API SERIES NO. 229

WHEAT POLICY ANALYSIS FOR 2008-09 CROP

AGRICULTURAL POLICY INSTITUTE
MINISTRY OF FOOD, AGRICULTURE AND LIVESTOCK
GOVERNMENT OF PAKISTAN
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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
BPS	Basic Pay Scale
BOI	Board of Investment
C&F	Cost and Freight
COP	Cost of Production
CPI	Consumer Price Index
CRS	Crop Reporting Service
CWRS	Canada Western Red Spring
DAP	Di Ammonium Phosphate
DRC	Domestic Resource Cost
ECC	Economic Coordination Committee
E&M	Economics and Marketing
EPC	Effective Protection Coefficient
EU	European Union
FAO	Food and Agriculture Organization
FAQ	Fair Average Quality
FBS	Federal Bureau of Statistics
FCA	Federal Committee on Agriculture
FOB	Free on Board
FSC&RD	Federal Seed Certification and Registration Department
FYM	Farm Yard Manure
GDP	Gross Domestic Product
GMR	Grain Market Report
HIES	Household Integrated Economic Survey
HRW	Hard Red Winter
HYVs	High Yielding Varieties
IRRI	International Rice Research Institute
MHW	Medium Hard Wheat
MINFAL	Ministry of Food, Agriculture and Livestock
NARC	National Agricultural Research Centre
NAs	Northern Areas
NFDC	National Fertilizer Development Centre
NPC	Nominal Protection Coefficient
NSC	National Seed Council
PAM	Policy Analysis Matrix
PARC	Pakistan Agricultural Research Council
PASSCO	Pakistan Agricultural Storage and Services Corporation
PME	Plant, Machinery and Equipment
PODB	Pakistan Oilseed Development Board
PSC	Punjab Seed Corporation
PSI	Pakistan Standards Institute
TCP	Trading Corporation of Pakistan
WFP	World Food Programme
WTO	World Trade Organization

SUMMARY OF FINDINGS AND RECOMMENDATIONS

Findings

Area and Production

- Punjab and Sindh contribute about 77 and 14 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 per cent per annum due to 1.7 per cent improvement in yield and 0.2 per cent expansion in area.
- Wheat production from 2007-08 crop is estimated at 21.7 million tonnes, a decline of 7 per cent from the record production of 23.3 million in 2006-07.
- Wheat production has fallen short of the target by 10 per cent.
- Major factors responsible for short prodution are decline in wheat acreage by 2 per cent, shortage of canal water by 22 per cent and high prices of inputs like diesel and fertilizer.

Domestic Requirements

- Based on per capita availability estimated through balance sheet method by API at 128 kgs per annum, the domestic requirement works to 24 million tonnes including allowance for seed, feed and wastage @ 10 per cent of production.
- Assuming the per capita consumption at 124 kgs per annum, the domestic requirement comes to 23 million tonnes including allownace for seed, feed and wastage @ 10 per cent.
- Including one million tonnes as food security reserve, total domestic requirement ranges from 24 – 25 million tonnes.

Domestic Prices

- Monthly average market prices of wheat for 2007-08 crop have generally ruled above the support price.
- The wholesale prices of wheat averaged at Rs 677 per 40 kgs in the Punjab during the post harvest season in major producing areas.
- The wholesale prices of wheat averaged at Rs 640 per 40 kgs during the post harvest season in major producing areas of Sindh.

Cost of Production

- In Punjab, cost of wheat cultivation during 2008-09 season is expected at Rs 18,235 per acre.
- The cost of production at market/procurement level would be Rs 676 per 40 kgs, reflecting a substantial rise of 50 per cent over the last year.
- In Sindh, the cost of wheat cultivation for 2008-09 crop is estimated at Rs 15,505 per acre.
- The cost of production at market/procurement level would come to Rs 659 per 40 kgs, showing a considerable rise of 51 per cent over the last year.
- The high escalation in cost of production is largely attributed to hike in prices of fertilizers especially DAP, wage rate, land rent and cost of field operations, wheat seed and harvesting/threshing charges.

Economics of Wheat and Competing Crops

- The economics of wheat vs oilseeds like sunflower and canola during 2007-08 has shown poor performance in most of the economic indicators adopted in this analysis.
- Wheat has somehow performed better in terms of gross returns to crop duration and irrigation water against canola.

- Wheat has also gained an edge over sunflower in respect of gross revenue to irrigation water.

- In Sindh, wheat farming did not compare favourably against oilseeds in most of economic criteria adopted in this analysis.

- Wheat has, however, performed better than canola in view of gross returns to crop duration and irrigation water.

- Wheat combinations have rewarded the farmers much better than sugarcane in terms of all the economic indicators in both the provinces.

Economics of Fertilizer Use

- The quantity of wheat needed to buy one nutrient tonne of N fertilizer has fluctuated from 1.48 to 2.41 tonnes during 2001-08.

- During 2007-08, 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 3.52 tonnes during 2001-08.

- During 2007-08, the parity ratio between market prices of P and wheat improved over the last many years in favour of wheat due to very remunerative market prices of wheat.

Real Prices

- The real support price of wheat deteriorated to Rs 297 per 40 kgs in 2006-07 against Rs 300 in the base year of 2000-01 in view of low wheat prices.

- However, the real price of wheat improved to Rs 407 per 40 kgs in 2007-08 due to very lucrative prices of Rs 625 per 40 kgs.

World Production and Prices

- World wheat production at 628 million tonnes in 2004-05 declined to 597 million tonnes in 2006-07. In 2007-08 global wheat production was estimated at 608 million tonnes which is forecast at 662 million tonnes in 2008-09.

- The closing stocks at 140 million tonnes in 2004-05 are estimated to decline to 121 million tonnes by 2007-08. However, these stocks are forecast at 144 million tonnes during 2008-09

- The average fob (Gulf) prices of US No. 2 Hard Red Winter (HRW) averaged at US $ 177 per tonne during 2006-07.

- During 2007-08 the world prices escalated sharply to average at US $ 332 per tonne. Monhtly average prices ranged between US $ 226 - 416 per tonne.

Export/Import Parity Prices

- Based on fob Gulf US No. 2 HRW wheat prices during 2007-08, the export parity price works to Rs 833 per 40 kgs.

- Export parity prices come to Rs 874 per 40 kgs and Rs 827 per 40 kgs if the fob Gulf prices of June and August 2008 are taken as reference price.

- Based on actual cif (Karachi) prices of imported Red wheat during 2007-08, the import parity prices of wheat works back to Rs 1403 per 40 kgs at Karachi and Rs 1479 at Multan.

- The import parity prices of wheat calculate to Rs. 1264 per 40 kgs at Karachi and Rs. 1340 at Multan, if the prices of actual import of wheat during 2008-09 are taken in to account.

- Based on FAO-OECD forcast for 2008-09, import parity prices work back to Rs. 1110 per 40 kgs at Karachi and Rs. 1186 at Multan.

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 import scenario for 2004-05 to 2007-08.

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

- 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 9th largest wheat producer in terms of area and 8th in production but holds 57th position in terms of yield.

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

- Since 1990, about 15 high yielding wheat varieties have been developed by research institutes in Punjab, while 7 varieties of wheat are released by research institutes in Sindh.

- India has been announcing higher support prices for the couple of years as compared to Pakistan dispite of huge subsidies on farm inputs.

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

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

Impact of Support Price on CPI and Household Expenditure

- In case the support price of wheat is enhanced by Rs 100 and Rs 200 per 40 kgs over the existing level of Rs 625 per 40 kgs, the CPI is likely to rise by 0.90 and 1.80 per cent.

- Like-wise, the increases of Rs 100 and Rs 200 per 40 kgs over the existing support price would bring additional expenditure of Rs 310 and Rs 620 per capita per year or Rs 2092 and Rs 4185 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 2008-09 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) Actual average c&f (Karachi) prices of imported red wheat during 2007-08, if consumed at:	
- Karachi	1403
- Multan	1479
b) Actual average c&f (Karachi) prices of white wheat during 2008-09, if consumed at:	
- Karachi	1679
- Multan	1755
c) TCP's actual import price during 2008-09 if consumed at :	
- Karachi	1264
- Multan	1340
d) FAO - OECD forecast for 2008-09 if consumed at:	
- Karachi	1110
- Multan	1186
2. Export parity price on the basis of:	
a) Fob (Gulf Port) prices of US No.2 Hard Red Winter wheat during 2007-08, if exported from procurement centre	833
b) Fob (Gulf Port) prices of US No.2 Hard Red Winter wheat during June 2008, if exported from procurement centre	874
c) Fob (Gulf Port) prices of US No.2 Hard Red Winter wheat during August 2008, if exported from procurement centre	827
d) FAO – OECD forecast for 2008-09	653
e) Average price	797
3. Monthly average wholesale market prices of wheat in producing area markets during post-harvest of 2007-08 crop:	
- Punjab	677
- Sindh	640
4. Cost of production at market/procurement level for 2008-09 crop	
- Punjab	676
- Sindh	659

- 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 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 MINFAL may like to enhance the support price of wheat for 2008-09 crop in view of hike in world prices, high inflationary trends in input costs and economics of competing crops.
- It should provide remunerative margin of returns over the cost of production which would help Productivity Enhancement Programme of the Government through balanced input use, better management and optimal technology adoption.
- It provides a reference point to intervene by the public sector agency, if needed.
- 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.
- 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.

- There should be a national programme for seed fertilizer drills multiplication and dissemination on subsidized rate to double the fertilizer use efficiency in case of phosphate.

- Zero tillage, bed planting and high efficiency irrigation system should be promoted.

- To achieve balanced fertilizer use, the prices of DAP 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

- 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 committee of experts should be constituted to examine the current system of crop estimation and suggest ways and means to improve the provincial estimates.

- 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.

(Dr. Qadir Bux Baloch)
Chairman, API

August 20, 2008

WHEAT POLICY ANALYSIS FOR 2008-09 CROP

INTRODUCTION

Wheat is the main staple food and largest grain crop of the country. It contributes 13 per cent to the value added in agriculture. It is cultivated over 8 million hectares with an annual average production of 22 million tonnes. During the decade ending 2007-08, wheat production has increased @ 2 per cent per annum. About 86 per cent of wheat area is irrigated which accounts for around 90 per cent of the annual production. Inspite of bumper crop in 2006-07, Pakistan faced serious food crisis due to falling world wheat stocks, price hike, regional scenario and situation in India, internal price distortions, resultant speculative hoarding, smuggling, increased use of wheat by feed mills due to relative price differential of rice, maize and withdrawal of private sector from the market.

2. During 2007-08, production of wheat has declined to 21.7 million tonnes, which is less by 7 per cent than the last year's record wheat production. This decline is reported due to 2 per cent slash in area sown for delayed sugarcane crushing and late cotton picking, upward fluctuation in DAP prices from Rs 850 to 1400 per bag, delayed announcement of support price of wheat, shortage of irrigation water by 22 per cent and incidence of severe frost, etc.

3. Among the important wheat producing countries, Pakistan ranks 9th in terms of global area and 8th in terms of production of wheat but lies way behind at 57th in terms of yield per hectare (FAO). The yield potential in HYVs of wheat is about 6 tonnes per hectare at Research Farms while the national average yield is about 2.5 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. Possibilities for such increase are supported by the yields already obtained by some progressive growers in the country.

4. To provide a floor to the market during the post harvest season, the government annually reviews the support price of wheat. The objective is to reduce the uncertainty and price risk in wheat farming and also to maintain food security in the country. For the 2007-08 wheat crop, the

government delayed, the announcement of support price until February 2008, when it was fixed at Rs 510 per 40 kgs. In the wake of high prices in the open market, no considerable procurement could be made. Hence, the government revised the support price upward to Rs 625 per 40 kgs in April 2008.

5. The PASSCO and the Provincial Food Departments are reported to have procured 3.92 million tonnes of wheat against the target of 5 million tonnes. In view of lower production, nominal carryover stocks and food security concerns, the government has planned to import 2.5 million tonnes of wheat in the public sector. To encourage the private sector to import additional one million tonnes of wheat, the government has eliminated 10 per cent import duty.

6. In formulating the price policy recommendations for 2008-09 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, 2008.

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 15th July 2008 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 policy recommendations.

7. As the wheat is a staple food commodity for the populace, 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.

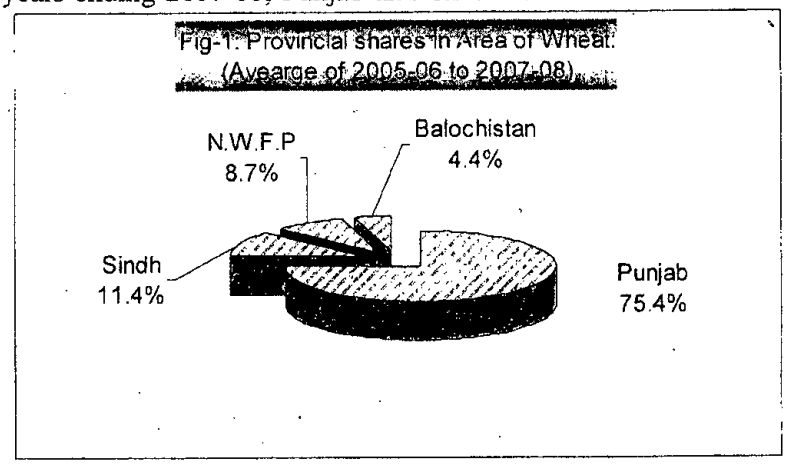
8. Perceiving the food crisis in the coming years, the MINFAL has taken several steps for wheat productivity enhancement. These include availability of fertilizer, a subsidy of Rs 1000 per bag for DAP to promote balanced use of fertilizer and reasonable prices of herbicides/weedicides by adopting generic scheme. A media campaign for dissemination of information on technology package for wheat production will also be launched in the coming season. In the long run, the government has invested around Rs 100 million in various programmes to combat the menace of UG 99 Stem Rust. Pakistan is an active partner to the global efforts to control rust threats, and has been involved in joint research activities. The wheat material in Pakistan is continuously being tested in Kenya to screen and identify resistant varieties/sources to be incorporated in domestic wheat varieties.

9. It will be desirable to achieve and maintain self-sufficiency in wheat production by removing the constraints. There is also a need to acquire the potential productivity by adopting the optimal inputs package and improved farm management practices as the progressive growers are getting double the level of national average yield by adoption of such practices. 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 announce the support price of wheat in September 2008 to ensure minimum level of incentive to wheat growers. 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. The government has also planned to develop a Safety Net for food assistance to the poor.

2. REVIEW OF 2007-08 CROP

2.1 Provincial Shares in Area and Production

10. Based on average of three years ending 2007-08, Punjab and Sindh contribute about 77 and 14 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 & 2.



11. Around 86 per cent of wheat acreage is cultivated under irrigated conditions which contribute 92 per cent of wheat production in the country.

Table-1: Provincial Shares in Area and Production: (Average of 2005-06 to 2007-08)

Item/Country/ Province	Total	Pakistan	Punjab	Sindh	NWFP	Balochistan
	000 hact.	---------- Per cent ----------				
A. Area						
Total	8479.8 (20954.6)	100.0	75.4	11.4	8.7	4.4
Irrigated	7297.9 (18033.9)	86.1	67.4	11.0	3.7	3.9
Un-irrigated	1181.9 (2920.7)	13.9	8.0	0.4	5.1	0.5
B. Production	000 tonnes	---------- Per cent ----------				
Total	22092.0	100.0	76.9	14.4	5.1	3.6
Irrigated	20488.8	92.7	72.3	14.2	2.8	3.4
Un-irrigated	1603.2	7.3	4.6	0.2	2.3	0.2

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

2.2 Long-term Changes: 1997-98 to 2007-08

12. During the decade ending 2007-08, wheat production at country level has surged @ 2.0 per cent per annum owing to 1.7 per cent improvement in yield and 0.2 per cent expansion in

area. In the Punjab, wheat production has increased @ 2.2 per cent annually due to 1.5 per cent improvement in yield and 0.7 per cent acreage expansion. In Sindh, wheat production has also risen @ 2.0 per cent per annum mostly due to improvement of 3.5 per cent in yield as the area contracted by 1.4 per cent. Details of wheat area, yield and production by province are presented in Table-2.

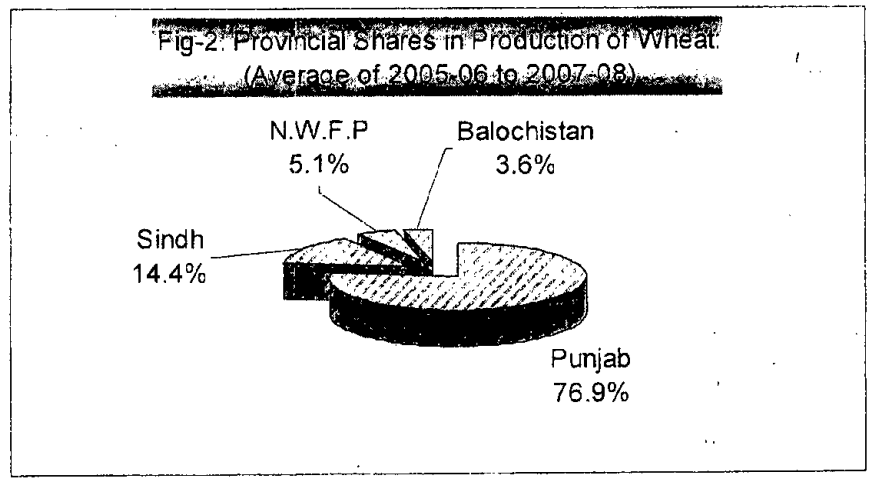
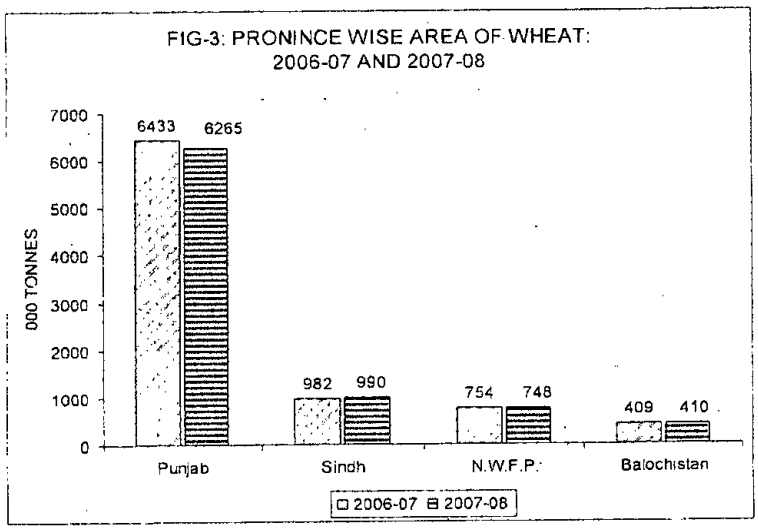


Table-2: Average Annual Growth Rates of Area, Yield and Production of Wheat: 1997-98 to 2007-08

Country/ Province	Area	Yield	Production
	---------- Per cent per annum ----------		
Pakistan	(+) **0.2**	**(+) 1.7**	**(+) 2.0**
Punjab	(+) 0.7	(+) 1.5	(+) 2.2
Sindh	(-) 1.4	(+) 3.5	(+) 2.0
NWFP	(-) 1.8	(+) 1.6	(-) 0.2
Balochistan	(+) 1.2	(-) 0.0	(+) 1.0

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 2007-08

13. The annual growth rates for the period 2003-04 to 2007-08 show that the wheat production has increased by 3.3 per cent per year due to 2.2 per cent improvement in yield and 1.1 per cent expansion in area at country level.

14. In the medium term, area, yield and production in all the provinces are presented in Table-3.

Table-3: Average Annual Growth Rates of Area, Yield and Production of Wheat: 2003-04 to 2007-08

Country/Province	Area	Yield	Production
	--------- Per cent per annum ---------		
Pakistan	**(+) 1.1**	**(+) 2.2**	**(+) 3.3**
Punjab	(+) 0.7	(+) 1.2	(+) 1.9
Sindh	(+) 3.1	(+) 8.3	(+) 11.6
NWFP	(+) 0.3	(+) 1.5	(+) 1.8
Balochistan	(+) 4.0	(+) 2.5	(+) 6.6

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

2.4 Short-term Changes: 2006-07 Vs 2007-08

15. According to the final estimates of Sindh and 2nd estimates of other provinces, the wheat production from 2007-08 crop is reported at 21.70 million tonnes at country level, showing 6.8 per cent decline from 23.3 million tonnes produced in 2006-07. The downfall in production is mainly attributed to 5.0 per cent decline in yield and contraction of 1.9 per cent in area. The provincial beak up of area, yield and production of wheat is given in Table-4 and also depicted in Figures 3 and 4.

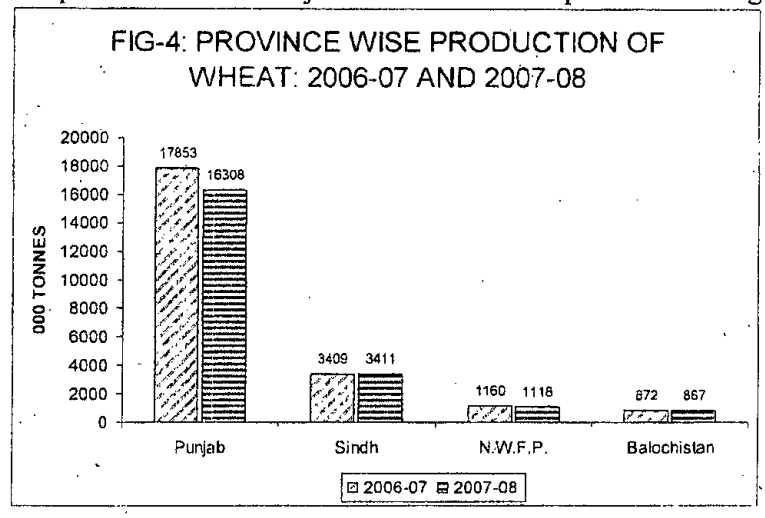
Table-4: Area, Yield and Production of Wheat: 2006-07 and 2007-08 Crop

Country/ Province	Area		Changes	Yield per hectare		Changes	Production		Changes
	2006-07	2007-08		2006-07	2007-08		2006-07	2007-08	
	-- 000 hectares --		Per cent	-----Kgs ----		Per cent	-- 000 tonnes --		Per cent
Pakistan	8578.20	8413.50	(-)1.9	2716	2580	(-) 5.0	23294.70	21704.60	(-) 6.8
Punjab	6432.80	6265.20	(-)2.6	2775	2603	(-) 6.2	17853.00	16308.00	(-) 8.7
Sindh	982.20	989.90	(+)0.8	3471	3446	(-) 0.7	3409.20	3411.40	(+) 0.1
NWFP	754.30	748.10	(-)0.8	1538	1495	(-) 2.8	1160.40	1118.20	(-) 3.6
Balochistan	308.90	410.30	(+)0.3	2133	2113	(-) 0.9	872.10	867.0	(-) 0.6

Source: Annex-I.

2.5 Factors Responsible for Short Production: 2007-08 Crop

16. The Provincial Agriculture Departments of the Punjab and Sindh have reported following factors responsible for short production during 2007-08 crop:

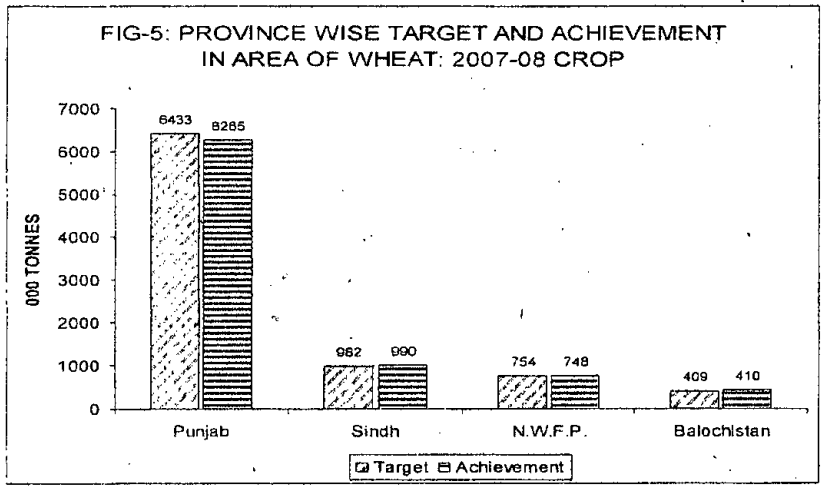


Punjab

1. High prices of inputs i.e. diesel and fertilizers.
2. Shortage of canal water by 22% over the last year.
3. Abnormal frost phenomenon caused the decrease in average yield of early sown varieties.
4. Mild attack of aphid is reported at the late stage due to long dry weather which is feared to affect the yield considerably particularly in un-irrigated areas.
5. Decline in wheat acreage by 2.6%.

Sindh

1. Production increased due to increase in area.



2. Sowing of high yielding varieties on major portion of area, growers received more yield per hectare.
3. Prolonged winter season, especially at the milky stage favoured in getting more yield per hectare.
4. Precipitation in the Province covered the shortage of irrigation water.

2.6 Targets Vs Achievements: 2007-08 Crop

17. The Federal Committee on Agriculture (FCA) had fixed the wheat production target at 24.0 million tonnes for 2007-08 crop from an area of 8.58 million hectares. According to final estimates of Sindh and 2nd estimates of other provinces, the production of wheat is reported at 21.70 million tonnes, short by 9.6 per cent against the target. The production target could not be achieved due to under achievement in area and yield targets by 1.9 and 7.8 per cent, respectively. Provincial details on area, yield and production may be seen in Table-5 and also depicted in Figures 5 and 6.

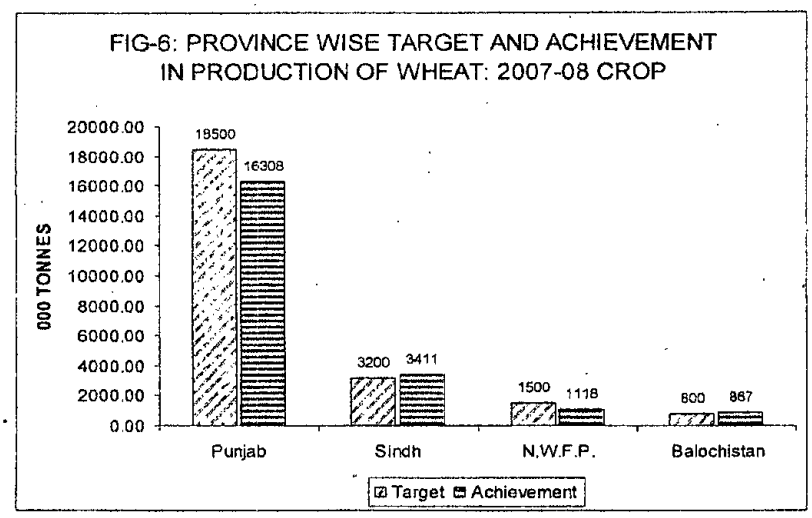


Table-5: Targets Vs Estimated Achievements in Area, Yield and Production of Wheat: 2007-08 Crop

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	8578.0	8413.50	(-) 1.9	2798	2580	(-) 7.8	24000.0	21704.60	(-) 9.6
Punjab	6433.0	6265.20	(-) 2.6	2876	2603	(-) 9.5	18500.0	16308.00	(-) 11.6
Sindh	982.0	989.90	(+) 0.8	3259	3446	(+) 5.8	3200.0	3411.40	(+) 6.6
N.W.F.P.	754.0	748.10	(-) 0.8	1989	1495	(-) 24.9	1500.0	1118.20	(-) 25.5
Balochistan	409.0	410.30	(+) 0.3	1956	2113	(+) 8.0	800.0	867.00	(+) 8.4

Sources:

1. For targets: Minutes of the 88th Meeting of FCA for Kharif season 2008-09 held on 24th April 2008.
2. For achievements: Annex-I.

2.7 Important Wheat Producing Districts

18. The districts producing more than 400 thousand tonnes or more of wheat per annum in the country are, Jhang, Sheikhupura, Bahawalnagar, R.Y.Khan, Faisalabad, Muzaffargarh, Bahawalpur, Okara, Gujranwala, Vehari, Khanewal, Sargodha, Sialkot, Multan, Kasur, Layyah, Pakpattan, T.T.Singh, Lodhran Sahiwal, and D.G.Khan. All these 21 districts fall in the Punjab and are producing 61 per cent of total domestic wheat production. While their share in area is estimated at 56 per cent. Sanghar, Hyderabad, Khairpur, Naushahro-Feroze and Mirpurkhas from Sindh, Swat from NWFP, Nasirabad and Jaffarabad from Balochistan are other important wheat producing districts. Districts have been arranged in descending order of wheat production magnitude in Annex-III.

3. SOWING AND HARVESTING TIMES OF WHEAT

19. 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 the 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.

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

21. In Sindh, wheat sowing commences from 1st November and goes up-to the end of December.

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

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

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

4. DOMESTIC DEMAND, SUPPLY, STOCKS AND PRICE SITUATION

4.1 Domestic Demand, Supply and stocks

25. With the domestic production of 21.71 million tonnes from 2007-08 crop and carry over stocks of 0.135 million tonnes total wheat supply in the country for 2008-09 consumption year became 21.85 million tonnes. This supply may slightly increase if production of wheat in Azad Kashmir and Northern Areas estimated at 0.263 million tonnes is added. Foreseeing the shortage in later part of the year an import of 2.5 million tonnes of wheat has also been scheduled by the TCP. Thus total availability of wheat in country would be 24.603 million tonnes.

26. The estimation of consumption requirement of wheat for 2008-09 is based on its actual average per capita availability during 2004-05 to 2006-07 that has averaged at 128 kgs per annum (Annex-IV). Using mid year population as on 1st November 2008 i.e. of 170.19 million (including AJ&K, NAs and Afghan Refugees), human consumption requirement for 2008-09 is estimated at 21.78 million tonnes. Adding allowance for seed, feed and wastage @ 10 per cent of production and accounting for one million tonnes as reserve stocks, gross domestic requirements for 2008-09 wheat year works to 24.98 million tonnes. However, this requirement would be 24.3 million tonnes if estimated at per capita consumption of 124 Kgs per annum as used by the MINFAL. The calculations are presented in Table -7.

Table-7: Domestic Requirements of Wheat for 2008-09 Wheat Year: (May-April)

S.No.	Item	Based on annual per capita consumption estimates of:	
		128 Kgs*	124 Kgs*
1.	Population on 1st November, 2008 (M. persons)	170.19	170.19
2.	Human consumption requirement (M. tonnes)	21.78	21.10
3.	Allowance for seed, feed and wastage @ 10 per cent of total production (M. tonnes)	2.20	2.20
4.	Food Secrurity reserves (M. tonnes)	1.00	1.00
5.	Total requirements (M. tonnes)	24.98	24.30

Note: * Per capita consumption estimated through balance sheet method by API.
** Per capita consumption used by MINFAL.

Source: Annex-IV.

4.2 Post harvest prices

27. Average monthly wholesale prices of wheat during the post-harvest period of 2007-08 crop in the main producing area markets of the Punjab and Sindh are given in Table-8 and 9.

Table-8: Monthly Average Wholesale Prices of Wheat in Main producing area Markets of the Punjab during Post-harvest Season of 2007-08 Crop

(Rs/40 Kgs)

Markets	April	May	June	Average
Lahore	688	737	760	728
Faisalabad	623	673	694	663
Sargodha	690	669	691	683
Multan	667	663	668	666
Gujaranwala	638	670	713	674
Okara	642	672	677	664
R.Y. Khan	616	671	686	658
Average	**652**	**679**	**698**	**677**

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

Table-9: Monthly Average Wholesale Prices of Wheat in Main producing area Markets of the Sindh during Post-harvest Season of 2007-08 Crop

(Rs/40 Kgs)

Markets	March	April	May	Average
Sanghar	510	625	707	614
Nawabshah	620	625	750	665
Mirpur khas	600	625	800	675
Hyderabad	500	650	720	623
Sukkur	600	650	625	625
Average	**566**	**635**	**720**	**640**

Sources: D.G Agriculture Extension Hyderabad (Annex-V).

28. Tables 8 and 9 above reveal that monthly average wholesale prices of wheat in main markets of Punjab and Sindh generally ruled higher than support price of Rs 625 per 40 Kgs. Monthly average whole sale prices during post-harvest period in various markets of Punjab and Sindh ranged between Rs.616 to Rs 760 and Rs.510 to Rs.800 per 40 kgs, respectively.

5. WORLD PRODUCTION, CONSUMPTION, STOCKS AND TRADE SITUATION

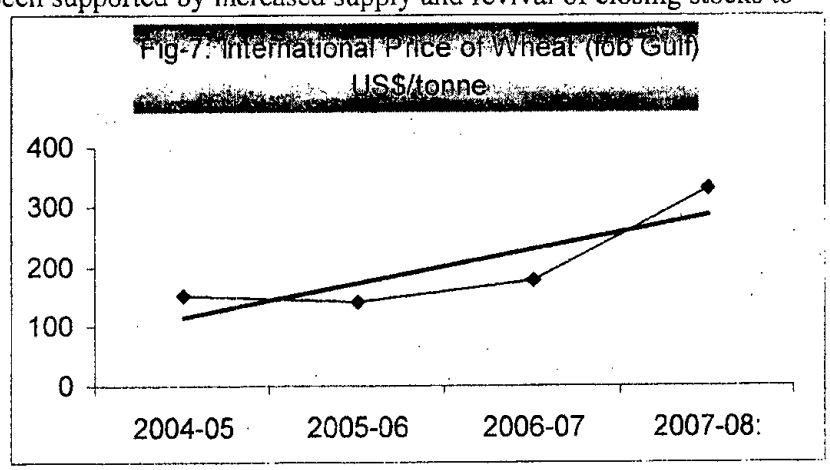
29. The data regarding world production, consumption, stocks and trade situation from 2005-06 to 2007-08 is presented in Table-10.

Table-10: World Wheat Balance Sheet: 2004-05 to 2008-09

Items	2004-05	2005-06	2006-07	2007-08 (Estimated)	2008-09 (Forecast)
	.....Million tonnes.....				
Opening stocks	128	141	137	123	121
Production	628	620	597	608	662
Total Supply	756	761	734	731	783
Consumption	617	624	611	610	639
Closing stocks	140	137	123	121	144
Trade	110	110	110	109	114

Source: Grains Market Report, International Grains Council, London.

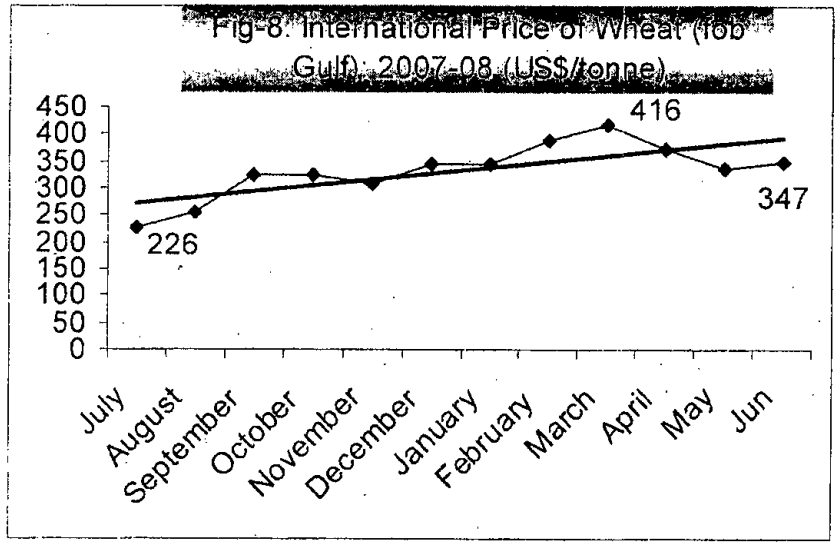
30. In 2007 the international food price index rose by nearly 40 percent, compared with 9 percent the year before, and in the first three months of 2008 prices increased further by about 50 percent. However, OECD-FAO Agri. Outlook for 2008-17 (Annex-VI) entails a declining trend in grain prices particularly of wheat that may first come down from an average price of US$319 per tonne during 2007-08 toUS$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 144 million tonnes during 2008-09 along with trade increased from 110 million tonnes to 114 million tonnes.



6. INTERNATIONAL PRICES OF WHEAT

31. Average fob (Gulf) prices of No.2 Hard Red

Winter from 2004-05 to 2007-08 are presented in Annex-VII. The prices of US No Hard Red Winter 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 next year averaging $ 177 per tonne. During 2007-08, monthly averaged prices ranged between $ 226 to 416 per tonne.



7. IMPORT AND EXPORT PARITY PRICES

32. Estimated at various international prices of wheat prevailed during 2007-08 the economic wheat parity prices both export (Table-11) and import (Table-12) suggest that Pakistan should realign its pricing system to enhance domestic production to avoid expensive imports through paying its producers the better prices.

Table-11: Export Parity Prices of Wheat on the Basis of No.2 Hard Red Winter Fob (Gulf Port)

Item	During 2007-08	During June, 2008	During August, 2008	FAO-OECD Forecast for 2008-09	Average Price
FOB (Gulf) price assuming fob Karachi (US $ per tonne)	332	347	330	267	319
Export parity price at procurement centre (Rs per 40 kgs)	833	874	827	653	797

Source: Annex-VIII

Table-12: Import Parity Prices of Wheat on the Basis of Actual Average C&F (Karachi) Price of Imported Wheat

Item	During 2007-08		During 2008-09		FAO-OECD Forecast for 2008-09
	Red Wheat	White Wheat	TCP's Actual import	TCP's Import Order	
	----------US $ per tonne----------				
Average c&f (Karachi) Price	454	545	408	380	357
	32688	39240	29376	27360	25704
Import parity price per tonne of wheat	------- Rs/40 kgs------				
i) If consumed at Multan	1479	1755	1340	1255	1186
ii) If consumed at Karachi	1403	1679	1264	1179	1110

Source: Annex-IX

8. COST OF PRODUCTION OF WHEAT

33. Cost of production (COP) is one of the imperative instruments in assessing price suggestions for farm commodities. Nevertheless, estimation of the representative cost of production is somewhat complicated due to ample dissimilarity in the use level of farm inputs, technology and farming system and substantial deviations in yields across the regions, even within a region by farm size and farm to farm.

34. The costs of production of wheat for 2008-09 crop in the Punjab and Sindh have been analysed by taking up the input-output parameters as employed in the 2007-08 Wheat Policy Report in unifying with the latest inputs prices and rates of field operations obtained through mini field surveys conducted by the API during July 2008 in the major wheat growing areas of the Punjab and Sindh. These rates were also consulted 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 15th July 2008 at Islamabad. The details of the COP estimates for the Punjab and Sindh for 2007-08 and 2008-09 crops are presented at Annex-X and XI, respectively, while a summary of the results is given in Table-13 below:

Table-13: Average Farmers' Cost of Production of Wheat: 2007-08 and 2008-09 Crops

Items	Units	2007-08 Crop	2008-09 crop	Increase in 2008-09 over 2007-08
PUNJAB				
1. Cost of cultivation	Rs/acre	12082	18235	6153
2. Yield				
a) Yield in kgs	Kgs/acre	1108	1108	-
b) Yield in maunds	40 kgs /acre	28	28	-
3. Cost of production at farm level	Rs/40 kgs	436	658	222
4. Marketing cost	Rs/40 kgs	16	18	2
5. Cost of production at market/ procurement centre				
a) With land rent	Rs/40 kgs	452	676	224
b) Without land rent	Rs/40 kgs	353	532	179
SINDH				
1. Cost of cultivation	Rs/acre	10152	15504	5352
2. Yield				
a) Yield in kgs	Kgs/acre	968	968	-
b) Yield in maunds	40 kgs /acre	24	24	-
3. Cost of production at farm level	Rs/40 kgs	420	641	221
4. Marketing cost	Rs/40 kgs	16	18	2
5. Cost of production at market/ procurement centre				
a) With land rent	Rs/40 kgs	436	659	223
b) Without land rent	Rs/40 kgs	353	535	182

Source: Annex-X and XI.

Punjab

35. The likely expenses on cultivating an acre of wheat in the Punjab, during 2008-09 crop season are estimated at Rs 18235, inclusive of land rent. Distributing this cost over the average yield of 1108 kgs per acre, the cost of producing of wheat at farm level works to Rs 658 per 40 kgs. Accounting for marketing cost @ Rs 18 per 40 kgs, the cost of producing and bringing wheat at market/procurement centre would be Rs 676, higher by Rs 224, per 40 kgs (50 per cent) than the corresponding cost of 2007-08 crop.

Sindh

36. Cultivating an acre of wheat in Sindh during 2008-09 crop season is estimated to cost Rs 15504, including land rent. With the average yield of 968 kgs per acre, cost of cultivation of wheat at farm level works to Rs 641 per 40 kgs. Adding marketing cost @ Rs 18 per 40 kgs, the

market/procurement centre cost of produce would be Rs 659, showing an increase of Rs 223 (51 per cent) over the last year's corresponding cost.

37. The high escalation in the costs of production of wheat for the 2008-09 crop in the Punjab and Sindh are largely credited to hike in prices of fertilizer especially of phosphoric fertilizer due to tremendous surge in landed cost at Karachi. Likewise, increases in the harvesting/threshing charges and prices of wheat seed owing to higher market prices of wheat, labour wage rates, land rentals and custom hire rates of field operations on account of increases in the prices of diesel have also added upsurge in cost of production of the wheat.

Cost of major farm inputs and operations

38. The component-wise cost of the different farm inputs and operations of wheat farming for 2007-08 and 2008-09 crops in the Punjab and Sindh are given in the Table-14.

Table- 14: Cost of major operations/inputs of wheat: 2007-08 and 2008-09 Crops

Operations/inputs	2007-08 crop		2008-09 crop		Share in increased cost
	--Rs/acre-	%	Rs/acre	%	%
Punjab					
1. Land preparation	1214	9	1617	8	6
2. Seed and sowing operations	1577	12	2213	11	10
3. Weedicides	315	2	334	2	0
4. Irrigation	1845	14	2096	10	4
5. Fertilizer including FYM	2537	19	5109	25	39
6. Land rent	2750	20	4000	20	19
7. Harvesting and threshing etc	2460	18	3500	17	16
8. Others	884	7	1366	7	7
9. Total cost	13582	100	20235	100	100
Sindh					
1. Land preparation	1409	12	2011	11	10
2. Seed and sowing operations	1359	12	1943	11	10
3. Interculture/weedicides	224	2	240	1	0
4. Irrigation	893	8	1048	6	3
5. Fertilizer including FYM	2560	22	5040	29	41
6. Land rent	2000	17	3000	17	17
7. Harvesting and threshing etc	2127	19	2500	14	6
8. Others	880	8	1723	10	14
9. Total cost	11452	100	17505	100	100

Source: Annexes X & XI.

Punjab

39. Fertilizer including FYM is the principal component in the total cost of cultivation of wheat 2008-09 crop in the Punjab, accounting for 25 per cent. The other constituents are: land rent (20 %), harvesting and threshing operations (17 %), seed/sowing operations (11%), irrigation (10 %), land preparation (8 %), interculture and weedicides (2 %) and others (7 %).

Sindh

40. Fertilizer including FYM is the principal constituent of the cost of cultivation of wheat for the 2008-09 crop in Sindh, accounting for 29 per cent. The other components are: land rent (17 %), harvesting and threshing (14%), land preparation (11 %), seed and sowing operations (11 %), irrigation (6 %), interculture and weedicides (1 %) and others (10 %).

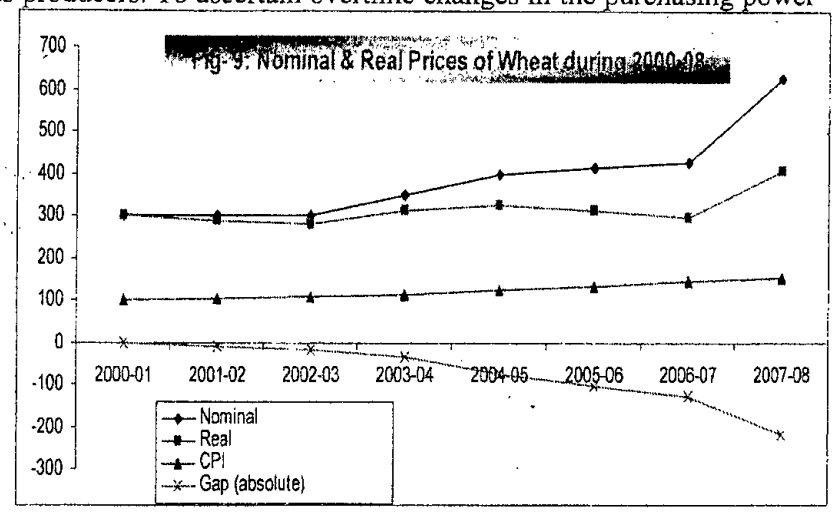
Prices of major farm inputs

41. The average market prices of major farm inputs used in the estimation of the cost of cultivation of wheat for the 2007-08 and 2008-09 crops are given below:

Items	Units	2007-08 crop	2008-09 crop	Per cent changes
Punjab				
1. HSD	Rs/litre	37.80	64.72	71
2. Power tariff	Rs/kwh	3.28	3.73	14
3. Seed	Rs/kg	21	30	43
4. Fertilizers:	Rs/bag			
4.1 DAP		1206	3067	154
4.2 Urea		525	695	32
4.3 NP		800	2009	151
Sindh				
1. HSD	Rs/litre	37.80	64.72	71
2. Power tariff	Rs/kwh	3.28	3.73	14
3. Seed	Rs/kg	21	30	43
4. Fertilizers:	Rs/bag			
4.1 DAP		1170	3104	165
4.2 Urea		542	697	29
4.3 NP		835	1930	131

9. NOMINAL AND REAL SUPPORT PRICES OF WHEAT: 2000-01 TO 2007-08

42. The purchasing power of a certain commodity is influenced by fluctuations 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 2007-08 are set out in Table-15 and depicted in Figure-9.

Table-15: Nominal and Real Support Prices of Wheat: 2000-01 to 2007-08

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	122.98	400	325.26
2005-06	132.72	415	312.69
2006-07	143.18	425	296.83
2007-08	153.46	625	407.27

Sources: Economic Survey of Pakistan: 2007-08.

44. The price of wheat in nominal terms, which remained constant in initial three years, has evidenced an increasing trend during the later five years, thus giving a cumulative push of 108 per cent over the base year 2000-01. The variation in CPI during the period was evidenced at

53.5 % bringing up-ward change in the real value by a one-third 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 affecting the income of the wheat farmers disadvantageously.

45. The support price of wheat was enhanced from Rs 425 in 2006-07 to Rs 625 per 40 kgs in 2007-08; 47 % addition in nominal value. Over the last year, its real value in terms of 2000-01 prices improved by 37 %. Analysis of the data reveals that during 3 year interval of 2003-06 and 2007-08, the real price crossed the base year while in remaining period it could not maintain. Primary factor for this fluctuation in the price of wheat has been relatively lower enhancement in the nominal price against the inflationary pressure.

46. Despite an upward trend observed in nominal price line consecutively during 2005-07, the real price evidenced decline from Rs. 325 to Rs. 297 indicating erosion of real purchasing power of the wheat grower.

10. COMPARATIVE ECONOMICS OF WHEAT AND COMPETING CROPS

47. Resource allocation among various competing farm enterprises are certain 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 and usage of natural, financial and human 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.

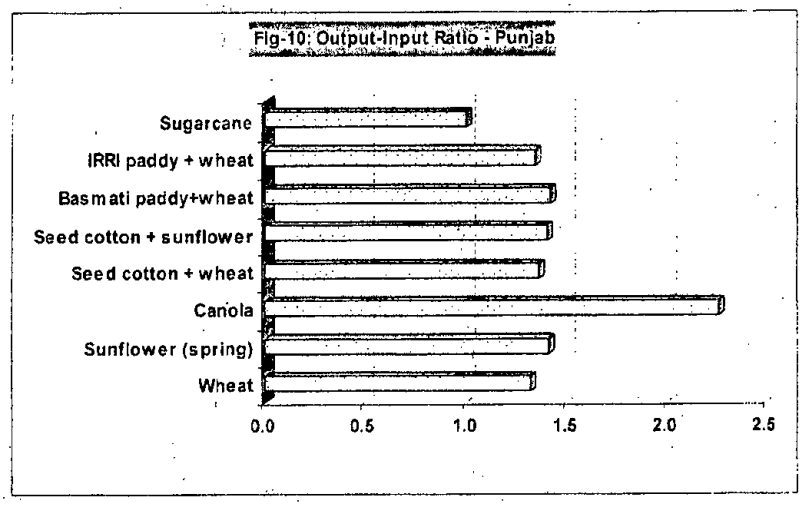


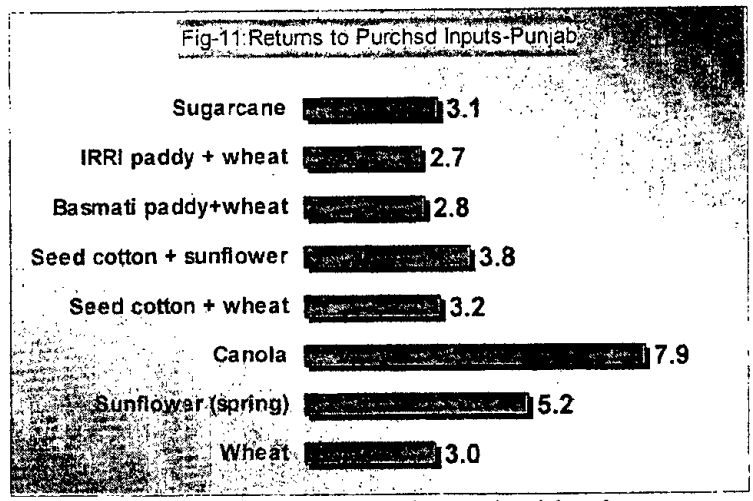
Table-16: Economics of Wheat and Competing Crops at Prices Realized by the Growers: 2007-08 Crops

Province / crops /crop combination	Output-input ratio	Revenue per		
		Rupee of purchased inputs	Crop day	Acre inch of water used
		.....Rupees.....		
Punjab				
Wheat	1.3	3.0	102	1531
Sunflower (spring)	1.4	5.2	123	807
Canola	1.6	5.4	72	1158
Seed cotton + wheat	1.4	3.2	104	1289
Seed cotton + sunflower	1.4	3.8	113	982
Basmati paddy+wheat	1.4	2.8	110	566
IRRI paddy + wheat	1.3	2.7	96	467
Sugarcane	1.0	3.1	70	571
Sindh				
Wheat	1.4	3	89	1336
Sunflower (spring)	1.8	6	155	1012
Canola	1.7	5	72	1158
Seed cotton + wheat	1.4	3.7	98	1376
Seed cotton + sunflower	1.6	5.0	124	1188
IRRI paddy+ wheat	1.6	3.6	97	513
IRRI paddy+sunflower	1.8	5.1	127	527
Sugarcane	1.1	3.6	74	509

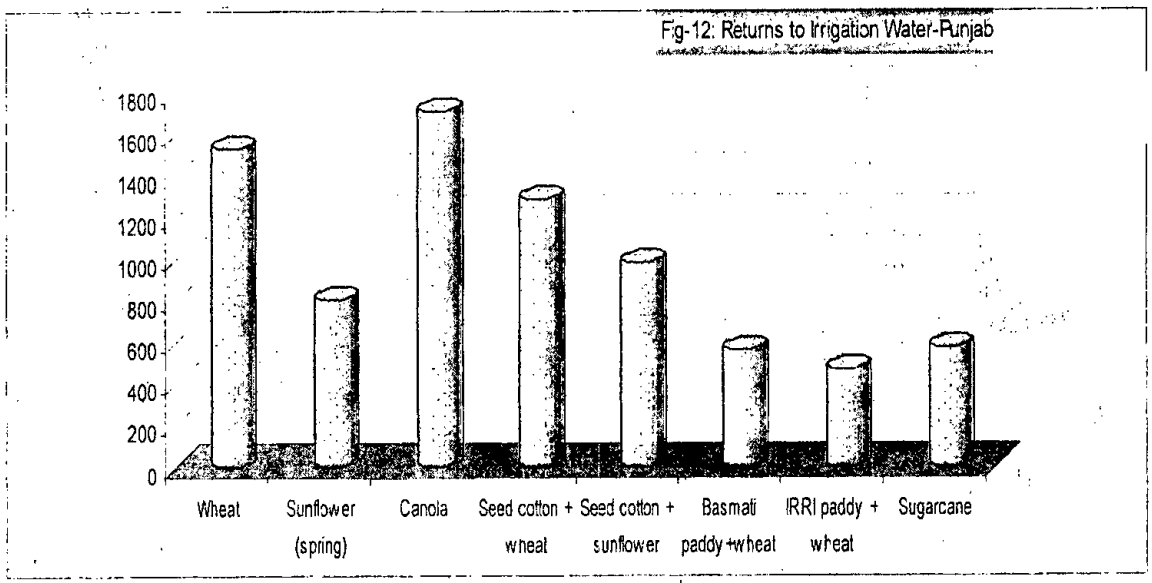
Source: Annex-XII.

48. Wheat, a 'rabi' crop, 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 2007-08 at farm level. 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.

- **Punjab**

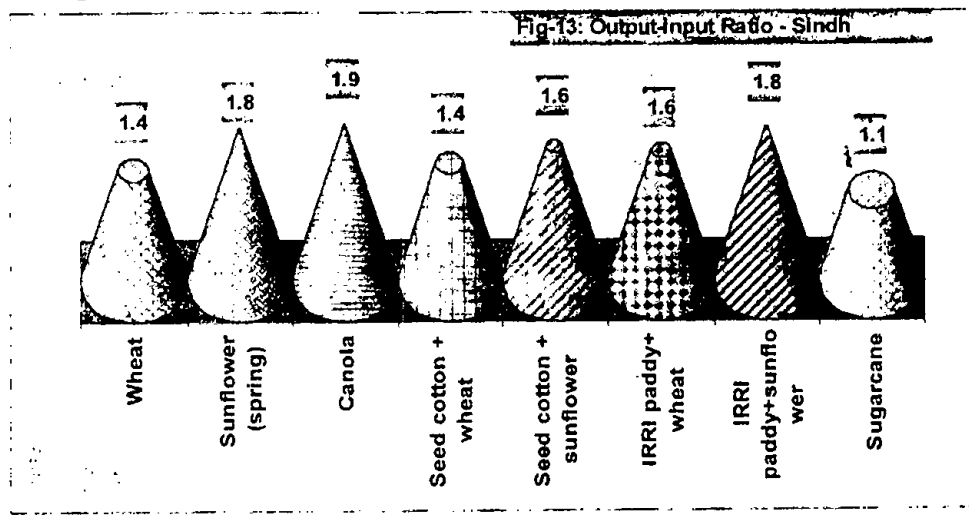


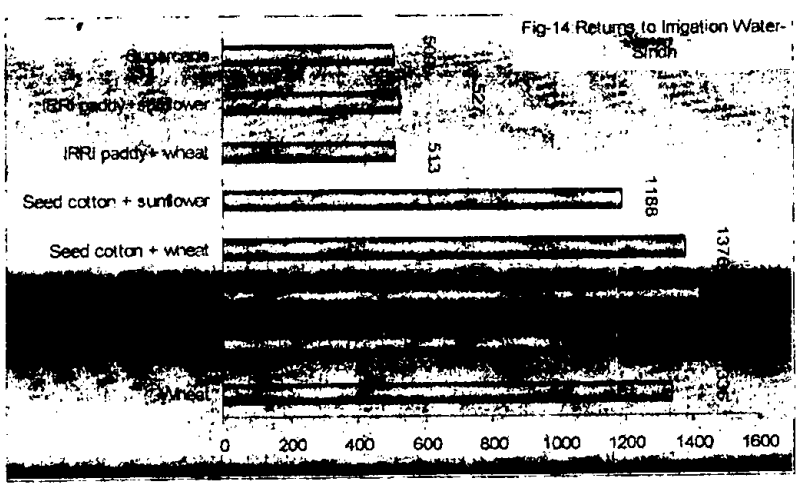
49. For the crop year 2007-08, wheat has shown relatively low performance as compared to other 'rabi' crops like sunflower and canola in terms of all the economic indicators except Irrigation water, in spite of a high price incentive (Fig-10). It is primarily because of the remunerative prices of sunflower and canola received by the growers during 2007-08 crop season. Wheat, however, performed better in terms of gross returns to crop duration and irrigation water against the canola. Likewise, wheat has gained an edge over sunflower in respect of gross revenue to irrigation water (Fig-12).



50. Under the phenomenon of indirect competition of wheat and its combinations with the sugarcane crop, the latter could not perform better than wheat combinations in majority of parameters. Cotton + wheat combination shows a significant edge over sugarcane in view of all the economic criteria. Amongst the wheat combinations, economic position of cotton + sunflower rotation has also given better returns over the combinations of cotton + wheat, basmati

+ wheat 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 the cotton + sunflower rotation. Sugarcane position has been better than combination of wheat with rice particularly in context of purchased inputs and irrigation water.





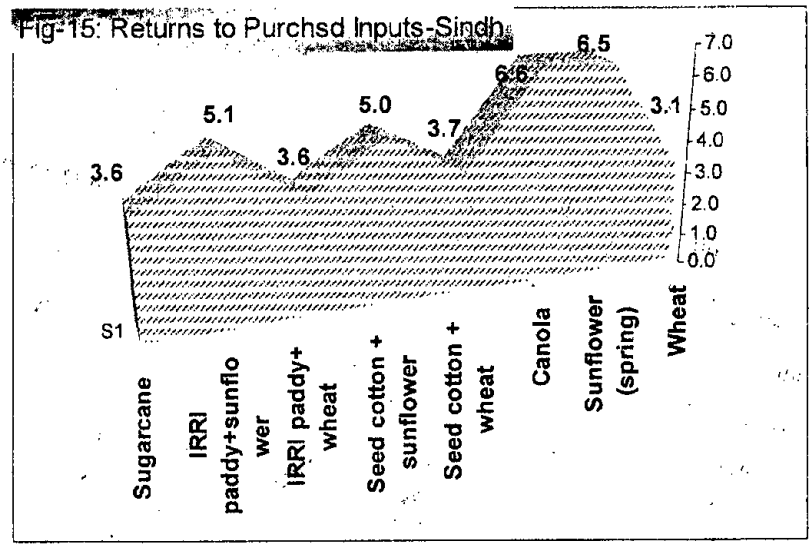
Sindh

51. In Sindh too, economics of wheat farming did not compare favourably against oilseed crops - sunflower and canola - during 2007-08, particularly in respect of overall investment and gross returns to purchased inputs cost. However, wheat has performed better than canola in view of gross revenue per unit of crop duration and against both the oilseeds in respect of revenue per unit of irrigation water.

52. In case of indirect competition with sugarcane, wheat combinations have rewarded the farmer much better than the earlier enterprise in all economic indicators. The economic returns of cotton + sunflower combination are significant than cotton + wheat and IRRI + wheat rotation in respect of all economic indicators except returns to irrigation water wherein cotton + wheat

excels over the earlier. Interestingly, IRRI + sunflower rotation has gained quite a better position over the other combinations against all the indicators except irrigation water.

Fig-15: Returns to Purchsd Inputs-Sindh



11. ECONOMIC EFFICIENCY IN WHEAT PRODUCTION

53. Wheat is not only the staple food but also the largest crop in terms of area, production and value addition in Pakistan. Its production, involves extensive use of land, water and other resources. In view of its importance, it is imperative to examine its competitiveness from the farmers' as well as the national perspective as it has implications for the sustainability of wheat farming in the country. Accordingly, the economic efficiency parameters like Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC), and Domestic Resource Cost Coefficient (DRC) are estimated, both for the Punjab and Sindh in the context of wheat farming. These efficiency parameters, also called measures of protection are briefly described below:

11.1 Nominal Protection Coefficient (NPC)

54. NPC is estimated as domestic output prices divided by social prices. It measures the impact of output pricing policies without any consideration about intervention/distortion in input markets. The NPC, if greater than one, indicates that domestic producers are getting more than the economic price for their produce. When the producers receive more than the economic price they receive a protection which encourages production. In case the coefficient is less than one, it implies that domestic producers are getting less than the economic prices and are thus being taxed. Taxation of producers entails resource transfer to other sectors which acts as a disincentive.

11.2 Effective Protection Coefficient (EPC)

55. It is the ratio of the difference between the revenue and tradable inputs' costs (value addition) in private prices to that in social prices. Unlike the NPC, which ignores the distortions and policy interventions in the input markets altogether, EPC takes into account the policy interventions in both input and output markets. Thus it is a preferred measure for estimating the protection/taxation of a given commodity.

56. EPC is the indicator of the net incentive and disincentive effects of all policies affecting prices of tradable output and inputs. EPC greater than one means the private profit is higher than it would be without government interventions in input – output market. EPC less than one indicates that net effect of policies that change prices of tradable inputs and outputs is to reduce private profits. In the former case the domestic production of a commodity is being protected and encouraged whereas in the latter situation opposite is the case.

11.3 Domestic Resource Cost (DRC)

57. The domestic Resource Cost indicates the cost of non-tradable domestic resources used per unit of the value added in the production of a commodity, estimated at social prices. The numerator in these calculations is the opportunity cost of non-tradable factors used in domestic production while denominator is the value addition calculated at social prices.

58. DRC coefficient greater than one indicates a 'comparative disadvantage' in domestic production as the cost associated with domestic production is greater than the corresponding cost of imports. A situation where domestic resource cost coeffficient is less than one implies 'comparative advantage' since the domestic production can save/generate foreign exchange at costs less than the corresponding cost of imports. It may however be pointed out that DRC would vary with the changes in the opportunity cost of non tradable inputs as well the social value of output.

59. Based on the detailed cost of production data of 'average' farmers and import prices of wheat as used in the API's price policy reports, the NPC, EPC and DRCs in wheat farming for 2004-05 to 2007-08 have been estimated and summarized in Table-17. Data on private and social profitability for these years are detailed at Annexes-XIII and XIV.

Table-17: Economic Efficiency Coefficients for Wheat Crop

Province/ Year	Under Importing Situation			Under exporting Situation		
	NPCs	EPCs	DRCs	NPCs	EPCs	DRCs
PUNJAB						
2004-05	0.75	0.57	0.49	1.17	1.18	1.02
2005-06	0.77	0.56	0.59	0.96	0.83	0.86
2006-07	0.62	0.42	0.44	1.22	1.55	1.63
2007-08	0.48	0.38	0.21	0.81	0.75	0.43
SINDH						
2004-05	0.72	0.55	0.51	1.12	1.12	1.02
2005-06	0.77	0.59	0.61	0.96	0.85	0.88
2006-07	0.62	0.46	0.47	1.22	1.43	1.48
2007-08	0.46	0.37	0.25	0.76	0.71	0.48

Source: Annex-XIII and XIV.

60. Under importing situation the nominal protection coefficients as well as effective protection coefficients are less than one throughout the period of analysis indicating no economic protection given to wheat farming in the country. Rather wheat producers both in Punjab as well Sindh have been taxed or resources transferred out of wheat farming as these coefficients are substantially less than one. The magnitude of nominal taxation ranged from 23 to 38 percent during the first three years of the analysis but during 2007-08 it rose to as high as 54 percent due to high global prices and lower prices paid to the producers. In effective term this magnitude has been estimated at 63 percent indicating high distortions in the input market also.

61. Under exporting situation wheat production got protection during 2004-05 and 2006-07 when NPC and EPC were more than unity but during 2007-08 implying an implicit tax to the extent of 20 to 30 percent.

62. The domestic resource cost coefficients in wheat production calculated at the import parity prices are also less than one which suggests that the resource cost of domestic production is less than the corresponding import costs, indicating a comparative advantage in domestic production and import substitution. Therefore, it would be an economical proposition for the country to invest in the wheat production and marketing to maintain hard earned self-sufficiency in the staple food crop of wheat.

12. PRODUCER PRICES OF WHEAT IN SELECTED COUNTRIES

63. 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 the International Grains Council, London and Pak Missions abroad.

64. The data on the minimum guaranteed producer prices of wheat for 2005-06 to 2007-08 crops in major wheat producing countries are presented in Table-18.

65. 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: 2005-06 to 2007-08 Crops

Country	2005-06		2006-07		2007-08		Remarks
	US $/ Tonne	Pak Rs/ 40 kgs	US $/ Tonne	Pak Rs/ 40 kgs	US $/ Tonne	Pak Rs/ 40 kgs	
Australia	140	338	176.62	430.25	-	-	AWB Ltd Estimated No.1 Pool Return for ASW
Brazil	139	336	-	-	-	-	Minimum price for A Class 1 Wheat
Canada [1)]	161	389	127.22	309.91	-	-	Initial guaranteed payment for No.1 CWRS 13.5% effective August 2006.
EU	121	292	127.19	309.83	-	-	Basic Intervention price
India	155	374	208.26	507.32	224.14	650	Minimum support price plus Bonus
USA [2)]	120	290	101.05	246.16	-	-	National average loan rate
Pakistan	172	415	174.47	425.00	215.51	625	Support price

Sources:

1. International Grains Council, London, U.K.
2. Pak Missions, abroad.
3. The daily 'Business Recorder' August 8, 2008 for exchange rates.

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.
3. The exchange rates are those as applicable during the post-harvest period of wheat crop in Pakistan.

\- Data Not available from IGC.

13. PARITY BETWEEN PRICES OF FERTILIZERS AND WHEAT

66. Fertilizer is one of the most important factors that have contributed significantly to the increasing production of wheat in the country. However, its use depends on the purchasing power of wheat in terms of different fertilizers. The purchasing power of wheat in terms of fertilizers may be estimated from the parity ratio between prices of fertilizer nutrients and wheat. 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.

67. 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 1998-99 to 2007-08 and presented in Table-19.

Table-19: Parity Between Market Prices of Fertilizers and Wheat: 2000-01 to 2007-08

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

Sources: i) Tables 8 and 9.
ii) Annexes X and XI.

68. The parity ratio between market prices of nitrogen and wheat for 1998-99 shows that 2.54 units of wheat were needed to buy one unit of N. In 1999-00, the market price of wheat increased by 25 per cent and that of nitrogen fell by 3 per cent which led parity ratio to improve in favour of wheat. In the subsequent 3 years, parity ratio again weighed against wheat crop mainly

because of sharp increase in the price of nitrogenous fertilizer. During 2003-04 and 2004-05, prices of N fertilizer though increased significantly but wheat prices increased in higher proportion which improved the parity ratio in favour of wheat. However, these ratios deteriorated in the following two years and 2.07 units of wheat were needed to buy one unit of nitrogen. In the current year, parity ratio between market prices of N and wheat improved in favour of wheat due to appreciated market prices of the output.

69. A similar pattern of parity ratio is observed in prices of P fertilizer and wheat. However, the magnitude of change in parity ratio has been higher in the case of P fertilizer. The parity ratio decreased from 3.43 in 1998-99 to 3.34 in 1999-00. In the following year, this ratio moved in favour of wheat as 2.70 units of wheat were required to buy one unit of P fertilizer. It again moved against wheat in 2001-02 and 2002-03 due to unmatching change in prices of wheat and P fertilizer. Thereafter, the purchasing power of wheat in terms of P fertilizer improved as parity declined to 2.99 in 2003-04 and 2.91 in 2004-05 due to remunerative market prices of wheat. However, during 2005-06 and 2006-07 wheat again lost its purchasing power as the parity ratio jumped to 3.52 and 3.37 respectively. For 2007-08 crop, parity ratio estimated at 2.79 reflecting 17 per cent improvement in the purchasing power of wheat as compared with previous year in terms of P fertilizer.

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

70. Expenditure on wheat is an important item in average household budget. Accordingly, wheat and its products are included in the basket of goods used in estimating the Consumer Price Index (CPI). The support price of wheat affects both the household expenditure and CPI 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-XV, while a summary of the results is provided in Table-20. The findings of the analysis are discussed as under:

14.1 Impact on CPI

71. The Federal Bureau of Statistics (FBS) has estimated the changes in CPI as a result of increase in support price of wheat over the existing level of Rs 625 per 40 kgs in 2007-08. 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 ----------	
625 (Existing price)			
650	0.224	77	519
675	0.448	155	1046
700	0.671	232	1566
725	0.895	310	2092
750	1.119	387	2612
775	1.343	465	3138
800	1.567	542	3658
825	1.790	620	4185

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

72. It is evident from the above Table that every increase of Rs 25 per 40 kgs over the existing support price of wheat is expected to raise the CPI by 0.224 per cent, other things remaining the same. In case the support price of wheat is enhanced by Rs 100 and Rs 200 per 40 kgs, the CPI is likely to rise by 0.9 and 1.8 per cent respectively.

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

14.2 Impact on Household Expenditure

74. 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-XV and summarized in Table-20.

75. According to the above analysis, every increase of Rs 25 in the support price of wheat over the existing level of Rs 625 per 40 kgs in 2007-08 would increase the annual expenditure by Rs 77 per person and Rs 519 per average household, other factors remaining the constant. While the monthly expenses on wheat consumption due to every increase of Rs 25 per 40 kgs in the support price of wheat would rise by Rs 6.42 per person and Rs 43.25 per household. Likewise, the increases of Rs 100 and Rs 200 per 40 kgs over the existing support price would bring additional expenditure of Rs 310 and Rs 620 per capita per year and Rs 2092 and Rs 4185 per household, respectively. 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.

15. MAJOR WHEAT VARIETIES AND THEIR YIELD POTENTIAL

76. Seed has played 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 various research institutes at country level. Since 1990, about 15 high yielding wheat varieties have been developed by research institutes of the Punjab while about 7 HYVs of wheat released by the research institutes of Sindh.

77. 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.

78. 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 averaging at 6618 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 Durum-97 and Uqab-2000 indicating yield potential at 7100 and 6900 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.

79. Some high yielding wheat varieties were evolved by Research Institutes of Sindh during 1985 to 2006. Details of the agronomic practices, quality characteristics, yield potential and average yield at farmers' field of the following eight Commercial Wheat Varieties Released by Wheat Research Institute, Sakrand, Sindh for commercial cultivation are presented in Table-22.

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

S.No.	Variety	Seed rate	Sowing time	Duration	Maturity	Yield potential	Average yield	Chapatti quality	Gluten	Protein
		Kg/acre			Days	------Mds/acre----			---- 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.

80. The yield potential of 8 varieties ranged between 50 to 90 maunds per acre, the highest yield potential of Imdad-05 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.

16. WHEAT YIELD AMONG COMPETING COUNTRIES

16.1 Yield Potential

81. The gap between average yields presently achieved by farmers and yield potential is determine0d by the yielding ability of available crop varieties or hybrids and the degree to which crop and soil management practices allow expression of this genetic potential. Maintaining a sizable yield gap is crucial for sustaining steady increases in average crop yields.

82. In world wheat area, India contributes 12 per cent followed by China and Russian Federation. More than 34 per cent area of world wheat shared by top three countries i.e. India, China and Russian Federation and China. Pakistan contributes in terms of area by 4 per cent and stands at 9th position at global level. Top nine wheat producing countries in terms of area contributing 68 per cent of world wheat area are listed in Annex-XVI.

83. China is playing leading role in wheat production with 17 per cent share at world level followed by India and United States of America, contributing 12 and 9 per cent, respectively. More than 38 per cent of world wheat production is contributed by these countries. Pakistan contributes around 4 per cent in the world wheat production. Pakistan stands at 8th position in world wheat production. Top eight wheat producing countries in terms of wheat production jointly contribute about 63 per cent of the world wheat production (Annex-XVI).

16.2 World wheat yield

84. Among the important wheat producing countries, Pakistan ranks 8th in terms of wheat production in the world but holds at 57th position in yield per hectare at global level which needs special attention to improve productivity (Annex-XVII).

85. The yield potential in High Yielding Varieties (HYVs) of wheat is about 7 tonnes per hectare at research farms while the national average is 2.6 tonnes per hectare. This yield gap per hectare could be narrowed through adoption of optimal technology package on general field

conditions. Possibilities for such increase are supported by the yields already obtained by some progressive farmers in the country. Wheat faces competition for land and other resources from sunflower, canola and pulses. Other competing crops include spring maize, sugarcane and rabi fodders.

86. During 2006 wheat crop, the highest yield of 10,000 kgs per hectare of United Arab Emirates was recorded followed by Ireland and Netherlands at world level. On an average, the yield of top ten countries as listed in Annex-XVII was calculated at 7805 kgs per hectare at world level. The average yield of Pakistan is 2519 kgs per hectare which is less of 5286 kgs per hectare as compared to top ten wheat producing countries at world level (Annex-XVII).

87. Scientists working on wheat crop are of the view that round 40 per cent of yield potential is achieved from the existing wheat varieties. There are so many factors for getting low yield. Proper plant population and balanced use of fertilizer with timely application are contributing major role in achieving higher yield. If these factors are properly maintained as per research recommendations, definitely yield per hectare could be increased to a lot.

17. ISSUE PRICE OF WHEAT AND SUBSIDY

88. 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.

89. From 2005-06, Government fixed the indicative issue price at uniform level instead of cascading issue prices. For 2007-08, indicative issue price of Rs 465 per 40 kgs was fixed by the Cabinet, Rs 40 per 40 kgs higher than the corresponding support price. The government has released about 6 million tonnes of wheat to flour mills during May 2006 to April 2007 (Table-23).

Table-23: Release of Wheat to Flour Mills during 2007-08

Million tonnes

Provinces/Agencies	2007-08
Punjab	3.102
Sindh	1.184
NWFP	0.649
Balochistan	0.283
Others (AJK, NA, Refs, Utility Stores)	1.062
PASSCO	0.039*
Total	6.319

*PASSCO local sale + export sale.

Source: MINFAL, Islamabad.

90. During 2007-08, about 1.72 million tonnes of wheat were imported to meet the domestic requirements. The cost of imported wheat is reported at Rs 39,696 per tonne which is over 3 times the issue price of wheat at Rs 465 per 40 kgs and Rs 11625 per tonne. Thus, the Government subsidized the wheat consumers by about Rs 48 billion as under. If half of consumer subsidy would have provided to the growers, it would have certainly helped in productivity enhancement of wheat and saved valuable foreign exchange.

1.	Wheat import during 2007-08	1716.23 (000 tonnes)
2.	Rate of imported wheat	Rs 39696 (Per tonne)
3.	Issue price of wheat	Rs 11625 "
4.	Estimated subsidy to consumer	Rs 28071 "
	Total	Rs 48.18 (Billion)

18. MARKETING OF WHEAT

91. Agricultural Policy Institute conducted a mini field survey during July 2008 in the main producing areas of the Punjab and Sindh. On the basis of survey results and discussions in the Standing Committee meeting on wheat held on 15-7-2008, the wheat marketing situation for 2007-08 crop has been reviewed in the following paragraphs:

18.1 Wheat Procurement Targets and Achievements

92. The Federal Government fixed the target at 5.00 million tonnes for the procurement of wheat from 2007-08 crop through Provincial Food Departments and PASSCO. Agency-wise targets alongwith their achievements by provinces are shown in Table-24.

Table-24: Procurement Targets and Achievements: 2007-08 Wheat Crop

Province/agency	Target	Achievement	Achievement as per cent of target
	-------- Million tonnes ------		Per cent
Pakistan	**5.000**	**3.920**	**79**
- Provincial Food Departments	3.620	3.065	85
- PASSCO	1.400	0.854	61
Punjab	**4.330**	**3.372**	**78**
- Food Department	3.000	2.557	85
- PASSCO	1.330	0.815	61
Sindh	**0.660**	**0.546**	**83**
- Food Department	0.600	0.507	85
- PASSCO	0.060	0.039	65
Balochistan	**0.030**	**0.001**	**3**
- Food Department	0.020	0.001	5
- PASSCO	0.010	0.000	0

Source: MINFAL.

93. The numerics of the Table-24 reveal that none of the procurement agencies have fully achieved the targets. However, Provincial Food Departments were more efficient to procuring about 85 percent of the target. The analysis of the situation comes up with the higher market prices of wheat in comparison to support price as the main reason of under achievement of the targets. This statement seems true both at national as well as provincial level.

94. The average market prices in the main producing area markets of the Punjab and Sindh during post harvest season of 2007-08 crop were reported at Rs 677 and Rs 640 per 40 kgs respectively against the support price of Rs 625 per 40 kgs.

95. The Procurement of wheat in relation to the production during the last five years alongwith respective support and average market prices are given in Table-25.

Table-25: Production, Procurement, Market and Support Prices of Wheat: 2003-04 to 2007-08

Crop year (May-April	Production	Procure-ment	Procurement as a percent of production	Support price	Average market price (May-July)*
	------Million tonnes------		Per cent	----Rupees per 40 kgs----	
2003-04	19.50	3.33	17.00	350	384
2004-05	21.61	3.93	18.55	400	417
2005-06	21.28	3.88	17.88	415	411
2006-07	23.29	4.42	18.98	425	437
2007-08	21.70	3.92	18.06	625	659

Sources:

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

18.2 Wheat Prices Received by the Farmers

96. For 2007-08 wheat crop, the government announced Rs 625 per 40 kgs as support price which was to be implemented by Provincial Food Departments and PASSCO. According to the API's field survey conducted in Punjab and Sindh, the prices of wheat received by the farmers ruled above the support price.

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AREA,YIELD AND PRODUCTION OF WHEAT : 1997-98 TO 2007-08

Year	Punjab	Sindh	NWFP	Balochistan	Pakistan
AREA		---------- Thousand hectares ----------			
1997-98	5934.6	1120.2	918.1	381.7	8354.6
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	6265.2	989.9	748.1	410.3	8413.5
YIELD		---------- kgs per hectare ----------			
1997-98	2327	2374	1477	2283	2238
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	2603	3446	1495	2113	2580
PRODUCTION		---------- Thousand tonnes ----------			
1997-98	13807.0	2659.4	1356.0	871.6	18694.0
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	16308.0	3411.4	1118.2	867.0	21704.6

Sources:
1. **For 1997-98 to 2006-07: Agricultural Statistics of Pakistan, 2006-07 MINFAL, Islamabad.**
2. **For 2007-08: Final estimate of Sindh and Second estimates of Punjab, NWFP and Balochistan provided by respective Provincial Agriculture Departments.**

AREA, YIELD AND PRODUCTION OF WHEAT BY PROVINCE AND BY IRRIGATION: 2006-07 AND 2007-08

Country/ Province	Area			Yield per hectare			Production		
	2006-07	2007-08	Change Per cent	2006-07	2007-08	Change Per cent	2006-07	2007-08	Change Per cent
	000 ha			Kgs			000 tonnes		
				IRRIGATED					
PAKISTAN	7334.60	7220.40	-1.56	2916	2796	-4.11	21389.60	20191.30	-5.60
PUNJAB	5723.00	5598.70	-2.17	2902	2749	-5.28	16607.50	15388.90	-7.34
SINDH	937.00	951.30	1.53	3556	3556	0.00	3331.60	3382.50	1.53
NWFP	314.00	316.40	0.76	2018	1949	-3.45	633.80	616.60	-2.71
BALOCHISTAN	360.60	354.00	-1.83	2265	2269	0.19	816.70	803.30	-1.64
				UNIRRIGATED					
PAKISTAN	1243.60	1193.10	-4.06	1532	1268	-17.20	1905.10	1513.30	-20.57
PUNJAB	709.80	666.50	-6.10	1755	1379	-21.41	1245.50	919.10	-26.21
SINDH	45.20	38.60	-14.60	1717	749	-56.39	77.60	28.90	-62.76
NWFP	440.30	431.70	-1.95	1196	1162	-2.85	526.60	501.60	-4.75
BALOCHISTAN	48.30	56.30	16.56	1147	1131	-1.36	55.40	63.70	14.98
				TOTAL					
PAKISTAN	8578.20	8413.50	-1.92	2716	2580	-5.00	23294.70	21704.60	-6.83
PUNJAB	6432.80	6265.20	-2.61	2775	2603	-6.21	17853.00	16308.00	-8.65
SINDH	982.20	989.90	0.78	3471	3446	-0.71	3409.20	3411.40	0.06
NWFP	754.30	748.10	-0.82	1538	1495	-2.84	1160.40	1118.20	-3.64
BALOCHISTAN	408.90	410.30	0.34	2133	2113	-0.92	872.10	867.00	-0.58

Source: Annex-I.

DISTRICT- WISE AREA, YIELD AND PRODUCTION OF WHEAT
AVERAGE OF 2005-06 TO 2007-08

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	378.78	1124.43	5.09	297	1	Swat	62.23	103.08	0.47	1656
2	Sheikhupura	314.16	896.45	4.06	285	2	Mardan	45.31	97.25	0.44	2146
3	Bahawalnagar	308.50	868.29	3.93	281	3	Mansehra	37.92	84.39	0.38	2226
4	R.Y.Khan	305.13	849.59	3.85	278	4	Swabi	41.33	77.78	0.35	1882
5	Faisalabad	265.33	792.73	3.59	299	5	Peshawar	34.50	76.47	0.35	2216
6	Muzaffargarh	305.12	780.96	3.54	256	6	Bunir	49.15	70.86	0.32	1442
7	Bahawalpur	278.69	763.40	3.46	274	7	Charsadda	27.29	64.15	0.29	2351
8	Okara	210.30	700.11	3.17	333	8	D.I.Khan	39.77	56.39	0.26	1418
9	Gujranwala	225.27	675.53	3.06	300	9	Haripur	37.26	53.36	0.24	1432
10	Vehari	242.13	672.77	3.05	278	10	Nowshera	23.31	50.39	0.23	2162
11	Khanewal	216.77	646.31	2.93	298	11	Bajour AG.	39.02	44.59	0.20	1143
12	Sargodha	208.27	529.84	2.40	254	12	Malakand	29.06	34.42	0.16	1185
13	Sialkot	197.49	516.24	2.34	261	13	Dir Lower	25.74	24.37	0.11	947
14	Multan	187.77	500.18	2.26	266	14	Dir Uper	20.37	23.83	0.11	1170
15	Kasur	169.43	499.00	2.26	295	15	Abbottabad	14.77	22.30	0.10	1510
16	Layyah	184.94	477.07	2.16	258	16	Kohat	22.97	21.68	0.10	944
17	Pakpattan	145.55	473.36	2.14	325	17	Bannu	12.18	21.67	0.10	1778
18	T.T.Singh	157.42	453.68	2.05	288	18	Kurram AG.	12.29	20.85	0.09	1697
19	Lodhran	165.78	450.06	2.04	271	19	Shanlapar	22.49	20.56	0.09	914
20	Sahiwal	150.40	433.66	1.96	288	20	Mohmand AG.	16.70	19.77	0.09	1184
21	D.G.Khan	157.29	409.45	1.85	260	21	Lakki Marwat	22.82	18.68	0.08	819
22	Hafizabad	143.12	399.16	1.81	279	22	Chitral	7.92	18.53	0.08	2340
23	Bhakkar	155.53	363.64	1.65	234	23	Khyber AG.	12.48	17.88	0.08	1432
24	Rajanpur	134.08	353.39	1.60	264	24	Karak	23.45	15.22	0.07	649
25	Mianwali	169.56	343.68	1.56	203	25	Hangu	13.90	13.25	0.06	953
26	M.B.Din	125.18	336.43	1.52	269	26	N.Waziristan	7.03	9.05	0.04	1288
27	Narowal	139.75	308.15	1.39	221	27	S.Waziristan	7.12	7.50	0.03	1054
28	Gujrat	144.20	278.64	1.26	193	28	Battagram	5.87	7.09	0.03	1208
29	Attock	155.26	274.83	1.24	177	29	Orakzai AG	5.54	6.63	0.03	1195
30	Rawalpindi	113.04	197.62	0.89	175	30	F.R.Peshawar	4.63	6.35	0.03	1371
31	Chakwal	132.47	173.26	0.78	131	31	Tank	5.26	4.73	0.02	898
32	Khushab	85.66	168.04	0.76	196	32	F.R.Bannu	4.21	4.73	0.02	1123
33	Lahore	56.79	151.05	0.68	266	33	F.R.D.I.Khan	4.12	4.26	0.02	1034
34	Jhelum	51.93	96.15	0.44	185	34	F.R.Kohat	1.88	2.21	0.01	1178
35	Islamabad	12.68	21.64	0.10	171	35	Kohistan	1.36	2.17	0.01	1601
	Sub Total	**6393.78**	**16979.00**	**76.86**	**2656**		**Sub Total**	**741.23**	**1126.43**	**5.10**	**1520**
	SINDH						**BOLUCHISTAN**				
1	Sanghar	118.54	420.68	1.90	3549	1	Nasirabad	79.86	202.84	0.92	2540
2	Hyderabad	114.20	369.00	1.67	3231	2	Jaffarabad	53.10	134.64	0.61	2536
3	Khairpur	100.90	363.10	1.64	3599	3	Khuzdar	41.74	80.27	0.36	1923
4	N.Feroze	100.37	360.65	1.63	3593	4	Jhal Magsi	31.05	72.53	0.33	2336
5	Mirpurkhas	96.19	309.54	1.40	3218	5	Barkhan	23.88	43.60	0.20	1826
6	Ghotki	84.33	300.41	1.36	3562	6	Kharan	18.95	30.65	0.14	1617
7	Nawabshah	75.02	260.20	1.18	3468	7	Loralai	13.71	29.16	0.13	2128
8	Larkana	68.84	199.84	0.90	2903	8	Bolan	12.17	27.70	0.13	2276
9	Sukkur	43.33	150.28	0.68	3468	9	Chaghi	13.76	25.96	0.12	1887
10	Jacobabad	46.04	130.31	0.59	2830	10	Killa Saifullah	13.46	24.98	0.11	1856
11	Dadu	45.57	125.10	0.57	2745	11	Sibi	12.01	22.77	0.10	1896
12	Shikarpur	30.93	88.69	0.40	2867	12	Kalat	9.55	16.94	0.08	1775
13	Badin	29.67	75.40	0.34	2541	13	Mastung	10.07	16.26	0.07	1615
14	Thatta	12.61	32.10	0.15	2545	14	Awaran	7.91	11.64	0.05	1471
15	Tharparkar	1.58	4.30	0.02	2716	15	Dera Bughti	7.13	11.46	0.05	1607
16	Karachi	0.29	0.73	0.00	2481	16	Kohlu	5.87	7.54	0.03	1284
						17	Pishin	4.52	7.46	0.03	1651
						18	Lasbela	4.20	7.21	0.03	1717
						20	K.Abdullah	2.58	4.48	0.02	1734
						21	Musa Khel	2.67	3.75	0.02	1403
						22	Zhob	2.16	3.49	0.02	1615
						23	Panjgoor	1.83	2.75	0.01	1506
						24	Turbat	1.02	1.85	0.01	1822
						25	Ziarat	0.11	0.20	0.00	1782
	Sub Total	**968.43**	**3190.31**	**14.44**	**3294**		**Sub Total**	**376.39**	**796.30**	**3.60**	**2116**
							Pak Total	**8479.83**	**22092.03**	**100.00**	**2605**

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 2007-08

S.No	Description	Production year / Consumption year	2004-05 / 2005-06	2005-06 / 2006-07	2006-07 / 2007-08
			----------Million--------		
1	Population as on 1st November		160.75	163.91	167.02
			------000 tonnes--------		
2	Opening stock as on 1st May		337	2109	501
3	Production of Pakistan		21612	21277	23520
4	Production of AJ&K nad Nas areas		262	257	285
5	Imports		816	136	1730
6	Exports		-	458	-
7	Closing stocks as on 30th April		2109	501	135
8	Total availability		20918	22820	25901
9	Deduction for seed & feed @ 10%		2187	2153	2380
10	Availability for human consumption (item 8 - item 9)		18731	20667	23520
11	Per capita availability (item 10/item 1)		117	126	141
12	Average per capita availability during 2005-06 to 2007-08 (3 years average)			128	

Notes: 1. Population of AJ&K, NAs and Afghan refugees have also been included.

2. Due to non-availability of data, production of AJ&K and NAs has been estimated on the basis of ratio between the production of Pakistan and that of AJ&K and NAs during 1991-92.

Annex-V

MONTHLY AVERAGE WHOLESALE PRICES OF WHEAT IN MAIN PRODUCING AREA DURING POST-HARVEST SEASON OF 2007-08 CROP

Punjab

Markets	April	May	June	Average
Lahore	688	737	760	728
Faisalabad	623	673	694	663
Sargodha	690	669	691	683
Multan	667	663	668	666
Gujaranwala	638	670	713	674
Okara	642	672	677	664
R.Y. Khan	616	671	686	658
Average	**652**	**679**	**698**	**677**

Sindh

Markets	March	April	May	Average
Sanghar	510	625	707	614
Nawabshah	620	625	750	665
Mirpur khas	600	625	800	675
Hyderabad	500	650	720	623
Sukkur	600	650	625	625
Average	**566**	**635**	**720**	**640**

Annex-VI

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	USD/t	113.2	181.3	185.3	189.0	173.0	164.6
Rice	USD/t	262.3	361	390.6	330.7	340.3	334.5
Oilseeds	USD/t	293.4	485.8	481.9	468.3	452.4	457.2
Oilseed meal	USD/t	219.5	365.7	348.2	328.4	302.6	307.0
Vegetable oil	USD/t	587.5	1015.1	986.9	1026.3	1048.0	1055.1
Sugar							
Raw	USD/t	237.1	229.3	216.0	257.6	298.0	301.7
Refined	USD/t	291.1	289.1	268.1	317.8	371.3	379.1

Annex-VII

INTERNATIONAL/EXPORT PRICES FOB(GULF) OF NO HARD RED WINTER

Years	Fob(Gulf) price US$ per tonne
2004-05	151
2005-06	138
2006-07	177
2007-08:	332
July	226
August	254
September	323
October	326
November	308
December	345
January	344
February	389
March	416
April	371
May	335
Jun	347

Source: USDA, Web.

Annex-VIII

EXPORT PARITY PRICES OF WHEAT ON THE BASIS OF NO 2 HARD RED WINTER
FOB (GULF) PORT

S.No	Item	During 2007-08	During June, 2008	During Augus	FAO-OECD Forecast for	Average Price
		----------US $ per tonne----------				
1	FOB (Gulf) price assuming fob karachi	332	347	330	267	319
		OR .....Rupees per tonne--------(a)				
		23904	24984	23760	19224	22968
2	Incidental charges:	3083	3125	3078	2902	3047
	i) Expences from procurement center to multan	100	100	100	100	100
	ii) Transport cost from surplus area to(Multan) to Karachiport	1500	1500	1500	1500	1500
	iii) Cleaning and grading charges	500	500	500	500	500
	iv) Bagging, spillage, loading, unloading & testing charges	15	15	15	15	15
	v) Wharfage/ weighment, port charges	25	25	25	25	25
	vi) Pre-shipment charges @ 0.5% of fob price	120	125	119	96	115
	vii) Export-development surcharge @0.25 of fob price	60	62	59	48	57
	viii) Bank commission and charges	15	15	15	15	15
	ix) Markup @ 11% per annum for 30 days	216	226	215	174	208
	x) Miscellaneous charges @ 2% of fob price	478	500	475	384	459
3	Export parity price of wheat at procurement center level	20821	21859	20682	16322	19921
4	Export parity price per 40 kgs at procurement centre	833	874	827	653	797

Note: Exchange rate of one US $ =72 Pak Rupees.

Sources: 1. For c&f (Karachi) price: MINFAL, Islamabad.
2. For incidental and transport charges:Trading Corporation of Pakistan(pvt) Ltd, Karachi.
3. For procurement charges: PASSCO, Lahore.

Annex-IX

IMPORT PARITY PRICES OF WHEAT ON THE BASIS OF ACTUAL AVERAGE C&F(KARACHI) PRICE OF IMPORTED WHEAT

S.No	Item	During 2007-08		During 2008-09		OECD Forecast for 2008-09
		Red Wheat	White Wheat	TCP's Actual import	TCP's Import Order	
		----------US $ per tonne----------				
1	Average c&f (Karachi) Price	454	545	408	380	357
		OR .....Rupees per tonne----------(a)				
		32688	39240	29376	27360	25704
2	Marine insurance @0.23 % of c&f Cost	75	90	68	63	59
3	Stevedoring charges, clearing, forwarding, wharfage, weightment, survey and inland insurance charges	718	718	718	718	718
4	L.C Charges @ 0.1% of c&f cost	33	39	29	27	26
5	Misc. expences including advertisement	33	39	29	27	26
6	TCP Commission @ 2% of c&f Cost	654	785	588	547	514
7	Markup @ 11% per annum for 90 days	887	1064	797	742	697
8	**Landed cost at Karachi**	**35087**	**41976**	**31605**	**29485**	**27744**
9	Transport cost from Karachi to Multan	2000	2000	2000	2000	2000
10	Expences Procurement center to Multan	100	100	100	100	100
11	Import parity price per tonne of wheat at procurement center level	36987	43876	33505	31385	29644
12	Import parity price (Rs/40kgs)					
	i) If consumed at Multan	1479	1755	1340	1255	1186
	i) If consumed at Karachi	1403	1679	1264	1179	1110

Note: Exchange rate of one US $ =72 Pak Rupees.

Sources: 1. For c&f (Karachi) price: MINFAL, Islamabad.
2. For incidental and transport charges:Trading Corporation of Pakistan(pvt) Ltd, Karachi.
3. For procurement charges: PASSCO, Lahore.

Annex-X

AVERAGE FARMERS' COST OF PRODUCTION OF WHEAT IN THE PUNJAB: 2007-08 AND 2008-09 CROPS

Sr. No.	Operations/Inputs	Avg.No. of oprs/ units/per acre	2007-08 crop		2008-09 crop		Change in 2008-09 over 2007-08
			Rate per unit	Cost per acre	Rate 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	550.00	328.90	730.00	436.54	107.64
	1.2 Ploughing	2.137	225.00	480.83	300.00	641.10	160.28
	1.3 Ploughing & planking	0.714	275.00	196.35	365.00	260.61	64.26
	1.4 Planking	0.649	110.00	71.39	150.00	97.35	25.96
	1.5 Levelling (hrs)	0.498	275.00	136.95	365.00	181.77	44.82
2.	Seed and sowing operations:						
	2.1 Seed used (kgs)	52.577	21.00	1104.12	30.00	1577.31	473.19
	2.2 Tractor drilling	0.166	225.00	37.35	300.00	49.80	12.45
	2.3 Labour for seed broadcasting (m.hrs)	0.858	17.00	14.59	25.00	21.45	6.86
	2.4 Ploughing in case of broadcasting	1.390	225.00	312.75	300.00	417.00	104.25
	2.5 Planking in case of broadcasting	0.321	110.00	35.31	150.00	48.15	12.84
3.	Bund making:						
	3.1 Manual (m. hrs)	1.033	17.00	17.56	25.00	25.83	8.26
	3.2 Tractor (hrs)	0.203	275.00	55.83	364.00	73.89	18.07
4.	Weedicides	0.787	400.00	314.80	425.00	334.48	19.68
5.	Irrigation: (Nos)						
	5.1 Canal alone	0.507	-	50.00	-	50.00	0.00
	5.2 Private tubewell	3.002	505.00	1516.01	550.00	1651.10	135.09
	5.3 Mixed	0.230	335.00	77.05	365.00	83.95	6.90
6.	Labour for irrigation and water-course cleaning (m.days)						
	6.1 For irrigation	1.225	130.00	159.25	200.00	245.00	85.75
	6.2 For water-course cleaning	0.329	130.00	42.77	200.00	65.80	23.03
7.	Farm yard manure (50 %)	-	-	90.00	-	120.00	30.00
8.	Chemical fertilizers (bags)						
	8.1 DAP	1.090	1206.00	1314.54	3067.00	3343.03	2028.49
	8.2 Urea	1.747	525.00	917.18	695.00	1214.17	296.99
	8.3 SSP	0.132	365.00	48.18	843.00	111.28	63.10
	8.4 NP	0.079	800.00	63.20	2009.00	158.71	95.51
	8.5 CAN	0.039	400.00	15.60	673.00	26.25	10.65
	8.6 SOP	0.024	981.00	23.54	2264.00	54.34	30.79
	8.7 Gypsum	0.024	60.00	1.44	70.00	1.68	0.24
	8.8 Transport and application	3.135	20.00	62.70	25.00	78.38	15.68
9.	Mark- up on investment on item 1 to 8 excluding item 5 (1) @ 12.00 % per annum for 6 months	-	-	446.29	-	679.14	232.85
10.	Harvesting charges (40 kgs/acre)	2.997	425.00	1273.73	637.00	1909.09	635.36
11.	Threshing:						
	11.1 Threshing @ 3.23 kgs/40 kgs (40 kgs)	2.237	425.00	950.73	637.00	1424.97	474.24
	11.2 M. days	1.810	130.00	235.30	200.00	362.00	126.70
12.	Land rent per acre for 6 months	-	5500.00	2750.00	8000.00	4000.00	1250.00
13.	Average weighted land tax @ 132/acre/annum for 6 months	-	132.00	66.00	132.00	66.00	0.00
14.	Management charges for 6 months	-	-	372.00	-	425.00	53.00
15	Total cost per acre	-	-	13582.21	-	20235.14	6652.92
16.	Value of wheat bhoosa	-	-	1500.00	-	2000.00	500.00
17	Net cost per acre (item 15 - item 16)	-	-	12082.21	-	18235.14	6152.92
18.	Yield per acre (kgs)	-	-	1108.00	-	1108.00	0.00
19	Cost of production at farm level (Rs/ 40 kgs)	-	-	436.18	-	658.31	222.13
20.	Marketing cost (Rs/ 40kgs)	-	-	16.00	-	18.00	2.00
21.	Cost of production at market/procurement centre (Rs/ 40 kgs)						
	21.1 With land rent	-	-	452.18	-	676.31	224.13
	21.2 Without land rent	-	-	352.90	-	531.90	179.00

Annex-XI

AVERAGE FARMERS' COST OF PRODUCTION OF WHEAT IN SINDH: 2007-08 AND 2008-09 CROPS

Sr. No.	Operations/Inputs	Avg.No. of oprs/ units/per acre	2007-08 crop		2008-09 crop		Change in 2008-09 over 2007-08
			Rate per unit	Cost per acre	Rate per unit	Cost per acre	
1	2	3	4	5=3*4	6	7=3*6	8=7-5
				---------- Rupees ----------			
1.	Preparatory tillage:						
	1.1 Rotavator/disc plough	0.349	550.00	191.95	785.00	273.97	82.02
	1.2 Ploughing	3.034	280.00	849.52	400.00	1213.60	364.08
	1.3 Ploughing and planking	0.070	330.00	23.10	470.00	32.90	9.80
	1.4 Planking	0.081	140.00	11.34	200.00	16.20	4.86
	1.5 Levelling (hrs)	1.010	330.00	333.30	470.00	474.70	141.40
2.	Seed and sowing operations:						
	2.1 Seed used (kgs)	55.817	21.00	1172.16	30.00	1674.51	502.35
	2.2 Tractor drilling	0.037	280.00	10.36	400.00	14.80	4.44
	2.3 Labour for seed broadcasting (m.hr)	1.127	17.00	19.16	25.00	28.18	9.02
	2.4 Ploughing in case of broadcasting	0.275	280.00	77.00	400.00	110.00	33.00
	2.5 Planking in case of broadcasting	0.162	140.00	22.68	200.00	32.40	9.72
3.	Bund making:						
	3.1 Manual (m.hrs)	1.611	17.00	27.39	25.00	40.28	12.89
	3.2 Tractor (hrs)	0.091	330.00	30.03	470.00	42.77	12.74
4.	Interculture/weeding						
	4.1 Interculture	0.037	330.00	12.21	400.00	14.80	2.59
	4.2 Weedicides	0.529	400.00	211.60	425.00	224.83	13.23
5.	Irrigation: (Nos)						
	5.1 Canal alone	1.763	-	53.30	-	53.30	0.00
	5.2 Lift pump	0.551	253.00	139.40	275.00	151.53	12.12
	5.3 Private tubewell	1.046	381.00	398.53	415.00	434.09	35.56
	5.4 Mixed	0.449	275.00	123.48	300.00	134.70	11.23
6.	Labour for irrigation and water course cleaning (m.days)						
	6.1 For irrigation	1.022	130.00	132.86	200.00	204.40	71.54
	6.2 For water course cleaning	0.349	130.00	45.37	200.00	69.80	24.43
7.	Farm Yard Manure (50 %)			85.00		85.00	0.00
8.	Chemical fertilizers (bags)						
	8.1 DAP	1.013	1170.00	1185.21	3104.00	3144.35	1959.14
	8.2 Urea	1.950	542.00	1056.90	697.00	1359.15	302.25
	8.3 NP	0.186	835.00	155.31	1930.00	358.98	203.67
	8.4 CAN	0.020	415.00	8.30	650.00	13.00	4.70
	8.5 Transport + application	3.169	22.00	69.72	25.00	79.23	9.51
9.	Mark- up on investment on item 1 to 8 exc item 5 (1) @ 12.00 % per annum for 6 months	-	-	383.51	-	613.69	230.18
10.	Harvesting charges (40 kgs/ac	2.876	417.00	1199.29	596.00	1714.10	514.80
11.	Threshing:						
	11.1 Tresher @ 2.95 kgs/40 kgs (40 kgs)	1.784	417.00	743.93	596.00	1063.26	319.34
	11.2 Labour (m.days)	1.415	130.00	183.95	200.00	283.00	99.05
12.	Land rent for 6 months	-	4000.00	2000.00	6000.00	3000.00	1000.00
13.	Land tax @ 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	-	-	372.00	-	425.00	53.00
16.	Total cost per acre	-	-	11451.85	-	17504.49	6052.64
17.	Value of wheat bhoosa	-	-	1300.00	-	2000.00	700.00
18.	Net cost per acre (Item 16 - item 17)	-	-	10151.85	-	15504.49	5352.64
19.	Yield per acre (kgs)	-	-	967.81	-	967.81	0.00
20.	Cost of production at farm level (Rs/40 kgs	-	-	419.58	-	640.81	221.23
21.	Marketing cost (Rs/40 kgs)	-	-	16.00	-	18.00	2.00
22.	Cost of production at market/procurement centre (Rs/40 kgs)						
	22.1 With land rent	-	-	435.58	-	658.81	223.23
	22.2 Without land rent	-	-	352.92	-	534.82	181.90

Notes for Annex-X and XI:

1. The input-output parameters for estimating cost of production of wheat 2008-09 crop have been adopted from the Price Policy Report for wheat 2007-08 crop, API's Series No 225.

2. The inputs prices, custom hire rates of field operations, wage rate, value of wheat bhoosa and land rentals have been adjusted in the light of the information provided by the Provincial Agriculture Departments and Farmers' Associations' discussion made in the meeting of the Standing Committee on Wheat, held on 15th July 2008 at Islamabad and other sources as under:

3. The Punjab Seed Corporation has not yet fixed the sale prices of wheat seed for 2008-09 crop. Therefore, prices of wheat seed in the Punjab and Sindh have been revised on the basis of increases in the average wholesale market prices of wheat during current 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 31st July 2008.

5. 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 7078 per month for a Field Assistant at the 10th stages in BPS-6 as per revised scale of July 2008.

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

7. The values of kind payments for harvesting and threshing of wheat have revised in the light of current market prices averaged at Rs 655 per 40 kgs in the Punjab and Rs 614 in Sindh. Marketing charges of Rs 18 per 40 Kgs have been deducted from the market prices to bring these costs at the farm level.

8. Land rent is one of the foremost components in the cost of cultivation of wheat. During field survey conducted by the API during July 2008 in the major producing areas of wheat in the Punjab and Sindh, sizeable increases in the land rent, on account of current higher market prices of crops, were recorded. Land rent is altered by several factors and drastically varies from region to region. Nevertheless, there is no defined measure to fix land rent. Keeping in view the discussion made by crop experts in the aforesaid meetings and information collected during field survey, land rentals have been adjusted accordingly.

Annex-XII

ECONOMICS OF WHEAT AND COMPETING CROPS AT PRICES REALIZED BY THE GROWERS: 2007-08 CROPS

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	Crop day	Acre inch of water
1	2	3	4	5	6	7=6-5	8=6-4	9=6/4	10=6/5	11=6/2	12=6/3
	Days	Acre inches	.....Rupees per acre.....						.....Rupees.....		
Punjab											
1 Wheat	180	12	13962	6069	18369	12301	4408	1.3	3.0	102	1531
2 Basmati paddy	180	58	13979	8150	21232	13082	7253	1.5	2.6	118	366
3 IRRI paddy	180	62	11715	6689	16189	9500	4474	1.4	2.4	90	261
4 Seed cotton	240	22	18191	7811	25443	17632	7252	1.4	3.3	106	1157
5 Sugarcane	394	48	27306	8809	27410	18601	104	1.0	3.1	70	571
6 Sunflower (spring)	144	22	12605	3433	17760	14328	5155	1.4	5.2	123	807
7 Canola	210	13	9828	2811	22211	19400	12383	2.3	7.9	106	1709
8 Seed cotton + wheat	420	34	32153	13880	43812	29932	11660	1.4	3.2	104	1289
9 Seed cotton + sunflower	384	44	30796	11244	43203	31959	12407	1.4	3.8	113	982
10 Basmati paddy+wheat	360	70	27940	14219	39601	25382	11661	1.4	2.8	110	566
11 Basmati paddy+sunflower	324	80	26584	11582	38992	27409	12408	1.5	3.4	120	487
12 IRRI paddy + wheat	360	74	25677	12758	34558	21800	8882	1.3	2.7	96	467
13 IRRI paddy+sunflower	324	84	24321	10122	33949	23827	9628	1.4	3.4	105	404
Sindh											
1 Wheat	180	12	11851	5129	16035	10906	4184	1.4	3.1	89	1336
2 IRRI paddy	180	56	10243	4572	18866	14293	8623	1.8	4.1	105	337
3 Seed cotton	240	18	17091	5988	25250	19262	8159	1.5	4.2	105	1403
4 Sugarcane	488	71	33509	10006	36120	26114	2610	1.1	3.6	74	509
5 Sunflower (spring)	144	22	12105	3433	22260	18828	10155	1.8	6.5	155	1012
6 Canola	210	13	9651.3	2811	18476	15665	8825	1.9	6.6	88	1421
7 Seed cotton + wheat	420	30	28942	11116	41285	30168	12343	1.4	3.7	98	1376
8 Seed cotton + sunflower	384	40	29196	9420	47510	38090	18314	1.6	5.0	124	1188
9 IRRI paddy+ wheat	360	68	22094	9701	34901	25200	12806	1.6	3.6	97	513
10 IRRI paddy+sunflower	324	78	22349	8005	41126	33121	18777	1.8	5.1	127	527

Notes for Annex – XII:

1. The economic analysis presented in the above exercise is based on the input-output prices applicable for 2007-08 crops.

2. The data regarding input-output parameters have been adopted from the APCom's support price policy papers for sugarcane, seed cotton, rice paddy and wheat, 2007-08 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 2007-08 crops. To incorporate the escalations in input prices, which occurred during the growing period of 2007-08 crops, some marginal revisions have been made as under:

   2.1 The cost of supplementary irrigation remained unchanged as there is no any change observed in the power tariff and diesel prices during the period under consideration.

   2.2 The cost of fertilizers has been revised in view of their prices prevailed at the time of application for the respective crops in 2007-08 season.

3. Water use has been estimated from the number of irrigations as reported in the cost of production estimates of the respective crops assuming each irrigation of 3 inches and 'rauni' of 4 inches.

4. The following prices as realized by the growers for different crops are adopted for the analysis:

   4.1 The support price of Rs 625 per 40 kgs as announced by the government for 2007-08 crop has been adopted for the current analysis.

   4.2 The wholesale market prices of basmati paddy and IRRI paddy during the post harvest period in major producer area markets reported by the Directorate of Agriculture (E&M), Lahore have averaged at Rs 920 and Rs 481 per 40 kgs, respectively. While, the average price of IRRI paddy in Sindh is reported at Rs 509 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 2007-08 in the main producer area markets have averaged at Rs 1468 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 1445 per 40 kgs.

   4.4 As per field information, the prices of sunflower are reported to hover around Rs. 1500 per 40 kgs in Sindh and Rs. 1200 in the Punjab. The corresponding prices for canola are Rs. 1500 and 1800 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 55 per 40 kgs in the Punjab and Rs 60 in Sindh.

5. The market prices have been adjusted for the marketing expenses to make them effective at the farm level. These expenses amount to Rs 6.25 per 40 kgs in Punjab and Sindh for sugarcane, Rs 23 in Punjab and Rs 25 in Sindh for seed cotton, Rs 16 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 used in acre inches.

Annex-XIII

ECONOMIC EFFICIENCY OF RESOURCE USE IN WHEAT
POLICY ANALYSIS MATRIX (PAM) FOR AVERAGE FARMERS
(BASED ON IMPORT PARITY PRICES)

Description	Revenues	Traded cost	Domestic Factors Cost	Profits
	--------- Rupees per acre ---------			
PUNJAB				
2004-05				
Private Prices	11332	6131	4579	178
Social Prices	14828	5712	4495	4926
Transfers	-3629	773	347	-4749
2005-06				
Private Prices	12191	7204	5271	178
Social Prices	15571	6715	5205	4926
Transfers	-3629	773	347	-4749
2006-07				
Private Prices	12773	7488	5614	178
Social Prices	20045	7607	5532	4926
Transfers	-3629	773	347	-4749
2007-08				
Private Prices	19310	8081	6531	178
Social Prices	38854	9382	6335	4926
Transfers	-3629	773	347	-4749
SINDH				
2004-05				
Private Prices	10021	5212	4695	239
Social Prices	13665	4877	4441	4847
Transfers	-3767	617	224	-4608
2005-06				
Private Prices	10775	5930	5197	-318
Social Prices	13727	5553	5016	4149
Transfers	-3025	1150	291	-4467
2006-07				
Private Prices	11283	6002	5668	-318
Social Prices	17635	6033	5447	4149
Transfers	-3025	1150	291	-4467
2007-08				
Private Prices	16098	6267	7090	178
Social Prices	34065	7406	6706	4926
Transfers	-3629	773	347	-4749

Annex-XIV

ECONOMIC EFFICIENCY OF RESOURCE USE IN WHEAT
POLICY ANALYSIS MATRIX (PAM) FOR AVERAGE FARMERS
(BASED ON EXPORT PARITY PRICES)

Description	Revenues	Traded cost	Domestic Factors Cost	Profits
	-------- Rupees per acre --------			
PUNJAB				
2004-05				
Private Prices	11332	6085	4577	178
Social Prices	9814	5372	4513	4926
Transfers	-3629	773	347	-4749
2005-06				
Private Prices	12191	7204	5271	178
Social Prices	12627	6596	5213	4926
Transfers	-3629	773	347	-4749
2006-07				
Private Prices	12773	7488	5614	178
Social Prices	10640	7227	5559	4926
Transfers	-3629	773	347	-4749
2007-08				
Private Prices	19310	8081	6531	178
Social Prices	23684	8770	6378	4926
Transfers	-3629	773	347	-4749
SINDH				
2004-05				
Private Prices	10021	5206	4617	239
Social Prices	9009	4694	4387	4847
Transfers	-3767	617	224	-4608
2005-06				
Private Prices	10775	5930	5197	-318
Social Prices	11156	5458	5022	4149
Transfers	-3025	1150	291	-4467
2006-07				
Private Prices	11283	6002	5668	-318
Social Prices	9420	5730	5464	4149
Transfers	-3025	1150	291	-4467
2007-08				
Private Prices	16098	6267	7090	178
Social Prices	20814	6917	6733	4926
Transfers	-3629	773	347	-4749

Annex-XV

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

Proposed support price	Expenditure on wheat at annual 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 ----------			
625 (Existing for 2007-08 crop)	1938	13082	-	-
650	2015	13601	77	519
675	2093	14128	155	1046
700	2170	14648	232	1566
725	2248	15174	310	2092
750	2325	15694	387	2612
775	2403	16220	465	3138
800	2480	16740	542	3658
825	2558	17267	620	4185

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-XVI

AREA UNDER WHEAT OF MAJOR WHEAT PRODUCING COUNTRIES IN THE WORLD: 2006 CROP

S.No.	Name Country	Area in million hactares	Per cent share in world area
1	India	26.48	**12.40**
2	China	23.45	**10.98**
3	Russian Federation	23.05	**10.80**
4	United States of America	20.28	**9.50**
5	Kazakhstan	12.40	**5.81**
6	Australia	11.14	**5.22**
7	Canada	10.53	**4.93**
8	Turkey	9.30	**4.36**
9	**Pakistan**	**8.45**	**3.96**
	Total	145.08	**67.95**
	Total World Area	213.50	**100.00**

Source: FAO

WHEAT PRODUCTION IN MAJOR WHEAT PRODUCING COUNTRIES IN THE WORLD: 2006 CROP

S.No.	Name Country	Production in million tonnes	Per cent share in world Prod.
1	China	104.47	17.31
2	India	69.35	11.49
3	United States of America	57.30	9.49
4	Russian Federation	45.01	7.46
5	France	35.37	5.86
6	Canada	27.28	4.52
7	Germany	22.43	3.72
8	**Pakistan**	21.28	3.52
	Total	382.47	63.36
	Total World Area	603.67	**100**

Source: FAO

Annex-XVII

YIELD PER HECTARE OF MAJOR WHEAT PRODUCING COUNTRIES IN THE WORLD: 2006 CROP

Sr. No.	Name of Country	Yield per Hactare in Kgs	Sr. No.	Name of Country	Yield per Hactare in Kgs
1	United Arab Emirates	10000	30	Italy	3683
2	Ireland	8764	31	Finland	3557
3	Netherlands	8548	32	Turkmenistan	3524
4	United Kingdom	8039	33	Serbia, Republic of	3474
5	Belgium	7987	34	Bulgaria	3403
6	New Zealand	7314	35	Korea, Republic of	3343
7	Germany	7201	36	Poland	3245
8	Denmark	6996	37	Bosnia and Herzegovina	3170
9	France	6741	38	Zimbabwe	3111
10	Egypt	6455	39	Korea, Dem People's Rep	3033
11	Zambia	6210	40	Venezuela,Bolivar Rep of	3014
12	Luxembourg	5969	41	Albania	2991
13	Namibia	5931	42	Macedonia,The Fmr Yug Rp	2965
14	Switzerland	5781	43	Montenegro, Republic of	2917
15	Sweden	5462	44	Lebanon	2903
16	Mexico	5252	45	Spain	2848
17	Saudi Arabia	5195	46	United States of America	2825
18	Austria	4907	47	Belarus	2819
19	Croatia	4583	48	Oman	2808
20	Norway	4546	49	Latvia	2782
21	Czech Republic	4486	50	Romania	2774
22	Chile	4460	51	South Africa	2752
23	China	4455	52	India	2619
24	Malta	4318	53	Azerbaijan, Republic of	2605
25	Slovenia	4191	54	Canada	2589
26	Uzbekistan	4140	55	Sudan	2568
27	Hungary	4061	56	Argentina	2545
28	Slovakia	3846	**57**	**Pakistan**	**2519**
29	Japan	3835			

Source: FAO

Annex-XVIII

Requirement and Availability of Certified Seed of Wheat During 2002-03 to 2007-08

Province/ Year	Area under wheat	Total requirement	Annual replacement requirement	Certified seed availability			Certified seed available to meet	
				Public sector	Private sector	Total	Annual replacement requirement	Total seed requirement
	000 hect.	000 m. tonnes					% age	
Punjab								
2002-03	6097.3	554.9	111.0	68.0	55.0	123.0	110.8	22.2
2003-04	6221.9	566.2	113.2	69.0	65.2	134.2	117.9	23.6
2004-05	6378.9	580.5	116.1	68.0	112.4	180.2	156.1	31.2
2005-06	6483.4	590.0	118.0	62.0	147.06	209.1	181.7	36.3
2006-07	6432.8	585.4	117.1	53.2	140.5	193.7	165.4	33.1
2007-08	6265.2	570.1	114.0	50.9	134.3	185.2	162.5	32.5
Sindh								
2002-03	863.7	78.6	15.7	1.1	5.0	6.1	38.8	7.8
2003-04	878.2	79.0	16.0	0.6	4.7	5.3	33.2	6.6
2004-05	887.4	80.7	16.2	0.3	8.8	9.1	56.2	11.3
2005-06	933.2	84.9	17.0	0.3	9.4	9.7	57.1	11.4
2006-07	982.2	89.4	17.9	1.6	11.4	13.0	72.6	14.5
2007-08	989.9	90.1	18.0	3.1	10.2	13.3	73.9	14.8
NWFP								
2002-03	732.1	66.6	13.3	6.5	0.4	6.9	51.8	10.4
2003-04	755.4	68.7	13.7	3.8	0.4	4.2	31.1	6.2
2004-05	748.6	68.1	13.6	2.7	0.5	3.2	23.0	4.6
2005-06	721.3	65.6	13.1	2.6	0.3	2.8	20.7	4.1
2006-07	754.3	68.6	13.7	2.8	0.9	3.7	27.0	5.4
2007-08	748.1	68.1	13.6	3.0	1.2	4.2	30.9	6.2
Balochistan								
2002-03	340.8	31.0	6.2	0.2	0.0	0.2	3.2	0.6
2003-04	334.5	30.4	6.1	0.3	0.0	0.3	4.8	1.0
2004-05	343.1	31.2	6.2	0.3	0.6	0.9	14.9	3.0
2005-06	310.0	28.2	5.6	0.5	1.1	1.2	21.4	4.3
2006-07	408.9	37.2	7.4	0.0	0.4	0.4	5.9	1.1
2007-08	410.3	37.3	7.5	0.3	1.2	1.5	20.0	4.0
Pakistan								
2002-03	8033.9	731.1	146.2	75.8	60.4	136.2	93.1	18.6
2003-04	8190.0	745.3	149.1	73.7	70.3	144.0	96.3	19.3
2004-05	8358.0	760.6	152.1	71.7	122.3	193.6	127.7	25.5
2005-06	8447.9	768.8	153.8	64.94	157.9	222.8	47.4	29.5
2006-07	8578.2	780.6	156.1	57.6	153.2	210.8	135.0	27.0
2007-08	8413.5	765.6	153.1	57.3	146.9	204.2	133.4	26.7

Note: Seed rate of 91 kgs per hectare has been used for working out the total annual requirement 20% of which has been assumed annual replacement requirement.

Source: For certified seed sold:

i) Working paper and minutes of various meetings of FCA.

ii) FSC & RD Islamabad.

iii) For area under wheat see Annex-I.