API SERIES NO.232

WHEAT POLICY ANALYSIS FOR 2009-10 CROP

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

AUGUST, 2009

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ABBREVIATIONS

AJ&K	Azad Jammu and Kashmir
ALMA	Agricultural and Livestock Marketing Adviser
API	Agriculture Policy Institute
ASW	Australian Standard White
BCR	Benefit Cost Ratio
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
FAO	Food and Agriculture Organization
FBS	Federal Bureau of Statistics
FCA	Federal Committee on Agriculture
FOB	Free on Board
FYM	Farm Yard Manure
GDP	Gross Domestic Product
GMR	Grain Market Report
HIES	Household Integrated Economic Survey
HRW	Hard Red Winter
HYVs	High Yielding Varieties
IRRI	International Rice Research Institute
MINFA	Ministry of Food and Agriculture
NAs	Northern Areas
PCs	Protection Coefficients
NP	Nitro Phosphate
NPC	Nominal Protection Coefficient
NSC	National Seed Council
PAM	Policy Analysis Matrix
PARC	Pakistan Agricultural Research Council
PASSCO	Pakistan Agricultural Storage and Services Corporation
TCP	Trading Corporation of Pakistan

SUMMARY OF FINDINGS AND RECOMMENDATIONS

- Findings

Area and Production

- Punjab and Sindh contribute about 76 and 15 per cent in wheat production while the share of NWFP and Balochistan is 5 and 4 per cent, respectively.
- During the last decade, wheat production has increased @ 2.3 per cent per annum due to 1.6 per cent improvement in yield and 0.7 per cent expansion in area.
- Wheat production from 2008-09 crop is estimated at 24.03 million tonnes, showing an increase of 14.7 per cent over the 20.96 million tonnes in 2007-08.
- Wheat production has fallen short by 3.9 per cent against the target.

Domestic Requirements

- Assuming the per capita consumption at 124 kgs per annum, the domestic requirement comes to 23.48 million tonnes including allownace for seed, feed and wastage @ 10 per cent.
- Assuming the per capita consumption at 120 kgs per annum, the domestic requirement comes to 22.80 million tonnes including allownace for seed, feed and wastage @ 10 per cent.
- Including one million tonnes as food security reserve, total domestic requirement will hover around 24 million tonnes.

Domestic Prices

- Monthly average market prices of wheat for 2008-09 crop have remained below the support price in the Punjab. While in Sindh these generally remained above the support price.
- The wholesale prices of wheat averaged at Rs 917 per 40 kgs in the Punjab during the post harvest season in major producing areas.
- The wholesale prices of wheat averaged at Rs 961 per 40 kgs during the post harvest season in major producing areas of Sindh.

Cost of Production

- In Punjab, cost of wheat cultivation during 2009-10 season is expected at Rs 20689 per acre.
- The cost of production at market/procurement level would be Rs 767 per 40 kgs, reflecting a rise of 13 per cent over the last year.
- In Sindh, the cost of wheat cultivation for 2009-10 crop is estimated at Rs 18,433 per acre.
- The cost of production at market/procurement level would come to Rs 782 per 40 kgs, showing a rise of about 19 per cent over the last year.

Economics of Wheat and Competing Crops

- The economics of wheat vs oilseeds like sunflower and canola during 2008-09 has shown better performance in terms of all the economic indicators adopted in this analysis except purchased inputs for sunflower.
- In terms of purchased inputs in the Punjab, sunflower has marginal edge over wheat.
- In Sindh, both the wheat and sunflower performed equally better in terms of purchased inputs.
- In case of indirect competition with sugarcane, cotton+wheat, basmati+wheat and IRRI+wheat combinations have given lesser gains to the farmers against sugarcane in both the provinces.

- In terms of revenue per crop day, both the rice+wheat combinations have out competed sugarcane in the Punjab.

- The cotton+wheat combination in both the provinces has out competed sugarcane in terms of irrigation water.

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 2001-09.

- During 2008-09, the parity ratio between market prices of N and wheat improved in favour of wheat due to very 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 2001-09.

- During 2008-09, the parity ratio between market prices of P and wheat was not in favour of wheat due to very high prices of P fertilizers.

Nominal and Real Support Prices

- The nominal support prices of wheat during 2001 to 2009 have experienced overall rise of 217 per cent, while real support prices have shown an increase of 78 per cent.

- During 2008-09, the nominal support price indicates a surge of 52 per cent over the last year, while the real price has shown a rise of 33 per cent.

World Production and Prices

- World wheat production at 609 million tonnes in 2007-08 increased to 687 million tonnes in 2008-09, while it is forecast at 666 million tonnes for 2009-10.

- The closing stocks at 118 million tonnes in 2007-08 are estimated to reach to 163 million tonnes by 2008-09. These stocks are forecast at 185 million tonnes during 2009-10

- The average fob (Gulf) prices of US No.2 Hard Red Winter (HRW) wheat fluctuated widely dipping as low as US $ 138 per tonne in 2005-06 and rising as high as $ 332 per tonne in 2007-08.

However, these prices are averaged at $ 283 per tonne during 2008-09.

- During first six months of 2009-10, the international prices of US HRW wheat has declined to US $ 214 per tonne.

Export/Import Parity Prices

- Based on fob Gulf of US No. 2 HRW wheat prices during 2008-09, the export parity prices works to Rs 818 per 40 kgs. The export parity price calculates to Rs 808 per 40 kgs on the basis of average fob price during 2006-07 to 2008-09.

- Based on fob Gulf price of 2009-10 (July-December), the export parity price of wheat works back to Rs 597 per 40 kgs.

- Based on average fob gulf prices during 2008-09 and during 2006-07 to 2008-09, the import parity prices work to Rs 1249 and 1239 per 40 kgs at Multan, while Rs 1169 and 1159 at Karachi.

- Based on fob price during 2009-10 (July-December), the import parity prices work back to Rs 1012 per 40 kgs at Multan and Rs 932 per 40 kgs at Karachi.

- Based on actual import price, the import parity price calculates to Rs 1239 per 40 kgs at Multan and Rs 1159 at Karachi during 2008-09. For 2006-09, these prices come to Rs 1445 and Rs 1365 per 40 kgs.

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 2005-06 to 2008-09.

- The EPCs are also below one. However, lower EPCs imply that the magnitude of taxation has been higher than the estimation through NPCs.

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

- The DRCs have been much less than one during the period under importing scenario. It implies a Comparative Advantage in domestic wheat production for import substitution.

- The findngs of economic efficiency analysis warrant expansion in wheat production to meet domestic requirements as the imports are more expensive.

World Comparison

- Pakistan is the 8th largest wheat producer in terms of area and 6th in production but holds 49th position in terms of yield.

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

- Since 1990, about 11 high yielding wheat varieties have been developed by research institutes in Punjab, while 8 varieties of wheat are released by research institutes in Sindh.

- India announced higher support prices for 2006-07 and 2007-08 as compared to Pakistan despite of huge subsidies on farm inputs. However, Pakistan fixed much higher price during 2008-09.

- 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 tube wells.

Impact of Support Price on CPI and Household Expenditure

- In case the support price of wheat is enhanced by Rs 50 per 40 kgs over the existing level of Rs 950 per 40 kgs, the CPI is likely to rise by 0.3 per cent.

- Like-wise, the increases of Rs 50 per 40 kgs over the existing support price would bring additional expenditure of Rs 155 per capita per year or Rs 1046 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 2009-10 crop would be as under:

Base	Likely price of domestic wheat at procurement center
	Rs per 40 kgs
1. Import parity price on the basis of:	
a) Fob (Gulf) price of US Hard Red Winter (HRW) wheat during 2008-09, if consumed at:	
- Karachi	1169
- Multan	1249
b) Fob (Gulf) price of US HRW wheat during 2006-07 to 2008-09, if consumed at:	
- Karachi	1159
- Multan	1239
c) Fob (Gulf) price of US HRW wheat during 2009-10 (July-December), if consumed at:	
- Karachi	932
- Multan	1012
d) Actual import price during 2008-09 if consumed at :	
- Karachi	1159
- Multan	1239
e) Actual average import price during 2006-07 to 2008-09, if consumed at:	
- Karachi	1365
- Multan	1445
2. Export parity price on the basis of:	
a) Fob (Gulf) price of US HRW wheat during 2008-09, if exported from procurement centre	818
b) Fob (Gulft) average price of US HRW wheat during 2006-07 to 2008-09, if exported from procurement centre	808
c) Fob (Gulf) price of US HRW wheat during 2009-10 (Jul-Dec), if exported from procurement centre	597
3. Monthly average wholesale market prices of wheat in producing area markets during post-harvest period of 2008-09 crop:	
- Punjab	917
- Sindh	961
4. Cost of production at market/procurement centre level for 2009-10 crop	
- Punjab	767
- Sindh	782

- 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 crop:

Support Price

- The API strongly feels that the country should emphasize to accomplish its objective of wheat self sufficiency.
- The MINFA may like to maintain the support price of wheat at Rs 950 per 40 kgs for 2009-10 crop as well in view of low world prices, but high input costs and economics of competing crops.
- 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 should be designated as implementing agency for procurement of wheat at the support price announced by the Government.
- The Provincial Food Departments and PASSCO 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

- 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.
- 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.

- 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 technologies like laser levelling, zero tillage, raised bed planting and high efficiency irrigation systems should be promoted.
- Awareness should be created for rational use of fertilizers through soil and water testing.
- The Government should emphasize on availability of certified seed and grading of farm saved seed of wheat crop.
- To achieve balanced fertilizer use, the prices of DAP and potash fertilizer should be kept at optimal level to maintain certain level of ratio in prices of fertilizer and wheat.
- Measures should be taken for strict quality control to check adulteration of weedicides, herbicides, pesticides and fertilizer to enhance their efficiency.
- Feasibility of processing of city wastes and its utilization as source of nutrients, soil conditioners etc be undertaken.

Improving Statistics and Marketing

- Provincial Government should emphasize more on crop cutting experiments being conducted in the Punjab and Sindh. The NWFP 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 1-2 million tonnes needs to be maintained for the sake of food security.

(Dr. Qadir Bux Baloch)
Chairman, API

August 20, 2009

WHEAT POLICY ANALYSIS FOR 2009-10 CROP

INTRODUCTION

Wheat is the main staple food and the largest crop of the country. It contributes 13 per cent to the value added in agriculture and about 3 per cent to GDP. Wheat crop occupies around 37 per cent of total cropped area. It is cultivated on 8.7 million hectares with an annual average production of 23 million tonnes. During the decade ending 2008-09, wheat production has increased @ 2.3 per cent per annum. About 86 per cent of wheat area is irrigated which accounts for about 93 per cent of the annual production. Due to lower wheat production in 2007-08, Pakistan faced serious food crisis and the country had to import about 2.7 million tonnes wheat worth US $ 887 million during 2008-09.

2. Pakistan harvested a record wheat of 24.03 million tonnes during 2008-09, which is about 3 million tonnes (15%) more than the last year's wheat production. This increase was due to remunerative support price of Rs 950 per 40 kgs, higher wheat procurement target of 6.5 million tonnes and subsidy of Rs 2200 per bag for DAP fertilizer announced by the Government well before sowing time, which motivated the farming community to expand area under wheat crop and to use inputs efficiently. In addition, the adequate soil moisture at growing time encouraged the germination while the optimal temperature and intermittent rains improved the maturity of crop and grain formation.

3. Among the world wheat producing countries, Pakistan ranks 8th in terms of area and 6th in terms of production of wheat but lies way behind at 49th in terms of yield per hectare (FAO). The yield potential of high yielding wheat varieties is about 6 tonnes per hectare at Research Farms in Pakistan, while the national average yield is only about 2.6 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 we achieve even 60 per cent of the yield potential, Pakistan can not only become self-sufficient in wheat but also can join the club of wheat exporting countries.

4. To reduce the uncertainty and price risk in wheat farming and to ensure food security for the country, the Government annually reviews the support price of wheat. For the year 2008-09, the support price of wheat was fixed at Rs 950 per 40 kgs in the meeting of Cabinet held on 29th September, 2008.

5. The PASSCO and the Provincial Food Departments during 2008-09 are reported to have procured 9.19 million tonnes of wheat against the revised target of 9.05 million tonnes. As far as the food security and carryover stocks are concerned, the government has sufficient stocks to meet the domestic requirements and maintain strategic reserve during the consumption year of 2009-10.

6. In formulating the price policy recommendations for 2009-10 wheat crop, following steps were undertaken by the API:

i) To update data on prices of inputs, hiring rates of farm operations and marketing costs, a mini field survey in important wheat growing areas of the Punjab and Sindh was carried out during July, 2009.

ii) The data on crop area, yield and production, stocks, trade and prices; domestic as well as global, subsidy and incidentals in 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. 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 14th July 2009 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 highlighted in the forum, 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 a staple food commodity for the masses, 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 escalates consumer prices, leading to inflationary trend in view of the sensitive nature of the commodity and its high weight in the average household budget. Accordingly, 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, the 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. The government has planned to continue the 2008-09 wheat strategy with some adjustment to create a space for the private sector to participate in the wheat market. Additionally, strategy would focus on awareness campaign for good agricultural practices especially for timely sowing of wheat and micro management of irrigation water at regional levels. As a very sensitive commodity, a small 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.

2. REVIEW OF 2008-09 CROP

2.1 Provincial Shares in Area and Production

9. Based on three years average ending 2008-09, Punjab and Sindh contribute about 76 and 15 per cent in total wheat production while the shares of both the NWFP and Balochistan are 5 and 4 per cent, respectively. Province-wise shares of area and production are presented in Table-1 and depicted in Figures 1 and 2.

10. Around 86 per cent of wheat acreage is cultivated under irrigated conditions which contribute 93 per cent of wheat production in the country.

Table-1: Provincial Shares in Area and Production of Wheat (Average of 2006-07 to 2008-09)

Item/Country/ Province	Total	Pakistan	Punjab	Sindh	NWFP	Balochistan
	000 hact.	---------- Per cent ----------				
A. Area						
Total	8724.7 (21559.5)	100.0	75.2	11.5	8.7	4.7
Irrigated	7508.6 (18554.6)	86.1	67.3	11.0	3.7	4.1
Un-irrigated	1216.0 (3004.9)	13.9	7.9	0.5	5.0	0.6
B. Production	**000 tonnes**	---------- Per cent ----------				
Total	22762.1	100.0	76.0	15.2	5.0	3.8
Irrigated	21144.8	92.9	71.5	15.0	2.9	3.6
Un-irrigated	1617.3	7.1	4.5	0.2	2.2	0.3

Note: Figures in parentheses are thousand acres.
Source: Worked out from Annex-I & IB.

2.2 Long-term Changes: 1998-99 to 2008-09

11. During the decade ending 2008-09, wheat production at country level has surged @ 2.3 per cent per annum owing to 1.6 per cent improvement in yield and 0.7 per cent expansion in area. In the Punjab, wheat production has increased @ 2.1 per cent annually due to 1.1 per cent improvement in yield and 1.0 per cent acreage expansion. In Sindh, wheat production has also risen @ 3.6 per cent per annum mostly due to improvement of 3.9 per cent in yield as the area contracted by 0.3 per cent. Details of wheat area, yield and production by province are presented in Table-2.

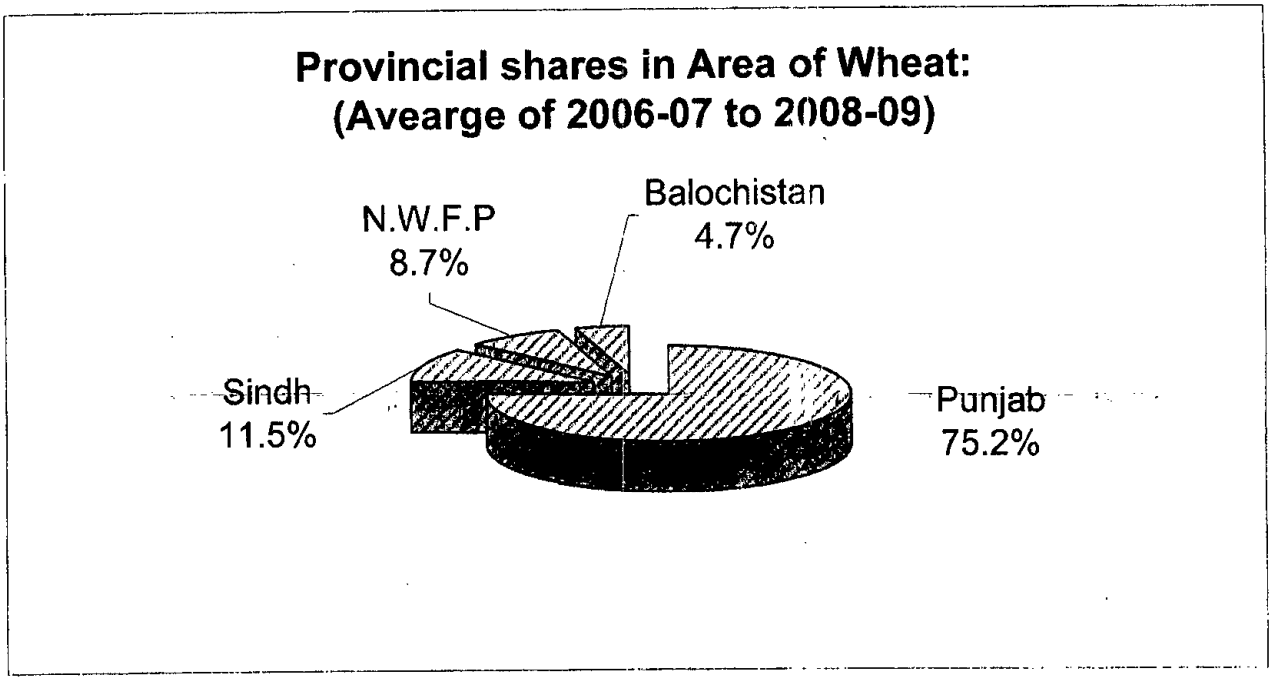


Figure-1 Shares in Area

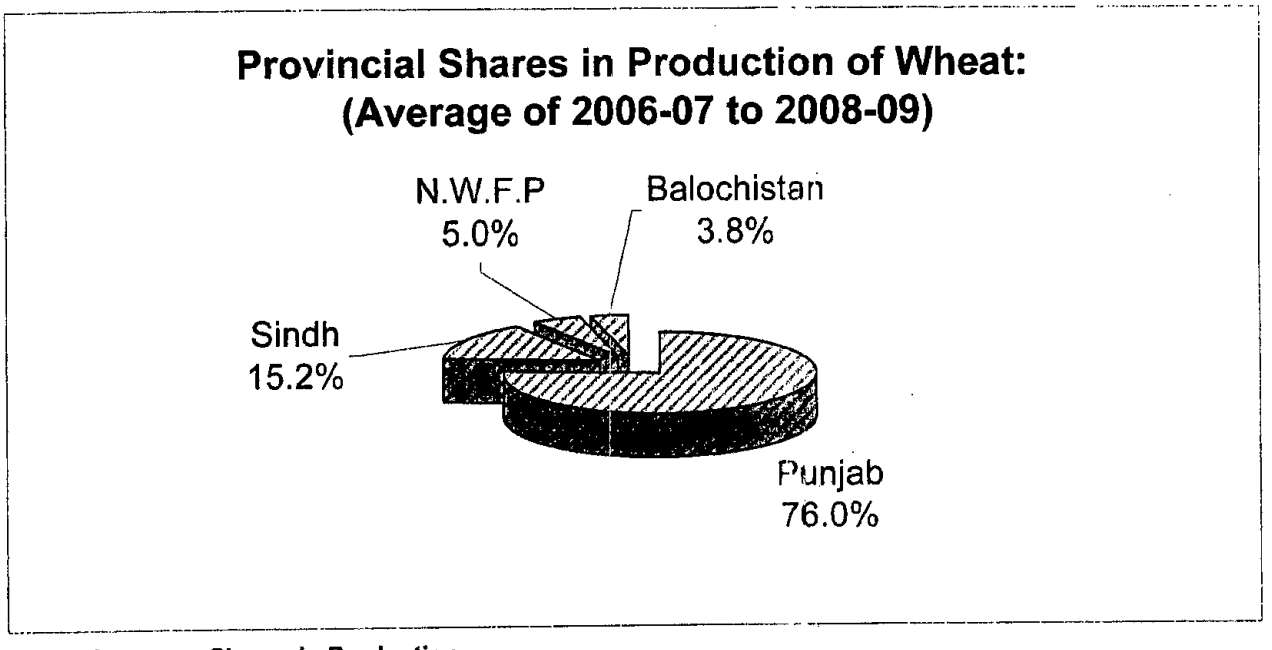


Figure-2 Shares in Production

Table-2: Average Annual Growth Rates of Area, Yield and Production of Wheat: 1998-99 to 2008-09

Country/ Province	Area	Yield	Production
	---------- Per cent per annum ----------		
Pakistan	(+) **0.7**	(+) **1.6**	(+) **2.3**
Punjab	(+) 1.0	(+) 1.1	(+) 2.1
Sindh	(-) 0.3	(+) 3.9	(+) 3.6
NWFP	(-) 0.9	(+) 2.5	(+) 1.5
Balochistan	(+) 2.5	(+) 1.0	(+) 3.5

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.

2.3 Medium Term Changes: 2003-04 to 2008-09

12. The annual growth rates for the period 2003-04 to 2008-09 show that the wheat production at country level has increased by 3.0 per cent per year due to 1.4 per cent improvement in yield and 1.6 per cent expansion in area. Provincial growth rates are presented in Table-3.

Table-3: Average Annual Growth Rates of Area, Yield and Production of Wheat: 2003-04 to 2008-09

Country/Province	Area	Yield	Production
	--------- Per cent per annum ---------		
Pakistan	(+) **1.6**	(+) **1.4**	(+) **3.0**
Punjab	(+) 1.3	(+) 0.3	(+) 1.6
Sindh	(+) 3.4	(+) 7.1	(+) 10.8
NWFP	(+) 0.6	(+) 1.7	(+) 2.3
Balochistan	(+) 5.1	(+) 2.4	(+) 7.6

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.

2.4 Short-term Changes: 2007-08 Vs 2008-09

13. According to the final estimates, the wheat production from 2008-09 crop is reported at 24.03 million tonnes at country level, showing 14.7 per cent increase over 20.9 million tonnes in 2007-08. The rise in production is mainly attributed to 8.4 and 5.8 per cent increase in yield and area. The provincial area, yield and production of wheat are given in Table-4 and also depicted in Figures 3 and 4.

Table-4: Area, Yield and Production of Wheat: 2007-08 and 2008-09 Crop

Country/ Province	Area		Changes	Yield per hectare		Changes	Production		Changes
	2007-08	2008-09		2007-08	2008-09		2007-08	2008-09	
	-- 000 hectares --		Per cent	-----Kgs ----		Per cent	-- 000 tonnes --		Per cent
Pakistan	**8549.8**	**9046.0**	**(+) 5.8**	**2451**	**2657**	**(+) 8.4**	**20958.8**	**24032.9**	**14.7**
Punjab	6402.0	6836.2	(+) 6.8	2438	2694	(+)10.5	15607.0	18420.0	18.0
Sindh	989.9	1031.4	(+) 4.2	3446	3432	(-) 0.4	3411.4	3540.2	3.8
NWFP	747.4	769.5	(+) 3.0	1434	1565	(+) 9.2	1071.8	1204.5	12.4
Balochistan	410.5	408.9	(-) 0.4	2116	2123	(+) 0.3	868.6	868.2	0.0

Source: Annex-I.

14. The area, yield and production by mode of irrigation during 2007-08 and 2008-09 are presented in Annex-II.

2.5 Factors Responsible for High Production: 2008-09 Crop

15. The Provincial Agriculture Departments of the Punjab and Sindh have reported following factors responsible for high production during 2008-09 crop:

Punjab

1. Adequate soil moisture at growing time encouraged the germination and growth of the crop.
2. Corresponding increase in area of about 7 per cent.
3. Optimal temperature and intermittent rains improved the maturity of crop and grains.

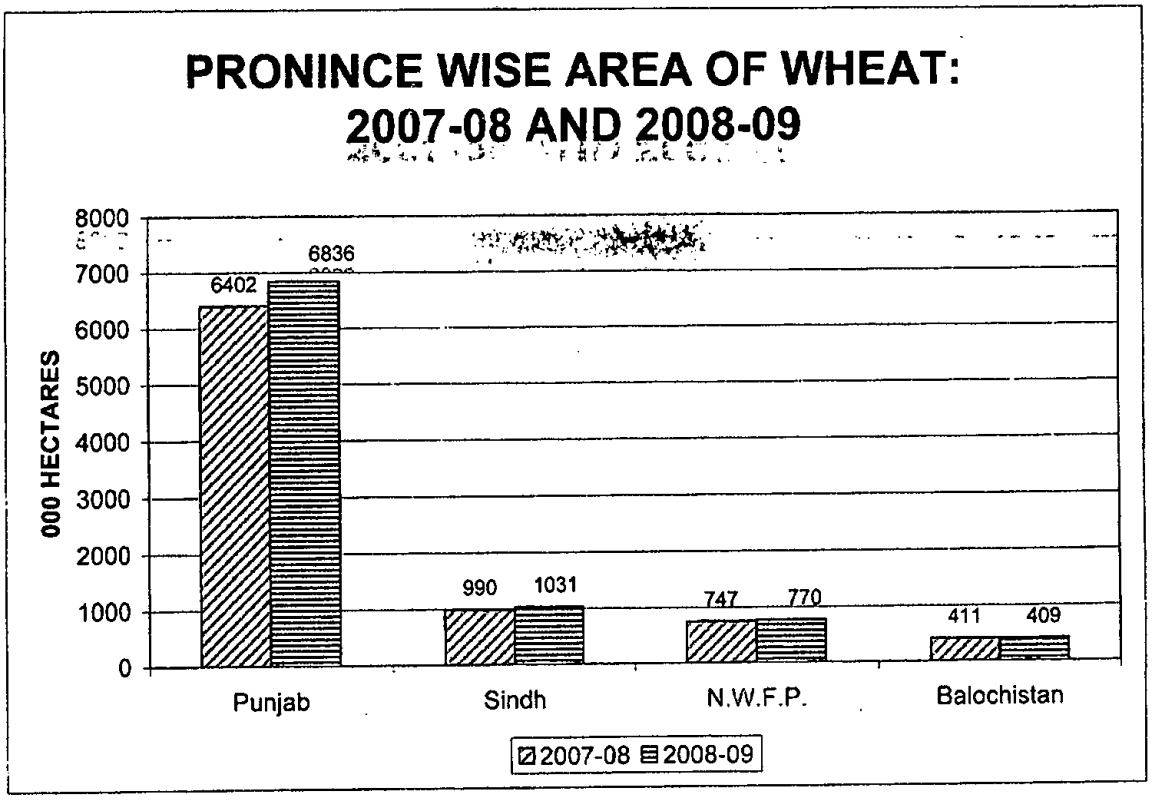


Figure-3

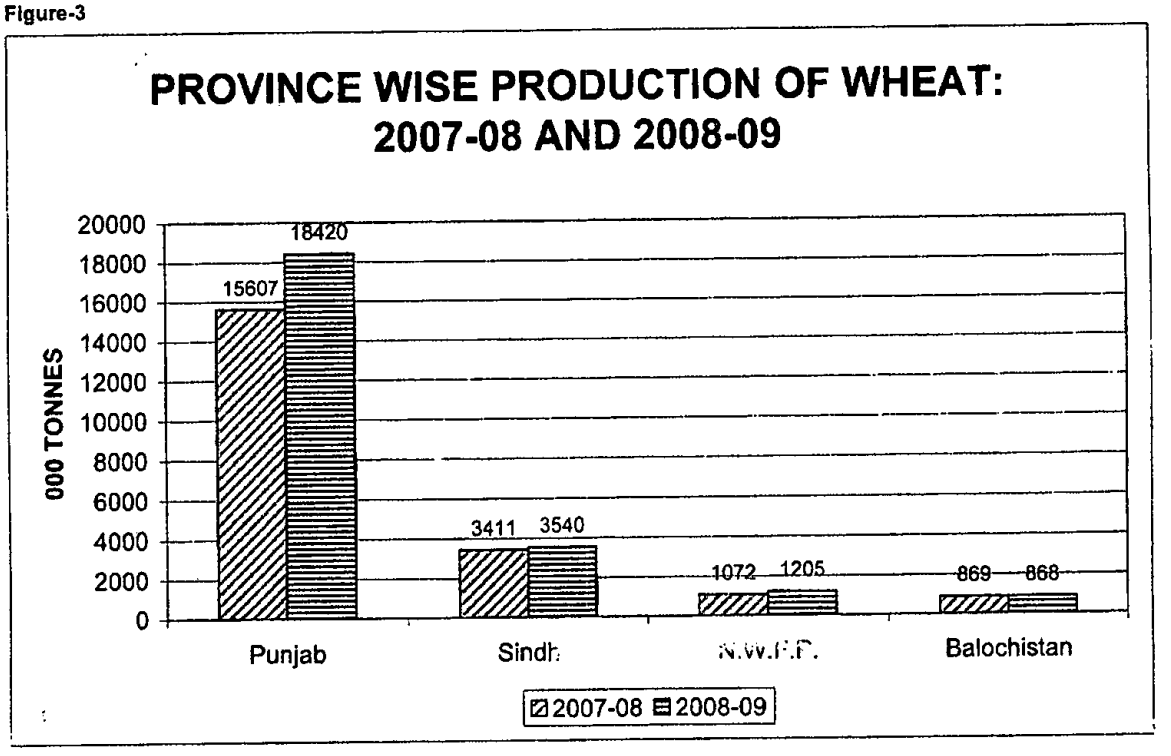


Figure-4

Sindh

1. Increase in wheat area by 4% over last year.

2. Marginal decline in yield due to shortage of irrigation water and short winter season.

2.6 Targets Vs Achievements: 2008-09 Crop

16. The Federal Committee on Agriculture (FCA) had fixed the wheat production target at 25.0 million tonnes for 2008-09 crop from an area of 8.61 million hectares. However, the production of wheat is reported at 24.0 million tonnes, short by 3.9 per cent against the target. The production target could not be achieved due to under achievement in yield target by 8.5 per cent while the area surpassed by 5.1 per cent. Provincial details on area, yield and production may be seen in Table-5 and also depicted in Figures 5 and 6.

Table-5: Targets Vs Estimated Achievements in Area, Yield and Production of Wheat: 2008-09 Crop

Country/ Province	Area		Deviation from target	Yield per hectare		Deviation from target	Production		Deviation from target
	Targets	Achieve-ments		Targets	Achieve-ments		Targets	Achieve-ments	
	000 ha		Per cent	Kgs		Per cent	000 tonnes		Per cent
Pakistan	**8610.1**	**9046.0**	**(+) 5.1**	**2904**	**2657**	**(-) 8.5**	**25000.0**	**24032.9**	**(-) 3.9**
Punjab	6460.0	6836.2	(+) 5.8	3003	2694	(-) 10.3	19400.0	18420.0	(-) 5.1
Sindh	992.0	1031.4	(+) 4.0	3531	3432	(-) 2.8	3503.0	3540.2	(+) 1.1
N.W.F.P	748.0	769.5	(+) 2.9	1632	1565	(-) 4.1	1221.0	1204.5	(-) 1.4
Balochistan	410.0	408.9	(-) 0.3	2137	2123	(-) 0.6	876.0	868.2	(-) 0.9

Sources:

1. For targets: Minutes of the 90th Meeting of FCA for Kharif season 2008-09.

2. For achievements: Annex-I.

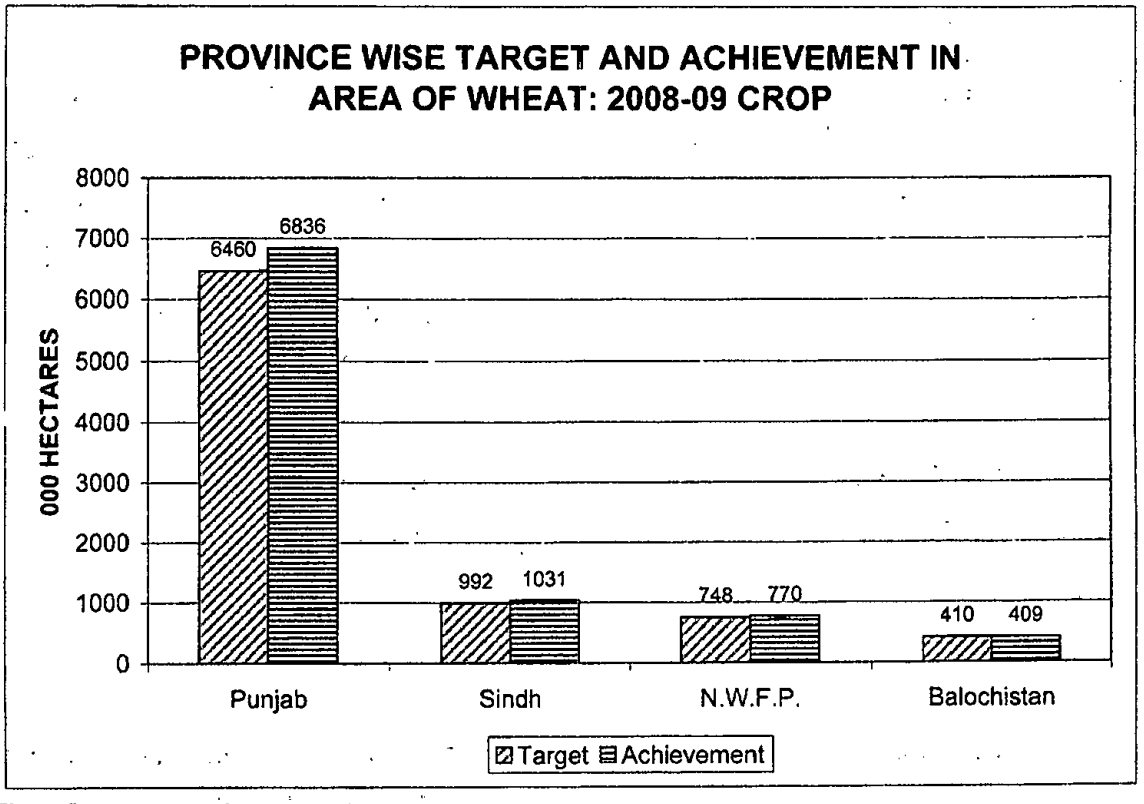


Figure-5

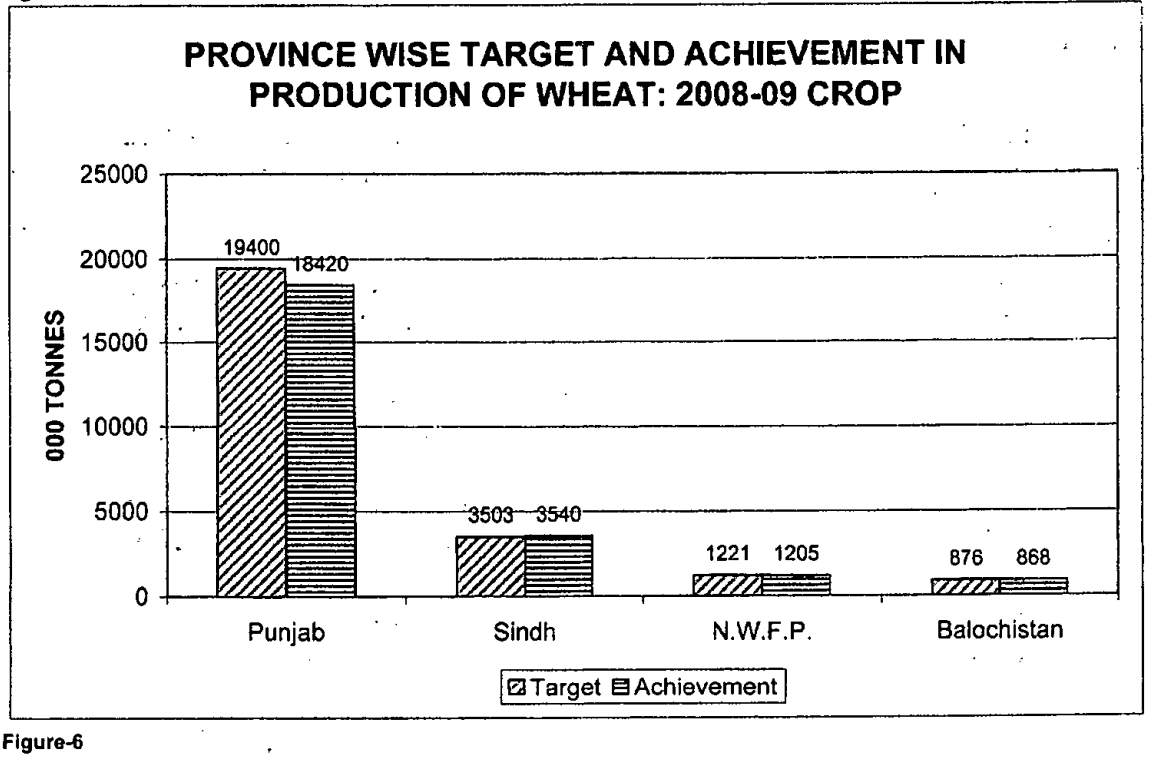


Figure-6

2.7 Important Wheat Producing Districts

17. The districts producing more than 400 thousand tonnes of wheat per annum are Jhang, Bahawalnagar, Sheikhupura, R.Y.Khan, Bahawalpur, Muzaffargarh, Faisalabad, Vehari, Okara, Gujranwala, Khanewal, Sargodha, Kasur, Multan, Sialkot, Lodhran, Layyah, Pakpattan, T.T.Singh, Sahiwal, Sanghar, Hafizabad, Hyderabad and D.G.Khan. In all these 24 districts, 22 districts falling in the Punjab and 2 districts in Sindh produce 66 per cent of total domestic wheat production. While their share in area is estimated at 61 per cent. Khairpur, Naushahro-Feroze and Mirpurkhas from Sindh, Mardan, Swat from NWFP, Nasirabad and Jaffarabad from Balochistan are other important wheat producing districts. Districts have been arranged in descending order of wheat production in Annex-III.

3. SOWING AND HARVESTING TIMES OF WHEAT

18. 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-6.

Table-6: 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
NWFP	
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.

19. 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.

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

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

22. 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 while in plain areas, sowing times of wheat ranges from 1st November to 15th December.

23. 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.

4. DOMESTIC DEMAND, SUPPLY, STOCKS AND PRICE SITUATION

4.1 Domestic Demand, Supply and stocks

24. With the domestic production of 24.03 million tonnes from 2008-09 crop and carry over stocks of 0.337 million tonnes total wheat supply in the country for 2009-10 consumption year became 24.38 million tonnes. This supply may slightly increase if production of wheat in Azad Kashmir and Northern Areas estimated at 0.284 million tonnes is added. Thus total availability of wheat in the country would be 24.65 million tonnes.

25. The estimation of consumption requirement of wheat for 2009-10 is based on average per capita consumption of 124 kgs per annum as per MINFA and 120 kgs per annum as per Planning Commission.. Using mid year population as on 1st November 2009 at 170 millions, human consumption requirement for 2009-10 is estimated at 21.08

and 20.40 million tonnes respectively. Adding allowance for seed, feed and wastage @ 10 per cent of production, total domestic requirements for 2009-10 wheat year works to 23.48 and 22.80 million tonnes. If the strategic reserve is kept to the minimum level of one million tonnes, the gross domestic requirements for 2009-10 wheat year will be 23.80 and 24.48 million tonnes. However, the average per capita availability for the last 3 years (2006-09) calculates to 128 kgs per annum on account of abnormal disappearance of wheat during 2007-08 (Annex-IV). The calculations are presented in Table -7.

Table-7: Domestic Requirements of Wheat for 2009-10 Wheat Year: (May-April)

S.No.	Item	Based on annual per capita consumption estimates of :	
		120 Kgs*	124 Kgs**
		---------- Millions ----------	
1.	Population on 1st November, 2009	170.00	170.00
		---------- Million tonnes ----------	
2.	Human consumption requirement	20.40	21.08
3.	Allowance for seed, feed and wastage @ 10 per cent of total production	2.40	2.40
4.	Food Security reserves	1.00	1.00
5.	Total requirements	23.80	24.48

Note: * Per capita consumption adopted by Planning Commission.

** Per capita consumption used by MINFA.

Source: Annex-IV.

4.2 Post harvest prices

26. Monthly wholesale prices of wheat during the post-harvest period of 2008-09 crop in the main producing area markets of the Punjab and Sindh have averaged at Rs 917 and 961 per 40 kgs respectively in Table-8 and 9.

Table-8: Monthly Average Wholesale Prices of Wheat in Main Producing Area Markets of Punjab during Post-harvest Season of 2008-09 Crop

Table-8: Monthly Average Wholesale Prices of Wheat in Main Producing Area Markets of Punjab during Post-harvest Season of 2008-09 Crop

Markets	April	May	June	Average
	---------- Rs per 40 kgs ----------			
Lahore	980	950	950	960
Faisalabad	925	938	922	928
Sargodha	915	922	902	913
Multan	943	926	911	927
Gujaranwala	893	929	903	908
Okara	888	912	896	899
R.Y. Khan	886	897	879	887
Average	**919**	**925**	**909**	**917**

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

Table-9: Monthly Average Wholesale Prices of Wheat in Main Producing Area Markets of Sindh during Post-harvest Season of 2008-09 Crop

Markets	March	April	May	Average
	---------- Rs per 40 kgs ----------			
Sanghar	950	900	900	917
Nwabshah	-	938	920	928
Hyderabad	1050	1000	1025	1025
Sukkur	960	930	945	945
Ghotki	1050	960	960	990
Average	**1003**	**945**	**950**	**961**

Sources: D.G Agriculture (Extension), Hyderabad

27. The perusal of the market data reveals that monthly average wholesale prices of wheat in main markets of Punjab and Sindh generally ruled lower but close to support price of Rs 950 per 40 Kgs except in Hyderabad, Ghotki and Lahore districts where price ruled higher than the support price. However, price spread in Punjab and Sindh remained between Rs 887 to 960 and Rs 917 to Rs 1025 respectively.

5. WORLD PRODUCTION, CONSUMPTION, STOCKS AND TRADE SITUATION

28. The global wheat production estimated at 687 million tonnes during 2008-09 is about 13 per cent higher than that of previous year. While production for 2009-10 is forecast at 666 million tonnes which would be 3 per cent less than its level of 2008-09. The world wheat closing stocks during 2008-09 are estimated at 163 million tonnes which is 38 per cent higher than the last year's 118 millions. For 2009-10, wheat stocks forecast at 185 million tonnes would be further 13 per cent higher (Table-10).

Table-10: World Wheat Balance Sheet: 2005-06 to 2009-10

Items	2005-06	2006-07	2007-08	2008-09 (Estimated)	2009-10 (Forecast)
	.....Million tonnes.....				
Opening stocks	141	136	123	118	163
Production	621	598	609	687	666
Total Supply	762	734	732	805	829
Consumption	625	611	614	641	643
Closing stocks	136	123	118	163	185
Trade	110	111	110	136	113

Source: Grain Market Report, International Grains Council, London, 24th September 2009 GMR No 393.

29. In 2007 the international food price index rose by nearly 40 percent, compared with 9 percent the year before, and in the first three months of 2008 prices increased further by about 50 percent. However, OECD-FAO Agriculture Outlook for 2008-17 (Annex-V) entails a declining trend in grain prices particularly of wheat that may first come down from an average price of US$319 per tonne of 2007-08 to US $ 267 in 2008-09 and then to US $ 230 per tonne in 2017-18. This trend in prices seems to have been supported by increased supply and revival of closing stocks to 163 million tonnes during 2008-09 alongwith trade increase from 110 million tonnes to 136 million tonnes.

6. INTERNATIONAL PRICES OF WHEAT

30. Average fob (Gulf) prices of No.2 Hard Red Winter Wheat from 2004-05 to 2009-10 are presented in Annex-VI. The prices showed a volatile pattern during the period under review. The prices averaged at US $ 151 per tonne during 2004-05. Next

year, these prices declined to US $ 138 but increased sharply in the following year averaging at $ 177 per tonne. During 2007-08, prices showed a sharp increase and reached to $ 332 per tonne, the highest level during the period under review. During 2009-10 (Jul-Dec) price decreased to US $ 214 per tonne.

7. IMPORT PARITY PRICES OF WHEAT

31. Based on international prices of US HRW and actually imported wheat, the estimated import parity prices of Pak wheat at procurement centre ranged between Rs 932 to Rs 1169 and Rs 1159 to 1365, if imported wheat consumed at Karachi. While the import parity prices ranged between Rs 1012 to 1249 and Rs 1239 to 1445 per 40 kgs respectively, if imported wheat consumed at Multan.

Table -11 Import Parity price of wheat

Item	2009-10 (Jul-Dec)	During 2008-09	During 2006-09
A. Based on Fob Gulf Price of US HRW wheat	**US $ per tonne**		
Average fob price	214	283	280
Import Parity price	Rs per 40 kgs		
i) if consumed at Multan	1012	1249	1239
ii) if consumed at Karachi	932	1169	1159
B. Based on Actual Import Price	**US $/tonne**		
Average c&f price	-	330	390
Import Parity price	**Rs per 40 kgs**		
iii) if consumed at Multan	-	1239	1445
iv) if consumed at Karachi	-	1159	1365

Source: Annexes VII and VIII.

8. EXPORT PARITY PRICES OF WHEAT

32. The export parity prices estimated under export scenario have ranged from Rs 597 to Rs 818 per 40 kgs implying that under global prices prevailed from US $ 214 to $ 283 per tonne, wheat production for export purpose is not economical (Table-12).

Table-12: Export Parity Prices of Wheat on the Basis of Fob (Gulf) Price of US Hard Red Winter

Item	2009-10 (Jul-Dec)	During 2008-09	During 2006-09
	US $ per tonne		
Fob (gulf) price assuming for Karachi	214	283	280
	Rs per 40 kgs		
Export parity price at procurement centre	597	818	808

Source: Annex-IX.

9. COST OF PRODUCTION OF WHEAT

33. In formulating price proposals for farm commodities, the cost of production (COP) is one of the important considerations. However, the empirical estimation of a representative COP involves a number of conceptual and practical difficulties. These difficulties generally arise from the larger number of growers with diverse farming systems involving substantial variations in the agro-climatic conditions, cropping pattern, use level of inputs, adoption of farm technologies, cultural practices etc, resulting in varying crop yields and unit cost of production.

34. The cost of production of wheat for 2009-10 cop in the Punjab and Sindh have been estimated by adopting the input-output parameters used in the 2008-09 Wheat Policy Analysis Report alongwith the latest inputs prices and custom hiring rates of cultural operations, collected through mini field survey conducted by the API during July 2009 in the major wheat growing areas of the Punjab and Sindh. These inputs prices and custom 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 14th July 2009 at Islamabad. The details of the COP estimates for the Punjab and Sindh for 2008-09 and 2009-10 crops are presented at Annex-X and XI respectively, while the summary of these is presented in Table-13.

Table-13: Average Farmers' Cost of Production of Wheat: 2008-09 and 2009-10 Crops

Items	Units	2008-09 Crop	2009-10 crop	Increase in 2009-10 over 2008-09
Punjab				
1. Cost of cultivation	Rs/acre	18235	20689	2454
2. Yield				
a) Yield in kgs	Kgs/acre	1108	1108	-
b) Yeld in maunds	40 kgs maunds/acre	28	28	-
3. Cost of production at farm level	Rs/40 kgs	658	747	89
4. Marketing cost	Rs/40 kgs	18	20	2
5. Cost of production at market/procurement centre				
a) With land rent	Rs/40 kgs	676	767	91
b) Without land rent	Rs/40 kgs	532	586	54
Sindh				
1. Cost of cultivation	Rs/acre	15504	18433	2928
2. Yield				
a) Yield in kgs	Kgs/acre	968	968	-
b) Yield in maunds	40 kgs maunds/acre	24	24	-
3. Cost of production at farm level	Rs/40 kgs	641	762	121
4. Marketing cost	Rs/40 kgs	18	20	2
5. Cost of production at market/procurement centre				
a) With land rent	Rs/40 kgs	659	782	123
b) Without land rent	Rs/40 kgs	535	617	82

Source: Annex-X and XI.

Punjab

35. As per information summarized in Table-14 the cost of cultivation of one acre of wheat in the Punjab during 2009-10 crop year at the current prices of farm inputs and custom hiring rates is expected at Rs 20689, including land rent. With the average yield of 1108 kgs per acre, cost of producing wheat is worked out at Rs 747 per 40 kgs. Accounting for the marketing charges @ Rs 20 per 40 kgs, the market/procurement centre level cost of production works out to Rs 767, higher by Rs 91 (13 %) over the corresponding cost of Rs 676 in 2008-09.

Sindh

36. Cost of growing one acre of wheat in Sindh during 2009-10 crop is likely to be Rs 18433, inclusive of land rent. Distributing this cost over the average yield of 968 kgs per acre, the farm level cost of production comes to Rs 762 per 40 kgs. Adding marketing cost @ Rs 20 per 40 kgs, the cost of producing and delivering 40 kgs wheat at market/procurement centre level would be Rs 782, reflecting a rise of Rs 123 (19 %) over the last year.

37. The increases in the cost of production of wheat for the 2009-10 crop in the Punjab and Sindh over the last year's cost are mainly attributed to the escalated wage rates, higher prices of wheat seed and higher values of kind payments for harvesting and threshing operations. Moreover, the unusual rise in land rent has also added substantially to the increase in cost of production. However, increased values of wheat bhoosa and decreased prices of some phosphotic fertilizers like DAP and NP have partially offset the impact of rise in the cost of production of wheat for 2009-10 crop.

Cost of major farm inputs and operations

38. A comparison of the cost of different field operations and farm inputs in the total cost of cultivation of wheat in the Punjab and Sindh during 2008-09 and 2009-10 crops alongwith percent changes therein is presented in Table-14.

Table-14: Cost of major operations/inputs of wheat: 2008-09 and 2009-10 Crops

Operations/inputs	2008-09 crop	2009-10 crop	Share in increased cost
	---Rs/acre---		Per cent
Punjab			
1. Land preparation	1617 (8)	2069 (9)	16
2. Seed and sowing operations	2213 (11)	2945 (12)	27
3. Weedicides	334 (2)	354 (2)	1
4. Irrigation	2096 (10)	2174 (9)	3
5. Fertilizer including FYM	5109 (25)	3960 (18)	-43
6. Harvesting and threshing etc	3696 (18)	5146 (23)	55
7. Land rent	4000 (20)	5000 (22)	38
8. Others	1170 (6)	1240 (5)	3
9. Total cost	20235 (100)	22889 (100)	**100**
Sindh			
1. Land preparation	2011 (11)	2534 (12)	18
2. Seed and sowing operations	1943 (11)	2569 (13)	21
3. Interculture/weedicides	240 (1)	257 (1)	1
4. Irrigation	1048 (6)	1116 (5)	2
5. Fertilizer including FYM	5040 (29)	3983 (20)	-35
6. Harvesting and threshing etc	3060 (17)	4739 (23)	57
7. Land rent	3000 (18)	4000 (20)	34
8. Others	1163 (7)	1235 (6)	2
9. Total cost	17505 (100)	20433(100)	**100**

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

Source: Annex-X and XI

Punjab

39. In overall cost of cultivation of wheat in the Punjab during 2009-10 crop year, harvesting and threshing operations is the major component, accounting for 23 per cent. The other constituents are as: land rent (22 %), Fertilizer including FYM (17 %), Seed and sowing operations (12 %), Irrigation (9 %), Land preparation (9 %), others (5 %) and interculture//weedicides (2 %).

Sindh

40. In Sindh, harvesting & threshing operations is the major component in the total cost of cultivation during 2009-10 crop season, accounting for 23 per cent. The other ingredients of the cost of cultivation are: Fertilizer including FYM and Land rent (20 %

each), Seed and sowing operations (13 %), Land preparation (12 %), Others (6 %), Irrigation (5 %) and Interculture/weedicides (1 %).

Prices of major farm inputs

41. The average market prices of major farm inputs used in computation of the cost of production of wheat for the 2008-09 and 2009-10 crops alongwith changes therein are given below:

Items	Units	2008-09 crop	2009-10 crop	Per cent changes
Punjab				
1. HSD	Rs/litre	64.72	66.14	2.19
2. Power tariff	Rs/kwh	3.73	4.00	7.24
3. Seed	Rs/kg	30	40	33.33
4. Fertilizers	Rs/bag			
4.1 DAP		3067	1949	(-) 36.46
4.2 Urea		695	758	9.06
4.3 NP		2009	1266	(-) 36.98
Sindh				
1. HSD	Rs/litre	64.72	66.14	2.19
2. Power tariff	Rs/kwh	3.73	4.00	7.24
3. Seed	Rs/kg	30	40	33.33
4. Fertilizers	Rs/bag			
4.1 DAP		3104	1870	(-) 39.76
4.2 Urea		697	772	10.76
4.3 NP		1930	1253	(-) 35.08

10. NOMINAL AND REAL SUPPORT PRICES OF WHEAT: 2000-01 TO 2008-09

42. The purchasing power of a certain commodity is influenced by fluctuation in its price in relation to general price level in the economy. Further, 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 prices of the crop during a specific period is being deflated by the corresponding Consumer Price Index (CPI), the most common measure of inflation in the economy.

43. Results of this exercise for the period 2000-01 to 2008-09 are set out in Table-15.

Table-15: Nominal and Real Support Prices of Wheat: 2000-01 to 2008-09

Crop year	Consumer Price Index (CPI)	Support Prices of Wheat	
		Nominal	Real
	2000-01=100	Rs/ per 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	155.74	625	401.31
2008-09	178.04	950	533.59

Sources: Economic Survey of Pakistan: 2008-09.

44. The price of wheat in nominal terms, which remained constant in initial three years, has evidenced an increasing trend during the later six years, thus giving a cumulative push of 217 per cent over the base year 2000-01. The variation in CPI during the period was evidenced at 78 per cent bringing upward change in the real value against the base year. Fluctuation in real support price during the period under review and resultant gap in absolute terms between the nominal and real prices indicates that nominal price has not been enhanced in line with the changes in inflationary trend, thus adversely affecting the income of the wheat farmers.

45. The support price of wheat was enhanced from Rs 625 per 40 kgs in 2007-08 to Rs 950 in 2008-09; 52 per cent addition in nominal value. Over the last year, its real value in terms of 2000-01 prices improved by 33 per cent. Analysis of the data reveals that real prices have observed wide fluctuation ranging from Rs 281.03 to 533.59 per 40 kgs during the period under review. Primary factor for this fluctuation in the price of wheat has been relatively lower enhancement in the nominal price against the inflationary pressure.

11. COMPARATIVE ECONOMICS OF WHEAT AND COMPETING CROPS

46. 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.

47. 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-XII, while a summary of various economic indicators like output-input ratio and revenues per rupee of purchased inputs cost, day of crop duration and unit of irrigation water for the Punjab and Sindh is presented in Table-16.

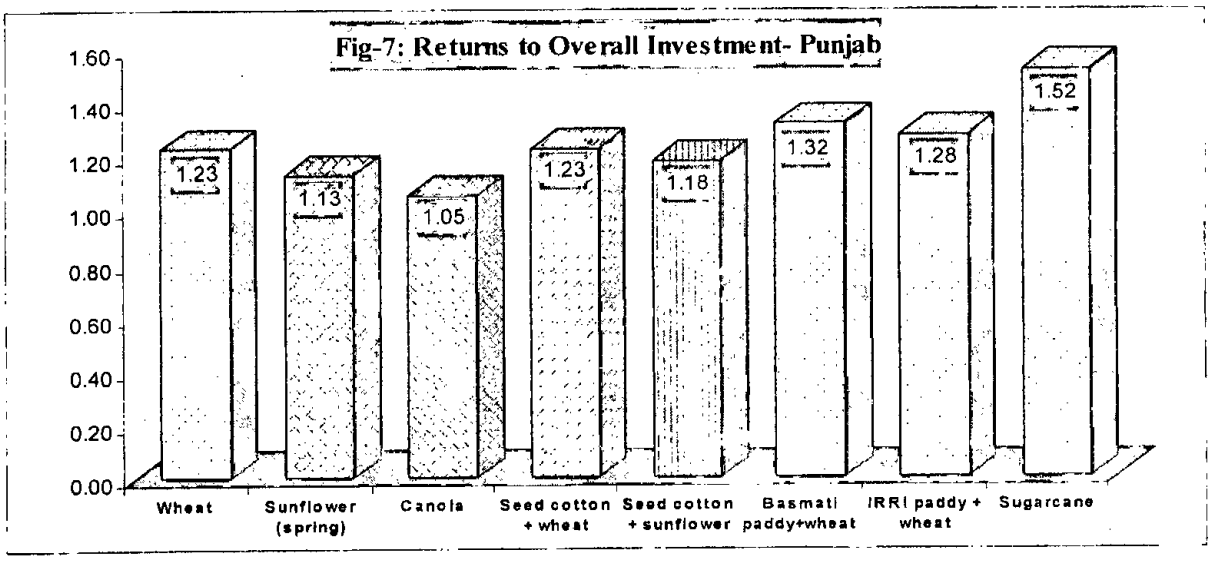
Table-16: Economics of Wheat and Competing Crops at Prices Realized by the Growers: 2008-09 Crops

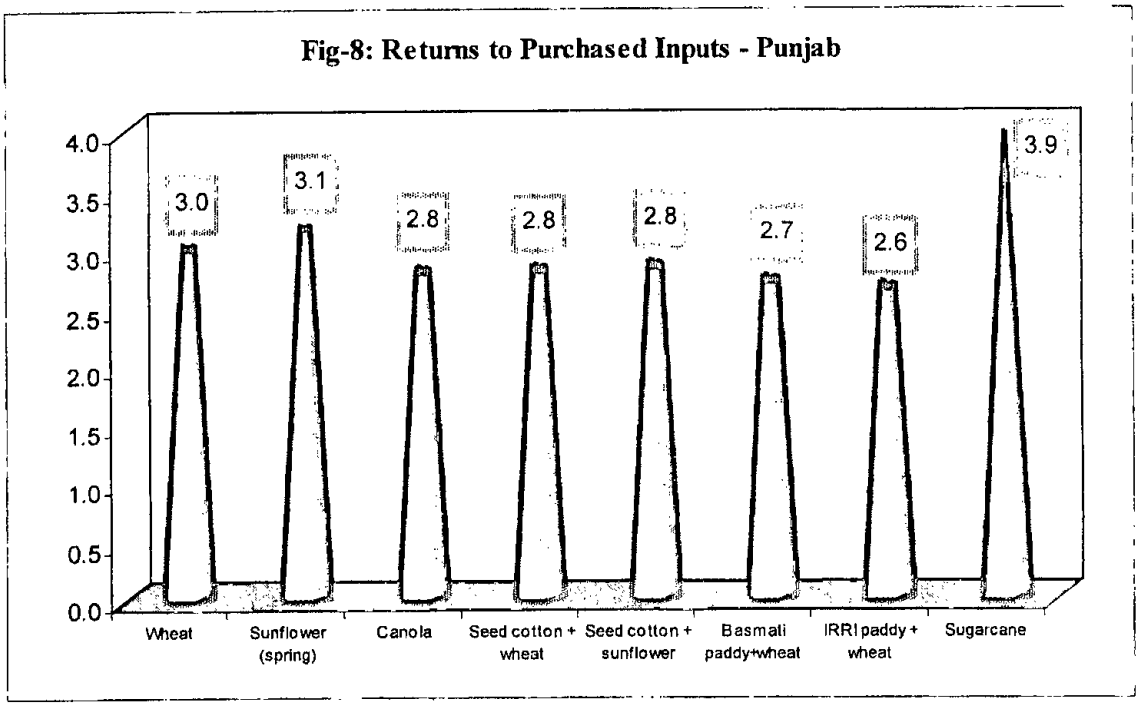
Province / crops /crop combination	Output-input ratio	Revenue per		
		Rupee of purchased inputs	Crop day	Acre inch of water used
		.....Rupees.....		
Punjab				
Wheat	1.23	3.0	146	2196
Sunflower (spring)	1.13	3.1	109	891
Canola	1.05	2.8	74	1025
Seed cotton + wheat	1.23	2.8	127	1569
Seed cotton + sunflower	1.18	2.8	111	1059
Basmati paddy+wheat	1.32	2.7	149	765
IRRI paddy + wheat	1.28	2.6	135	659
Sugarcane	1.52	3.9	133	1092
Sindh				
Wheat	1.27	3.1	135	2028
Sunflower (spring)	1.17	3.1	111	908
Canola	1.02	2.6	71	986
Seed cotton + wheat	1.26	3.1	121	1700
Seed cotton + sunflower	1.22	2.8	111	1166
IRRI paddy+ wheat	134	3.0	128	677
IRRI paddy+sunflower	1.30	3.0	116	535
Sugarcane	1.52	4.3	128	882

Source: Annex-XII.

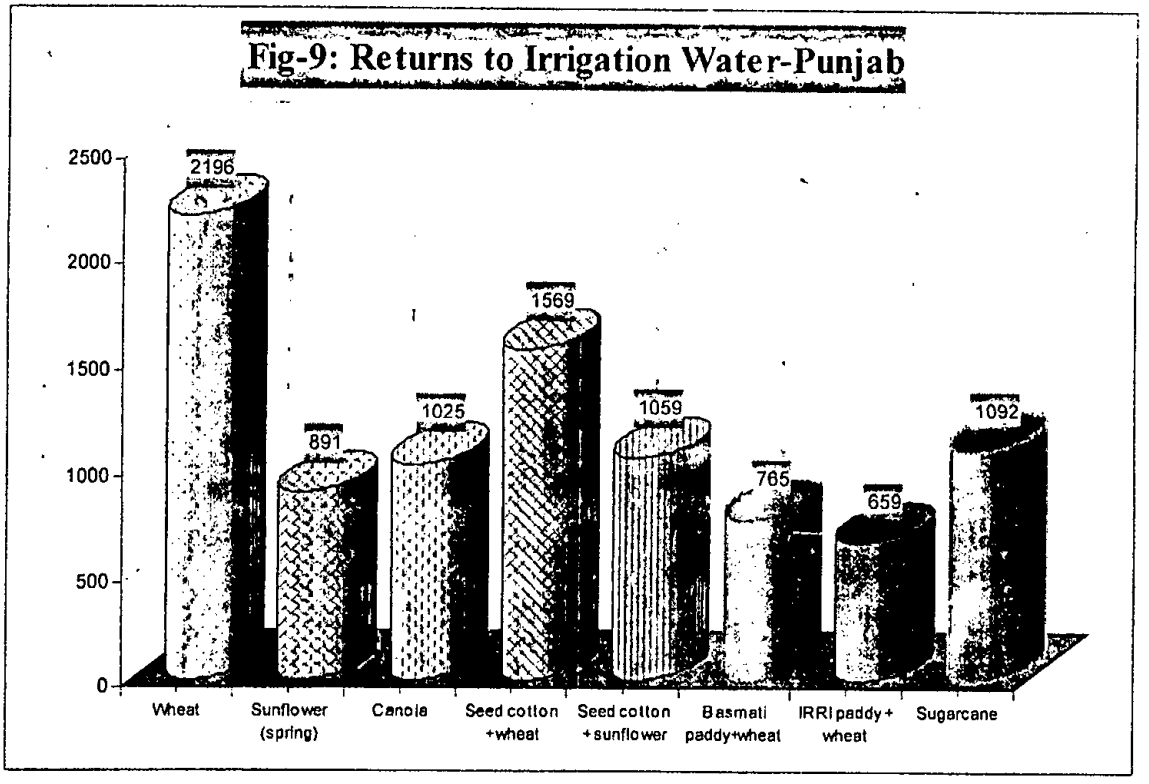
Punjab

48. For the crop year 2008-09, wheat has shown relatively better performance as compared to other 'rabi' crops like sunflower and canola in terms of all the economic indicators (Fig-7) except purchased inputs for sunflower (Fig-8), perhaps due to less use of fertilizer resulting less cost on purchased inputs for sunflower crop. Better wheat performance is primarily because of the remunerative price received by the growers during 2008-09 crop season.





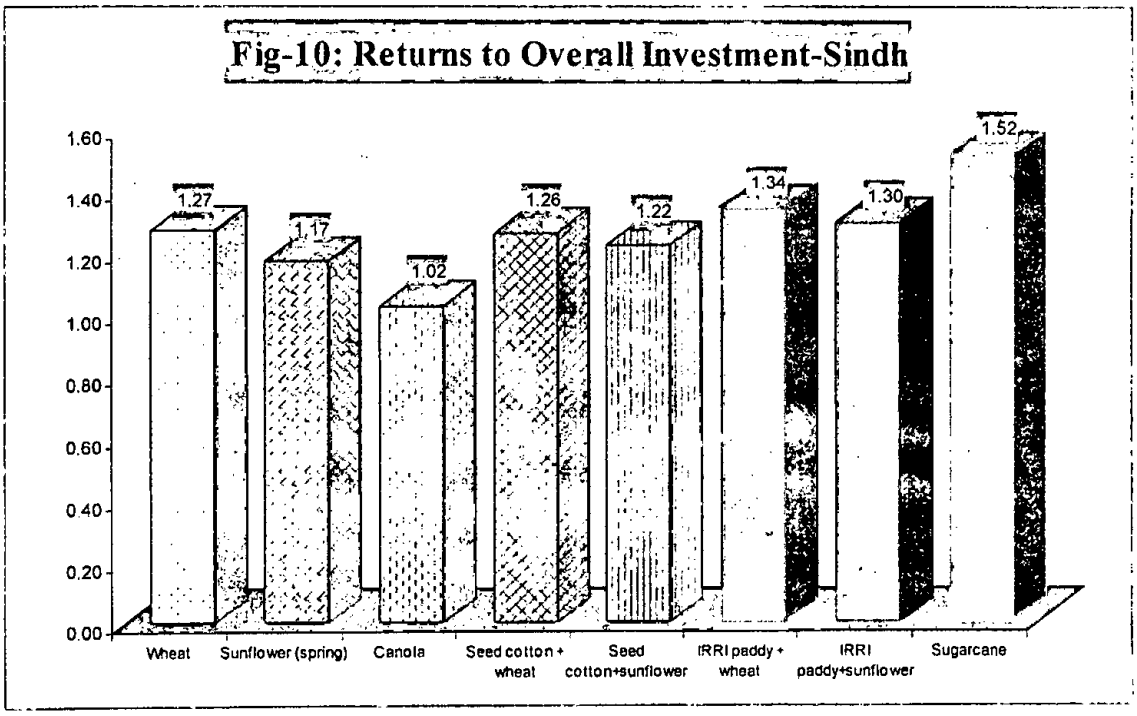
49. In view of indirect competition of wheat with sugarcane , the latter has performed better than wheat combinations in majority of parameters. This is due to lucrative prices of sugarcane realized by the growers during 2008-09. However, cotton + wheat combination in case of gross returns to irrigation water (Fig-9) and

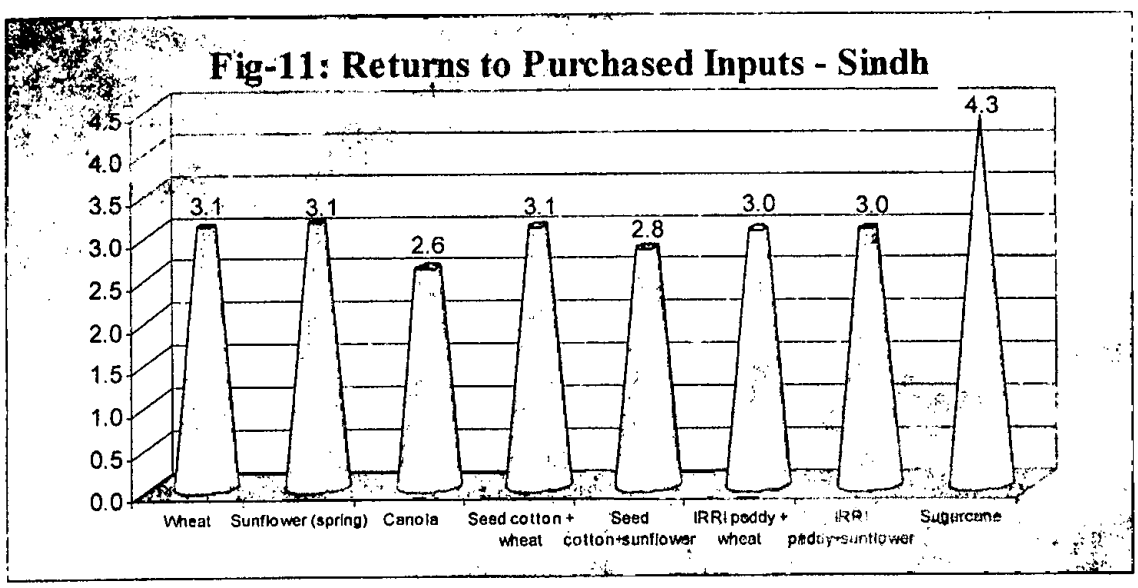


basmati + wheat and IRRI + wheat rotations in case of gross returns to crop day have a significant edge over sugarcane. Amongst the combinations, economic position of basmati + wheat has also given better returns over the combinations of cotton + wheat, basmati + sunflower, cotton + sunflower and IRRI + wheat in most of economic criteria adopted in the current analysis. In case of gross returns to irrigation water, the cotton + wheat combination out-performs all other combinations. While in case of gross returns to purchased inputs, the cotton + wheat and cotton + sunflower performed better than other combinations.

Sindh

50. In Sindh, economic returns of wheat are significant than oilseed crops - sunflower and canola - during 2008-09, in respect of all economic indicators (Fig-10) except gross returns to purchased inputs cost for which the performance of sunflower was equally good as wheat (Fig-11).





51. In case of indirect competition with sugarcane, wheat combinations could not perform better than sugarcane in all economic indicators except the gross returns to irrigation water for cotton + wheat rotation. It is primarily because of lucrative prices of sugarcane received by the growers. The economic returns of IRRI + wheat rotation has

significant edge over other comparable combinations except in returns to purchased inputs, and irrigation water wherein cotton + wheat rotation has gained edge (Table-16).

12. ECONOMIC EFFICIENCY OF RESOURCE USE IN WHEAT PRODUCTION

52. The economic efficiency of resource use in wheat production in Pakistan has been evaluated at three economic indicators viz. Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost Coefficient (DRC). As Pakistan has generally been importer of wheat, analysis has been carried out under importing scenario. The estimation of these indicators is mainly based on the cost of production data as used in APCom/API Price Policy Papers for wheat crop. To ascertain the impact of overtime changes in input-output prices, the analysis has been carried out for the 2006-07 to 2008-09 crops. Moreover, to capture regional variations in the resource use efficiency, NPCs, and DRCs have been calculated for Punjab and Sindh. The coefficients are summarized in Table-17 whereas absolute values of gross revenues, traded costs, domestic factors' cost and resource transfers estimated at private and social prices are given in Annex-XIII.

12.1 Nominal Protection Coefficient (NPC)

53. Nominal Protection Coefficient (NPC) is a measure of impact of output prices irrespective of interventions in the input market. It is obtained by dividing domestic price by social price. If NPC is greater than one, it indicates that domestic producers are getting more than the economic price for their produce. In this situation, price structure induces the producer for producing more. Contrarily when the NPC coefficient is less than one, it implies that domestic producers are getting less than the economic price and thus taxed and ultimately a disincentive for increasing production of the concerned commodity.

12.2 Effective Protection Coefficient (EPC)

54. Unlike the NPC, Effective Protection Coefficient measures protection / taxation of a given commodity including distortions both in input and output markets. It is calculated by dividing difference between the revenue and tradable inputs costs in private prices to that in social prices. Thus it is an indicator of the net effect of all policies to induce or discourage production of a commodity. EPC greater than one means that private profit is higher than that would be without any policy interventions in the input/output markets. Contrarily EPC less than one implies reduction in private profit due to changes in prices of tradable inputs and outputs. EPC greater than one promotes domestic production of a commodity and less than one hinders it.

12.3 Domestic Resource Cost (DRC)

55. Domestic resources have multiple uses and thus imply justification for their use in a particular enterprise. A Common measure of their effectiveness is Domestic Resource Cost Coefficient. It is a ratio of cost of non-tradable domestic resources to the value added in the production of a commodity estimated at social prices. The numerator in this calculation is the opportunity cost of non-tradable factors used in the domestic production while the denominator is the value added at social prices.

56. DRC Coefficient greater than one indicates a comparative disadvantage in domestic production as the cost of local production is greater than the cost of import. Unlike this if DRC is smaller than one, it means that domestic production of the concerned commodity is beneficial than its import. It may, however, be noted that DRC is influenced by changes in opportunity cost of non-tradable inputs as well as social value of output.

57. On the basis of cost of production of wheat cultivation on average category of farms and import price of wheat, NPC, EPC and DRCs have been estimated and produced in Table-17. Data on private and social profitability for 2005-06 to 2008-09 are presented in Annex-XIII.

Table-17: Economic Efficiency Coefficients for Wheat in importing Situation

Province	NPC	EPC	DRC
Punjab			
2005-06	.80	.61	.61
2006-07	.63	.42	.41
2007-08	.45	.34	.16
2008-09	.91	.89	.38
Sindh			
2005-06	.80	.48	.47
2006-07	.63	.34	.32
2007-08	.45	.29	.13
2008-09	.91	.74	.29

58. It is evident from the Table–17 that throughout the reference period NPCs and EPCs are less than one which, indicate that no economic protection is available to wheat crop in Pakistan. Rather wheat farmers both in Punjab and Sindh are taxed and resources are shifting from wheat sector. In nominal terms this taxation ranged between 39-66 percent whereas in 2008-09 it declined to nine percent. Corresponding PCs ranged between 0.38 – 0.57 reflecting resource transfer of 43 to 62 percent from the wheat sector.

59. The domestic resource cost coefficients are also less than one – at times even very small figures. The situation reveals comparative advantage in wheat production in Pakistan. This implies domestic production beneficial than import. Therefore, it would be economical proposition for Pakistan to invest in wheat production and marketing to maintain self sufficiency in staple food and save foreign exchange.

13. PRODUCER PRICES OF WHEAT IN SELECTED COUNTRIES

60. 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 the courtesy of International Grains Council, London and Pak Missions abroad.

61. The data on the minimum guaranteed producer prices of wheat for 2006-07 to 2008-09 crops in major wheat producing countries are presented in Table-18.

62. 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: Minimum Guaranteed Producer Prices of Wheat in Selected Countries: 2006-07 to 2008-09 Crops

Country	2006-07		2007-08		2008-09		Remarks
	US $/ Tonne	Pak Rs/ 40 kgs	US $/ Tonne	Pak Rs/ 40 kgs	US $/ Tonne	Pak Rs/ 40 kgs	
Australia	176.62	430	176.62	512	-	-	AWB Ltd Estimated No.1 Pool Return for ASW
Brazil	-	-	-	-	267.95	837	Minimum price for A Class 1 Wheat Initial guaranteed payment for No.1
Canada [1)]	127.22	310	127.22	369	229.67	717	CWRS 13.5% effective August 2006.
EU	127.19	310	127.19	369	141.70	442	Basic Intervention price
India	208.26	507	224.14	650	227.51	710	Minimum support price plus Bonus
USA [2)]	101.05	246	101.05	293	101.05	315	National average loan rate
Pakistan[3)]	174.47	425	215.51	625	304.29	950	Support price

Sources:

1. International Grains Council, London, U.K.
2. Pak Missions, abroad.
3. Exchange rate during 2008-09: US$ 1=Pak Rs. 78.0495.

Notes:

1. In Canada, additional payments are also made in view of returns from market operations.
2. In USA, counter-cyclical payments are also made whenever the effective price is less than target price.

14. PARITY BETWEEN PRICES OF FERTILIZERS AND WHEAT

63. 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 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 fertilizers.

64. To study 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 worked out for the period of 2000-01 to 2008-09 and presented in Table-19.

Table-19: Parity Between Market Prices of Fertilizers and Wheat: 2000-01 to 2008-09

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 -----	
2000-01	13913	18470	6850	2.03	2.70
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

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 used in COP estimates for the respective crop year.

65. The parity ratio between market prices of fertilizer and wheat shows that the quantity of wheat needed to buy one nutrient unit of N fertilizer has fluctuated between 1.29 to 2.41 units during the period under consideration. Similarlly, the parity ratios between prices of wheat and those of phosphatic fertilizer have fluctuated from 2.70 to 5.21 units.

15. IMPACT OF INCREASE IN SUPPORT PRICE OF WHEAT ON CONSUMER PRICE INDEX (CPI) AND AVERAGE HOUSEHOLD EXPENDITURE

66. 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 via 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-XIV, while a summary of the results is provided in Table-20. The findings of the analysis are discussed as under:

15.1 Impact on CPI

67. 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 2008-09. 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 given 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 @ 124 kgs per year	
		Per person	Per household
Rs per kg	Per cent	---------- Rupees ----------	
950 (Existing price)			
960	0.059	31	209
970	0.117	62	419
980	0.176	93	628
990	0.235	124	837
1000	0.295	155	1046

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

68. It is evident from the above Table that every increase of Rs 10 per 40 kgs over the existing support price of wheat is expected to raise the CPI by 0.059 per cent, other things remaining the same. In case the support price of wheat is enhanced by Rs 50 per 40 kgs, the CPI is likely to rise by 0.295 per cent.

69. 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.

15.2 Impact on Household Expenditure

70. According to the Household Integrated Economic Survey (HIES) 2004-05 by the FBS, the average household in Pakistan consists of 6.75 members. Taking the annual per capita consumption of wheat at 124 kgs and average household size of 6.75 members, the impact of selected increases in the support price of wheat on the average household expenditure has been estimated in Annex-XIV and summarized in Table-20.

71. According to the above analysis, every increase of Rs 10 in the support price of wheat over the existing level of Rs 950 per 40 kgs in 2008-09 would increase the annual expenditure by Rs 31 per person and Rs 209 per average household, other factors remaining constant. While the monthly expenses on wheat consumption due to every increase of Rs 10 per 40 kgs in the support price of wheat would rise by Rs 2.6 per person and Rs 17.42 per household. Likewise, the increase of Rs 50 per 40 kgs over the existing support price would bring additional expenditure of Rs 155 per capita per year and Rs 1046 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.

16. MAJOR WHEAT VARIETIES AND THEIR YIELD POTENTIAL

72. Seed plays an important role in yield increases of wheat, starting with Maxi-Pak in 1966. Upto now about 40 wheat varieties have been evolved by the wheat research institutes at country level. Since 1990, about 15 high yielding wheat varieties have been developed in the Punjab while 8 HYVs of wheat released in Sindh.

73. HYVs of wheat released by Research Institutes of the Punjab for commercial cultivation in specified field 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.	Pasban	1990	1st Nov – 30 Nov	6500	Saline soil
2.	Inqlab-91	1991	1st Nov – 10 Dec	7200	General cultivable
3.	Kohistan-97	1997	20 Oct – 15 Nov	6100	Barani area
4.	Durum-97	1998	1st Nov – 30 Nov	6100	General cultivable
5.	Uqab-2000	1999	1st Nov – 10 Dec	6900	General cultivable
6.	Bakhar-02	2002	1st Nov – 10 Dec	7200	Irrigated Thal area & Central Punjab
7.	GA 2002 (Barani)	2002	1st Nov – 10 Dec	5800	Barani area
8.	Uqab 2002	2002	1st Nov – 25 Nov	6800	Central Punjab
9.	Seher-06	2006	1st Nov – 30 Nov	7200	General cultivable
10.	Shafaq-06	2006	1st Nov – 10 Dec	5800	Southern Punjab
11.	Fareed-06	2006	1st Nov – 10 Dec	6200	General cultivable

Source: Wheat Research Institute, Faisalabad.

74. Eleven HYVs of wheat recommended for commercial cultivation with suitability in saline soil, barani area, Southern Punjab, Thal area, Central Punjab and for general cultivable. The yield potential of 11 varieties ranged between 5800 to 7200 kgs per hectare. The highest yield potential of Inqlab-91, Bakhar-02 and Seher-06 varieties is estimated at 7200 kgs per hectare followed by Uqab-2000, Uqab 2002, Pasban, Fareed-06, Kohistran-97 and Durum-97 indicating yield potential at 6900, 6800, 6500, 6200 and 6100 kgs per hectare, respectively. If these varieties are adopted for vast cultivation in specified field area with their production technology and timely supply of inputs and application, yield per hectare at country level would definitely increase over the national average yield of 2.6 tonnes per hectare.

75. High yielding wheat varieties evolved by Research Institutes in Sindh alongwith the detail of agronomic practices, quality characteristics, yield potential and average yield at farmers' field are presented in Table-22.

Table-22: Commercial Wheat Varieties and Their Yield Potential with Other Required Characteristics in Sindh

S.No.	Variety	Seed rate Kg/acre	Sowing time	Duration	Maturity Days	Yield potential ------Mds/acre----	Average yield ------Mds/acre----	Chapatti quality	Gluten ---- Per cent ----	Protein ---- Per cent ----
1.	**T.J-83**	60	21st Nov. to 15th Dec (South Sindh)	Short	120	55	37	Good	10.5	12.40
2.	**Mehran-89**	50	1st Nov. to 30th Nov. (North Sindh)	Normal	145	60	50	Good	10.60	15.48
3.	**Anmol-91**	60	21st Nov. to 15th Dec (South Sindh) 1st Dec. to 21st Dec (North Sindh)	Short	120	50	40	Good	10.56	12.30
4.	**Abadgar-93**	50	1st to 20th Nov (South Sindh) 7th to 30th Nov. (North Sindh)	Normal	140	65	50	Good	10.58	15.50
5.	**Moomal-2002**	55	1st to 20th Nov (South Sindh) 7th to 30th Nov. (North Sindh)	Medium	136	80	65	Good	10.60	15.50
6.	**SKD-1**	60	21st Nov. to 15Dec (South Sindh) 1st Dec to 21st Dec (North Sindh)	Short	118	75	53	Good	9.60	13.3
7.	**Imdad-2005**	50	1st Nov to 20th Dec (South-overall Sindh)st	Medium	130	80	55	Good	10.50	12.7
8.	**TD-I**	60	Ist Nov to 15th Dec.(Southern Sindh) 7th Nov to 21st Dec (Northern Sindh)	Short	118	90	54	Good	-	14.0

Source: Wheat Research Institute, Sakrand, Sindh.

76. The yield potential of 8 varieties ranged between 50 to 90 maunds per acre, the highest yield potential of TD-I variety was 90 maunds per acre. The average yield of these varieties ranged between 37 to 65 maund per acre. The average yield of Moomal-02 variety was recorded at 65 maunds per acre which is the highest yield among the other

varieties. The quality characteristics like making chappati, gluten and protein per cent of these varieties were recorded as good and upto the quality standards among the varieties of other provinces.

17. WHEAT YIELD AMONG COMPETING COUNTRIES

77. Global wheat during 2007 occupied an area of around 214 million hectares with a total production of 605.99 million tonnes. The world top 8 producing countries contribute 65 per cent of total area and 64 per cent of total production as narrated in Table-23.

Table-23: Major Wheat Producing Countries in the World: Area Under Wheat 2007 Crop

S.No.	Country	Area in million hectares	Per cent share in world area
1.	India	28.04	13.09
2.	China	23.72	11.07
3.	Russian Federation	23.50	10.97
4.	United States of America	20.64	9.64
5.	Kazakhstan	12.68	5.92
6.	Australia	12.35	5.76
7.	Canada	8.64	4.03
8.	**Pakistan**	**8.58**	**4.00**
	Total	**138.14**	**64.49**
	Total World Area	**214.21**	**100.00**

Source: FAO.

78. In terms of wheat area India is on the top with 28.04 million hectares followed by China with 23.72 million hectares and Russian Federation with 23.50 million hectares. Pakistan lies at 8th number in this regard.

79. In terms of wheat production, China is on the top with 109.3 million tonnes followed by India with 75.8 million tonnes and USA with 55.82 million tonnes. However, Pakistan retains 6th position in wheat production of the world as under:

Table-24: Major Wheat Producing Countries in the World: Production Under Wheat 2007 Crop

S.No.	Country	Production in million tonnes	Per cent share in world production
1.	China	109.30	18.04
2.	India	75.80	12.51
3.	United States of America	55.82	9.21
4.	Russian Federation	49.39	8.15
5.	France	32.77	5.41
6.	**Pakistan**	23.29	3.84
7.	Germany	20.82	3.44
8.	Canada	20.05	3.31
	Total	**387.26**	**63.90**
	Total World Production	**605.99**	**100.00**

Source: FAO.

80. In terms of yield per hectare, New Zealand lies at the top with 8497 kgs per hectare followed by Ireland with 8463 and Belgium with 7418 kgs per hectare. It is an alarming situation that Pakistan ranks at 49th in terms of yield at 2716 kgs per hectare while India lies at 51st position with 2704 kgs per hectare. However, the world average yield of wheat is 2868 kgs per hectare (Annex-XV).

18. ISSUE PRICE OF WHEAT AND SUBSIDY

81. It was policy of the Government to fix the uniform issue price of wheat supplied to flour mills from its stocks. This uniform price did not cover the full costs incurred on storage, marketing and unforeseen losses, shortage etc. Resultantly, the government had to bear huge amount of losses in the shape of subsidy on supply of wheat during the year. Simultaneously, this system discouraged private sector to invest on development of marketing and storage facilities for wheat. To overcome the situation, the ECC of the Cabinet fixed the cascading issue price 2001-02 to 2004-05.

82. From 2005-06, Government fixed the indicative issue price at uniform level instead of cascading issue prices. For 2008-09, indicative issue price of Rs 750 per 40 kgs was fixed by the Cabinet, Rs 125 per 40 kgs higher than the corresponding support price of Rs 625 per 40 kgs. The government has released about 6 million tonnes of wheat to flour mills during May 2008 to April 2009 as under:

Table-25: Release of Wheat to Flour Mills during 2008-09

Million tonnes

Provinces/Agencies	2008-09
Punjab	2.738
Sindh	1.059
NWFP	0.876
Balochistan	0.284
Others (AJK, NAs, Defence, Utility Stores Corporation)*	1.799
Total	5.756

*From PASSCO + TCP.

Source: MINFAL, Islamabad.

83. During 2008-09, about 2.7 million tonnes of wheat were imported through TCP to meet the domestic requirements. The cost of imported wheat is reported at Rs 37,480 per tonne which is about double the issue price of wheat at Rs 18,750 per tonne. Thus, the Government subsidized the wheat consumers by about Rs 48.5 billion as under:

1.	Wheat imported during 2008-09	2687.8 (000 tonnes)
2.	Cost of imported wheat (import price = Rs 26400 + incidentals @ Rs 11080.35 per tonne)	Rs 37480.35 per tonne
3.	Issue price of wheat	Rs 18750 per tonne
4.	Estimated subsidy to consumer	Rs 18730.35 per tonne)
	Total subsidy	Rs 50.34 (Billion)

84. If half of consumer subsidy would have provided to the growers on fertilizer, electricity/diesel and certified seed, it would have certainly helped in productivity enhancement of wheat and saved valuable foreign exchange.

19. WHEAT PROCUREMENT TARGETS AND ACHIEVEMENTS

85. The Federal Government fixed the wheat procurement target at 9.05 million tonnes for 2008-09 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: 2008-09 Wheat Crop

Province/agency	Target	Achievement	Achievement as per cent of target
	-------- Million tonnes ------		Per cent
Pakistan	**9.05**	**9.190**	**102**
- Provincial Food Departments	7.55	7.08	94
- PASSCO	1.50	2.12	141
Punjab	**7.41**	**7.81**	**105**
- Food Department	6.00	5.78	96
- PASSCO	1.41	2.03	144
Sindh	**1.24**	**1.26**	**102**
- Food Department	1.20	1.21	101
- PASSCO	0.04	0.05	125
NWFP	**0.30**	**0.08**	**26.7**
- Food Department	0.30	0.08	26.7
- PASSCO	-	-	-
Balochistan	**0.10**	**0.05**	**50**
- Food Department	0.05	0.00	0.00
- PASSCO	0.05	0.05	100

Source: MINFA.

86. The numeric of the Table-27 reveal that procurement targets were partially achieved by the Food Departments and PASSCO. However, PSSCO was more efficient to procure more than its targets but it failed to procure from NWFP. The Provincial food departments achieved 96 percent of the target in Punjab and 27 percent in NWFP. In Sindh targets were achieved by 101 percent but in Balochistan food departments could not procure at all.

Table-27: Production, Procurement, Market and Support Prices of Wheat: 2004-05 to 2008-09

Crop year (May-April	Production	Procure-ment	Procurement as percent of production	Support price	Average market price (May-July)
	------Million tonnes------		Per cent	----Rupees per 40 kgs----	
2004-05	21.61	3.93	18.19	400	417
2005-06	21.28	3.88	18.23	415	411
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

Sources:

1. For production and procurement: MINFA, Islamabad
2. For market prices:
   - ALMA, Karachi.
   - Provincial Directorate of Agriculture (E&M), Punjab, Lahore.

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Annex-I

AREA,YIELD AND PRODUCTION OF WHEAT : 1998-99 TO 2008-09

Year	Punjab	Sindh	NWFP	Balochistan	Pakistan
AREA		---------- Thousand hectares ----------			
1998-99	5934.6	1123.7	857.6	314.0	8229.9
1999-00	6180.3	1144.2	806.5	332.0	8463.0
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
YIELD		---------- kgs per hectare ----------			
1998-99	2226	2381	1425	2384	2170
1999-00	2667	2623	1324	1595	2491
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
PRODUCTION		---------- Thousand tonnes ----------			
1998-99	13212.0	2675.1	1221.8	748.7	17857.6
1999-00	16480.0	3001.3	1067.8	529.5	21078.6
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

Sources:
1. For 1998-99 to 2007-08: Agricultural Statistics of Pakistan, 2007-08 MINFA, Islamabad.
2. For 2008-09: Final estimates released by MINFA, Islamabad.

Annex-IB

AREA,YIELD AND PRODUCTION OF WHEAT : 1998-99 TO 2008-09

Year	Punjab	Sindh	NWFP	Balochistan	Pakistan
AREA		---------- Thousand acres ----------			
1998-99	14665.0	2776.8	2119.2	775.9	20336.9
1999-00	15272.1	2827.4	1992.9	820.4	20912.9
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
YIELD		---------- kgs per acre ----------			
1998-99	901	963	577	965	878
1999-00	1079	1061	536	645	1008
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
PRODUCTION		---------- Thousand tonnes ----------			
1998-99	13212.0	2675.1	1221.8	748.7	17857.6
1999-00	16480.0	3001.3	1067.8	529.5	21078.6
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

Sources:
1. For 1998-99 to 2007-08: Agricultural Statistics of Pakistan, 2007-08 MINFA, Islamabad.
2. For 2008-09: Final estimates released by MINFA, Islamabad.

ANNEX-II

AREA, YIELD AND PRODUCTION OF WHEAT BY PROVINCE AND BY IRRIGATION: 2007-08 AND 2008-09

Country/ Province	Area			Yield per hectare			Production		
	2007-08	2008-09	Change Per cent	2007-08	2008-09	Change Per cent	2007-08	2008-09	Change Per cent
	000 hectares			Kgs			000 tonnes		
				IRRIGATED					
PAKISTAN	7370.30	7821.00	6.12	2664	2865	7.56	19634.20	22410.60	14.14
PUNJAB	5742.40	6144.20	7.00	2579	2833	9.83	14812.40	17406.10	17.51
SINDH	951.30	990.50	4.12	3556	3542	-0.39	3382.50	3508.10	3.71
NWFP	322.40	331.40	2.79	1968	2081	5.78	634.40	689.80	8.73
BALOCHISTAN	354.20	354.90	0.20	2272	2273	0.01	804.90	806.60	0.21
				UNIRRIGATED					
PAKISTAN	1179.50	1225.00	3.86	1123	1324	17.93	1324.60	1622.30	22.47
PUNJAB	659.60	692	4.91	1205	1465	21.62	794.60	1013.9	27.60
SINDH	38.60	40.9	5.96	749	785	4.83	28.90	32.1	11.07
NWFP	425.00	438.1	3.08	1029	1175	14.15	437.40	514.7	17.67
BALOCHISTAN	56.30	54	-4.09	1131	1141	0.82	63.70	61.6	-3.30
				TOTAL					
PAKISTAN	8549.80	9046.00	5.80	2451	2657	8.38	20958.80	24032.90	14.67
PUNJAB	6402.00	6836.20	6.78	2438	2694	10.53	15607.00	18420.00	18.02
SINDH	989.90	1031.40	4.19	3446	3432	-0.40	3411.40	3540.20	3.78
NWFP	747.40	769.50	2.96	1434	1565	9.15	1071.80	1204.50	12.38
BALOCHISTAN	410.50	408.90	-0.39	2116	2123	0.35	868.60	868.20	-0.05

Sources:
1. For 2007-08: Agricultural Statistics of Pakistan, 2007-08 MINFAL, Islamabad.
2. For 2008-09: Final estimates of Punjab, Sindh, NWFP and Balochistan provided by respective Provincial Agriculture Departments.

DISTRICT- WISE AREA, YIELD AND PRODUCTION OF WHEAT
AVERAGE OF 2006-07 TO 2008-09

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						**NWFP**				
1	Jhang	383.09	1083.02	4.76	282.70	1	Mardan	46.98	98.11	0.43	2088.23
2	Bahawalnagar	326.44	918.46	4.04	281.35	2	Swat	61.85	89.68	0.39	1449.88
3	Sheikhupura	330.89	910.53	4.00	275.17	3	Swabi	45.58	84.28	0.37	1849.12
4	R.Y.Khan	308.63	836.68	3.68	271.09	4	Peshawar	34.77	79.36	0.35	2282.61
5	Bahawalpur	283.82	803.85	3.53	283.22	5	Mansehra	35.26	78.66	0.35	2230.68
6	Muzaffergarh	305.53	795.80	3.50	260.47	6	Charsadda	29.13	72.25	0.32	2479.77
7	Faisalabad	272.89	786.85	3.46	288.34	7	D.I.Khan	43.59	69.17	0.30	1586.69
8	Vehari	247.66	709.82	3.12	286.61	8	Bunir	49.14	65.58	0.29	1334.71
9	Okara	209.49	706.03	3.10	337.03	9	Haripur	37.29	60.03	0.26	1609.91
10	Gujranwala	228.91	704.63	3.10	307.82	10	Nowshera	23.36	52.36	0.23	2241.60
11	Khanewal	221.63	662.38	2.91	298.87	11	Malakand	28.94	35.23	0.15	1217.52
12	Sargodha	212.18	536.71	2.36	252.95	12	Bajour AG.	35.10	32.74	0.14	932.57
13	Kasur	181.02	524.87	2.31	289.95	13	Kohat	32.97	30.39	0.13	921.77
14	Multan	192.76	523.47	2.30	271.56	14	Abbottabad	14.71	23.12	0.10	1571.96
15	Sialkot	204.63	520.30	2.29	254.26	15	Mohmand AG.	17.60	23.07	0.10	1310.85
16	Lodhran	171.18	502.92	2.21	293.79	16	Kurram AG	12.06	22.70	0.10	1881.63
17	Layyah	194.11	477.07	2.10	245.77	17	Dir Lower	25.75	22.33	0.10	867.13
18	Pakpattan	143.93	476.76	2.09	331.25	18	Shanlapar	22.53	20.45	0.09	907.84
19	T.T.Singh	159.31	470.20	2.07	295.15	19	Bannu	11.06	20.35	0.09	1840.40
20	Sahiwal	147.43	434.36	1.91	294.61	20	Khyber AG.	13.04	20.02	0.09	1534.75
21	Hafizabad	150.00	427.43	1.88	284.96	21	Lakki Marwat	23.13	19.49	0.09	842.90
22	D.G.Khan	166.05	417.25	1.83	251.27	22	Dir Uper	20.38	17.49	0.08	858.17
23	Rajanpur	147.71	381.94	1.68	258.57	23	Chitral	7.92	16.97	0.07	2142.21
24	Bhakkar	160.79	363.56	1.60	226.11	24	Karak	23.31	13.78	0.06	590.87
25	M.B.Din	126.26	332.90	1.46	263.66	25	Hangu	13.02	12.01	0.05	922.23
26	Mianwali	171.58	332.43	1.46	193.74	26	Battagram	6.18	9.86	0.04	1595.34
27	Narowal	151.08	316.33	1.39	209.38	27	N.Waziristan	7.03	9.04	0.04	1286.11
28	Gujrat	148.66	270.91	1.19	182.24	28	S.Waziristan	7.22	8.95	0.04	1239.22
29	Attock	158.77	265.29	1.17	167.09	29	Tank	5.94	8.87	0.04	1494.36
30	Rawalpindi	113.04	204.09	0.90	180.55	30	F.R.Peshawar	4.93	7.11	0.03	1443.61
31	Chakwal	129.09	174.58	0.77	135.24	31	Orakzai AG	5.55	6.52	0.03	1175.76
32	Khushab	84.98	151.36	0.66	178.11	32	F.R.Bannu	4.25	6.10	0.03	1435.19
33	Lahore	59.49	150.18	0.66	252.47	33	F.R.D.I.Khan	4.21	4.92	0.02	1168.98
34	Jhelum	50.99	97.95	0.43	192.08	34	F.R.Kohat	1.91	2.39	0.01	1253.67
35	Islamabad	12.95	22.46	0.10	173.41	35	Kohistan	1.36	2.21	0.01	1629.48
	Sub Total	**6557.00**	**17293.33**	**75.97**	**2637.38**		**Sub Total**	**757.04**	**1145.59**	**5.03**	**1513.25**
	SINDH						**BOLUCHISTAN**				
1	Sanghar	120.62	449.43	1.97	3726.00	1	Nasirabad	84.46	214.52	0.94	2540.00
2	Hyderabad	119.86	420.32	1.85	3506.76	2	Jaffarabad	53.34	135.25	0.59	2535.55
3	Khairpur	103.02	386.11	1.70	3747.88	3	Jhal Magsi	46.89	111.72	0.49	2382.68
4	N.Feroze	101.14	381.27	1.67	3769.68	4	Khuzdar	42.80	79.90	0.35	1866.94
5	Mirpurkhas	100.72	340.21	1.49	3377.65	5	Barkhan	23.75	44.70	0.20	1882.14
6	Ghotki	90.73	337.42	1.48	3718.87	6	Loralai	15.14	31.30	0.14	2067.52
7	Nawabshah	76.63	276.24	1.21	3604.99	7	Bolan	12.22	27.81	0.12	2275.45
8	Larkana	70.64	210.04	0.92	2973.49	8	Sibi	14.51	27.68	0.12	1907.48
9	Sukkur	44.32	161.52	0.71	3644.08	9	Killa Saifullah	14.37	27.59	0.12	1920.04
10	Dadu	49.89	139.14	0.61	2788.95	10	Kharan	15.92	26.05	0.11	1636.07
11	Jacobabad	47.01	134.86	0.59	2868.63	11	Chaghi	11.72	20.13	0.09	1716.98
12	Shikarpur	31.21	91.77	0.40	2940.68	12	Awaran	12.41	19.08	0.08	1536.64
13	Badin	30.48	82.73	0.36	2714.64	13	Kalat	9.50	16.23	0.07	1709.67
14	Thatta	12.88	36.59	0.16	2841.98	14	Mastung	9.52	16.00	0.07	1681.99
15	Tharparkar	1.47	4.43	0.02	3003.80	15	Dera Bughti	7.42	12.78	0.06	1722.30
16	Karachi	0.55	1.51	0.01	2757.28	16	Pishin	7.01	11.19	0.05	1596.19
						17	Lasbela	5.43	10.09	0.04	1856.85
						18	Kohlu	6.13	8.72	0.04	1421.81
						19	K.Abdullah	3.99	6.64	0.03	1665.13
						20	Quetta	3.10	6.29	0.03	2027.53
						21	Panjgoor	2.79	4.82	0.02	1728.35
						22	Musa Khel	3.20	4.64	0.02	1452.87
						23	Zhob	2.47	4.12	0.02	1664.98
						24	Turbat	1.25	2.19	0.01	1749.00
						25	Ziarat	0.13	0.22	0.00	1663.29
	Sub Total	**1001.17**	**3453.59**	**15.17**	**3449.56**		**Sub Total**	**409.46**	**869.64**	**3.82**	**2123.88**
							Pak Total	**8724.67**	**22762.15**	**100.00**	**2608.94**

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

Source: MINFAL, Islamabad.

ANNEX - IV

PER CAPITA AVAILABILITY(CONSUMPTION) OF WHEAT:2005-06 to 2008-09 (MAY-APRIL)

S.No	Description	Production year	2005-06	2006-07	2007-08
		Consumption year	2006-07	2007-08	2008-09
			---------- Millions----------		
1	Population as on 1st November (a)		163.91	167.02	169.86
			------ 000 tonnes-------		
2	Opening stocks as on 1st May		2109	501	135
3	Production of Pakistan		21277	23295	20959
4	Production of AJ&K and NAs (b)		257	285	236
5	Imports		136	1730	2589
6	Exports		1704	0.66	134
7	Closing stocks as on 30th April		501	135	337
8	Total availability		21574	25675	23448
9	Deduction for seed,feed and wastage @ 10 per cent of production		2153	2358	2120
10	Available for human consumption (item 8 minus item 9)		19421	23317	21329
			-------- Kgs/ annum-------		
11	Per capita availability (item 10 divided by item 1)		118	140	126
12	Average per capita availability during 2006-07 to 2008-09			128 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 1991-92.

Sources:
1. Ministry of Food, Agriculture and Livestock (MINFAL), Islamabad.
2. Population Census Organization, Islamabad.
3. Ministry of Kashmir Affairs and Northern Areas and States and Frontier Regions, Government of Pakistan, Islamabad.

Annex-V

OECD-FAO COMMODITY PRICES OUTLOOK – 2008-2017

Commodity	Unit	Average 2002/06	2007/08	2008/09	2010/11	2013/14	2017/18
Wheat	USD/t	167.8	318.6	267.0	225.9	231.2	230.6
Coarse grains	"	113.2	181.3	185.3	189.0	173.0	164.6
Rice	"	262.3	361.0	390.6	330.7	340.3	334.5
Oilseeds	"	293.4	485.8	481.9	468.3	452.4	457.2
Oilseed meal	"	219.5	365.7	348.2	328.4	302.6	307.0
Vegetable oil	"	587.5	1015.1	986.9	1026.3	1048.0	1055.1
Sugar							
Raw	"	237.1	229.3	216.0	257.6	298.0	301.7
Refined	"	291.1	289.1	268.1	317.8	371.3	379.1

ANNEX - VI

INTERNATIONAL/ EXPORT PRICES (FOB GULF OF HARD RED WINTER WHEAT) : 2004-05 TO 2009-10

Year (July - June)	Month	Fob (Gulf) price US$ per tonne
2004-05		151
2005-06		138
2006-07		177
2007-08		332
2008-09		283
2009-10		214
	July	221
	August	212
	September	200
	October	215
	November	N.A
	December	223

Source: USDA, Web.

ANNEX-VII

IMPORT PARITY PRICES OF WHEAT ON THE BASIS OF US HRW FOB(GULF) QUOTED PRICE

S. No	Item	2009-10 Jul-Dec	2008-09	2006-07 to 2008-09
		----------US $ per tonne----------		
1	Average fob(Gulf) price	214.00	283.00	280.00
2	Freight charges from Gulg port to Karachi	50.00	50.00	50.00
3	Average c&f (Karachi) price	264.00	333.00	330.00
		OR ---------- Rupees per tonne----------		
		21912	27639	27390
4	Marine insurance charges @0.23% of c & F cost	50	64	63
5	Lc opening charges @0.2% of c&f cost.	44	55	55
6	Stevedoring, clearing, handling, wharfage, weightment, inland insurance, survey & pre-shipment charges and provision for / unforseen losses	651	651	651
7	TCP commission @ 2 % of c&f cost as per ECC	438	553	548
8	Bank markup @ 12 % per annum for 30 days	216	273	270
9	**Landed cost (item 3 to 8) at Karachi**	23312	29234	28977
10	Transport cost from Karachi to Multan	2100	2100	2100
11	Expences from procurement center to Lahore	100	100	100
12	Import parity price at procurement center level	**25312**	**31234**	**30977**
13	Import parity prices of wheat	----------Rs per 40 kgs----------		
	i) If consumed at Multan	**1012**	**1249**	**1239**
	ii) If consumed at Karachi	**932**	**1169**	**1159**

(a) Exchange rate of one US $ = 83.00 Pak Rupees.

i) For fob (Pacific) prices: Annex - VI.

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

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

Annex- VIII

IMPORT PARITY PRICES OF WHEAT ON THE BASIS OF ACUTAL AVERAGE CIF (KARACHI)PRICE

S. No	Item	2008-09	2006-09
		--------US $ per tonne-----	
1	Average cif(Karachif) price	330.00	390.00
		OR -------- Rupees per tonne-----	
		27390	32370
4	Marine insurance charges @0.23% of c & F cost	63	74
5	Lc opening charges @0.2% of c&f cost.	55	65
6	Stevedoring, clearing, handling, wharfage, weightment, inland insurance, survey & pre-shipment charges and provision for / unforseen losses	651	651
7	TCP commission @ 2 % of c&f cost as per ECC	548	647
8	Bank markup @ 12 % per annum for 30 days	270	319
9	**Landed cost (item 3 to 8) at Karachi**	28977	34127
10	Transport cost from Karachi to Multan	2100	2100
11	Expences from procurement center to Lahore	100	100
12	Import parity price at procurement center level	**30977**	**36127**
13	Import parity prices of wheat	----------Rs per 40 kgs----------	
	i) If consumed at Multan	**1239**	**1445**
	ii) If consumed at Karachi	**1159**	**1365**

(a) Exchange rate of one US $ = 83.00 Pak Rupees.

i) For CIF (karachi) prices: TCP, Karachi.

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

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

Annex- IX

EXPORT PARITY PRICES OF WHEAT ON THE BASIS OF US HRW FOB(GULF)QUOTED PRICE

S.No	Item	2009-10 Jul-Dec	2008-09	2006-07 to 2008-09
			US $ Per Tonne	
1.	Fob(Gulf) price assuming fob Karachi price	[illegible].00	283.00	280.00
		OR	**Rs per tonne (a)**	
		17762	23489	23240
2.	Incidental charges: (items i to xii)	2826	3040	3030
	i). Expenses from procurement centre to Multan	100	100	100
	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 pric	89	117	116
	vii) Export development surcharges @0.25% of fob pric	44	59	58
	viii). Insurance charges at port	7	7	7
	ix). Bank commission & charges	15	15	15
	x). Mark up @ 12% per annum for one month	175	232	229
	xi). Miscellaneous charges @ 2% of fob price	355	470	465
3.	Export parity price of FAQ wheat at procurement centre level(item 1- items 2)	14936	20449	20210
			---------Rs per 40kgs----------	
4.	Export parity price at procurement center level	597	818	808

Notes: (a) Buying exchange rate of one US $ = 83 Pak Rupees.

Sources:

i) For fob (Pacific) prices: Annex - VI.

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

iii) For expenses from procurement centre and transport charges: PASSCO, Lahore.

ANNEX– X

AVERAGE FARMERS' COST OF PRODUCTION ESTIMATES OF WHEAT IN THE PUNJAB: 2008-09 AND 2009-10 CROPS

S. No.	Operations / Inputs	Average No. of oprs/units/ acre	2008-09 crop		2009-10 crop		Change in 2009-10 over 2008-09
			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	730.00	436.54	800.00	478.40	41.86
	1.2 Ploughing	2.137	300.00	641.10	400.00	854.80	213.70
	1.3 Ploughing & planking	0.714	365.00	260.61	500.00	357.00	96.39
	1.4 Planking	0.649	150.00	97.35	200.00	129.80	32.45
	1.5 Levelling (hrs)	0.498	365.00	181.77	500.00	249.00	67.23
2	Seed and sowing operations:						
	2.1 Seed used (kgs)	52.577	30.00	1577.31	40.00	2103.08	525.77
	2.2. Tractor drilling	0.166	300.00	49.80	400.00	66.40	16.60
	2.3 Labour for seed broadcasting (m.hrs)	0.858	25.00	21.45	25.00	21.45	0.00
	2.4 Ploughing in case of broadcasting	1.390	300.00	417.00	400.00	556.00	139.00
	2.5 Planking in case of broadcasting	0.321	150.00	48.15	200.00	64.20	16.05
3	Bund making:						
	3.1 Manual (m.hrs)	1.033	25.00	25.83	31.00	32.02	6.20
	3.2 tractor (hrs)	0.203	365.00	74.10	500.00	101.50	27.41
4	Weeding	0.787	425.00	334.48	450.00	354.15	19.68
5	Irrigation: (Nos)						
	5.1 Canal	0.507	-	50.00	-	50.00	0.00
	5.2 Private tubewell	3.002	550.00	1651.10	550.00	1651.10	0.00
	5.3 Mixed	0.230	365.00	83.95	365.00	83.95	0.00
6	Labour for irrigation and water course cleaning (m.days)						
	6.1 For irrigation	1.225	200.00	245.00	250.00	306.25	61.25
	6.2 For water course cleaning	0.329	200.00	65.80	250.00	82.25	16.45
7	Farm Yard Manure (50 %)	-	-	120.00	-	150.00	30.00
8	Fertilizers: (bags)						
	8.1 DAP	1.090	3067.00	3343.03	1949.00	2124.41	-1218.62
	8.2 Urea	1.747	695.00	1214.17	758.00	1324.23	110.06
	8.3 SSP	0.132	843.00	111.28	690.00	91.08	-20.20
	8.4 NP	0.079	2009.00	158.71	1266.00	100.01	-58.70
	8.5 CAN	0.039	673.00	26.25	706.00	27.53	1.29
	8.6 SOP	0.024	2264.00	54.34	2193.00	52.63	-1.70
	8.7 Gypsum	0.024	70.00	1.68	100.00	2.40	0.72
	8.8 Transport and application	3.135	25.00	78.38	28.00	87.78	9.41
9	Mark up on investment on item 1to 8 excluding item 5(1) @12 % per annum for 6 months	-	-	679.15	-	687.09	7.94
10	Harvesting charges (40 kgs/acre)	2.997	637.00	1909.09	897.00	2688.31	779.22
11	Threshing:						
	11.1 Threshing @ 3.23 kgs/40 kgs (40 kgs)	2.237	637.00	1424.97	897.00	2006.59	581.62
	11.2 M.days	1.810	200.00	362.00	250.00	452.50	90.50
12	Land rent for 6 months	-	8000.00	4000.00	10000.00	5000.00	1000.00
13	Average weighted land tax @ Rs 132/acre/annun for 8 months	-	132.00	66.00	132.00	66.00	0.00
14	Management charges for 6 months	-	-	425.00	-	487.00	62.00
15	Total cost per acre			20236.35		22888.91	2653.56
16	Value of wheat bhoosa	-	-	2000.00	-	2200.00	200.00
17	Net cultivation cost (item 15-16)			18235.35		20688.91	2453.56
18	Yield per acre (kgs)			1108.00		1108.00	
19	Cost of production at farm level: (Rs/40 kgs)			658.32		746.89	88.58
20	Marketing cost (Rs/40 kgs)	-	-	18.00	-	20.00	2.00
21	Cost of production at market/procurement centre (Rs/40 kgs)						
	21.1 Including land rent			676.32		766.89	90.58
	21.2 Excluding land rent	-	-	531.91	-	586.39	54.48

ANNEX – XI

AVERAGE FARMERS' COST OF PRODUCTION ESTIMATES OF WHEAT IN SINDH: 2008-09 AND 2009-10 CROPS

S. No.	Operations / Inputs	Average No. of oprs/units/ acre	2008-09 crop		2009-10 crop		Change in 2009-10 over 2008-09
			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	785.00	273.97	1000.00	349.00	75.04
	1.2 Ploughing	3.034	400.00	1213.60	500.00	1517.00	303.40
	1.3 Ploughing & planking	0.070	470.00	32.90	600.00	42.00	9.10
	1.4 Planking	0.081	200.00	16.20	250.00	20.25	4.05
	1.5 Levelling (hrs)	1.010	470.00	474.70	600.00	606.00	131.30
2	Seed and sowing operations:						
	2.1 Seed used (kgs)	55.817	30.00	1674.51	40.00	2232.68	558.17
	2.2. Tractor drilling	0.037	400.00	14.80	500.00	18.50	3.70
	2.3 Labour for seed broadcasting (m.hrs)	1.127	25.00	28.18	31.00	34.94	6.76
	2.4 Ploughing in case of broadcasting	0.275	400.00	110.00	500.00	137.50	27.50
	2.5 Planking in case of broadcasting	0.162	200.00	32.40	250.00	40.50	8.10
3	Bund making:						
	3.1 Manual (m.hrs)	1.611	25.00	40.28	31.00	49.94	9.67
	3.2 tractor (hrs)	0.091	470.00	42.77	600.00	54.60	11.83
4	Interculture/weeding						
	4.1 Interculture	0.037	400.00	14.80	500.00	18.50	3.70
	4.2 Weedicides	0.529	425.00	224.83	450.00	238.05	13.23
5	Irrigation: * (Nos)						
	5.1 Canal	1.763	-	53.30	-	53.30	0.00
	5.2 Lift pump	0.551	275.00	151.53	275.00	151.53	0.00
	5.3 Private tubewell	1.046	415.00	434.09	415.00	434.09	0.00
	5.4 Mixed	0.449	300.00	134.70	300.00	134.70	0.00
6	Labour for irrigation and water course cleaning (m.days)						
	6.1 For irrigation	1.022	200.00	204.40	250.00	255.50	51.10
	6.2 For water course cleaning	0.349	200.00	69.80	250.00	87.25	17.45
7	Farm Yard Manure (50 %)	-	-	85.00	-	120.00	35.00
8	Fertilizers: (bags)						
	8.1 DAP	1.013	3104.00	3144.35	1900.00	1924.70	-1219.65
	8.2 Urea	1.950	697.00	1359.15	821.00	1600.95	241.80
	8.3 NP	0.186	1930.00	358.98	1260.00	234.36	-124.62
	8.4 CAN	0.020	650.00	13.00	700.00	14.00	1.00
	8.5 Transport and application	3.169	25.00	79.23	28.00	88.73	9.51
9	Mark up on investment on item 1to 8 excluding item 5(1) @12 % per annum for 6 months	-	-	613.69	-	624.32	10.63
10	Harvesting charges (40 kgs/acre)	2.876	596.00	1714.10	941.00	2706.32	992.22
11	Threshing:						
	11.1 Threshing @ 2.95 kgs/40 kgs (40 kgs)	1.784	596.00	1063.26	941.00	1678.74	615.48
	11.2 M.days	1.415	200.00	283.00	250.00	353.75	70.75
12	Land rent for 6 months	-	6000.00	3000.00	8000.00	4000.00	1000.00
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	-	-	425.00	-	487.00	62.00
16	Total cost per acre	-	-	17504.49	-	20432.69	2928.20
17	Value of wheat bhoosa	-	-	2000.00	-	2000.00	0.00
18	Net cultivation cost (item 16-17)	-	-	15504.49	-	18432.69	2928.20
19	Yield per acre (kgs)	-	-	967.81	-	967.81	0.00
20	Cost of production at farm level: (Rs/40 kgs)			640.81		761.83	121.02
21	Marketing cost (Rs/40 kgs)	-	-	18.00	-	20.00	2.00
22	Cost of production at market/procurement centre (Rs/40 kgs)						
	22.1 Including land rent	-	-	658.81	-	781.83	123.02
	22.2 Excluding land rent	-	-	534.82	-	616.51	81.69

Notes for Annex-X and XI

1. The input-output parameters for estimating cost of production of wheat 2009-10 Crop have been adopted from the Wheat Policy Analysis Report for wheat 2008-09 Crop, API's Series No 229.

2. The custom hiring rates of field operations, inputs prices, wage rate and land rentals have been adjusted 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 14th July 2009 at Islamabad and other sources as:

3. The sale prices of wheat seed for 2009-10 crop has not yet fixed by the PSC, Lahore as reported in the Standing Committee meeting on wheat. Therefore, prices of wheat seed have been revised on the basis of current wholesale market prices of wheat during post-harvest season.

4. The prices of chemical fertilizers have been revised in the light of the fertilizers prices published by the Federal Bureau of Statistics, Islamabad for the week ending on 6th August 2009.

5. The value of wheat bhoosa has been increased in the Punjab and Sindh based on the results of mini field survey conducted by API during July 2009 in the Punjab and Sindh provinces. These prices have been adjusted in the COP accordingly.

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 8115 per month for a Field Assistant at the 10th stages in BPS-6 as per revised scale of July 2008 including 20 % dearness allowance announced in 2009-10 budget.

7. Make-up rate of 12 per cent is the average weighted mark-up on agriculture loans disbursed by different public and private banks.

8. The values of kind payments for harvesting and threshing of wheat have revised in the light of current market prices averaged at Rs 917 per 40 kgs in the Punjab and Rs 961 in Sindh. Marketing charges of Rs 20 per 40 Kgs have been deducted from the market prices to bring these costs at the farm level.

9. In both provinces, Punjab and Sindh, land rent is the major item of the cost of cultivation. There is no precise measure for updating the land rentals. However, keeping in view the observations obtained during field survey and discussion made in the meeting of the API's Standing Committee, land rentals have been adjusted accordingly.

ANNEX-XII

ECONOMICS OF WHEAT AND COMPETING CROPS AT PRICES REALIZED BY THE GROWERS: 2008-09 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	21452	8829	26348	17519	4896	1.23	3.0	146	2196
2	Seed Cotton	240	22	22064	10277	27002	16725	4937	1.22	2.6	113	1227
3	Basmati paddy	180	58	19197	11060	27214	16154	8017	1.42	2.5	151	469
4	IRRI paddy	180	62	16728	9646	22390	12744	5662	1.34	2.3	124	361
5	Sunflower (spring)	180	22	17404	6229	19605	13376	2201	1.13	3.1	109	891
6	Canola	180	13	12701	4784	13320	8536	619	1.05	2.8	74	1025
7	Seed cotton + wheat	420	34	43516	19106	53350	34244	9834	1.23	2.8	127	1569
8	Seed cotton + sunflower	420	44	39469	16506	46607	30101	7138	1.18	2.8	111	1059
9	Basmati paddy+wheat	360	70	40649	19889	53562	33673	12914	1.32	2.7	149	765
10	Basmati paddy+sunflower	360	80	36601	17289	46819	29530	10218	1.28	2.7	130	585
11	IRRI paddy + wheat	360	74	38180	18475	48738	30263	10558	1.28	2.6	135	659
12	IRRI paddy+sunflower	360	84	34133	15875	41995	26120	7863	1.23	2.6	117	500
13	Sugarcane	394	48	34509	13387	52418	39031	17908	1.52	3.9	133	1092
	Sindh											
1	Wheat	180	12	19152	7905	24332	16428	5180	1.27	3.1	135	2028
2	Seed cotton	240	18	21185	8690	26675	17985	5490	1.26	3.1	111	1482
3	IRRI paddy	180	56	15125	7341	21733	14392	6608	1.44	3.0	121	388
4	Sunflower (spring)	180	22	17030	6399	19980	13581	2950	1.17	3.1	111	908
5	Canola	180	13	12521	4957	12820	7863	299	1.02	2.6	71	986
6	Seed cotton + wheat	420	30	40338	16594	51007	34413	10670	1.26	3.1	121	1700
7	Seed cotton+sunflower	420	40	38215	16594	46655	30061	8440	1.22	2.8	111	1166
8	IRRI paddy + wheat	360	68	34278	15246	46065	30819	11788	1.34	3.0	128	677
9	IRRI paddy+sunflower	360	78	32155	13740	41713	27973	9558	1.30	3.0	116	535
10	Sugarcane	488	71	41166	14404	62654	48250	21487	1.52	4.3	128	882

Notes for Annex – XII

1. The economic analysis presented in the above exercise is based on the input-output prices applicable for 2008-09 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, 2008-09 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 2008-09 crops. To incorporate the escalations in input prices, which occurred during the growing period of 2008-09 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 2008-09 season.

   2.2 Harvesting and threshing charges have been revised in view of post harvest market price of wheat during 2008-09.

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 2008-09 have been adopted at Rs 917 per 40 kgs for Punjab and Rs 961 for Sindh.

   4.2 The wholesale market prices of basmati paddy and IRRI paddy during the post harvest period in major producer area markets reported by the Directorate of Agriculture (E&M), Lahore have averaged at Rs 1183 and Rs 664 per 40 kgs, respectively. While, the average price of IRRI paddy in Sindh is reported at Rs 585 per 40 kgs by the Joint Director, Directorate of Agriculture Extension, Hyderabad, Sindh.

   4.3 The wholesale market prices of seed cotton during the post-harvest months of Aug - Feb 2008-09 in the main producer area markets have averaged at Rs 1557 per 40 kgs in the Punjab as reported by the Directorate of Agriculture (E&M), Lahore. In Sindh, the corresponding prices are reported by the PCCC, Karachi averaged at Rs 1525 per 40 kgs.

   4.4 The wholesale market prices of sunflower are reported by PODB to hover around Rs. 1350 per 40 kgs in Sindh and Rs. 1325 in the Punjab. The corresponding prices for canola are Rs. 1300 and 1350 per 40 kgs, respectively.

4.5 The market prices of sugarcane at mill-gate in the major cane producing areas are reported to hover around Rs 100 per 40 kgs in the Punjab and 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 7. 25 per 40 kgs in Punjab and Rs 7. 32 in Sindh for sugarcane, Rs 25 in Punjab and Rs 27 in Sindh for seed cotton, Rs 20 for rice paddy, 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 in acre inches.

ANNEX-XIII

ECONOMIC EFFICIENCY OF RESOURCE USE IN WHEAT PRODUCTION

POLICY ANALYSIS MATRIX (PAM)
UNDER IMPORTING SITUATION

Description	Revenues	Traded cost	Domestic Factors Cost	Profits
PUNJAB	--------- Rupees per acre ---------			
2005-06				
Private Prices	12219	7206	5248	-236
Social Prices	14948	6745	4991	3212
Transfers	-2729	461	258	-3447
2006-07				
Private Prices	12923	7754	5313	-145
Social Prices	19629	7408	5048	7173
Transfers	-6707	347	265	-7318
2007-08				
Private Prices	19810	8500	5469	5841
Social Prices	41531	8727	5157	27647
Transfers	-21721	-227	312	-21806
2008-09				
Private Prices	27623	10445	7728	9449
Social Prices	29282	9895	7329	12059
Transfers	-1659	550	400	-2609
SINDH				
2005-06				
Private Prices	10709	6653	4333	-188
Social Prices	14948	6245	4061	4642
Transfers	-4149	409	272	-4830
2006-07				
Private Prices	11433	7077	4404	-49
Social Prices	19629	6793	4119	8717
Transfers	-8196	285	285	-8766
2007-08				
Private Prices	17493	7930	4562	5001
Social Prices	41531	3196	4224	29111
Transfers	-24038	-266	338	-24110
2008-09				
Private Prices	24381	9360	6380	8641
Social Prices	29282	8924	5977	14381
Transfers	-4901	436	402	-5740

ANNEX- XIV

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

Proposed support price	Expenditure on wheat at average per capita consumption @ 124 kgs per year		Rise in expenditure	
	Per person	Per household	Per person	Per household
Rs per 40 kgs	---------- Rupees per year ----------			
950 (Existing for 2008-09 crop)	2945	19879	-	-
960	2976	20088	31	209
970	3007	20297	62	419
980	3038	20507	93	628
990	3069	20716	124	837
1000	3100	20925	155	1046

Note: Average size of Household comprises of 6.75 members.

Source: 1. PSLM, Household Integrated Survey (HIES) 2004-05, Federal Bureau of Statistics (FBS), Islamabad.

2. Annex-IV.

Annex-XV

MAJOR WHEAT PRODUCING COUNTRIES IN THE WORLD: YIELD PER HECTARE 2007 CROP

S.No.	Country	Yield per Hactare in Kgs	S.No.	Name Country	Yield per Hactare in Kgs
1	New Zealand	8497	27	Slovenia	4162
2	Ireland	8463	28	Korea, Republic of	3954
3	Belgium	7418	29	Poland	3938
4	United Kingdom	7225	30	Finland	3933
5	Netherlands	7071	31	Lithuania	3922
6	Germany	6961	32	Slovakia	3825
7	Denmark	6561	33	Estonia	3605
8	Egypt	6478	34	Hungary	3594
9	Sweden	6257	35	Latvia	3572
10	France	6256	36	Italy	3568
11	Zambia	6033	37	Albania	3554
12	Switzerland	5953	38	Bosnia and Herzegovina	3476
13	Namibia	5909	39	Spain	3470
14	Saudi Arabia	5840	40	Kenya	3400
15	Luxembourg	5599	41	Serbia	3333
16	Mexico	5082	42	Belarus	3277
17	Czech Republic	4857	43	Turkmenistan	3195
18	Chile	4786	44	Oman	3055
19	Austria	4776	45	South Africa	3014
20	Croatia	4641	46	Uruguay	2865
21	China	4608	47	Argentina	2827
22	Zimbabwe	4571	48	Sudan	2826
23	Uzbekistan	4482	**49**	**Pakistan**	**2716**
24	Norway	4393	50	United States of America	2705
25	Japan	4340	51	**India**	**2704**
26	Malta	4167	52	Armenia	2680
World Average Yield		:	**2868**		

Source:FAO