country. For the year 2010-11, the ECC of the Cabinet has retained support price of wheat at last year's level of Rs 950 per 40 kgs in its meeting held on 29th October 2010.

5. The PASSCO and the Provincial Food Departments are reported to have procured 6.22 million tonnes of wheat against the target of 7.00 million tonnes during 2010-11. As far as the food security and carryover stocks are concerned, the government has sufficient stocks not only to meet the domestic requirements during the consumption year of 2011-12 but also has surplus for exports.

6. In formulating the price policy recommendations for 2011-12 wheat crop, following steps were undertaken by the API:

i) To update the data on prices of inputs, hiring rates of farm operations and marketing costs, annual field survey in important wheat growing areas of the Punjab and Sindh was carried out during July, 2011.

ii) The data on crop area, yield and production, stocks, trade and prices; both domestic and global, subsidy and incidentals on wheat handling and Consumer Price Index were collected from various agencies and published matter. Producer prices of wheat in selected countries were collected from various national and international agencies and through internet. These data have been analyzed to reflect the domestic and international position on various aspects of wheat production and marketing.

iii) Annual meeting of the API's Standing Committee on wheat was held on 19th September 2011 at Islamabad. The meeting was attended by the wheat growers, crop experts, policy makers and representatives of the provincial chambers of agriculture, farmers associations and officials from the Federal and Provincial governments. Issues relating to the production and marketing of wheat including prices of inputs and cost of production were discussed at length. A number of constraints impacting on farm production in general and wheat in particular were also highlighted which helped in suggesting certain measures to improve the efficiency of wheat farming and marketing. The views expressed in the meeting have been duly considered in formulating the policy recommendations.

7. As the wheat is not only staple food but a major food security crop, its pricing is a complex phenomenon. It involves harmony of conflicting interests of various

stakeholders like growers, consumers, millers, etc. In view of hike in input prices and cost of production, the farmers argue for higher output prices otherwise wheat farming may not be a viable proposition. High producer prices of wheat in turn escalate consumer prices, leading to inflationary trend in view of sensitive nature of the commodity and its high weight in the average household budget. Accordingly, the governments hesitate to enhance consumer prices of wheat to their economic levels and subsidize the issue prices at considerable cost to the public exchequer.

8. The productivity gap between the progressive and resource poor farmers in Pakistan is almost 50 per cent. Due to lack of finances, resource poor farmers can not use quality seed, proper doses of fertilizers, herbicides and other inputs timely and efficiently. This would require the timely supply of inputs and production technology at the grassroots level alongwith incentive prices for their produce. As a very sensitive commodity, a slight change in its price and availability could have positive or negative impact on consumers, especially on the poor sections of the community. Hence the government has also planned to develop a Safety Net for food assistance to the poor to save them from adverse effects of hike in prices of staple food like wheat and other essential food items. In this regard, the Federal Government has launched a Benazir Income Support Programme for the food assistance of the poorest section of the society.

2. SOWING AND HARVESTING TIMES OF WHEAT

9. A wide-ranging schedule of wheat sowing for various ecological zones in the country, as recommended by the Pakistan Agricultural Research Council, is presented in Table-1.

Table-1: Recommended Sowing and Harvesting Times of Wheat

Provinces	Times
Punjab	
i) Southern	1st November to 30th December
ii) Central	1st November to 15th December
iii) Northern	
a) Irrigated	1st November to 15th December
b) Un-irrigated	20th October to 15th November
Sindh	
i) Southern	1st November to 25th December
ii) Northern	1st November to 31st December
Khyber Pakhtunkhwa	
i) Plain area	25th October to 15th December
ii) Hilly area	1st November to 15th December
Balochistan	
i) Upper	1st October to 20th February
ii) Plain	1st November to 15th December

Source: PARC, Islamabad.

10. In the Punjab, wheat sowing in the irrigated areas generally starts from 1st November and extends upto end of December while in barani areas it begins from 20th October and continues upto 15th November.

11. In Sindh, wheat sowing commences from 1st November and goes upto the end of December.

12. In the Khyber Pakhtunkhwa, wheat is sown from 25th October to 15th December in plain areas and 1st November to 15th December in hilly areas.

13. In Balochistan, wheat sowing starts in advance than other provinces. It begins from 1st October in upper part of the province and goes upto 20th February. In plain areas, sowing time of wheat ranges from 1st November to 15th December.

14. Harvesting of wheat depends on the climatic conditions and maturing time of varieties sown. By and large it starts in March/April and continues upto May, depending upon the sowing time, management practices, climatic conditions and varieties.

3. REVIEW OF 2010-11 CROP

3.1 Provincial Shares in Area and Production

15. Based on three years average ending 2010-11, Punjab and Sindh contribute about 76.3 and 15.9 per cent in total wheat production while the shares of both the KPK and Balochistan are 4.8 and 2.9 per cent, respectively. The provincial shares of area and production are presented in Table-2 and depicted in Figures 1 & 2.

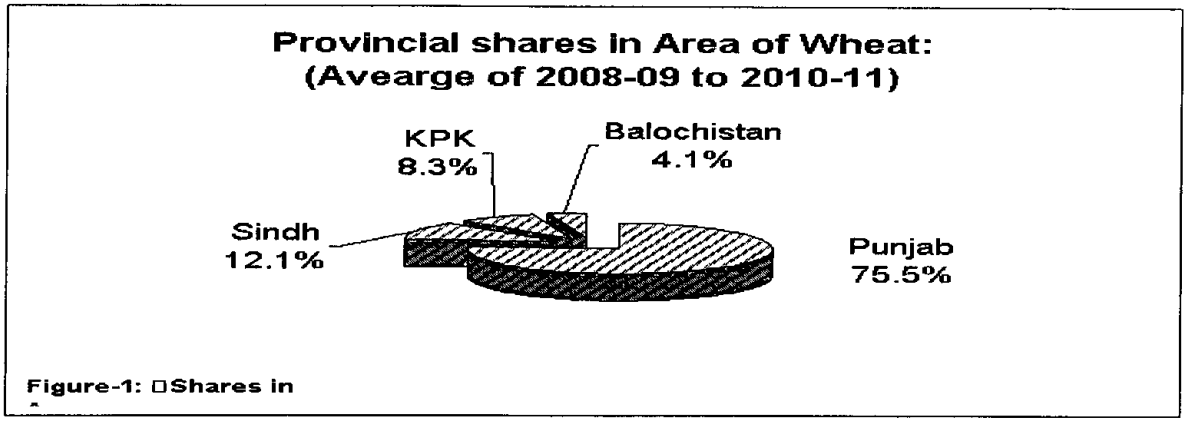

Figure-1: Shares in Area.

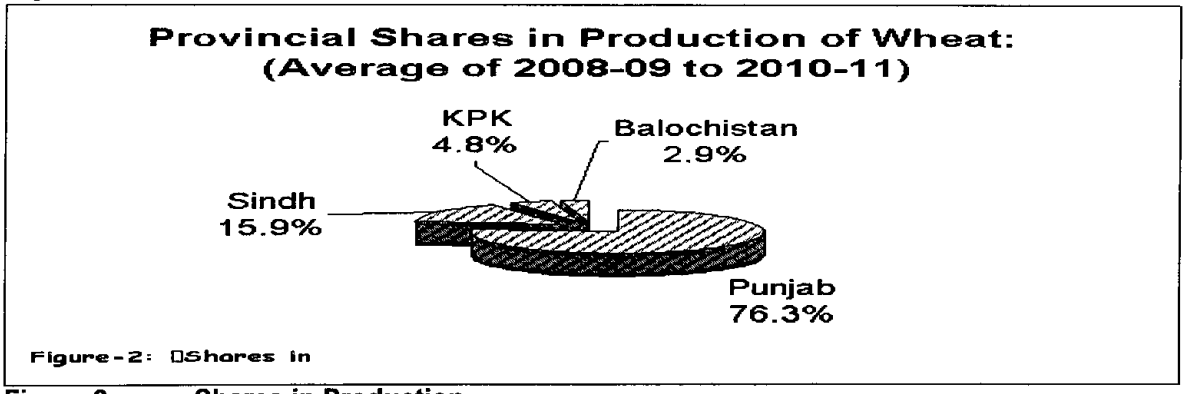

Figure-2: Shares in Production

16. Around 87 per cent of wheat acreage is cultivated under irrigated conditions which contribute 94 per cent of wheat production in the country.

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

Item	Total	Pakistan	Punjab	Sindh	KPK	Balochistan
	000 hact.	---------- Per cent ----------				
A. Area						
Total	9026.1 (22304.4)	100.0	75.5	12.1	8.3	4.1
Irrigated	7869.7 (19446.7)	87.2	68.4	11.5	3.6	3.7
Un-irrigated	1156.4 (2857.7)	12.8	7.1	0.5	4.7	0.5
B. Production	000 tonnes	---------- Per cent ----------				
Total	24185.8	100.0	76.3	15.9	4.8	2.9
Irrigated	22834.0	94.4	73.1	15.7	2.8	2.8
Un-irrigated	1351.8	5.6	3.3	0.2	2.0	0.2

Note: Figures in parentheses are thousand acres.
Source: Worked out from Annex-I, IA and II.

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

17. During the decade ending 2010-11, wheat production at country level has surged @ 3.0 per cent per annum owing to 1.7 per cent improvement in yield and 1.3 per cent expansion in area. In the Punjab, wheat production has increased @ 2.2 per cent annually due to 1.1 per cent increase in both yield and acreage. In Sindh, wheat production has risen @ 7.8 per cent per annum due to improvement of yield by 4.5 per cent and area expansion by 3.2 per cent. Details of wheat area, yield and production by province are presented in Table-3.

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

Country/ Province	Area	Yield	Production
	---------- Per cent per annum ----------		
Pakistan	(+) **1.3**	(+) **1.7**	(+) **3.0**
Punjab	(+) 1.1	(+) 1.1	(+) 2.2
Sindh	(+) 3.2	(+) 4.5	(+) 7.8
KPK	(-) 0.2	(+) 3.5	(+) 3.3
Balochistan	(+) 1.6	(+) 0.1	(+) 1.7

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

3.3 Medium Term Changes: 2005-06 to 2010-11

18. The annual growth rates for the period 2005-06 to 2010-11 show that the wheat production has increased @ 2.9 per cent due to 1.4 per cent improvement in yield and 1.5 per cent expansion in area at country level. Provincial growth rates are presented in Table-4.

Table-4: Average Annual Growth Rates of Area, Yield and Production of Wheat: 2005-06 to 2010-11

Country/Province	Area	Yield	Production
	--------- Per cent per annum ---------		
Pakistan	**(+) 1.5**	**(+) 1.4**	**(+) 2.9**
Punjab	(+) 1.3	(+) 1.1	(+) 2.3
Sindh	(+) 4.0	(+) 3.3	(+) 7.4
KPK	(+) 0.2	(+) 0.8	(+) 1.0
Balochistan	(+) 0.4	(-) 2.9	(-) 2.5

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

3.4 Short-term Changes: 2009-10 Vs 2010-11

19. According to the final estimates, the wheat production from 2010-11 crop is reported at 25.21 million tonnes at country level, showing 8.2 per cent increase over 23.31 million tonnes in 2009-10. Higher production is solely attributed to 11 per cent yield improvement as the area contracted by 2.5 per cent. The provincial area, yield and production of wheat are given in Table-5 and also depicted in Figures 3 and 4.

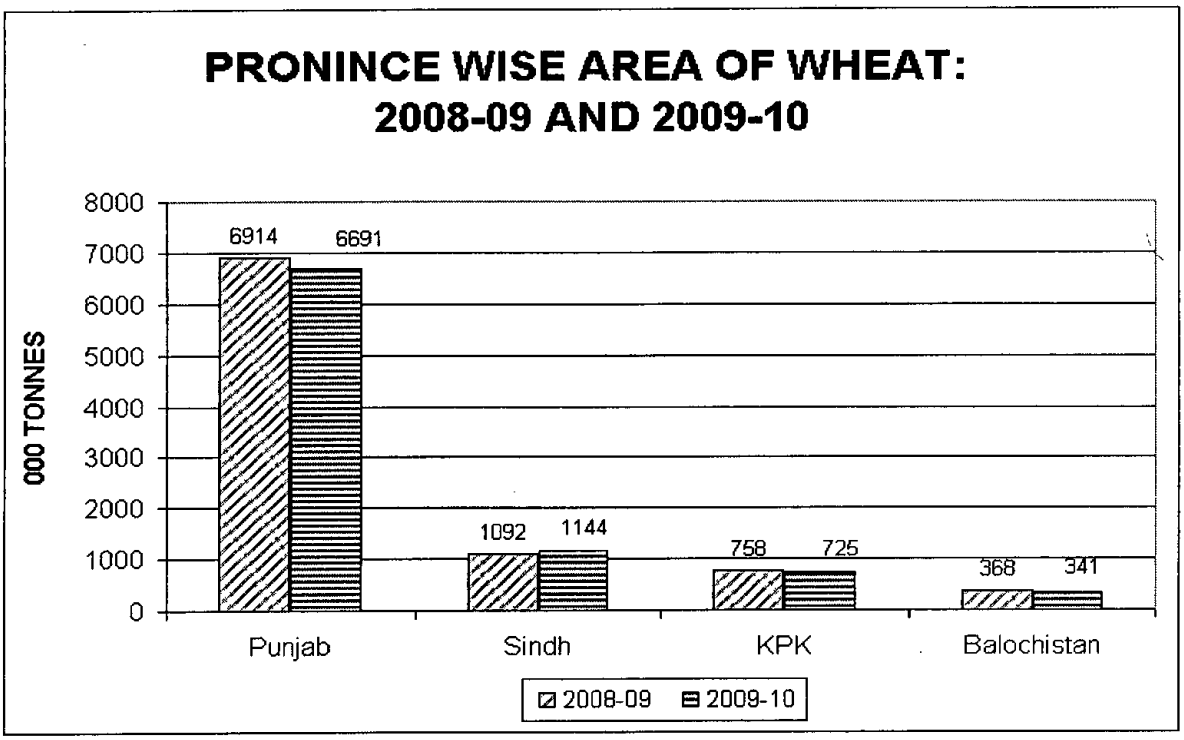

Figure-3: Province-wise Area of Wheat: 2008-09 and 2009-10

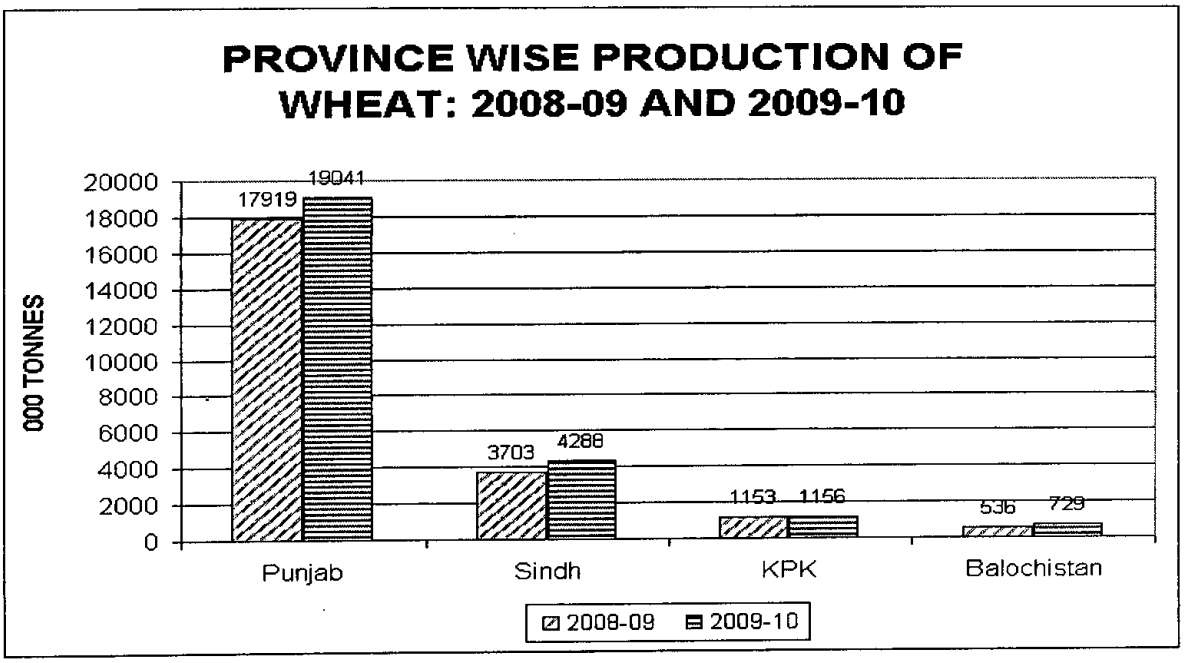

Figure-4: Province-wise Production of Wheat: 2008-09 and 2009-10

Table-5: Area, Yield and Production of Wheat: 2009-10 and 2010-11 Crop

Country/ Province	Area		Changes	Yield per hectare		Changes	Production		Changes
	2009-10	2010-11		2009-10	2010-11		2009-10	2010-11	
	-- 000 hectares --		Per cent	-----Kgs ----		Per cent	-- 000 tonnes --		Per cent
Pakistan	**9131.6**	**8900.7**	**(-) 2.5**	**2553**	**2733**	**(+) 11.0**	**23310.8**	**25213.8**	**(+) 8.2**
Punjab	6913.5	6691.0	(-) 3.2	2592	2846	(+) 9.8	17919.0	19041.0	(+) 6.3
Sindh	1092.3	1144.4	(+) 4.8	3390	3747	(+) 10.5	3703.1	4287.9	(+)15.8
KPK	758.3	724.5	(-) 4.5	1520	1595	(+) 5.0	1152.5	1155.8	(+) 0.3
Balochistan	367.5	340.8	(-) 7.3	1459	2139	(+) 46.6	536.2	729.1	(+)36.0

Source: Annex-I.

3.5 Factors Responsible for High Production: 2010-11 Crop

20. The Provincial Agriculture Departments of the Punjab and Sindh have reported following factors responsible for change in area and production of 2010-11 wheat crop:

Punjab

- **Area**

a) During last year farmers faced problems in disposal of wheat produce which discouraged to put more area under the crop.

b) In irrigated tract, the growers were inclined to bring more area under cotton/sugarcane crops due to lucrative market prices.

c) Late crushing start by sugarmills and considerable increase in potato (autumn) area restricted wheat acreage in certain districts.

d) In un-irrigated tract, optimal moisture was available at sowing time which enhanced the acreage in barani tract.

- **Production**

a) With the grace of Almighty Allah ever record production was achieved.

b) Sowing of crop at appropriate time and availability of moisture particularly in barani tract supported germination / growth.

c) Intermittent rains and cool temperature prevailed during growth and maturity stage proved beneficial for healthy grain formation.

d) Availability and use of inputs remained adequate and smooth.

Sindh

- **Area**

a) Due to more inundation in River Indus, more area came under wheat crop.

b) Due to lucrative price of wheat, the growers gave preference to bring maximum area under wheat crop cultivation. They even cultivated it as mixed crop in newly sown sugarcane, onion and also in orchards.

c) The Sindh Government supplied free of cost wheat seed and urea fertilizer to the growers of damaged area by flood resultantly, more area came under wheat cultivation.

- **Production**

a) Production increased due to increase of area.

b) Due to better position of irrigation water as compared to last year, the growers applied recommended dose of inputs.

c) Yield per acre was improved due to more area of fertile land of River Indus under cultivation.

d) Since last some years the growers are preferring the high yielding varieties and also applying the herbicides, so they received more yield per acre.

3.6 Important Wheat Producing Districts

21. The districts producing more than 400 thousand tonnes per annum are Jhang, Bahawalnagar, Sheikhupura, R.Y.Khan, Bahawalpur, Muzaffargarh, Faisalabad, Vehari, Okara, Gujranwala, Khanewal, Lodhran, Kasur, Sargodha, Pakpattan, Multan, Layyah, Sialkot, T.T.Singh, Sahiwal, Hafizabad, Rajanpur, D.G.Khan, Bakhar, Sukkur and Sanghar. In all these 26 districts, 24 districts falling in the Punjab and 2 districts in Sindh produce 71 per cent of total domestic wheat production, while their share in area is estimated at 65 per cent. Khairpur, Naushahro-Feroze and Shaheed Benazirabad from Sindh, Mardan, and Mansehra from KPK, Nasirabad and Jaffarabad from Balochistan are other important wheat producing districts. Districts have been arranged in descending order of wheat production in Annex-III.

4. FACTORS CONSIDERED FOR PRICE POLICY ANALYSIS

22. In formulating the price policy proposals for wheat, 2011-12 crop, following factors have been considered and analysed:

4.1 Domestic Demand, Supply, Stocks and Prices of Wheat
4.2 World Production, Consumption, Stocks and Trade Situation
4.3 International Prices of Wheat
4.4 Import/Export Parity Prices of Wheat
4.5 Cost of Production of Wheat
4.6 Nominal and Real support Prices of Wheat
4.7 Comparative Economics of Wheat and Competing Crops
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4.9 Producer Prices of Wheat in Selected Countries
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4.1 Domestic Demand, Supply, Stocks and Price Situation

4.1.1 Domestic Demand, Supply and Stocks

23. With the domestic production of 25.21 million tonnes from 2010-11 crop and carryover stocks of 3.11million tonnes, total wheat supply in the country for 2011-12 consumption year becomes 28.32 million tonnes. This supply may slightly increase if production of wheat in Azad Kashmir and Northern Areas estimated at 0.252 million tonnes is added. Thus total availability of wheat in the country would be 28.57 million tonnes.

24. The estimation of consumption requirement of wheat for 2011-12 is based on its actual average per capita availability of 112 kgs per annum calculated by API through balance sheet method and of 120 kgs per annum as per Planning Commission. Using total population of 187.29 million and 120 kgs per annum, human consumption requirement for 2011-12 is estimated at 22.47 million tonnes. Adding allowance for seed, feed and wastage @ 10 per cent of production, gross domestic requirements for 2011-12 wheat year works to 24.99 million tonnes. However, this requirement would be 23.50 million tonnes if estimated at per capita availability of 112 Kgs per annum as per API analysis. The calculations are presented in Table -6.

Table-6: Domestic Requirements of Wheat for 2011-12 Wheat Year: (May-April)

S.No.	Item	Based on annual per capita	
		Consumption	Availability
		120 Kgs	112 Kgs
1.	Population in million	187.29	187.29
		----- Million tonnes-----	
2.	Human consumption requirement	22.47	20.98
3.	Allowance for seed, feed and wastage @ 10 per cent of total production	2.52	2.52
4.	Total requirement	24.99	23.50

Source: Annex-IV.

4.1.2 Post harvest prices

25. Monthly wholesale prices of wheat during the post-harvest months of 2010-11 crop in the major producing area markets of the Punjab and Sindh are presented in Table-7.

Table-7: Monthly Average Wholesale Prices of Wheat in Main Producing Area Markets of Punjab and Sindh during Post-harvest Season of 2010-11 Crop

Markets	April	May	June	Average
Punjab	----------Rs per 40 kgs----------			
Lahore	992	918	909	940
Faisalabad	1023	902	917	947
Sargodha	983	865	909	919
Multan	966	883	899	916
Gujranwala	1027	923	944	965
Okara	987	891	888	922
R.Y. Khan	888	861	896	882
Average	**989**	**892**	**909**	**927**
Sindh				
Sanghar	875	890	895	887
Nawabshah	890	900	920	903
Hyderabad	880	880	880	880
Mirpurkhas	890	890	890	890
Gotki	883	883	883	883
Kashmore/ khandkot	855	850	850	852
Average	**879**	**882**	**886**	**883**

Sources: i) Directorate of Agriculture (E&M), Lahore, Punjab.
ii) DG Agriculture Extension Hyderabad, Sindh.

26. The monthly average wholesale prices of wheat in main producing area markets of Punjab remained above the support price of Rs 950 per 40 Kgs during the month of April 2011 except R.Y. Khan where the wholesale price was reported less than the support price. However, the average market prices fell below the support price during the months of May and June 2011.

27. The monthly average wholesale prices of wheat in the main producing area markets of Sindh were reported less than its support price during the post harvest period.

28. According to the API field survey, the wheat prices realized by the growers are averaged at Rs 850 per 40 kgs in the Punjab and Rs 877 in the Sindh during the post-harvest season of 2010-11 crop.

4.2 World Production, Consumption, Stocks and Trade Situation

29. The data on world production, consumption, stocks and trade situation from 2007-08 to 2011-12 are presented in Table-8.

Table-8: World Wheat Balance Sheet: 2007-08 to 2011-12

Items	2007-08	2008-09	2009-10	2010-11 (Estimated)	2011-12 (Forecast)
	.....Million tonnes.....				
Opening stocks	124	132	172	199	195
Production	607	685	679	651	684
Total Supply	731	817	851	850	879
Consumption	602	645	652	655	677
Closing stocks	132	172	199	195	202
Trade	110	137	128	127	132

Source: Grain Market Report, International Grains Council, London, October 27, 2011 GMR No 416.

30. The world wheat production in 2010-11 is estimated at 651 million tonnes, 28 million tonnes lower than the last year's level of 679 million. After adding the opening stocks of 199 million tonnes, the world supply of wheat in 2010-11 is estimated at 850 million tonnes, one million tonnes lower than the last year. Due to slightly decline in

production against the requirement of 655 million tonnes, the closing stocks are estimated to decline to 195 million tonnes in 2010-11.

31. According to the International Grains Council London, the global wheat production for 2011-12 is forecast to increase to 684 million tonnes. Accounting for the opening stocks of 195 million tonnes, total supply is anticipated at 879 million tonnes against the consumption forecast of 677 million tonnes in 2011-12. The closing stocks are forecast at the record level of 202 million tonnes in 2011-12.

4.3 International Prices of Wheat

32. Average fob (Gulf) prices of US Hard Red Winter from 2004-05 to 2011-12 are presented in Annex-V. The prices of US Hard Red Winter showed a volatile pattern during the period under review. The prices averaged at US $ 150 per tonne during 2004-05. The world prices of wheat followed a rising trend in the next three years and reached to US $ 314 per tonne in 2007-08. However, the prices fell to US $ 283 per tonne in 2008-09 and $ 212 per tonne in 2009-10. The prices again escalated to $ 319 per tonne in 2011-12, the highest level during the period under review. In first four months of 2011-12, the prices have averaged at US $ 315 per tone.

4.4 Import and Export Parity Prices of Wheat

33. The import and export parity prices have been calculated on the basis of fob (gulf) prices of Hard Red Winter US wheat. The results of the calculations have been summarized in Table-9 and 10, while the detail of these calculations may be seen at annexes- VI and VII.

Table-9: Import Parity Prices of Wheat on the Basis of US No 2 Hard Red Winter fob (Gulf) Price

Item	2011-12 (Jul-Oct)	2010-11	2009-10 to 2011-12
Fob Gulf price (US $ per tonne)	315	319	282
Import parity price (Rs per 40 kgs):			
i) if consumed at Multan	1407	1422	1290
ii) If consumed at Karachi	1327	1342	1210

Source: Annex-VI.

34. It may be seen from Table-10 that the export parity price calculates to Rs 962 per 40 kgs on the basis of US HRW fob (Gulf) in 2010-11. It implies that the export of wheat from Pakistan is not feasible at issue price of Rs 1000 per 40 kgs inspite of huge governments stocks for the last 2 years.

Table-10: Export Parity Prices of Wheat on the Basis of US No.2 Hard Red Winter Fob (Gulf)

Item	2011-12 (Jul-Oct)	2010-11	2009-10 to 2011-12
Fob Gulf price assuming for Karachi (US $ per tonne)	315	319	282
Export parity price (Rs per 40 kgs)	948	962	840

Source Annex-VII.

4.5 Cost of Production of Wheat

35. The cost of production (COP) is one of the most important considerations in making price policy proposals for agriculture crops. However, the estimation of COP involves a number of conceptual and practical difficulties because of varying crop yields and cost of production on account of substantial variations in agro-climatic conditions, cropping pattern, use level of inputs, adoption of farm technologies, cultural practices etc.

36. The cost of production of wheat for 2011-12 crop in the Punjab and Sindh have been estimated by adopting the input-output parameters used in the 2010-11 Wheat Policy Analysis Report alongwith the latest input prices and hiring rates of farm operations, collected through annual field survey conducted by the API during July 2011 in the major wheat producing areas of the Punjab and Sindh. These input prices and hiring rates were also supplemented with the information provided by the representatives of the Provincial Governments and Farmers' Associations in the meeting of the API's Standing Committee on wheat, held on 19th September 2011 at Islamabad. The details of the COP estimates for the Punjab and Sindh for 2010-11 and 2011-12 crops are presented at Annex-VIII and IX, while a summary of the results is given in Table-11.

Table-11: Average Farmers' Cost of Production of Wheat: 2010-11 and 2011-12 Crops

Items	Units	2010-11 Crop	2011-12 crop	Increase in 2011-12 over 2010-11
Punjab				
1. Cost of cultivation	Rs/acre	22453	27898	5445
2. Yield				
a) Yield in kgs	Kgs/acre	1108	1108	-
b) Yield in maunds	40 kgs/acre	28	28	-
3. Cost of production at farm level	Rs/40 kgs	811	1007	196
4. Marketing cost	Rs/40 kgs	22	25	3
5. Cost of production at market/ procurement centre				
a) With land rent	Rs/40 kgs	833	1032	199
b) Without land rent	Rs/40 kgs	652	761	109
Sindh				
1. Cost of cultivation	Rs/acre	20037	24569	4532
2. Yield				
a) Yield in kgs	Kgs/acre	968	968	-
b) Yield in maunds	40 kgs/acre	24	24	-
3. Cost of production at farm level	Rs/40 kgs	828	1015	187
4. Marketing cost	Rs/40 kgs	22	25	3
5. Cost of production at market/ procurement centre				
a) With land rent	Rs/40 kgs	850	1040	190
b) Without land rent	Rs/40 kgs	685	792	107

Source: Annex-VIII and IX.

Punjab

37. It is revealed from the table above that the cost of cultivation of one acre of wheat in the Punjab during 2011-12 is expected at Rs 27898, including land rent. With the average yield of 1108 kgs per acre, cost of producing wheat is worked out at Rs 1007 per 40 kgs. Accounting for the marketing charges @ Rs 25 per 40 kgs, the market/procurement centre level cost of production works to Rs 1032, higher by Rs 199 (24 %) over the corresponding cost of Rs 833 in 2010-11.

Sindh

38. During 2011-12 crop year, the cost of growing one acre of wheat in Sindh is likely to be Rs 24569, inclusive of land rent. Distributing over the average yield of 968 kgs per acre, the farm level cost of production comes to Rs 1015 per 40 kgs. Adding marketing cost @ Rs 25 per 40 kgs, the cost of producing and delivering 40 kgs wheat at market/procurement centre level would be Rs 1040, reflecting a rise of Rs 190 (22 %) over the last year.

39. The escalation in cost of production of wheat for the 2011-12 crop over the last year in Punjab and Sindh is mainly attributed to the escalations in prices of fertilizers and land rentals. Likewise, increases in expenses on land preparation and supplementary irrigation on account of rising prices of diesel also added in the cost of production. However, higher value of wheat bhoosa has partially offset the rise in the cost of production of wheat for 2011-12 crop.

4.5.1 Cost of major farm inputs and operations

40. The shares of different farm operations and inputs in the gross cost of cultivation of wheat in the Punjab and Sindh during 2010-11 and 2011-12 crop years are provided in the Table-12.

Table-12: Cost of major operations/inputs of wheat: 2010-11 and 2011-12 Crops

Operations/inputs	2010-11 crop	2011-12 crop	Share in increased cost
	---Rs/acre---		Per cent
Punjab			
1. Land preparation	2312 (9)	2556 (8)	4
2. Seed and sowing operations	3059 (12)	3235 (10)	3
3. Weedicides	413 (2)	484 (1)	1
4. Irrigation	2457 (10)	2721 (9)	4
5. Fertilizer including FYM	4973 (20)	8192 (25)	45
6. Harvesting and threshing etc	5133 (21)	5264 (17)	2
7. Land rent	5000 (20)	7500 (24)	36
8. Others	1606 (6)	1946 (6)	5
9. Total cost	24953 (100)	31898 (100)	**100**
Sindh			
1. Land preparation	3072 (14)	3570 (13)	8
2. Seed and sowing operations	2638 (12)	2700 (9)	1
3. Interculture/weedicides	287 (1)	345 (1)	1
4. Irrigation	1300 (6)	1443 (5)	2
5. Fertilizer including FYM	4965 (22)	8145 (29)	51
6. Harvesting and threshing etc	4418 (20)	4423 (15)	Neg.
7. Land rent	4000 (18)	6000 (21)	32
8. Others	1607 (7)	1943 (7)	5
9. Total cost	22287(100)	28569(100)	**100**

Notes: 1. Others include mark-up, management charges, land tax and drainage cess.
2. Figures in parenthesis are percent shares in total cost of cultivation.

Source: Annex-VIII & IX

Punjab

41. The expenditure on fertilizers is the vital component of gross cost of cultivation of wheat in the Punjab, accounting for 25 per cent. Other major constituents are: Land rent (24 %), Harvesting & threshing (17 %), Seed and sowing operations (10 %), Irrigation (9 %) and land preparation (8 %).

Sindh

42. In Sindh too, fertilizer is the leading ingredient in the gross cost of cultivation, accounting for 29 per cent. Other major components are: Land rent (21 %), Harvesting & threshing (15 %), Land preparation (13 %), Seed and sowing operations (9 %) and Irrigation (5 %).

4.5.2 Prices of major farm inputs

43. The average market prices of the most important farm inputs used in working out cost of production of wheat for the 2010-11 and 2011-12 crops are given below:

Items	Units	2010-11 crop	2011-12 crop	Per cent changes
Punjab				
1. HSD	Rs/litre	73.15	92.84	26.92
2. Power tariff	Rs/kwh	5.11	5.31	3.91
3. Seed	Rs/kg	40	40	-
4. Fertilizers	Rs/bag			
4.1 DAP		2605	4125	58.35
4.2 Urea		861	1570	82.35
4.3 NP		1721	2760	60.37
Sindh				
1. HSD	Rs/litre	73.15	92.84	26.92
2. Power tariff	Rs/kwh	5.11	5.31	3.91
3. Seed	Rs/kg	40	40	-
4. Fertilizers	Rs/bag			
4.1 DAP		2581	3950	53.04
4.2 Urea		873	1600	83.28
4.3 NP		1735	2800	61.38

4.6 Nominal and Real Prices of Wheat

44. The purchasing power of a certain commodity is influenced by the fluctuation in its price in relation to general price level in the economy. Such variations in the price also affect the welfare and real income of its producers. To ascertain overtime changes in the purchasing power of wheat, the nominal support price of the crop during 2000-01 to 2010-11 has been deflated by the corresponding Consumer Price Index (CPI), the most common measure of inflation in the economy.

4.6.1 At Support Prices of Wheat

45. The analysis in terms of nominal and real support prices for the period 2000-01 to 2010-11 is set out in the Table-13:

Table-13: Nominal and Real Support Prices of Wheat: 2000-01 to 2010-11

Crop year	Consumer Price Index (CPI)	Support Prices	
		Nominal	Real
	2000-01=100	Rs/40 Kgs	
1	2	3	4=(3/2)x100
2000-01	100.00	300	300.00
2001-02	103.54	300	289.74
2002-03	106.75	300	281.03
2003-04	111.63	350	313.54
2004-05	121.98	400	327.92
2005-06	131.64	415	315.25
2006-07	141.73	425	299.87
2007-08	158.90	625	393.33
2008-09	191.90	950	495.05
2009-10	212.44	950	447.19
2010-11	242.34	950	392.01

Sources: For CPI, Economic Survey of Pakistan: 2010-11.
For Support Price, API.

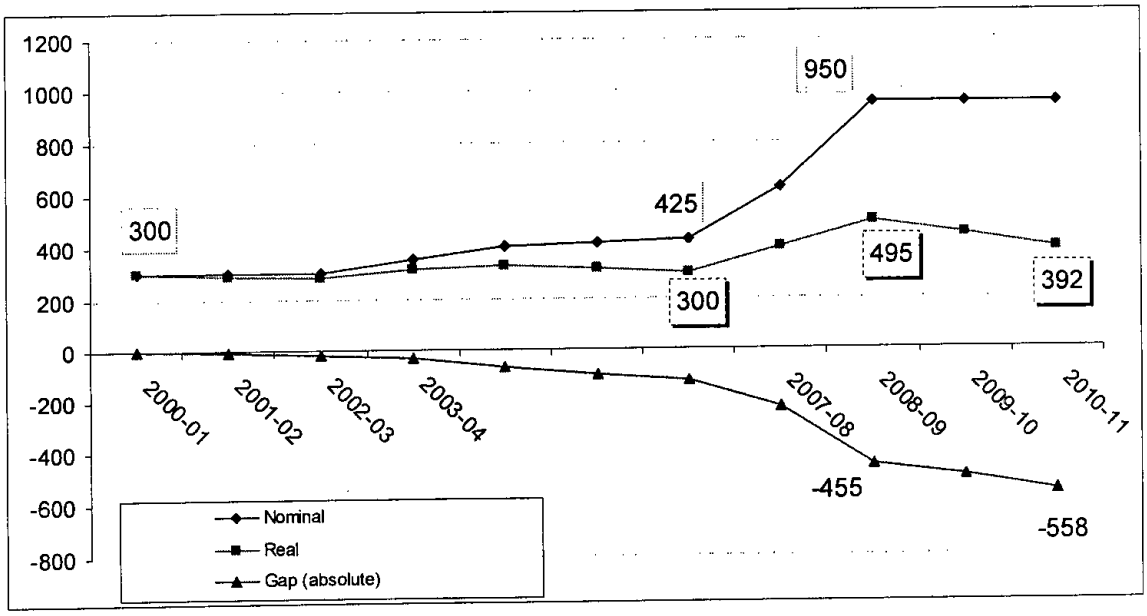


Fig-5: Nominal & Real Support Prices of Wheat

46. The nominal support price of wheat was constant in initial three years, while it was annually enhanced during next 6 years. As the CPI increased by about 7 % during the initial three years (2000-03), the real value of crop declined by 6 % to Rs 281 per 40

kgs. However, the nominal price evidenced a constant upward rise during the years 2003-09 with overall increase of 217 percent. Although the nominal price was raised from Rs 350 to Rs 425 per 40 kgs during 2003-07, but the real value declined to base level (Fig-5).

47. During the last three years, the nominal support price remained constant at Rs 950 per 40 kgs. Since the CPI increased by over 50 % during these three years, the real value was deteriorated by 21 % to Rs 392 per 40 kgs in 2010-11 as compared to Rs. 495 per 40 kgs in 2008-09.

48. The absolute gap in the nominal and real prices, as illustrated in the figure above, has been expanding mildly during 2000-01 to 2005-06, which however evidenced a sharp expansion after 2006-07 and dropping to (-) 558 in 2010-11, the widest ever during the period under review.

4.6.2 At Market Prices of Wheat

49. The analysis in terms of real and nominal market prices for the period 2000-01 to 2010-11 is set out in the Table-14:

Table-14: Nominal and Real Market Prices of Wheat: 2000-01 to 2010-11

Crop year	Consumer Price Index (CPI)	Market Prices	
		Nominal	Real
	2000-01=100	Rs/ per 40 Kgs	
1	2	3	4=(3/2)x100
2000-01	100.00	275	275.00
2001-02	103.54	292	282.02
2002-03	106.75	305	285.71
2003-04	111.63	388	347.58
2004-05	121.98	471	386.13
2005-06	131.64	420	319.05
2006-07	141.87	432	304.50
2007-08	158.90	659	414.73
2008-09	191.90	939	489.32
2009-10	212.44	902	424.59
2010-11	242.34	927	382.52

Sources: For CPI, Economic Survey of Pakistan: 2010-11.
For Market prices, Government of the Punjab.

50. The market prices have evidenced a constant change during the whole period under review. In the initial two years, the market price remained lower than the support price. During 2002-08, the farming community got market price relatively higher than the support price. After 2008-09, the market price could not gain an identical value as of support price and remained 1.2 % below at Rs 939 per 40 kgs. It further declined to Rs 902 in 2009-10 while it improved to Rs 927 per 40 kgs in 2010-11. The real value of the commodity in the market remained lower than support price during 2008-09 to 2010-11.

51. The real market value of wheat crop remained below the nominal value during the whole period under review, rather the absolute gap between both the prices widened with increasing rate as the years passed over as depicted in Fig-6.

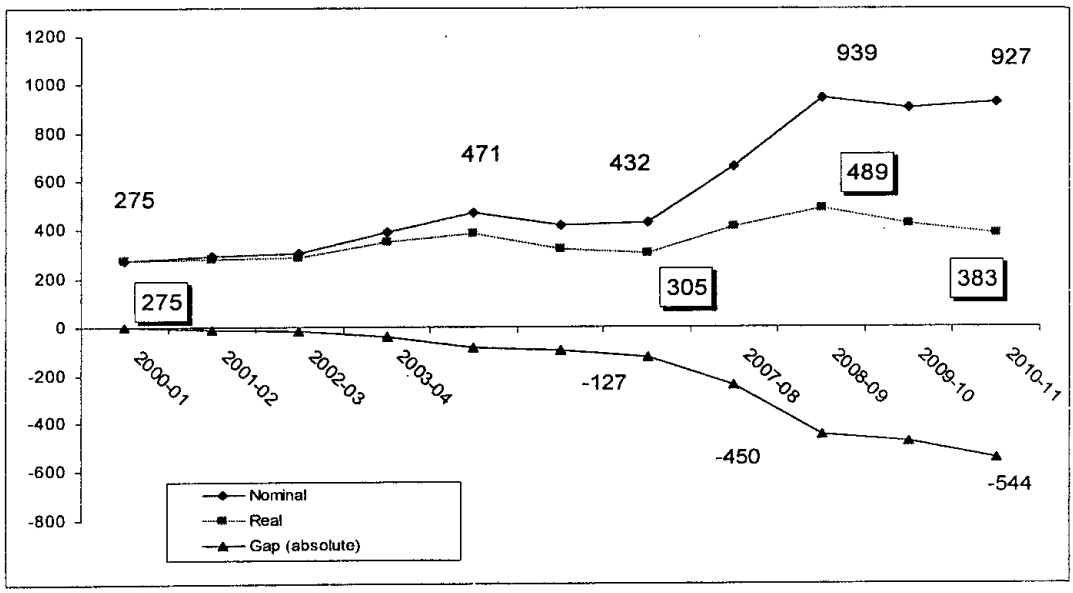


Fig-6: Nominal & Real Market Prices of Wheat

4.7 Comparative Economics of Wheat and Competing Crops

52. Resource allocation among the competing farm enterprises is primarily governed by economic indicators like output-input ratio, gross cost, gross income, gross margin, net income, returns to purchased inputs, revenue per acre inch of irrigation water and revenue per day of crop duration, etc. Estimation of such indicators provides useful

insights about the allocation of land, and other resources at farm level. These indicators are derived from the farm management data and output-input prices which are subject to change over time and space, necessitating due care in empirical estimation of these indicators.

53. Wheat is grown under both irrigated and rain-fed conditions. Over 90 per cent production at the country level, however, comes from the irrigated regions where it competes with oilseed crops like canola and spring sunflower. It also faces indirect competition from sugarcane, an annual crop competing against both 'rabi' and 'kharif' crops. In such situation, wheat combination with 'kharif' crops would need to be considered. The likely combinations in this context could be basmati + wheat, IRRI + wheat, cotton + wheat, cotton + sunflower and IRRI + sunflower. The economics of wheat and competing crops has been analyzed in terms of output and input prices received and paid by the growers during 2008-09 at farm level. The details of the analysis are provided in Annex-X, while a summary of various economic indicators like output-input ratio and revenue per rupee of purchased inputs cost, day of crop duration and unit of irrigation water for the Punjab and Sindh is presented in Table-15.

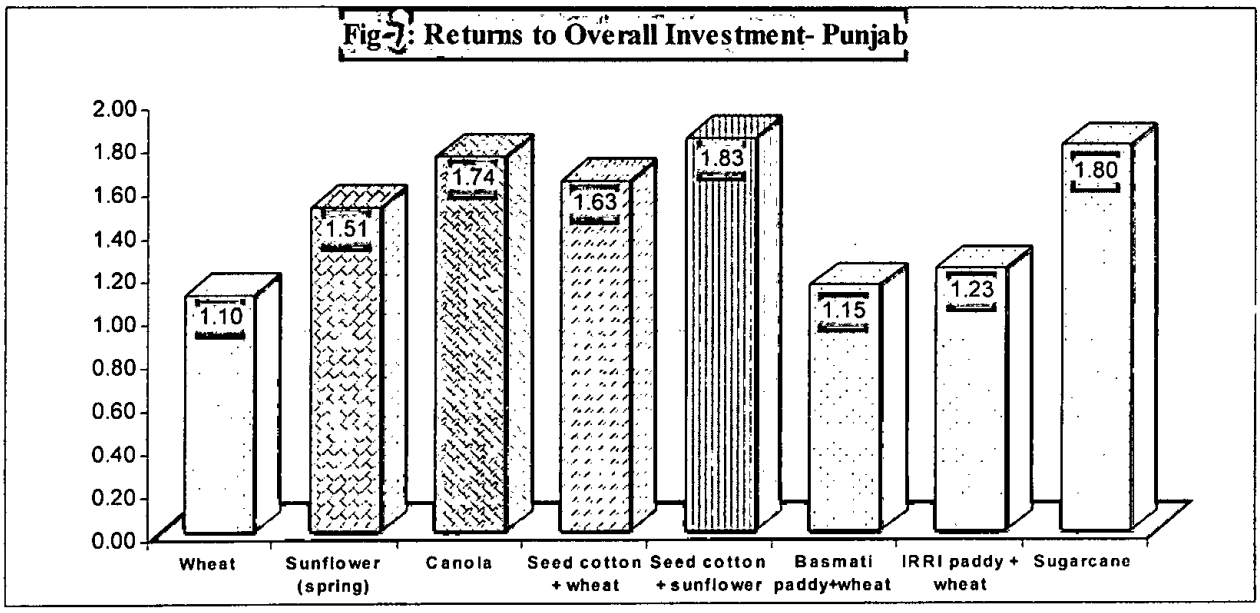
Punjab

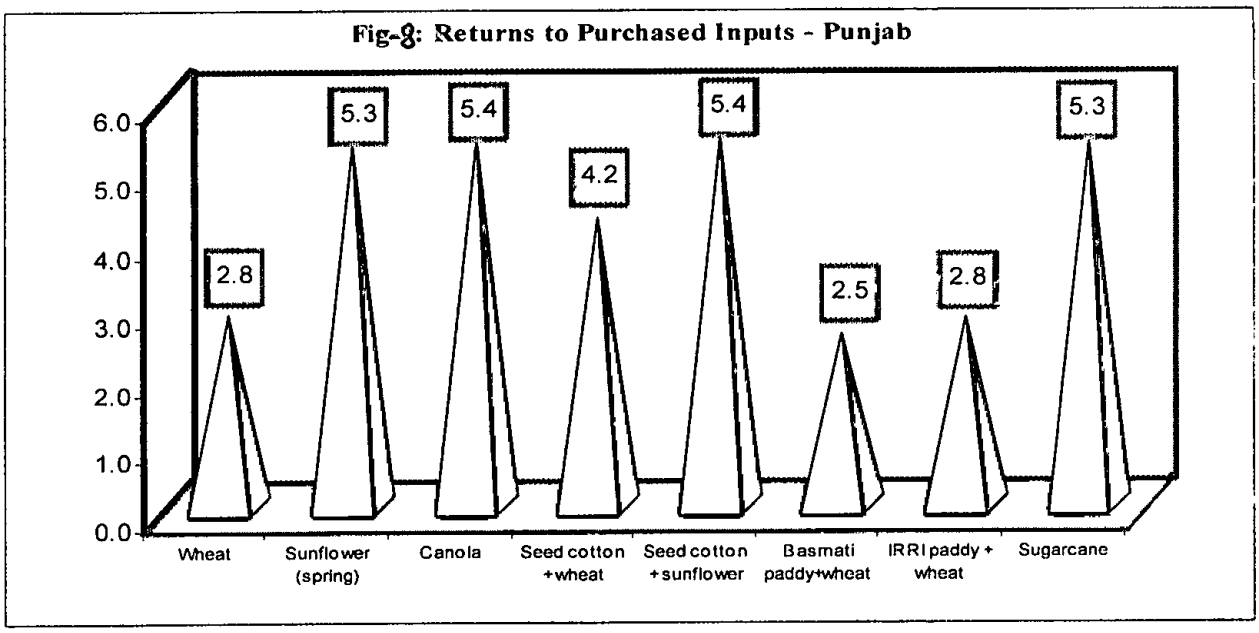
54. For the 2010-11 crop, wheat has shown poor performance as compared to other rabi crops like sunflower and canola in terms of all economic criteria adopted in this analysis except irrigation water primarily because of the remunerative prices of sunflower and canola (Fig-7 and 8). However, wheat out competed both the oilseed crops in terms of irrigation water. Wheat has also performed equally to canola in terms of revenue per crop day.

Table-15: Economics of Wheat and Competing Crops at Prices Realized by the Growers: 2010-11 Crops

Province / crops /crop combination	Output-input ratio	Revenue per		
		Rupee of purchased inputs	Crop day	Acre inch of water used
		.....Rupees.....		
Punjab				
Wheat	1.10	2.8	153	2297
Sunflower (spring)	1.51	5.3	184	1502
Canola	1.74	5.4	153	2118
Seed cotton + wheat	1.63	4.2	213	2630
Seed cotton + sunflower	1.83	5.4	226	2157
Basmati paddy+wheat	1.15	2.5	165	851
IRRI paddy + wheat	1.23	2.8	167	814
Sugarcane	1.80	5.3	236	1940
Sindh				
Wheat	1.04	2.7	128	1924
Sunflower (spring)	1.53	5.3	184	1502
Canola	1.57	4.9	138	1914
Seed cotton + wheat	1.72	4.8	206	2880
Seed cotton + sunflower	1.94	5.3	229	2409
IRRI paddy+ wheat	1.30	3.3	161	853
IRRI paddy+sunflower	1.55	4.5	189	871
Sugarcane	1.89	5.7	242	1663

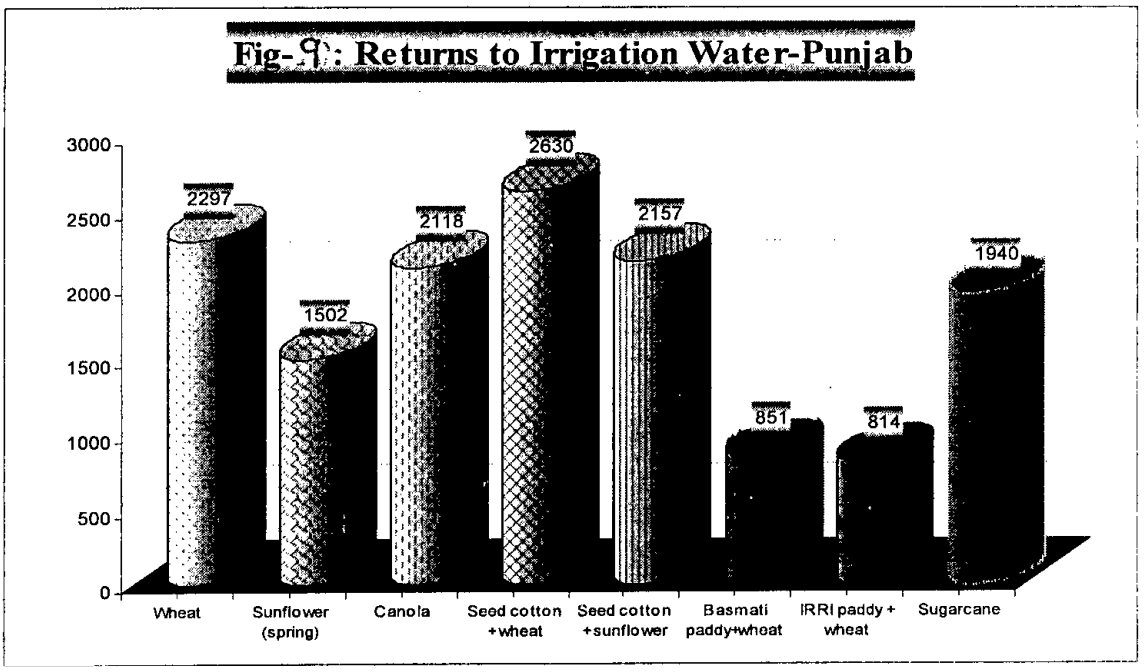
Source: Annex-X.





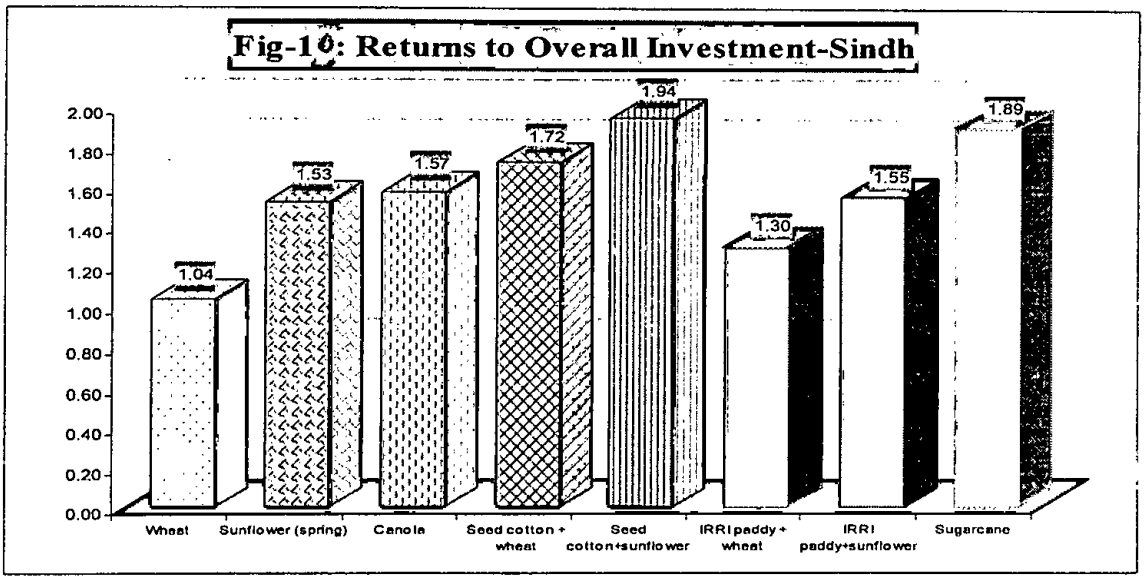
55. In view of indirect competition, sugarcane has performed much better than wheat combinations in terms of all the economic indicators except irrigation water. This is due to highly lucrative prices of sugarcane realized by the growers during 2010-11. However, cotton+wheat combination in case of gross returns to irrigation water (Fig-9) has an edge over sugarcane. Amongst the crop combinations, economic position of cotton+sunflower

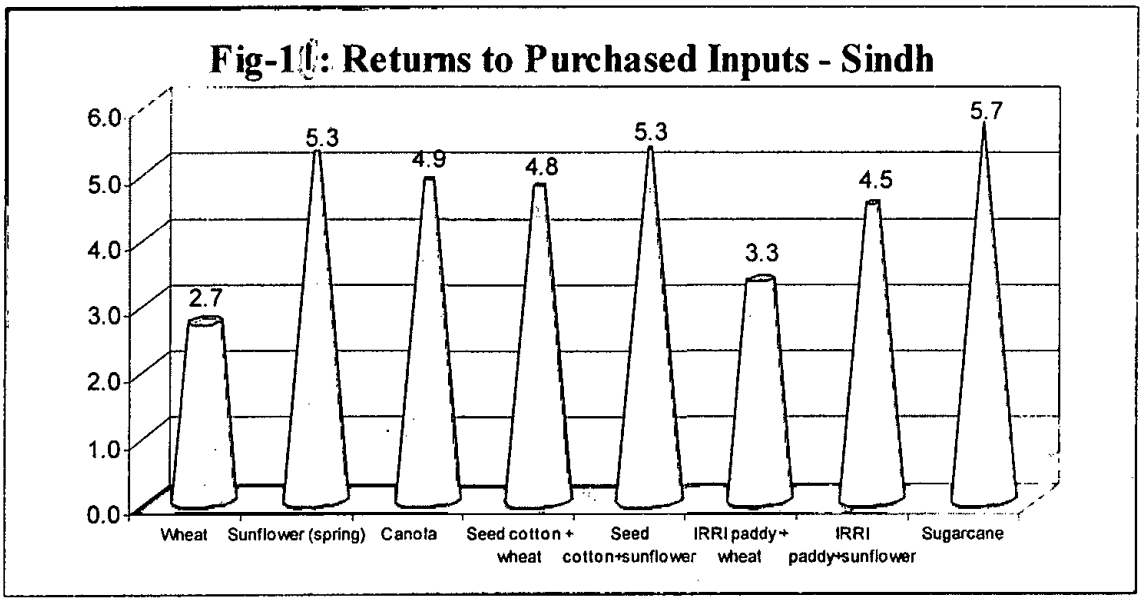
has given better returns over the combinations of cotton + wheat and IRRI + wheat in terms of all economic indicators except irrigation water where cotton + wheat rotation has an edge over all other crop combinations. Cotton + sunflower rotation also out-competed sugarcane in respect of all economic indicators due to very lucrative price realized by the growers for both seed cotton and sunflower crops.



Sindh

56. Similarly in Sindh, the overall economic returns to wheat cultivation during 2010-11 remained lower than rabi oilseed crops (Fig-10). In respect of economic indicators of gross returns to purchased inputs and crop day, sunflower and canola performed much better than wheat (Fig-11). However, wheat out performed both the oilseed crops in case of gross returns to irrigation water. Wheat has also edge over canola in case of returns to crop day.





57. In case of indirect competition, sugarcane performed much better than wheat combinations in all economic indicators except the gross returns to irrigation water where cotton + wheat rotation out-competed not only sugarcane but also other crop combinations estimated in Table-15. The economic returns of cotton + wheat rotation has significant edge over rice combinations in all respect. The economic position of cotton + sunflower rotation is much stronger than cotton + wheat rotation.

4.8 Economic Efficiency in Wheat Production

58. From food security point of view, wheat is the most important crop of Pakistan. Therefore, it is important to assess its profitability and competitiveness from farmer as well as national point of view. For this purpose, three parameters are generally used. These are Nominal Protection Coefficient, Effective Protection Coefficient and Domestic Resource Cost coefficient. In other words, these parameters are also called measures of protection. In the following paragraphs, numerical estimates of the said parameters are described in detail. The underlying analysis is based on the cost of production of wheat in the Punjab and Sindh provinces.

4.8.1 Nominal Protection Coefficient (NPC)

59. NPC is the ratio of the market price to the social price of a commodity. It examines the impact of domestic market price of a crop without any consideration to the distortions in the input prices. As a rule of thumb, if NPC is greater than one it means that local producers have protection and if it is less than one it means that domestic producers are implicitly taxed. Implicit taxation to the growers of a particular crop means flow of resources from that particular crop. It is evident from Table-16 that NPC values for the Punjab province remained less than one throughout the period under analysis. It ranged between 0.46 and 0.90 which implies implicit taxation of the wheat growers of Pakistan. Similarly the NPC numeric remained less than one for the Sindh province except for 2009-10 when it grew to the level of 1.00. A wide fluctuation is noted during these years that may be attributed to the volatile wheat prices in the open market.

Table-16: Nominal and Effective Protection Coefficients for Wheat in Pakistan

Year	Nominal Protection Coefficient (NPC)	Effective Protection Coefficient (EPC)	Nominal Protection Coefficient (NPC)	Effective Protection Coefficient (EPC)
	Punjab		**Sindh**	
2006-07	0.65	0.51	0.70	0.67
2007-08	0.46	0.38	0.46	0.44
2008-09	0.75	0.96	0.84	0.91
2009-10	0.90	1.26	1.00	1.09
2010-11	0.74	0.93	0.71	0.74

Source: Annex-XI.

4.8.2 Effective Protection Coefficient (EPC)

60. EPC is the ratio of the difference between the revenue and the cost of tradable inputs at the private prices and the difference between the revenue and the tradable inputs cost at social prices. Thus EPC is the indicator of the net incentive and disincentive effects of all policies affecting prices of tradable output and inputs. EPC greater than one means that private profit is higher than it could be without government intervention in the input/ output market. In contrast, EPC less than one indicates that net effect of policies affecting input/output prices reduces private profit in wheat cultivation. In the former case, there is domestic protection to the producers of the commodity while in the later case they are implicitly taxed which discourages domestic production.

61. In contrast to the NPC, EPC measures competitiveness of a crop by including prices of both inputs and output. The above Table also presents EPC estimates. In 2006-07 and 2007-08, EPC remained below the corresponding NPC values. However, in 2008-09 and onward EPC rose above the NPC to owing relatively lower prices of traded inputs. For 2009-10, EPC estimate indicates an unusual situation i.e it is greater than one. This may be ascribed to relatively less increase in input prices as compared to price of wheat.

4.8.3 Domestic Resource Cost (DRC)

62. DRC is the ratio of the social cost on domestic factors to value added at social prices. If DRC is less than one it implies comparative advantage as the domestic production can save foreign exchange at costs less than the corresponding cost of imports. When DRC is greater than one, it indicates comparative disadvantage in domestic production as in such situations import of a commodity is cheaper. However, it should be noted that DRC varies with changes in opportunity cost of non-tradable inputs as well as the social value of output. Based on cost of production of average farmers and import prices of wheat, DRC for Punjab and Sindh are estimated and produced in Table-17. Data on private and social profitability for the analysis period are produced in Annex-XI.

Table-17: Domestic Resource Cost (DRC) for Wheat in Punjab and Sindh Provinces

Year	DRC Coefficient (Punjab)	DRC Coefficient (Sindh)
2006-07	0.27	0.38
2007-08	0.12	0.17
2008-09	0.33	0.33
2009-10	0.53	0.58
2010-11	0.45	0.43

Source: Annex-XI.

63. It is visible from the above Table that the DRC coefficients are substantially below one which indicate Pakistan's comparative advantage as import substitution in wheat production. In other words, domestic resource cost would be less than the corresponding import expenditure. Therefore, it would be an economic proposition to invest in wheat production and marketing at home rather to import.

4.9 Producer Prices of Wheat in Selected Countries

64. Wheat is widely grown all over the world. Major wheat producing countries provide a variety of incentives including the minimum guaranteed prices to the growers. To compare the producer prices in Pakistan with other countries, the relevant information has been obtained through internet.

65. The data on the minimum guaranteed producer prices of wheat for 2008-09 to 2010-11 crops in major wheat producing countries are presented in Table-18.

66. While comparing the producer prices of a commodity across the globe, following factors should be kept in view:

i) Quality of the produce;
ii) Structure of input prices;
iii) Policy objectives;
iv) Fluctuations in exchange rates
v) Stage of agriculture development;
vi) Adjustment payments
vii) Country-specific commodity programmes;
viii) Counter-cyclical payments

Table-18: Producer Prices of Wheat in Selected Countries: 2008-09 to 2010-11 Crops

Country	2008-09		2009-10		2010-11		Remarks
	US $/ Tonne	Pak Rs/ 40 kgs	US $/ Tonne	Pak Rs/ 40 kgs	US $/ Tonne	Pak Rs/ 40 kgs	
Australia	240.53	755	222.03	742	251.00	863	APW 10% net Pool Return
Brazil	267.95	841	224.50	750	295.00	1015	Minimum Support Price
Canada	229.67	721	-	-	-	-	CWRS 13.5%
China	254.00	798	269.33	900	285.00	980	Minimum Support Price for White Wheat
EU	141.70	445	-	-	-	-	Basic Intervention Price
India	227.01	713	234.55	784	246.14	847	Minimum Support Price
Maxico	202.45	636	202.45	677	-	-	Target Income Support Price
Russian Federation	200.00	628	-	-	-	-	Procurement Intervention Price
USA	253.21	871	177.61	611	238.17	819	Average Farm Price of US Hard Red Winter Wheat
Pakistan	302.55	950	284.23	950	276.16	950	Support price

Notes:

1. Exchange rates of 1US$=Pak Rs. 78.50 for 2008-09, Rs 83.56 for 2009-10 and Rs 86.00 for 2010-11 are adopted.
2. The pool return is an estimated average across the major companies offering grain pool.

4.10 Parity Between Prices of Fertilizers and Wheat

67. The parity ratio indicates the quantity of wheat required to buy one nutrient unit of fertilizer. Higher the ratio, lower the purchasing power of wheat as more units of the commodity are needed to buy a given quantity of fertilizer and vice versa. A favourable parity will be required to stimulate fertilizer application towards optimal level. As the prices of inputs and outputs do not change proportionately, the parity ratios may favour or go against the output. Hence, it is important to monitor and analyse the parity ratios between prices of wheat and fertilizer.

68. To study the overtime changes in the purchasing power of wheat in terms of nitrogen and phosphatic fertilizers, the parity ratios between fertilizer nutrients and wheat have been calculated for the period of 2001-02 to 2010-11 (Table-19).

Table-19: Parity Between Market Prices of Fertilizers and Wheat: 2001-02 to 2010-11

Crop year	Price of fertilizer		Market price of wheat	Units of wheat needed to buy one unit of fertilizer	
	N	P		N	P
	---------- Rupees per tonne----------			----- Units -----	
2001-02	16956	21626	7025	2.41	3.08
2002-03	17870	25181	7750	2.31	3.25
2003-04	18000	28740	9625	1.87	2.99
2004-05	19565	31474	10800	1.81	2.91
2005-06	21260	36180	10275	2.07	3.52
2006-07	22870	37220	11050	2.07	3.37
2007-08	23200	43750	15675	1.48	2.79
2008-09	30260	122290	23475	1.29	5.21
2009-10	34320	70240	22262	1.54	3.16
2010-11	37700	97987	22625	1.67	4.33

Sources: i) Directorates of Agriculture, Punjab and Sindh for market prices of wheat.

ii) Fertilizer prices have been worked out from the prices of Urea and DAP as per COP estimates for the respective crops.

69. The parity ratio between market prices of fertilizer and wheat shows that the quantity of wheat needed to buy one nutrient tonne of N fertilizer has fluctuated between 1.29 to 2.41 tonnes during the period under consideration. Similarly, the parity ratios between prices of wheat and those of phosphatic fertilizer have fluctuated from 2.79 to 5.21 units.

4.11 Impact of Increase in Support Price of Wheat on Consumer Price Index (CPI) and Average Household Expenditure

70. Expenditure on wheat is an important item in average household budget. Accordingly, wheat and its products are included in the basket of goods used in estimating the Consumer Price Index (CPI). The support price of wheat affects both the household expenditure and CPI through consumer prices of wheat flour and its products. Any change in the price of wheat and general price level in the economy impacts on the household budget. The details of analysis are presented in Annex-XII, while a summary of the results is provided in Table-20.

14.11.1 Impact on CPI

71 The Federal Bureau of Statistics (FBS) has estimated the changes in CPI as a result of increase in support price of wheat over the existing level of Rs 950 per 40 kgs in 2010-11. The analysis is based on the assumption that the market prices of wheat and wheat flour would increase in the same proportion as the support price. The impact of increases in the support price of wheat on CPI and average household expenditure are presented in Table-20.

Table-20: Impact of Increase in Wheat Prices on CPI and Average Household Expenditure

Wheat price	Rise in CPI	Increase in annual expenses on the basis of average per capita wheat availability @ 120 kgs per year	
		Per person	Per household
Rs per kg	Per cent	---------- Rupees ----------	
950 (Existing price)			
970	0.117	60	395
990	0.235	120	790
101	0.352	180	1184
1030	0.469	240	1579
1050	0.587	300	1974

Sources: 1. Federal Bureau of Statistics (FBS), Karachi.
2. Annex-XII.

72. It is evident from the above Table that every increase of Rs 20 per 40 kgs over the existing support price of wheat is expected to raise the CPI by 0.117 per cent, other things remaining the same. In case the support price of wheat is enhanced by Rs 100 per 40 kgs, the CPI is likely to rise by 0.587 per cent.

73. The above analysis is predicted on the assumption that prices of wheat flour and other products would increase in the same proportion as that of wheat. Moreover, increases in the CPI analysed above are the direct effects of increase in support price of wheat. The indirect and multiplier effects, if any, resulting from the increase in support price of wheat should be over and above the estimated changes in CPI.

14.11. 2 Impact on Household Expenditure

74. According to the Household Integrated Economic Survey (HIES) 2007-08 by the FBS, the average household in Pakistan consists of 6.58 members. Taking the annual per capita availability of wheat at 120 kgs and average household size of 6.58 members, the impact of selected increases in the support price of wheat on the average household expenditure has been estimated in Annex-XII and summarized in Table-20.

75. According to the above analysis, every increase of Rs 20 in the support price of wheat over the existing level of Rs 950 per 40 kgs in 2010-11 would increase the annual expenditure by Rs 60 per person and Rs 395 per average household, other factors remaining constant. While the monthly expenses on wheat consumption due to every increase of Rs 20 per 40 kgs in the support price of wheat would rise by Rs 5 per person and Rs 33 per household. Likewise, the increase of Rs 100 per 40 kgs over the existing support price would bring additional expenditure of Rs 300 per capita per year and Rs 1974 per household. The above results are based on the assumption that increases in the support price of wheat are proportionately reflected in prices of wheat flour and other wheat products.

5. CONSULTATIVE MECHANISM IN PRICE FIXATION OF WHEAT

76. Annual meeting of the API's Standing Committee on wheat was held on 19th September 2011 at Islamabad. The meeting was attended by the representatives of the growers', associations, chambers of agriculture, progressive growers, crop experts, policy makers and officials of the Federal and Provincial Governments concerned with wheat production and marketing. The meeting discussed the issues relating to food security, production and marketing of wheat including prices of inputs and cost of production at length. A number of constraints impacting on farm production in general and wheat in particular were also highlighted. Future prospects of wheat crop in the changing scenario also engaged the attention of the committee.

77. The farming community showed serious concerns over the shortage and hike in input prices particularly urea and DAP fertilizers and also criticized the imposition of GST on agriculture. They stressed that the prices of fertilizer, weedicides, diesel and electric power should be reduced and the support price for the coming crop should be enhanced according to the inflation rate in the economy as it plays on important role in increase of wheat production. The committee members emphasized the need for development of suitable technology package for sustainable production of wheat. Debating on the availability of certified seed, the growers from Sindh informed that the Sindh Seed Corporation is not producing certified seed and they are forced to purchase uncertified seed from the market. There was a consensus in the meeting for having a programme which ensures incentive prices to the farmers during the harvest season in general and for bumper harvest in particular. The meeting also suggested a number of measures to improve the productivity and marketing system.

6. MAJOR WHEAT VARIETIES AND THEIR YIELD POTENTIAL

78. The quality of seed play an important role in enhancing wheat productivity. Among all other inputs used in wheat production, seed is the most important input because the optimal returns to all other inputs including fertilizer, irrigation water, pesticides/weedicides, various cultural operations etc are influenced by the quality of seed. In this regard, over 50 wheat varieties have been evolved over the time by the wheat

research institutes at country level. During the last decade, 16 high yield varieties have been developed in the Punjab while 4 varieties of wheat are released in Sindh.

79. The high yielding varieties of wheat released by Research Institutes in the Punjab for commercial cultivation in specified areas are presented in Table-21:

Table-21: Commercial Wheat Varieties and Their Yield Potential in the Punjab

S. No.	Variety	Year of release	Sowing time	Yield potential (Kgs/hectare)	Suitability
1.	Bakhar-02	2002	1st Nov to 10 Dec.	7200	Irrigated Thal area & Central Punjab
2.	GA 2002 (Barani)	2002	1st Nov to 10 Dec.	5800	Barani area
3.	Uqab 2002	2002	1st Nov to 25 Nov.	6800	Central Punjab
4.	Sehar 2006	2006	1st Nov to 15 Dec.	7200	Not recommended for rice zone, central and norther Punjab
5.	Shafaq 2006	2006	10 Nov to 15 Dec.	6800	Irrigated areas of Punjab
6.	Freed 2006	2006	10 Nov to 15 Dec.	6200	Cotton zone of Punjab
7.	Fsd. 2008	2008	1st Nov to 30 Nov.	6732	Irrigated, rainfed & saline areas of Punjab
8.	Lasani 2008	2008	1st Nov to 30 Nov.	6100	Irrigated areas of Punjab
9.	Meraj 2008	2008	10 Nov to 15 Dec.	6500	Cotton zone of Punjab
10.	Chakwal 50	2008	15 Oct to 15 Nov.	6000	Rainfed areas of Punjab
11.	BARS 2009	2009	20 Oct to 15 Nov.	6000	-do-
12.	AARI 2011	2011	1st Nov to 30 Nov.	6563	Irrigated areas of Punjab except rice zone
13.	Punjab 2011	2011	1st Nov to 30 Nov.	6893	Irrigated areas of Punjab
14.	Millat 2011	2011	1st Nov to 30 Nov.	6358	Irrigated areas of Punjab except rice zone
15.	AAS 2011	2011	10 Nov to 15 Dec.	7200	Cotton zone of Punjab
16.	Dharabi 2011	2011	20 Oct to 15 Nov.	5500	Rainfed areas of Punjab

Source: Wheat Research Institute, AARI, Faisalabad.

80. The yield potential of these varieties range between 5800 and 7200 kgs per hectare. The highest yield potential of Bakhar-02, Seher-06 and AAS 2011 varieties is estimated at 7200 kgs per hectare followed by Punjab 2011 at 6893 kgs, Uqab 2002 and Shafaq 2006 at 6800 kgs per hectare. If these varieties are adopted for vast cultivation in their specified areas with recommended production technology and timely supply of inputs and application, the yield per hectare would definitely improve at the country level.

81. High yielding wheat varieties evolved by Research Institute in Sindh alongwith their yield potential and other characteristics are presented in Table-22.

Table-22: Commercial Wheat Varieties and Their Yield Potential in Sindh

S. No.	Variety	Sowing time	Maturity	Yield Potential	Average farmer yield	Protein
			Days	---- Kgs/hectare		Per cent
1.	Moomal-2002	1st Nov to 20th Nov. (South Sindh) 7th Nov. to 30th Nov. (North Sindh)	136	7116	5436	15.50
2.	SKD-1	1st Nov to 15th Dec. (South Sindh 7th Nov to 21st Dec. (North Sindh)	118	5920	5337	14.20
3.	Imdad-2005	1st Nov to 20th Nov. (South Sindh) 7th Nov to 30th Nov. (North Sindh)	130	6128	5436	13.20
4.	TD-1	1st Nov to 15th Dec. (South Sindh) 7th Nov to 21st Dec. (North Sindh)	118	7610	5634	13.46

Source: Wheat Research Institute, Sakrand, Sindh.

82. The yield potential of 4 varieties in Sindh ranged between 5920 and 7610 kgs per hectare. The highest yield potential of TD-1 variety is 7610 kgs per hectare. The average farmer yield of these varieties ranged from 5337 to 5634 kgs per hectare. The average farmer yield of TD-1 variety was recorded at 5634 kgs per hectare which is the highest average yield among other varieties. Other high yielding varieties are Moomal-2002 with yield potential of 7116 kgs, Imdad-2005 with 6128 kgs and SKD-1 with 5920 kgs per hectare.

7. WHEAT YIELD AMONG COMPETING COUNTRIES

83. Global wheat during 2009 occupied an area of around 225.61 million hectares with a total production of 685.57 million tonnes. The world top 14 producing countries 80 per cent of total area and 79 per cent of total production as narrated in Table-23.

Table-23: Wheat Area in Major Wheat Producing Countries of the World: 2009 Crop

S.No.	Country	Area in million hectares	Per cent share in world area
1.	India	27.75	12.30
2.	Russian Federation	26.63	11.80
3.	China	24.29	10.77
4.	United States of America	20.18	8.95
5.	Kazakhstan	14.33	6.35
6.	Australia	13.51	5.99
7.	Canada	9.64	4.27
8.	Pakistan	9.05	4.01
9.	Turkey	8.03	3.56
10.	Ukraine	6.75	2.99
11.	Iran (Islamic Republic of)	6.65	2.95
12.	France	5.15	2.28
13.	Argentina	4.33	1.92
14.	Germany	3.23	1.43
	Total	179.51	79.57
	Total World Area	225.61	100.00

Source: FAO.

84. In terms of wheat area, India is on the top with 27.75 million hectares followed by Russian Federation with 26.63 million and China with 24.29 million hectares. Pakistan lies at 8th number in this regard with 4 per cent share.

85. In terms of wheat production, China is on the top with 115.12 million tonnes followed by India with 80.68 million and Russian Federation with 61.74 million tonnes. However, Pakistan retains 8th position in wheat production of the world (Table-24).

Table-24: Wheat Production in Major Wheat Producing Countries of the World: 2009 Crop

S.No.	Country	Area in million hectares	Per cent share in world area
1.	China	115.12	16.79
2.	India	80.68	11.77
3.	Russian Federation	61.74	9.01
4.	United States of America	60.31	8.80
5.	France	38.33	5.59
6.	Canada	26.85	3.92
7.	Germany	25.19	3.67
8.	Pakistan	24.03	3.51
9.	Australia	21.66	3.16
10.	Ukraine	20.89	3.05
11.	Turkey	20.60	3.00
12.	Kazakhstan	17.05	2.49
13.	United Kingdom	14.38	2.10
14.	Iran (Islamic Republic of)	13.48	1.97
	Total	540.31	78.81
	Total World Area	685.57	100.00

Source: FAO.

86. In terms of yield per hectare, Belgium lies at the top with 9465 kgs per hectare followed by Netherlands with 9291 kgs and Ireland with 8122 kgs per hectare. It is an alarming situation that Pakistan ranks at 57th in terms of yield at 2657 kgs per hectare while India lies at 53rd position with 2907 kgs per hectare. However, the world average yield of wheat is 3039 kgs per hectare (Annex-XIII).

8. ISSUE PRICE OF WHEAT AND CONSUMER SUBSIDY

87. For the year of 2010-11, the Government of the Punjab province fixed issue price of wheat supplied to flour mills at Rs 1000 per 40 kgs over the corresponding support price of Rs 950 per 40 kgs, while the provinces of Sindh and KPK fixed issue price of wheat at Rs 975 per 40 kgs. However, the Balochistan province supplied wheat to flour mills at the issue price of Rs 1022 per 40 kgs. All four provinces released about 5 million tonnes of wheat to flour mills during May 2010 to April 2011. Detail of wheat releases are given in Table-25.

Table-25: Release of Wheat to Flour Mills during 2010-11

Million tonnes

Provinces	2010-11
Punjab	3.200
Sindh	1.011
KPK	0.555
Balochistan	0.070
Total	4.836

88. The issue price did not cover the full costs incurred on procurement, storage, marketing and unforeseen losses, shortage etc. Resultantly, the provincial governments had to bear huge amount of losses in the shape of subsidy on procurement and supply of wheat to flour mills during the year. During 2010-11, the Provincial Governments subsidized wheat consumers by more than Rs 19 billion as under. The details may be seen in Annex-XIV.

Federal/Provinces	Subsidy (Rs in billion)
Punjab	12.00
Sindh	4.38
KPK	2.97
Balochistan	Nil
Federal PASSCO	Nil
Total	19.37

Source: Annex-XIV.

9. WHEAT PROCUREMENT TARGETS AND ACHIEVEMENTS

89. The Federal Government fixed the wheat procurement target at 7.00 million tonnes for 2010-11 crop through Provincial Food Departments and PASSCO. Agency-wise targets with their achievements in provinces are shown in Table-26.

Table-26: Procurement Targets and Achievements: 2010-11 Wheat Crop

Province/agency	Target	Achievement	Achievement as per cent of target
	-------- Million tonnes ------		Per cent
Pakistan	**7.00**	**6.22**	**88.88**
- Provincial Food Departments	5.50	4.90	
- PASSCO	1.50	1.32	88.00
Punjab			
- Food Department	3.50	3.17	90.57
- PASSCO	1.45	1.29	88.97
Sindh			
- Food Department	1.5	1.40	93.33
- PASSCO	0.03	0.02	66.67
K.P.K			
Food Department	0.400	0.23	57.50
PASSCO	-	-	
Balochistan			
Food Department	0.10	0.10	100.00
PASSCO	0.02	0.008	40.00

Source: PASSCO and respective provincial Food Departments.

90. It may be seen from Table-27 that procurement targets were partially achieved by the Food Departments and PASSCO.

91. During the last 5 years, wheat production has ranged between 21.70 and 25.21 million tonnes. Procurement has been in the range of 3.92 - 9.23 million tonnes. OR 18 - 38 per cent of the respective production. The average market prices ranged between Rs 437 - Rs 939 per 40 kgs during the period under review.

Table-27: Production, Procurement, Market and Support Prices of Wheat: 2006-07 to 2010-11

Crop year (May-April	Production	Procure-ment	Procurement as percent of production	Support price	Average market price* (April-June)
	------Million tonnes------		Per cent	----Rupees per 40 kgs----	
2006-07	23.29	4.42	18.98	425	437
2007-08	21.70	3.92	18.06	625	659
2008-09	24.03	9.23	38.41	950	939
2009-10	23.31	6.71	28.00	950	902
2010-11	25.21	6.24	24.75	950	905

*Average of Punjab and Sindh

Source: PASSCO and Provincial Food Departments.

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17.	Mr. Muhammad Naeem	DMO

Chairman, API

Annex-I

AREA,YIELD AND PRODUCTION OF WHEAT : 2000-01 TO 2010-11

Year	Punjab	Sindh	KPK	Balochistan	Pakistan
AREA		---------- Thousand hectares ----------			
2000-01	6255.5	810.7	790.3	324.4	8180.9
2001-02	6101.8	875.2	746.9	333.6	8057.5
2002-03	6097.3	863.7	732.1	340.8	8033.9
2003-04	6255.5	878.2	741.6	340.9	8216.2
2004-05	6378.9	887.4	748.6	343.1	8358.0
2005-06	6483.4	933.2	721.3	310.0	8447.9
2006-07	6432.8	982.2	754.3	408.9	8578.2
2007-08	6402.0	989.9	747.4	410.5	8549.8
2008-09	6836.2	1031.4	769.5	408.9	9046.0
2009-10	6913.5	1092.3	758.3	367.5	9131.6
2010-11	6691.0	1144.4	724.5	340.8	8900.7
YIELD		---------- kgs per hectare ----------			
2000-01	2465	2746	967	1893	2325
2001-02	2392	2401	1192	1920	2262
2002-03	2518	2442	1454	1921	2388
2003-04	2500	2473	1382	1946	2373
2004-05	2724	2827	1458	1858	2586
2005-06	2588	2947	1526	2097	2519
2006-07	2775	3471	1538	2133	2716
2007-08	2438	3446	1434	2116	2451
2008-09	2694	3432	1565	2123	2657
2009-10	2592	3390	1520	1459	2553
2010-11	2846	3747	1595	2139	2833
PRODUCTION		---------- Thousand tonnes ----------			
2000-01	15419.0	2226.5	764.0	614.2	19023.7
2001-02	14594.4	2101.0	890.5	640.6	18226.5
2002-03	15355.0	2109.2	1064.4	654.7	19183.3
2003-04	15639.0	2172.2	1025.2	663.4	19499.8
2004-05	17375.0	2508.6	1091.1	637.6	21612.3
2005-06	16776.0	2750.3	1100.6	649.9	21276.8
2006-07	17853.0	3409.2	1160.4	872.1	23294.7
2007-08	15607.0	3411.4	1071.8	868.6	20958.8
2008-09	18420.0	3540.2	1204.5	868.2	24032.9
2009-10	17919.0	3703.1	1152.5	536.2	23310.8
2010-11	19041.0	4287.9	1155.8	729.1	25213.8

Sources:
1. For 2000-01 to 2009-10: Agricultural Statistics of Pakistan, 2009-10 MINFA, Islamabad.
2. For 2010-11: Final estimate of Punjab, Sindh, KPK and Balochistan provided by concerned Provincial Agriculture Departments.

Annex-I A

AREA,YIELD AND PRODUCTION OF WHEAT : 2000-01 TO 2010-11

Year	Punjab	Sindh	KPK	Balochistan	Pakistan
AREA		---------- Thousand acres ----------			
2000-01	15458.0	2003.3	1952.9	801.6	20215.8
2001-02	15078.2	2162.7	1845.7	824.4	19910.9
2002-03	15067.0	2134.3	1809.1	842.2	19852.6
2003-04	15458.0	2170.1	1832.6	842.4	20303.1
2004-05	15762.9	2192.9	1849.9	847.8	20653.5
2005-06	16021.1	2306.0	1782.4	766.0	20875.5
2006-07	15896.1	2427.1	1864.0	1010.4	21197.6
2007-08	15820.0	2446.1	1846.9	1014.4	21127.4
2008-09	16892.9	2548.7	1901.5	1010.4	22353.6
2009-10	17083.9	2699.2	1873.8	908.1	22565.1
2010-11	16534.1	2827.9	1790.3	842.2	21994.5
YIELD		---------- kgs per acre ----------			
2000-01	997	1111	391	766	941
2001-02	968	971	482	777	915
2002-03	1019	988	588	777	966
2003-04	1012	1001	559	788	960
2004-05	1102	1144	590	752	1046
2005-06	1047	1193	617	848	1019
2006-07	1123	1405	623	863	1099
2007-08	987	1395	580	856	992
2008-09	1090	1389	633	859	1075
2009-10	1049	1372	615	590	1033
2010-11	1152	1516	646	866	1146
PRODUCTION		---------- Thousand tonnes ----------			
2000-01	15419.0	2226.5	764.0	614.2	19023.7
2001-02	14594.4	2101.0	890.5	640.6	18226.5
2002-03	15355.0	2109.2	1064.4	654.7	19183.3
2003-04	15639.0	2172.2	1025.2	663.4	19499.8
2004-05	17375.0	2508.6	1091.1	637.6	21612.3
2005-06	16776.0	2750.3	1100.6	649.9	21276.8
2006-07	17853.0	3409.2	1160.4	872.1	23294.7
2007-08	15607.0	3411.4	1071.8	868.6	20958.8
2008-09	18420.0	3540.2	1204.5	868.2	24032.9
2009-10	17919.0	3703.1	1152.5	536.2	23310.8
2010-11	19041.0	4287.9	1155.8	729.1	25213.8

Sources:
1. For 2000-01 to 2009-10: Agricultural Statistics of Pakistan, 2009-10 MINFA, Islamabad.
2. For 2010-11: Final estimate of Punjab, Sindh, KPK and Balochistan provided by concerned Provincial Agriculture Departments.

ANNEX-II

AREA, YIELD AND PRODUCTION OF WHEAT BY PROVINCE AND BY IRRIGATION: 2009-10 AND 2010-11

Country/ Province	Area			Yield per hectare			Production		
	2009-10	2010-11	Change Per cent	2009-10	2010-11	Change Per cent	2009-10	2010-11	Change Per cent
	000 ha			Kgs			000 tonnes		
				IRRIGATED					
PAKISTAN	8075.5	7712.5	-4.50	2770	3076	11.05	22367.8	23723.7	6.06
PUNJAB	6364.4	6001.8	-5.70	2748	3020	9.91	17487.7	18125.4	3.65
SINDH	1044.8	1087.7	4.11	3506	3891	10.98	3663.4	4232.4	15.53
KPK	338.0	317.7	-6.01	2039	2132	4.54	689.2	677.2	-1.74
BALOCHISTAN	328.3	305.3	-7.01	1607	2256	40.40	527.5	688.7	30.56
				UNIRRIGATED					
PAKISTAN	1056.1	1188.2	12.51	893	1254	40.45	943.0	1490.1	58.02
PUNJAB	549.1	689.2	25.51	785	1328	69.13	431.3	915.6	112.29
SINDH	47.5	56.7	19.37	836	979	17.12	39.7	55.5	39.80
KPK	420.3	406.8	-3.21	1102	1176	6.73	463.3	478.6	3.30
BALOCHISTAN	39.2	35.5	-9.44	222	1138	412.77	8.7	40.4	364.37
				TOTAL					
PAKISTAN	9131.6	8900.7	-2.53	2553	2833	10.97	23310.8	25213.8	8.16
PUNJAB	6913.5	6691.0	-3.22	2592	2846	9.80	17919.0	19041.0	6.26
SINDH	1092.3	1144.4	4.77	3390	3747	10.52	3703.1	4287.9	15.79
KPK	758.3	724.5	-4.46	1520	1595	4.96	1152.5	1155.8	0.29
BALOCHISTAN	367.5	340.8	-7.27	1459	2139	46.63	536.2	729.1	35.98

Sources:
1. For 2009-10: Agricultural Statistics of Pakistan, 2009-10 MINFA, Islamabad.
2. For 2010-11: Final estimate of Punjab, Sindh, KPK and Balochistan provided by concerned Provincial Agriculture Departments.

DISTRICT- WISE AREA, YIELD AND PRODUCTION OF WHEAT
AVERAGE OF 2008-09 TO 2010-11

ANNEX-III

Area: 000 ha
Production: 000 tonnes
Yield: kgs/hectare

S.No	Province/ District/ Agency	Area	Production	Share in total production	Yield	S.No	Province/ District/ Agency	Area	Production	Share in total production	Yield
	PUNJAB						**KPK**				
1	Jhang	394.56	1118.51	4.62	283.48	1	Mardan	48.68	95.92	0.40	1970.51
2	Bahawalnagar	348.16	1041.75	4.31	299.22	2	Mansehra	40.40	90.53	0.37	2240.75
3	Sheikhupura	350.85	980.00	4.05	279.32	3	Swabi	46.06	89.04	0.37	1933.23
4	R.Y.Khan	318.21	908.16	3.75	285.39	4	Swat	61.28	83.54	0.35	1363.14
5	Bahawalpur	293.53	875.90	3.62	298.41	5	Charsadda	31.34	81.16	0.34	2589.97
6	Muzaffargarh	313.49	868.56	3.59	277.06	6	Peshawar	35.68	80.44	0.33	2254.44
7	Faisalabad	292.04	868.25	3.59	297.31	7	D.I.Khan	44.15	79.87	0.33	1808.96
8	Vehari	259.13	769.43	3.18	296.93	8	Haripur	37.40	67.58	0.28	1806.98
9	Okara	219.61	760.67	3.15	346.38	9	Bunir	50.20	65.31	0.27	1301.01
10	Gujranwala	234.58	747.26	3.09	318.56	10	Nowshera	23.25	56.57	0.23	2433.76
11	Khanewal	224.73	690.14	2.85	307.10	11	Malakand	27.94	33.43	0.14	1196.41
12	Lodhran	191.95	594.54	2.46	309.73	12	Kohat	31.73	32.56	0.13	1026.15
13	Kasur	197.35	575.24	2.38	291.49	13	Bajour AG.	31.04	26.23	0.11	844.97
14	Sargodha	222.44	555.40	2.30	249.69	14	Dir Lower	25.90	24.15	0.10	932.45
15	Pakpattan	152.43	548.54	2.27	359.87	15	Abbottabad	14.63	23.68	0.10	1618.85
16	Multan	197.62	543.80	2.25	275.18	16	Kurram AG.	11.50	21.75	0.09	1890.64
17	Layyah	198.97	524.47	2.17	263.59	17	Dir Uper	20.45	20.93	0.09	1023.46
18	Sialkot	212.05	522.54	2.16	246.42	18	Bannu	11.30	20.75	0.09	1836.44
19	T.T.Singh	161.33	496.45	2.05	307.72	19	Shanlapar	23.09	20.10	0.08	870.50
20	Sahiwal	146.76	456.37	1.89	310.97	20	Khyber AG.	12.40	19.02	0.08	1533.81
21	Hafizabad	158.50	454.62	1.88	286.83	21	Mohmand AG.	13.50	18.15	0.08	1344.57
22	Rajanpur	167.00	445.56	1.84	266.80	22	Lakki Marwat	21.88	15.79	0.07	721.92
23	D.G.Khan	173.47	433.54	1.79	249.92	23	Chitral	8.09	15.63	0.06	1933.26
24	Bhakkar	178.33	418.07	1.73	234.44	24	Tank	6.17	13.74	0.06	2225.38
25	Mianwali	176.57	375.66	1.55	212.75	25	Battagram	7.17	11.98	0.05	1671.41
26	M.B.Din	134.90	354.53	1.47	262.82	26	Hangu	12.34	11.30	0.05	915.40
27	Narowal	162.95	333.40	1.38	204.60	27	Karak	20.90	9.52	0.04	455.60
28	Gujrat	150.68	262.94	1.09	174.50	28	S.Waziristan	7.28	8.28	0.03	1137.04
29	Attock	154.45	223.45	0.92	144.67	29	N.Waziristan	5.99	7.77	0.03	1296.72
30	Lahore	63.67	168.42	0.70	264.52	30	F.R.Peshawar	4.38	6.58	0.03	1502.36
31	Khushab	86.06	164.38	0.68	191.00	31	F.R.Bannu	3.48	5.76	0.02	1657.17
32	Rawalpindi	109.40	151.14	0.62	138.15	32	Orakzai AG	4.06	4.93	0.02	1213.52
33	Chakwal	107.38	125.48	0.52	116.86	33	F.R.D.I.Khan	4.23	4.62	0.02	1092.99
34	Jhelum	47.49	85.65	0.35	180.36	34	Kohistan	1.37	2.34	0.01	1712.79
35	Islamabad	12.95	17.18	0.07	132.64	35	F.R.Kohat	1.56	2.00	0.01	1281.38
	Sub Total	**6813.57**	**18460.00**	**76.33**	**2709.30**		**Sub Total**	**750.78**	**1170.93**	**4.84**	**1559.62**
	SINDH						**BOLUCHISTAN**				
1	Sukkur	144.34	548.92	2.27	3802.89	1	Nasirabad	80.24	179.97	0.74	2242.99
2	Sanghar	124.64	469.96	1.94	3770.59	2	Jaffarabad	47.39	105.34	0.44	2222.76
3	Khairpur	104.07	393.09	1.63	3777.31	3	Jhal Magsi	37.52	81.81	0.34	2180.30
4	N.Feroze	102.84	392.96	1.62	3821.21	4	Khuzdar	41.48	71.36	0.30	1720.25
5	Sh. Benazirabad	81.02	324.60	1.34	4006.29	5	Loralai	14.79	27.77	0.11	1876.90
6	Mirpurkhas	64.68	230.70	0.95	3567.00	6	Killa Saifullah	16.50	26.11	0.11	1582.44
7	Larkana	77.23	223.10	0.92	2888.75	7	Sibi	14.96	25.50	0.11	1704.08
8	Dadu	64.84	205.23	0.85	3165.24	8	Barkhan	13.04	23.45	0 10	1798.05
9	Matiari	42.69	174.01	0.72	4076.61	9	Bolan	10.52	21.80	0.09	2072.50
10	Jaccbabad	51.54	143.31	0.59	2780.43	10	Awaran	15.42	21.37	0.09	1386.10
11	Umerkot	43.69	141.42	0.58	3236.75	11	Lasbela	8.50	15.35	0.06	1805.45
12	Tando Allahyar	34.40	133.49	0.55	3880.42	12	Dera Bughti	9.88	15.24	0.06	1541.85
13	Jamshoro	36.17	115.50	0.48	3193.54	13	Kharan	9.95	14.76	0.06	1483.69
14	Badin	35.71	100.33	0.41	2809.87	14	Chaghi	8.69	14.45	0.06	1662 59
15	Shikarpur	33.54	94.87	0.39	2829.02	15	Pishin	8.22	12.36	0.05	1503.63
16	Hyderabad	15.27	58.86	0.24	3854.61	16	Kalat	7.01	11.21	0.05	1598.01
17	Thatta	16.05	46.14	0.19	2874.98	17	Mastung	5.62	8.49	0.04	1511.64
18	Tando Muhammad	13.65	38.27	0.16	2803.36	18	K.Abdullah	5.29	7.84	0.03	1484.05
19	Tharparkar	1.83	5.50	0.02	3004.55	19	Quetta	2.95	5.31	0.02	1800.24
20	Karachi	1.19	3.44	0.01	2882.86	20	Turbat	2.90	5.03	0.02	1735.49
						21	Panjgoor	2.80	4.71	0.02	1683.27
						22	Zhob	2.87	4.17	0.02	1454.48
						23	Kohlu	2.67	3.85	0.02	1443.29
						24	Musa Khel	2.88	3.50	0.01	1216.30
						25	Ziarat	0.31	0.43	0.00	1367.53
						26	Gwadar	0.00	0.00	0.00	#DIV/0!
	Sub Total	**1089.37**	**3843.71**	**15.69**	**3528.37**		**Sub Total**	**372.40**	**711.18**	**2.94**	**1909.71**
							Pak Total	**9026.13**	**24185.83**	**100.00**	**2679.54**

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

Source: MINFA, Islamabad.

ANNEX - IV

PER CAPITA AVAILABILITY OF WHEAT:2007-08 to 2010-11 (MAY-APRIL)

S.No	Description	Production year / Consumption year	2007-08 / 2008-09	2008-09 / 2009-10	2009-10 / 2010-11
			----------Millions----------		
1	Total Population (a)		176.92	179.84	183.53
			----------000 tonnes----------		
2	Opening stocks as on 1st May		135	337	4220
3	Production of Pakistan		20959	24033	23311
4	Production of AJ&K and NAs (b)		210	240	233
5	Imports		3103	100	9
6	Exports		143	4	1676
7	Closing stocks as on 30th April		337	4220	3109
8	Total availability		23927	20486	22988
9	Deduction for seed,feed and wastage @ 10 per cent of production		2117	2427	2354
10	Available for human consumption (item 8 minus item 9)		21810	18059	20634
			----------Kgs/ annum----------		
11	Per capita availability (item 10 divided by item 1)		123	100	112
12	Average per capita availability during 2008-09 to 2010-11			112 Kgs	

Notes:
a). It includes the population of Pakistan, AJ&K, NAs and Afghan Refugees.
b). Due to non-availability of data, production of AJ&K and NAs in the past has been estimated on the basis ratio between the production of Pakistan and that of AJ&K and NAs during 1987-88.

Sources:
1. PASSCO and Provincial Food Departments.
2. Population Census Organization, Islamabad.
3. Ministry of Kashmir Affairs and Northern Areas and States and Frontier Regions, Government of Pakistan, Islamabad.

ANNEX - V

INTERNATIONAL PRICES (FOB GULF)OF US NO-2 HARD RED WINTER WHEAT
2004-05 TO 2011-12

Year (July - June)	Month	US$ per tonne
2004-05		150
2005-06		173
2006-07		177
2007-08		314
2008-09		283
2009-10		212
2010-11		319
2011-12		**315**
	July	303
	August	332
	September	323
	October	301

Sources:

i) From 2006-07 to 2008-09, USDA, WEB.
ii) For 2009-10 International Grains Council Quoted by Food Outlook, FAO
iii) For 2010-11 and 2011-12, international Grains council.

Annex-VI

IMPORT PARITY PRICES OF WHEAT ON THE BASIS OF US NO 2 HRW (FOB GULF)QUOTED PRICE

S. No	Item	2011-12 Jul-Oct	2010-11	2009-10 to 2011-12
		----------US $ per tonne----------		
1	Average Fob(gulf) price	315.00	319.00	282.00
2	Freight charges from Gulf port to Karachi	50.00	50.00	50.00
3	Average c&f (Karachi) price	365.00	369.00	332.00
		OR Rs per tonne @ Rs 85.93/US$		
		31364	31708	28529
4	Marine insurance charges @0.23% of c & F cost	72	73	66
5	Lc opening charges @0.2% of c&f cost.	63	63	57
6	Stevedoring, clearing, handling, wharfage, weightment, inland insurance, survey & pre-shipment charges and provision for unforeseen losses	651	651	651
7	TCP commission @ 2 % of c&f cost as per ECC	627	634	571
8	Bank markup @ 15.5 % per annum for 30 days	405	410	368
9	**Landed cost (item 3 to 8) at Karachi**	33183	33539	30242
13	Transport cost from Karachi to Multan	2200	2200	2200
14	Expences from procurement center to Multan	200	200	200
15	Import parity price at procurement center level	**35183**	**35539**	**32242**
16	Import parity prices of wheat	----------Rs per 40 kgs----------		
	i) If consumed at Multan	**1407**	**1422**	**1290**
	ii) If consumed at Karachi	**1327**	**1342**	**1210**

Sources:

i) For fob (gulf) prices: Annex - V.

ii) For, incidential and transport charges from Karachi to Multan, Universal Cargo (private) Limited, Karachi.

iii) For expenses from procurement centre to Multan: PASSCO, Lahore.

Annex-VII

EXPORT PARITY PRICES OF WHEAT ESTIMATED FROM US 2 HRW (FOB GULF) QUOTED PRICE

S.No	Item	2011-12 Jul-Oct	2010-11	2009-10 to 2011-12
		---------US $ Per Tonne -------		
1.	Fob(gulf) price assuming fob Karachi price	315.00	319.00	282.00
		OR Rs per tonne @ Rs 85.93/US$		
		27068	27412	24232
2.	Incidental charges: (items i to xi)	3356	3370	3241
	i). Expenses from procurement centre to Multan	200	200	200
	ii). Transport cost from Multan to Karachi	1500	1500	1500
	iii). Cleaning/grading	500	500	500
	iv). Bagging, spillage, loading, unloading & testing	15	15	15
	v). Wharfage/weightment, port charges	25	25	25
	vi). Pre shipment inspection charges @0.5% of fob price	135	137	121
	vii) Export development surcharges @0.25% of fob price	68	69	61
	viii). Insurance charges at port	7	7	7
	ix). Bank commission & charges	15	15	15
	x). Mark up @ 15.5% per annum for one month	350	354	313
	xi). Miscellaneous charges @ 2% of fob price	541	548	485
3.	Export parity price of wheat at procurement centre level(item 1- item 2)	23712	24042	20991
		---------Rs per 40kgs----------		
4.	Export parity price at procurement center level	948	962	840

Sources:

i) For Fob (gulf) prices: Annex - V.

ii) Incidental charges: Trading Corporation of Pakistan (Pvt) Ltd, Karachi.

iii) For expenses from procurement centre to Multan: PASSCO, Lahore.

ANNEX-VIII

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

S. No.	Operations / Inputs	Average No. of oprs/units/ acre	2010-11 crop		2011-12 crop		Change in 2011-12 over 2010-11
			Cost per unit	Cost per acre	Cost per unit	Cost per acre	
1	2	3	4	5 = 3 * 4	6	7 = 3 * 6	8 =7-5
				------Rupees------			
1	Land preparation:						
	1.1 Rotavator/disc plough	0.598	900.00	538.20	1000.00	598.00	59.80
	1.2 Ploughing	2.137	450.00	961.65	500.00	1068.50	106.85
	1.3 Ploughing & planking	0.714	550.00	392.70	600.00	428.40	35.70
	1.4 Planking	0.649	225.00	146.03	250.00	162.25	16.23
	1.5 Levelling (hrs)	0.498	550.00	273.90	600.00	298.80	24.90
2	Seed and sowing operations:						
	2.1 Seed used (kgs)	52.577	40.00	2103.08	40.00	2103.08	0.00
	2.2. Tractor drilling	0.166	450.00	74.70	500.00	83.00	8.30
	2.3 Labour for seed broadcasting (m.hrs)	0.858	38.00	32.60	38.00	32.60	0.00
	2.4 Ploughing in case of broadcasting	1.390	450.00	625.50	500.00	695.00	69.50
	2.5 Planking in case of broadcasting	0.321	225.00	72.23	500.00	160.50	88.28
3	Bund making:						
	3.1 Manual (m.hrs)	1.033	38.00	39.25	38.00	39.25	0.00
	3.2 tractor (hrs)	0.203	550.00	111.65	600.00	121.80	10.15
4	Weeding	0.787	525.00	413.18	615.00	484.01	70.83
5	Irrigation: * (Nos)						
	5.1 Canal	0.507	-	50.00	-	50.00	0.00
	5.2 Private tubewell	3.002	615.00	1846.23	700.00	2101.40	255.17
	5.3 Mixed	0.230	410.00	94.30	450.00	103.50	9.20
6	Labour for irrigation and water course cleaning (m.days)						
	6.1 For irrigation	1.225	300.00	367.50	300.00	367.50	0.00
	6.2 For water course cleaning	0.329	300.00	98.70	300.00	98.70	0.00
7	Farm Yard Manure (50 %)	-	-	200.00	-	300.00	100.00
8	Fertilizers: (bags)						
	8.1 DAP	1.090	2605.00	2839.45	4125.00	4496.25	1656.80
	8.2 Urea	1.747	861.00	1504.17	1570.00	2742.79	1238.62
	8.3 SSP	0.132	711.00	93.85	1215.00	160.38	66.53
	8.4 NP	0.079	1721.00	135.96	2760.00	218.04	82.08
	8.5 CAN	0.039	715.00	27.89	1317.00	51.36	23.48
	8.6 SOP	0.024	2421.00	58.10	3835.00	92.04	33.94
	8.7 Gypsum	0.024	150.00	3.60	250.00	6.00	2.40
	8.8 Transport and application	3.135	35.00	109.73	40.00	125.40	15.68
9	Mark up on investment on item 1to 8 excluding item 5(1) @12 % per annum for 6 months	-	-	789.85	-	1028.31	238.47
10	Harvesting charges (40 kgs/acre)	2.997	877.00	2628.37	902.00	2703.29	74.93
11	Threshing:						
	11.1 Threshing @ 3.23 kgs/40 kgs (40 kgs)	2.237	877.00	1961.85	902.00	2017.77	55.93
	11.2 M.days	1.810	300.00	543.00	300.00	543.00	0.00
12	Land rent for 6 months	-	10000.00	5000.00	15000.00	7500.00	2500.00
13	Average weighted land tax @ Rs 132/acre/annum for 8 months	-	132.00	66.00	132.00	66.00	0.00
14	Management charges for 6 months	-	-	750.00	-	851.00	101.00
15	Total cost per acre	-	-	24953.20	-	31897.94	6944.74
16	Value of wheat bhoosa	-	-	2500.00	-	4000.00	1500.00
17	Net cultivation cost (item 15-16)	-	-	22453.20	-	27897.94	5444.74
18	Yield per acre (kgs)	-	-	1108.00	-	1108.00	-
19	Cost of production at farm level: (Rs/40 kgs)			810.58		1007.15	196.56
20	Marketing cost (Rs/40 kgs)	-	-	22.00	-	25.00	3.00
21	Cost of production at market/procurement centre (Rs/40 kgs)						
	21.1 Including land rent	-	-	832.58	-	1032.15	199.56
	21.2 Excluding land rent	-	-	652.08	-	761.39	109.31

ANNEX-IX

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

S. No.	Operations / Inputs	Average No. of oprs/units/ acre	2010-11 crop		2011-12 crop		Change in 2011-12 over 2010-11
			Cost per unit	Cost per acre	Cost per unit	Cost per acre	
1	2	3	4	5 = 3 * 4	6	7 = 3 * 6	8 =7-5
				-------Rupees------			
1	Land preparation:						
	1.1 Rotavator/disc plough	0.349	1200.00	418.80	1300.00	453.70	34.90
	1.2 Ploughing	3.034	600.00	1820.40	750.00	2275.50	455.10
	1.3 Ploughing & planking	0.070	725.00	50.75	750.00	52.50	1.75
	1.4 Planking	0.081	300.00	24.30	375.00	30.38	6.08
	1.5 Levelling (hrs)	1.010	750.00	757.50	750.00	757.50	0.00
2	Seed and sowing operations:						
	2.1 Seed used (kgs)	55.817	40.00	2232.68	40.00	2232.68	0.00
	2.2. Tractor drilling	0.037	600.00	22.20	750.00	27.75	5.55
	2.3 Labour for seed broadcasting (m.hrs)	1.127	38.00	42.83	38.00	42.83	0.00
	2.4 Ploughing in case of broadcasting	0.275	600.00	165.00	750.00	206.25	41.25
	2.5 Planking in case of broadcasting	0.162	300.00	48.60	375.00	60.75	12.15
3	Bund making:						
	3.1 Manual (m.hrs)	1.611	38.00	61.22	38.00	61.22	0.00
	3.2 tractor (hrs)	0.091	725.00	65.98	750.00	68.25	2.28
4	Interculture/weeding						
	4.1 Interculture	0.037	600.00	22.20	750.00	27.75	5.55
	4.2 Weedicides	0.529	500.00	264.50	600.00	317.40	52.90
5	Irrigation: * (Nos)						
	5.1 Canal	1.763	-	53.30	-	53.30	0.00
	5.2 Lift pump	0.551	320.00	176.32	500.00	275.50	99.18
	5.3 Private tubewell	1.046	480.00	502.08	500.00	523.00	20.92
	5.4 Mixed	0.449	350.00	157.15	400.00	179.60	22.45
6	Labour for irrigation and water course cleaning (m.days)						
	6.1 For irrigation	1.022	300.00	306.60	300.00	306.60	0.00
	6.2 For water course cleaning	0.349	300.00	104.70	300.00	104.70	0.00
7	Farm Yard Manure (50 %)	-	-	200.00	-	350.00	150.00
8	Fertilizers: (bags)						
	8.1 DAP	1.013	2581.00	2614.55	3950.00	4001.35	1386.80
	8.2 Urea	1.950	873.00	1702.35	1600.00	3120.00	1417.65
	8.3 NP	0.186	1735.00	322.71	2800.00	520.80	198.09
	8.4 CAN	0.020	745.00	14.90	1300.00	26.00	11.10
	8.5 Transport and application	3.169	35.00	110.92	40.00	126.76	15.85
9	Mark up on investment on item 1to 8 excluding item 5(1) @12 % per annum for 6 months	-	-	732.55	-	968.93	236.37
10	Harvesting charges (40 kgs/acre)	2.876	857.00	2464.73	858.00	2467.61	2.88
11	Threshing:						
	11.1 Threshing @ 2.95 kgs/40 kgs (40 kgs)	1.784	857.00	1528.89	858.00	1530.67	1.78
	11.2 M.days	1.415	300.00	424.50	300.00	424.50	0.00
12	Land rent for 6 months	-	8000.00	4000.00	12000.00	6000.00	2000.00
13	land tax @ Rs 200/acre/annum for 6 months	-	200.00	100.00	200.00	100.00	0.00
14	Drainage cess	-	-	24.00	-	24.00	0.00
15	Management charges for 6 months	-	-	750.00	-	851.00	101.00
16	Total cost per acre	-	-	22287.20	-	28568.76	6281.56
17	Value of wheat bhoosa	-	-	2250.00	-	4000.00	1750.00
18	Net cultivation cost (item 15-16)	-	-	20037.20	-	24568.76	4531.56
19	Yield per acre (kgs)	-	-	967.81	-	967.81	0.00
20	Cost of production at farm level: (Rs/40 kgs)			828.15		1015.44	187.29
21	Marketing cost (Rs/40 kgs)	-	-	22.00	-	25.00	3.00
22	Cost of production at market/procurement centre (Rs/40 kgs)						
	22.1 Including land rent	-	-	850.15	-	1040.44	190.29
	22.2 Excluding land rent	-	-	684.82	-	792.45	107.63

Notes for Annex-VIII and IX

1. The input-output parameters for estimating cost of production of wheat 2011-12 crop have been adopted from the Wheat Policy Analysis Report for wheat 2010-11 crop, API's Series No 235.

2. The inputs prices and hiring rates of field operations have been revised in the light of the information provided by the Provincial Agriculture Departments and Farmers' Associations and discussion made in the meeting of the Standing Committee on Wheat, held on 19th September 2011 at Islamabad and other sources as:

3. The prices of chemical fertilizers have been revised in the light of the fertilizer prices published by the Federal Bureau of Statistics, Islamabad for the week ending on 15th September, 2011.

4. The cost of supplementary irrigation has been adjusted in view of rises in prices of diesel and tariff rates during August 2010 to September 2011.

5. The value of wheat bhoosa has been enhanced in the Punjab and Sindh in light of an annual field survey conducted by API during July 2011 in the Punjab and Sindh provinces.

6. The management charges for a manager looking after a 25-acre farm and devoting one-fourth of his time to the managerial activities have been worked out at Rs 14189 per month for a Field Assistant at the 15th stages in BPS-6 as per revised scale of July 2011, including 15 % Adhoc Relief.

7. The value of kind payments for harvesting and threshing of wheat has been revised in the light of current market prices averaged at Rs 927 per 40 kgs in the Punjab and Rs 883 in Sindh. Marketing charges of Rs 25 per 40 Kgs have been deducted from the market prices to bring these costs at the farm level.

8. In both the Punjab and Sindh provinces, land rent is the most important item of the cost of cultivation. There is no defined measure for updating the land rentals. However, land lease has been adjusted keeping in view the observations obtained during field survey and discussion made in the meeting of the API's Standing Committee on wheat.

ANNEX - X

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

S. No	Province/crops/crop combination	Crop duration	Water used	Gross cost	Cost of purchased inputs	Gross revenue	Gross margin	Net income	Output-input ratio	Revenue per Rupee of purchased inputs	Revenue per Crop day	Revenue per Acre inch of water used
		Days	Acre inches	.....Rupees per acre.....					Ratio	.....Rupees.....		
	1	2	3	4	5	6	7=6-5	8=6-4	9=6/4	10=6/5	11=6/2	12=6/3
	Punjab											
1	Wheat	180	12	24953	9746	27569	17823	2615	1.10	2.8	153	2297
2	Seed Cotton	240	22	29996	11339	61858	50518	31862	2.06	5.5	258	2812
3	Basmati paddy	180	58	26652	13838	31983	18146	5332	1.20	2.3	178	551
4	IRRI paddy	180	62	24029	11918	32646	20729	8618	1.36	2.7	181	527
5	Sunflower (spring)	180	22	21935	6281	33045	26764	11110	1.51	5.3	184	1502
6	Canola	180	13	15820	5136	27538	22402	11717	1.74	5.4	153	2118
7	Seed cotton + wheat	420	34	54949	21085	89426	68341	34477	1.63	4.2	213	2630
8	Seed cotton + sunflower	420	44	51931	17620	94903	77282	42972	1.83	5.4	226	2157
9	Basmati paddy+wheat	360	70	51605	23583	59552	35968	7947	1.15	2.5	165	851
10	Basmati paddy+sunflower	360	80	48587	20119	65028	44910	16442	1.34	3.2	181	813
11	IRRI paddy + wheat	360	74	48982	21663	60215	38552	11233	1.23	2.8	167	814
12	IRRI paddy+sunflower	360	84	45964	18199	65691	47493	19728	1.43	3.6	182	782
13	Sugarcane	394	48	51728	17450	93108	75658	41380	1.80	5.3	236	1940
	Sindh											
1	Wheat	180	12	22287	8563	23082	14519	795	1.04	2.7	128	1924
2	Seed cotton	240	18	27896	9580	63315	53735	35419	2.27	6.6	264	3518
3	IRRI paddy	180	56	22282	8842	34916	26074	12633	1.57	3.9	194	623
4	Sunflower (spring)	180	22	21664	6269	33045	26776	11381	1.53	5.3	184	1502
5	Canola	180	13	15818	5127	24888	19760	9069	1.57	4.9	138	1914
6	Seed cotton + wheat	420	30	50184	18143	86397	68254	36214	1.72	4.8	206	2880
7	Seed cotton+sunflower	420	40	49561	18143	96360	78217	46799	1.94	5.3	229	2409
8	IRRI paddy + wheat	360	68	44569	17405	57998	40593	13428	1.30	3.3	161	853
9	IRRI paddy+sunflower	360	78	43946	15111	67961	52850	24014	1.55	4.5	189	871
10	Sugarcane	488	71	62328	20704	118087	97383	55759	1.89	5.7	242	1663

Notes for Annex –X

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

2. The data regarding input-output parameters have been adopted from the API's Policy Analysis Reports for sugarcane, seed cotton, rice paddy and wheat, 2010-11 crops. However, the relevant data for sunflower and canola were adopted from the last support price policy for non-traditional oilseeds, 2000-01 crops with necessary adjustments in input prices for updating costs and incomes for the 2010-11 crops. To incorporate the escalations in input prices, which occurred during the growing period of 2010-11 crops, some marginal revisions have been made as under:

   2.1 The cost of fertilizers has been revised in view of their prices prevailed at the time of application for the respective crops in 2010-11 season.

   2.2 Harvesting and threshing charges have been revised in view of post harvest market price of wheat during 2010-11.

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 wholesale average market prices of wheat during the post harvest period of 2009-10 have been adopted at Rs 927 per 40 kgs for Punjab and Rs 883 for Sindh.

   4.2 The wholesale market prices of basmati paddy during the post harvest period of 2010-11 in major producer area markets have averaged at Rs 1377 per 40 kgs in the Punjab. The corresponding prices of IRRI paddy averaged at Rs 963 and Rs 935 per 40 kgs in the Punjab and Sindh.

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

   4.4 The wholesale market prices of sunflower during 2010-11 are reported by PODB at Rs. 2225 per 40 kgs in the Punjab and Sindh.. The corresponding prices for canola averaged at Rs. 2225 per 40 kgs in the Punjab and Rs 2013 in Sindh.

   4.5 The market prices of sugarcane at mill-gate during 2010-11 in the major cane producing areas are reported to hover around Rs 175 per 40 kgs in the Punjab and Rs. 185 in Sindh.

5. The market prices have been adjusted for the marketing expenses to make them effective at the farm level. These expenses amount to Rs 10.25 per 40 kgs in Punjab and Rs 10.32 in Sindh for sugarcane, Rs 30 in Punjab and Rs 32 in Sindh for seed cotton, Rs 25 for rice paddy and Rs 22 for wheat and oilseeds.

6.	Gross income	=	(Yield per acre multiplied by price of principal produce at farm gate) plus (value of by-products per acre).
7.	Cost of purchased inputs	=	Cost incurred on seed and related items, fertilizer, supplementary irrigation including labour, canal water rate, pesticides and weedicides.
8.	Gross margin	=	Gross income minus cost of purchased inputs.
9.	Net income	=	Gross income minus gross cost.
10.	Output-input ratio	=	Gross income divided by gross cost
11.	Revenue per rupee of purchased inputs cost	=	Gross income divided by cost of purchased inputs
12.	Revenue per crop day	=	Gross income divided by crop duration in days.
13.	Revenue per acre-inch of water used	=	Gross income divided by irrigation water used in acre inches.

Annex -XI

ECONOMIC EFFICIENCY OF RESOURCE USE IN WHEAT PRODUCTION IN PUNJAB AND SINDH

POLICY ANALYSIS MATRIX (PAM)

Based on import parity prices

Description	Revenues	Traded cost	Domestic Factors Cost	Profits
PUNJAB		--------- Rupees per acre ---------		
2006-07				
Private Prices	13366	6148	3668	3550
Social Prices	19986	5918	3845	10222
Transfers	-6620	229	-177	-6673
2007-08				
Private Prices	20253	6733	4035	9485
Social Prices	42025	6830	4135	31060
Transfers	-21772	-97	-100	-21575
2008-09				
Private Prices	27401	10269	5743	11388
Social Prices	28515	10594	5857	12064
Transfers	-1114	-325	-113	-675
2009-10				
Private Prices	26985	9361	7370	10255
Social Prices	23580	9580	7477	6523
Transfers	3405	-219	-107	3731
2010-11				
Private Prices	27678	10734	8088	8856
Social Prices	29252	11029	8200	10023
Transfers	-1574	-295	-112	-1167
2011-12				
Private Prices				
Social Prices				
Transfers				
SINDH				
2006-07				
Private Prices	10477	1115	5195	4166
Social Prices	15025	1062	5265	8698
Transfers	-4549	53	-69	-4533
2007-08				
Private Prices	15485	1127	5399	8959
Social Prices	33535	1074	5496	26965
Transfers	-18050	54	-97	-18007
2008-09				
Private Prices	23252	1609	7745	13897
Social Prices	25434	1532	7887	16014
Transfers	-2182	77	-142	-2117
2009-10				
Private Prices	22187	2027	10629	9531
Social Prices	20454	1931	10756	7768
Transfers	1733	97	-127	1763
2010-11				
Private Prices	21364	2457	10864	8043
Social Prices	27957	2340	11004	14613
Transfers	-6593	117	-139	-6571

ANNEX – XII

IMPACT OF RISE IN SUPPORT PRICE OF WHEAT ON AVERAGE HOUSEHOLD EXPENDITURE

Proposed support price	Expenditure on wheat at average per capita consumption @ 120 kgs per year		Rise in expenditure	
	Per person	Per household	Per person	Per household
Rs per 40 kgs	.....Rupees per year.....			
950 (Existing for 2010-11)	2850	18753	-	-
970	2910	19148	60	395
990	2970	19543	120	790
1010	3030	19937	180	1184
1030	3090	20332	240	1579
1050	3150	20727	300	1974

Note: Average size Household comprises of 6.58 members.

Sources: 1. PSLM, Household Integrated Survey (HIES) 2007-08, Federal Bureau of Statistics (FBS), Islamabad.

2. Annex – IV.

Annex-XIII

YIELD PER HECTARE OF MAJOR WHEAT PRODUCING COUNTRIES IN THE WORLD:2009 CROP

S.No.	Country	Yield per Hactare in Kgs	S.No.	Country	Yield per Hactare in Kgs
1	Belgium	9465	30	Hungary	3855
2	Netherlands	9291	31	Bosnia and Herzegovina	3775
3	Ireland	8122	32	Republic of Korea	3667
4	Denmark	8037	33	Serbia	3642
5	United Kingdom	7927	34	Latvia	3628
6	Germany	7808	35	Montenegro	3598
7	New Zealand	7488	36	Belarus	3543
8	France	7447	37	Italy	3532
9	Namibia	6721	38	Kuwait	3500
10	Luxembourg	6568	39	Turkmenistan	3439
11	Egypt	6448	40	Uruguay	3358
12	Sweden	6094	41	Oman	3333
13	Switzerland	6023	42	Japan	3237
14	Zambia	5699	43	Bulgaria	3187
15	Czech Republic	5242	44	Ukraine	3093
16	Croatia	5190	45	The former Yugoslav Republic	3076
17	Saudi Arabia	5000	46	Lebanon	3060
18	Mexico	4969	47	South Africa	3047
19	Austria	4929	48	Estonia	3015
20	China	4739	49	United Arab Emirates	3000
21	Malta	4548	50	United States of America	2989
22	Uzbekistan	4425	51	Mali	2966
23	Lithuania	4200	52	Norway	2935
24	Poland	4173	**53**	**India**	2907
25	Finland	4103	54	Canada	2786
26	Chile	4081	55	Spain	2672
27	Slovakia	4056	56	Qatar	2667
28	Albania	4023	57	**Pakistan**	**2657**
29	Slovenia	3964		**World average**	**3039**

Source:FAO

ANNEX-XIV

Subsidy on Wheat Released to Flour Mills During 2010-11 by Provincial Governments

Province	Procure-ment price	Incidental charges	Net procure-ment cost	Indicative issue price	Subsidy		Wheat released to flour mills	Total Subsidy
	---------- Rs per 40 kgs ----------					Rs/ tonne	Million tonnes	Million Rs
Punjab	950	200	1150	1000	150	3750	3.200	12000.00
Sindh	950	199	1149	975	174	4350	1.011	4397.85
KPK	950	239	1189	975	214	5350	0.555	2969.25
Balochistan	950	72	1022	1022	0	0	0.070	0.00
Total Subsidy								**19367.10**