



**RICE PADDY POLICY ANALYSIS
FOR
2009-10 CROP**

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

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ABBREVIATIONS

API	Agriculture Policy Institute
BMR	Balancing Modernization Replacement
CIS	Central Independent States
COP	Cost of Production
CPI	Consumer Price Index
DR	Dokri Research
DRC	Domestic Resource Cost
E&M	Economics and Marketing
ECC	Economic Coordination Committee
EPC	Effective Protection Coefficient
FAO	Food and Agriculture Organization
FAQ	Fair Average Quality
FBS	Federal Bureau of Statistics
FCA	Federal Committee on Agriculture
FMI	Farm Machinery Institute
FOB	Free on Board
FSC&RD	Federal Seed Certification and Registration Department
FYM	Farm Yard Manure
GST	General Sale Tax
IPM	Integrated Pest Management
IRRI	International Rice Research Institute
KSK	Kala Shah Kaku
MINFA	Ministry of Food and Agriculture
NARC	National Agricultural Research Centre
NIAB	Nuclear Institute for Agriculture and Biology
NPC	Nominal Protection Coefficient
PARC	Pakistan Agricultural Research Council
PASSCO	Pakistan Agricultural Storage and Services Corporation
PSC	Punjab Seed Corporation
REAP	Rice Export Association of Pakistan
RRI	Rice Research Institute
SSC	Sindh Seed Corporation
TCP	Trading Corporation of Pakistan
TDAP	Trade Development Authority of Pakistan
WBPH	White Back Plant Hopper
WTO	World Trade Organization

RICE PADDY POLICY ANALYSIS FOR 2009-10 CROP

SUMMARY OF FINDINGS AND RECOMMENDATIONS

Findings

Area and Production

- During the decade ending 2008-09, rice production in Pakistan fluctuated between 3.88 and 6.95 million tonnes.
- The average annual growth rate in its production was 3.2 per cent on account of 1.6 per cent rise in yield and 1.6 per cent expansion in area.
- During 2008-09 crop year, rice production is estimated at 6.95 million tonnes, higher by 25 per cent against 5.56 million tonnes of last year.
- The unusual increase in production is attributable to 16.9 per cent expansion in acreage and 6.9 per cent improvement in yield.
- Punjab is the largest producer of rice, accounting for 67.3 per cent in area and 55.5 per cent in production.
- The shares of Sindh in area and production of rice are 24.0 and 34.3 per cent, respectively.
- The NWFP and Balochistan jointly contribute about 8.8 per cent in area and 10.2 per cent in production.
- For 2008-09 crop, the FCA had set target of rice production at 5.72 million tonnes from an area of 2.59 million hectares. The production achieved is reported at 6.95 million tonnes from 2.94 million hectares, showing an increase of 21.5 per cent against the target.

Domestic Prices

- During 2008-09 post harvest season, monthly wholesale prices of super basmati ranged between Rs 1020 to Rs 1298 per 40 kgs in major producing area markets.
- Monthly wholesale prices of IRRI in the Punjab ranged from Rs 578 to Rs 726 per 40 kgs during post harvest in major producing area markets.
- Monthly wholesale prices of IRRI in Sindh ranged from Rs 535 to Rs 686 per 40 kgs during post harvest in major producing area markets.

Cost of production

- The cost of cultivation of basmati paddy for 2009-10 crop is estimated at Rs 21208 per acre.
- Based on yield of 893 kgs per acre, cost of production of basmati comes to Rs 972 per 40 kgs.
- Raising one acre IRRI paddy in the Punjab would cost to Rs. 19590 and cost of production will be Rs. 606 per 40 kgs, based on yield of 1341 kgs per acre.
- Growing IRRI paddy in Sindh would cost at Rs 17338 per acre.
- Based on yield of 1482 kgs per acre, the cost of production of IRRI in Sindh comes to Rs 490 per 40 kgs.

Economics of Rice paddy and Competing Crops

- Rice, being a major kharif crop competes with cotton for land, water and other resources where both are technically grown.
- In the Punjab during 2008-09, the basmati paddy had edge over cotton in terms of overall investment and crop duration. However, it could not retain its superiority in context of returns to purchased inputs and irrigation water.
- Similarly IRRI paddy in the Punjab attained some edge over cotton in terms of overall investment and crop duration. Nevertheless, it does not compete favourably with cotton in terms of purchased inputs and irrigation water;

- In Sindh too, rice farming has gained better returns than cotton crop as the rice farmers received better returns to overall investment and crop duration while the cotton crop performed better in respect of returns to irrigation water and purchased inputs.

Real Prices

- The real indicative prices of basmati paddy remained below the base year level of Rs 460 per 40 kgs throughout the period of 2000-01 to 2007-08, except 2008-09 where it rose to Rs 843 per 40 kgs, showing an increase of 83 per cent over the base year price;
- The real market prices of basmati paddy remained above the real intervention/indicative prices which indicate that the market prices have been giving more benefits to the paddy growers. However, during the base year 2005-06 and 2008-09 real market prices remained below the real intervention prices and hence the paddy growers suffered losses;
- The real intervention/indicative price of IRRI paddy in Sindh has witnessed many fluctuations during the period under reference. The highest level of Rs 393 was recorded in 2008-09 while the lowest level of Rs 193 was observed in 2003-04;
- In Sindh, by and large in all years the market prices of IRRI paddy ruled higher than indicative/intervention prices except base year 2005-06 and 2008-09;

World Situation

- World rice production in 2008-09 was estimated at 460.3 million tonnes which is higher by 4 per cent than the last year. The forecast production for 2009-10 is estimated at 465 million tonnes, higher the rice production of 2008-09 by 5 per cent;
- The closing stocks are forecast at 127 million tonnes by 2009-10, up by 17 per cent over 2007-08;
- The world trade in rice is reported at 30.9 million tonnes during 2008-09, showing 2 per cent increase over last year.

Export Parity Prices

- International prices of basmati rice at global level have been reported at US \$ 1030 to 1247 per tonne during August 2009 and 2008-09. Export parity prices of paddy ranged between Rs 1757 and Rs 2089 per 40 kgs;

- The world prices of IRRI rice during the aforesaid period ranged between US \$ 505 to 586 per tonne and export parity prices of IRRI paddy ranged between Rs 684 and 788 per 40 kgs.

Economic Efficiency

- Economic efficiency of resource use in rice production has been evaluated by estimating the Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC) and Domestic Resource Cost (DRC);
- NPC for basmati paddy has been less than one during the entire period of 2004-05 to 2008-09, implying that rice producers have not been received the economic price for their produce;
- In case of IRRI rice in the Punjab, the NPCs and EPC remained less than one during the period under review, indicating a tax on the growers;
- DRC indicates the opportunity cost of domestic resource used in the production of commodity. The DRC less than one indicates a commodity system having comparative advantage and greater than one a disadvantage situation;
- The results of analysis indicate that DRCs for basmati have been less than one during the period under review, implying that Pakistan has comparative advantage in basmati production;
- The DRC for IRRI in the Punjab remained less than one in 2004-05, 2007-08 and 2008-09, while it was greater than one in 2005-06 and 2006-07, declaring that the IRRI production was not economical during the latter period.
- The DRC for IRRI in Sindh remained less than one throughout the period under review, showing that the IRRI production was economical for exports.

World Comparison

- Pakistan is the 11th largest rice producer in terms of area and 12th in production but holds 59th position in terms of yield.
- Pakistan is the 4th largest exporter of rice.
- Pakistan competes with Thailand, Vietnam, India and USA for the export of rice. Thailand generally accounts for 24 per cent, Vietnam 18 per cent, India 15 per cent and Pakistan 10 per cent of the global rice exports;

Policy Options

Based on the analysis of relevant factors covered in the main text of the Report, the likely policy options for rice paddy 2009-10 crop are presented below:

Base		Worked back prices of rice paddy at mill-gate (Rupees per 40 kgs)
A.	Export parity prices based on actual fob (Karachi) prices of Pakistani basmati and IRRI rice:	
	i) Basmati	
	- During August 2009	1757
	- During 2008-09	2089
	ii) IRRI	
	- During August 2009	684
	- During 2008-09	788
B.	Domestic market prices of rice paddy during Oct-Feb 2008-09	
	i) Super basmati	1181
	ii) IRRI-6 Punjab	660
	iii) IRRI-Sindh	585
C.	Cost of production for 2009-10	
	i) Basmati	972
	ii) IRRI Punjab	606
	iii) IRRI Sindh	490

Recommendations

In view of the field information, consultation with the stakeholders in the API's Standing Committee meeting on rice paddy and analysis of relevant factors, following recommendations are made regarding intervention price, improving productivity and marketing of rice paddy:

Intervention price

- The MINFA may like to revise the Intervention Price of rice paddy for 2009-10 crop in view of higher world stocks and depressed prices, high 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 paddy growers should come through the market forces.
- The government policy of encouraging the role of private sector in marketing may be further strengthened.
- The PASSCO should be designated as implementing agency for procurement of rice paddy at the Intervention Price announced by the government.
- The PASSCO should arrange the pre-requisites for procuring rice paddy to enter well in time in the field especially in Sindh province where the harvesting starts early.
- The Provincial Food Departments may also be designated as the implementing agency for purchasing paddy to stabilize the market prices, if required.
- The API strongly feels that the country should emphasize to improve quality of rice for boosting the rice exports.

Improving Productivity

- Improved Varieties

To boost the production and distribution of certified seed of rice, the Government should take the following steps:

- Enhance the supply of pre-basic seed by providing additional facilities to the research stations or allow the private seed companies to produce pre-basic seed to meet their own requirements;
- Raise the credit facilities to seed companies in the private sector;
- Provide relief in terms of taxes (custom, import duties, income and local taxes) to the seed companies;
- Strictly check the marketing of seed of unknown quality by un-registered seed companies;
- Ban the release of seed of any variety before the approval of the competent authority.

- Irrigation Water Resources

To improve water resources, the government should focus on:

- Lining of canals, distributaries and water courses;
- Inducing water use efficiency through ensuring the adoption of water saving devices.
- To make the tube well irrigation economical, power tariffs and diesel prices need to be reduced/subsidized for growers.

- Soil Management

a) Use of Gypsum

- ✓ Crushing of gypsum be encouraged through extending facilities and tax rebates to the private sector.
- ✓ The growers should be educated about the importance of gypsum in improving the soil conditions and crop production through promotional campaigns.
- ✓ Government should arrange to supply gypsum at reduced prices and in pure form.

b) Organic Matter

- ✦ The Provincial Agriculture Departments should launch campaign to educate growers about the utility of organic manures.
- ✦ The Extension Wing of the Provincial Departments of Agriculture should launch campaign to induce/adjust the cultivation of Janter in the existing crop rotation through ensuring supply of pure seed of this green manuring crop.

c) Balanced use of fertilizers

Provincial government should be persuaded to ensure timely supply of pure fertilizers and strict punishment should be approved/effectuated for those involved in such business.

d) Use of Zinc Sulphate

- Provincial Agriculture Departments should educate growers to adopt new technology of zinc application through their extension workers.
- Public sector fertilizer distributing agencies be asked to arrange the supply of zinc sulphate and propagate its use through aggressive marketing

- Weed and Weed Management

Provincial Agriculture Extension Departments with collaboration of private weedicide companies should educate growers regarding suitability of weedicides and their proper dose and time of application.

- Integrated Pest Management

Efforts should be made to educate growers to adopt following cultural, mechanical and biological measures to minimize the use of chemicals:-

- Selection of pest resistant varieties for cultivation;
- Sowing of rice nurseries at proper sites because population of predators is more in rice nurseries which are grown near alfalfa, sorghum and berseem fields;
- In view of high infestation of leaf folder and white backed plant hoppers (WBPH) on late sown rice crop, planting the crop at optimum time;
- Discarding infested rice seedlings at the time of transplanting;

- If rice is cultivated after cotton crop, burning of cotton sticks before March, adhering to the recommended date of sowing of nursery;
- Disposal of rice straw to distant places after harvest, and rotavating of rice stubbles would check carryover of hibernating pests of rice to the next crop;
- To check the population of WBPH especially on coarse varieties in Sindh water may not be allowed to stand in the field after 3-4 weeks of planting;
- The larvae of leaf folder of rice which eats and folds plant leaf should be destroyed by burning the infested leaves at early stage;
- The grass and weeds surrounding the rice fields be destroyed because of toka which eats plant leaves and feeds on grass;
- Pest scouting services be strengthened and farmers trained in this context;
- Extracts of some plants (like Nimbokil extracted from Neem) are effective in the control of sucking pests, leaf roller and rice borers and also do not kill predators be used in pest control.

- **Harvesting and Threshing of Paddy**

To check the deterioration in the quality of rice, following measures for improving harvesting and threshing practices of rice are suggested:

- Educate the growers for adopting the use of combines, threshers or resorting to manual threshing of the crop immediately after harvest;
- The government should encourage the use of paddy dryers to improve the quality of rice;
- Provide incentives to private sector for importing already tested Head feeding combines developed in Japan for providing to growers on custom hire rates;
- Feasibility of importing reconditioned combines be also studied to reduce cost;
- Manual paddy threshing improves the quality and quantity of head rice. So the growers may be induced to follow this practice in Sindh too.
- After mechanical harvesting and threshing rice straw should not be burnt. It should either be rotavated in the soil or removed from the field immediately.

Improving quality and marketing

*** Use of paddy de-huskers and moisture meters**

To safeguard the interest of growers, the use of de-huskers and moisture meters should be encouraged for purchase of paddy.

*** Improving quality of paddy**

In order to improve harvesting and threshing of paddy, efforts of the Farm Machinery Institute (FMI) PARC should be supported by the government, by motivating the local industry to manufacture the proto-type of the imported machines and sell to growers at reasonable prices.

*** Processing of paddy**

In order to meet the requirements of international market, rice milling and processing should be modernized in view of world standard.

*** Admixture**

The admixture of coarse varieties with super basmati should be curtailed through strict administrative measures by the concerned agencies.

*** Storage capacity**

- To promote rice exports, the storage capacity at the export point should be improved
- Diversion of low rate credit provided by the government for storage of rice must be checked.

*** Moisture contents**

Moisture contents should be standardized in order to improve head rice recovery, its quality and price in the world market. Rice growers should be educated to minimize the moisture contents at farm level.

(Dr. Qadir Bux Baloch)
Chairman, API

July 15, 2009.

2. Introduction

Rice is one of the most important crops at the global level, as it is used as a staple food in most countries of the world. In Pakistan, it is the second most important crop which brings economic prosperity of the growers as well as earns billion of rupees for the country through its exports. Pakistan's fine rice commonly known as basmati is world famous and enjoys monopoly in the international market due to its quality characteristics, strong aroma and high degree of elongation on cooking.

2. Rice plays a pivotal role and occupies a prominent position in agro-based economy of Pakistan. It is a high valued cash crop and also a major export item. It accounts for 5.9 per cent of the total value added in agriculture and 1.3 per cent in GDP. Production of rice during 2008-09 crop year is estimated at 6.95 million tones which is 24.9 per cent higher than the last year's production. It was cultivated on area of 2.94 million hectares during 2008-09. The higher production was due to expansion in area by 16.9 per cent and improvement in yield by 6.9 per cent.

3. Area under rice accounts for 21.2 per cent in total food grains and 12.5 per cent of the total cropped area. It is mainly grown in the Punjab and Sindh. Punjab is specialized in producing long grain aromatic basmati rice while Sindh produces coarse IRRI rice. Punjab is the biggest producer of rice in the country. Based on 3 year 2006-09 average, contribution of the Punjab to national production of rice is around 56 per cent while the shares of Sindh, Balochistan and NWFP are 34, 8 and 2 per cent, respectively.

4. Some of the important varieties grown in the country are Super Basmati, Basmati 2000, Basmati-385, IRRI-6, IRRI-9, KS-282, DR-82 and DR-83. All rice is irrigated and grown through transplanting nursery seedlings.

5. In order to safeguard the growers' interest, reduce uncertainty and price risk in rice farming, the government has been announcing the support/intervention prices of rice paddy. Accordingly, the government announced the following prices of rice paddy to cushion the market in view of bumper harvest during 2008-09.

Variety	Intervention Prices for 2008-09
	Rs per 40 kgs
Super Basmati & Basmati 2000	1500
Basmati -385	1250
IRRI-6 (FAQ)	700

6. In formulating the price policy proposals for 2009-10 crop of Rice Paddy, the following steps were taken by the Agriculture Policy Institute (API):

- i) Data on area, yield and production of rice, domestic stocks, trade and prices of rice (domestic as well as international) were collected from various agencies and sources. These data have been analyzed and discussed in the report to reflect the domestic and international position on various aspects of rice production and marketing.
- ii) Annual meeting of API's Standing Committee on Rice was held on 21st April 2009 at Islamabad. It was attended by the representatives of the Federal, Provincial, AJK Governments, rice growers, Agriculture Chambers/Associations, Kissan/Abadgar Board, REAP, TCP, Rice Millers, Traders, Researchers. Important issues impacting production, domestic and international marketing of rice were discussed in the meeting alongwith the farm input prices, hiring rates of various field operations and other practices influencing cost of production of rice paddy in the major rice growing regions. The views expressed by the participants have been duly considered while formulating the pricing policy recommendations.

7. The rice production has shown an increasing trend during the recent past. There is a need to consolidate these gains in order to ensure food security at home and maintain our share in world markets. However, the water shortages, rising input prices and global trade liberalization have increased the incidence of risk in rice farming. The Government should take supportive steps to facilitate its production, marketing and trade.

8. Despite technological advances, the yields of all rice varieties are low compared to major rice producing countries in the world. In order to remain in the international market, the country has further to improve the quality of rice especially of basmati varieties. There is an urgent need for improving productivity to reduce unit cost of production and bring competitiveness in the world markets. The Government of Pakistan is always keen to induce friendly economic environment for adoption of hybrid technology and good agriculture practices in rice farming. The Government of Pakistan is also taking necessary steps to overcome the problems like registration of Basmati by other countries, ban on import of Pak rice by Russia and Aflotaxine hampering rice exports from Pakistan.

3. SOWING TIMES

9. In Pakistan rice is generally grown by transplanting of seedlings raised in nurseries. However, direct seeding is also carried out on a limited scale in areas where weed is not a problem. The sowing times of nurseries and transplanting differ by variety and region. The recommended sowing time of nurseries and their transplanting in various regions are given in Table-1.

Table- 1: Sowing Times of Rice Crop

Province	Variety	Time for	
		Sowing nursery	Transplanting
Punjab	Super Basmati	20 May to 7 June	20 June to 7 July
	Other Basmati	1 June to 20 June	1 July to 31 July
	IRRI	20 May to 7 June	20 June to 7 July
Sindh			
Upper Sindh	IRRI-6, Sada Hayat	8 May to 15 June	8 June to 15 July
	DR-82/92	23 May to 30 June	23 June to 31 July
	Dr-83	16 June to 15 July	16 July to 15 August
Lower Sindh	IRRI-6, Sada Hayat	16 April to 15 May	16 May to 15 June
	DR-82/92	8 May to 22 June	8 June to 22 July
	Dr-83	1 June to 7 July	1 July to 8 August
NWFP			
Plains	All varieties	1 May to 31 May	1 June to end of June
Hilly areas	All varieties	1 May to 20 May	3 rd week of May to end of June
Balochistan	All varieties	20 May to 30 June	20 June to 30 July

Sources:

- i) For Punjab: Director, Rice Research Institute, Kalashah Kaku.
- ii) For Sindh: Rice Research Institute, Dokri, Sindh.
- iii) For the NWFP and Balochistan: Rice Coordinator, NARC, Islamabad.

4. REVIEW OF 2008-09 CROP

4.1 Provincial Shares in Area and Production

10. Based on the average of 2006-09, annual production of rice is estimated at 5.98 million tonnes from the average area of 2.68 million hectares (6.62 million acres). Varietals break-up of rice production shows that Punjab is the sole producer of basmati rice in the country. In the total production of IRRI rice, Punjab, Sindh, and Balochistan are contributing 15.5, 66.5 and 18.0 per cent, respectively. In 'Others' varieties of rice, the respective shares of Punjab, Sindh and NWFP are 50.9, 33.0 and 16.1 per cent.

Table-2: Provincial Shares in Area and Production of Rice: Average of 2006-07 to 2008-09 Crops

Variety	Pakistan		Punjab	Sindh	NWFP	Balochistan
	Area (000 hectares)	Per cent				
Total	2678.9 (6619.9)	100.0	67.3	24.0	2.3	6.5
Basmati	1458.6 (3604.3)	54.4	100.0	-	-	-
IRRI	880.5 (2175.9)	32.9	18.8	61.5	-	19.7
Other	339.8 (839.7)	12.7	52.4	29.4	18.1	-
Production (000 tonnes)	Percent		-----Per cent-----			
Total	5983.9	100.0	55.5	34.3	2.1	8.1
Basmati	2502.5	41.8	100.0	-	-	-
IRRI	2692.7	45.0	15.5	66.5	-	18.0
Other	788.8	13.2	50.9	33.0	16.1	-

Source: Annex-I

Note: Figures in parenthesis are in thousand acres.

11. The provincial shares of Punjab, Sindh, NWFP and Balochistan in area under rice crop are 67.3, 24.0, 2.3 and 6.5 per cent respectively. Basmati accounts for 54.4 per cent of the total area, IRRI and 'Others' varieties are grown on 32.9 and 12.7 per cent. Province-wise and variety-wise shares in production are also shown in Fig-1 and 2.

Fig-1: VARIETAL SHARES IN PRODUCTION OF RICE: AVERAGE OF 2006-07 TO 2008-09

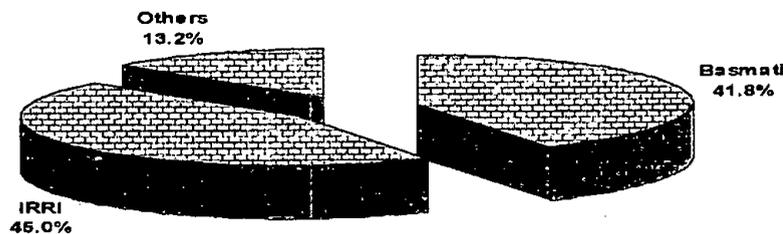
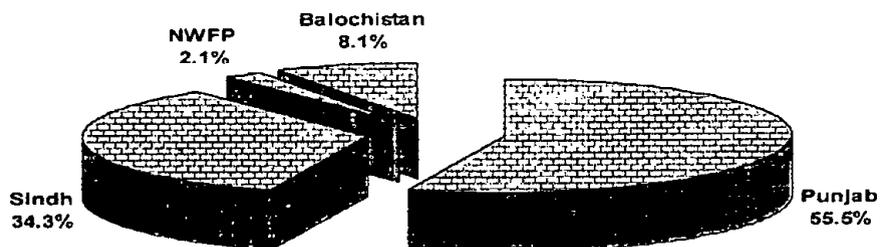


Fig-2: PROVINCIAL SHARES IN PRODUCTION OF RICE: AVERAGE OF 2006-07 TO 2008-09



4.2 Long-terms Changes: 1998-99 to 2008-09

12. The area under rice crop during 1998-99 to 2008-09 has ranged between 2.11 and 2.94 million hectares (5.22 to 7.26 million acres) and production oscillated between 3.88 and 6.95 million tonnes and yield between 1836 to 2364 kgs per hectare or 743 to 957 kgs per acre (Annex-I).

13. During the decade ending 2008-09, production of rice at country level is estimated to have increased @ 3.2 per cent per annum due to increase in yield and area by 1.6 per cent each (Table-3).

Table-3: Average Annual Growth Rates of Area, Yield and Production of Rice: 1998-99 to 2008-09

Country/Province	Variety	Area	Yield	Production
		-----Per cent per annum-----		
Pakistan	All varieties	(+) 1.6	(+) 1.6	(+) 3.2
	Basmati	(+) 2.8	(+) 2.5	(+) 5.4
	IRRI	(-) 0.9	(+) 1.6	(+) 0.7
	Others	(+) 4.7	(+) 2.6	(+) 7.5
Punjab	All varieties	(+) 2.1	(+) 2.5	(+) 4.6
	Basmati	(+) 2.8	(+) 2.5	(+) 5.4
	IRRI	(-) 5.3	(+) 3.8	(-) 1.7
	Others	(+) 8.4	(+) 2.3	(+) 10.9
Sindh	All varieties	(+) 0.5	(+) 1.3	(+) 1.7
	IRRI	(-) 0.2	(+) 1.1	(+) 0.9
	Others	(+) 4.3	(+) 2.9	(+) 7.3
NWFP	All varieties	(-) 1.0	(+) 0.6	(-) 0.4
Balochistan	All varieties	(+) 2.4	(-) 0.3	(+) 2.1

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

14. The rice production in the Punjab during the period 1998-99 to 2008-09 has annually increased @ 4.6 per cent due to increase in yield @ 2.5 per cent per annum and area by 2.1 per cent. The area and yield of basmati rice have increased by 2.8 and 2.5 per cent per annum, resulting in 5.4 per cent annual growth in its production. The production of IRRI rice has declined by 1.7 per cent annually solely due to reduction in area by 5.3 per cent per annum as the yield has improved by 3.8 per cent. The production of 'Other' varieties has increased by 10.9 per cent per annum because of 8.4 per cent expansion in area and 2.3 per cent rise in yield.

15. In Sindh, rice production is estimated to have increased @ 1.7 per cent annually due to 0.5 per cent expansion in area and 1.3 per cent rise in yield.

16. In the NWFP, the rise in yield by 0.6 per cent was not enough to balance 1.0 per cent contraction in area, resulting a downfall in production by 0.4 per cent.

17. In Balochistan, rice production during the period under reference has recorded average annual growth of 2.1 per cent entirely from 2.4 percent acreage expansion as the yield declined by 0.3 per cent.

4.3. Short-term Changes: 2008-09 Vs 2007-08

18. According to the Second estimates, rice production is estimated at 6.95 million tonnes in 2008-09. It is higher by 24.9 per cent than the production of 5.56 million tonnes during the last year. The production has increased by 24.9 per cent mainly due to increase of area by 16.9 per cent and yield by 6.9 per cent. The changes in area, yield and production by province and by variety in 2008-09 over 2007-08 are given in Table-4.

Table-4: Area, Yield and Production of Rice by Variety: 2007-08 and 2008-09
Crop

Country/ Pakistan	Area		Change	Yield		Change	Production		Change
	2007-08	2008-09		2007-08	2008-09		2007-08	2008-09	
	000 hectares		Percent	Kgs/hectare		Percent	000 tonnes		Percent
Pakistan	2585.4	2940.2	16.9	2212	2364	6.9	5562.4	6950.0	24.9
Basmati	1377.1	1524.4	10.7	1781	1680	-5.7	2453.1	2560.7	4.4
IRRI	827.1	947.5	14.6	2977	3309	11.2	2462.3	3135.4	27.4
Others	311.2	468.3	50.5	2083	2678	28.6	648.0	1253.9	93.5
Punjab	1723.5	1954.2	13.4	1907	1843	-3.4	3286.0	3601.3	9.6
Basmati	1377.1	1524.4	10.7	1781	1680	-5.7	2453.1	2560.7	4.4
IRRI	159.8	197.1	23.3	2593	2553	-1.6	414.4	503.2	21.4
Others	186.6	232.7	24.7	2243	2309	3.0	418.5	537.4	28.4
Sindh	594.0	733.5	23.5	3060	3310	14.7	1817.7	2574.7	41.7
IRRI	531.1	560.3	5.5	3232	3549	9.8	1716.5	1988.5	15.9
Others	62.9	173.2	175.4	1609	3385	110.4	101.2	586.2	479.3
NWFP (Others)	61.7	62.4	1.1	2079	2088	0.4	128.3	130.3	1.6
Balochistan (IRRI)	136.2	190.1	39.6	2433	3386	39.2	331.4	643.7	94.2

Source: Annex-I.

19. In Punjab, overall production of rice has shown an increase of 9.6 per cent during 2008-09 as compared to 2007-08. The rise in production occurred mainly because of increase in area by 13.4 per cent as the yield has decreased by 3.4 per cent. Production of basmati also increased by 4.4 percent because of expansion in area by 10.7 but yield has

declined by 5.7 percent. IRRI varieties have shown an increase of 21.4 per cent in production mainly because of increase in area by 23.3 per cent as yield declined by 1.6 per cent. Production of 'Other' rice has increased by 28.4 per cent because of increase in area by 24.7 percent and yield by 3.0 percent.

20. In Sindh, production of rice has increased by 41.7 per cent mainly due to increase in area by 23.5 per cent and yield by 14.7 per cent.

21. In the NWFP, area under rice crop has increased by 1.1 per cent and yield by 0.4 percent resulting 1.6 percent increase in production.

22. In Balochistan, production of rice has increased by 94.2 per cent due to increase in area by 39.6 per cent and yield by 39.2 per cent.

4.4 Factors Responsible for Increasing Production

23. Agriculture Department of Punjab and Sindh has provided following reasons regarding change in area and production of rice for 2008-09 crop:

Punjab

- Area

- i) Lucrative market prices received by growers last year induced them to plant more area under rice crop which resulted in shifting of sugarcane and cotton area to rice crop.
- ii) Favourable weather conditions at the time of rice transplantation.

- Production

24. The increase in production is attributed to corresponding increase in area. However yields of super varieties affected by shortage of canal water, least applications of fertilizer, high prices of diesel and slight attack of blight at some places.

Sindh

- Area

25. Last year growers received more market rates of paddy hence they preferred to bring more area under rice crop.

- i) Due to heavy attack of Mealy Bug reported last year on cotton crop, growers switched over cotton area towards rice crop, particularly in left bank of River Indus.
- ii) Due to crisis of sugar mills and low rate received by the growers, they generally converted sugarcane area into paddy cultivation.

Production

- i) The production increased due to increase in area.
- ii) The more area came under hybrid rice cultivation which is a high yielding crop.
- iii) Due to better market price of rice, growers applied the balanced doze of chemical fertilizer, therefore they received more yield per hectare.
- iv) Comparatively more use of certified seed also resulted in more production, as about 34% more quantity of certified seed against last year was available in the market.
- v) Favourable weather also resulted in more yield per hectare.

4.5 Targets Vs Achievements: 2008-09 crop

26. For 2008-09 crop, FCA had set target of rice production at 5.72 million tonnes. According to the Second estimates provided by provincial Agricultural Departments, the production estimated at 6.95 million tonnes remained higher the target by 21.5 per cent. The yield and production of Basmati remained below the target by 6 and 4 per cent respectively but the area was higher than the target by 2.4 per cent (Table-5). The area, yield and production of IRRI and 'Other' varieties of rice remained up the target by 28.1, 12.2 and 43.7 percent respectively.

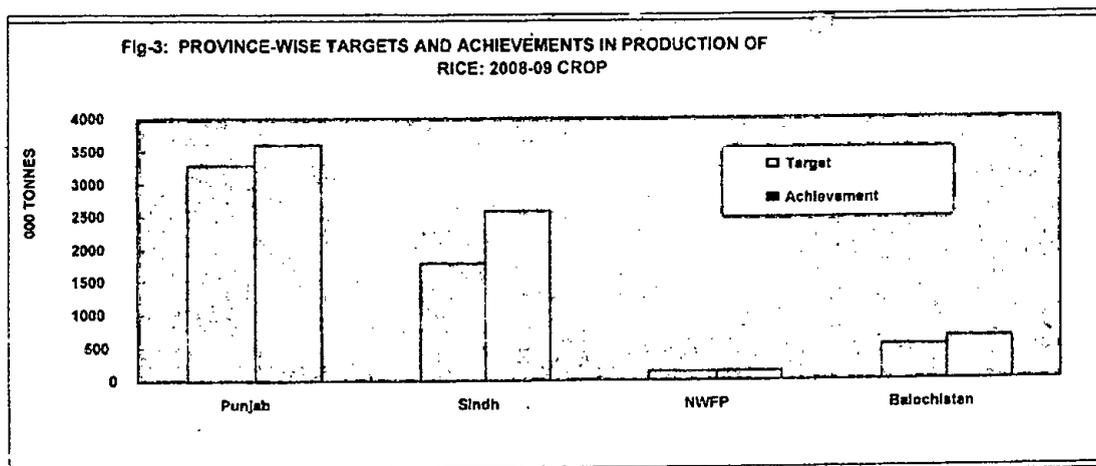
Table-5: Targets and Estimated Achievements of Area, Yield and Production of Rice: 2008-09 Crop

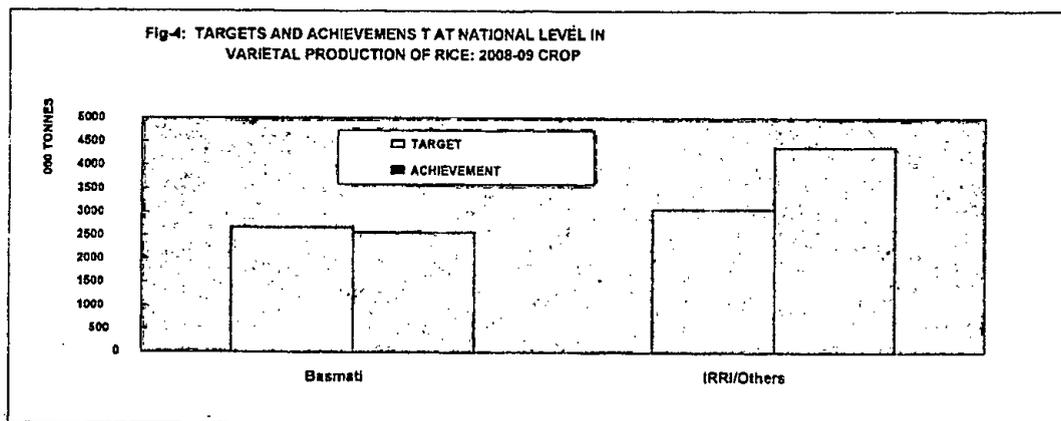
Country/ Province	Area		Deviation from Target	Yield		Deviation from Target	Production		Deviation from Target
	Target	Achieve- ment		Target	Achieve- ment		Target	Achieve- ment	
	000 hectares		Percent	kgs per hectare		Percent	000 tonnes		Percent
Pakistan	2594.2	2940.2	13.4	2205	2364	7.1	5720.5	6950.0	21.5
Basmati	1489.0	1524.4	2.4	1791	1680	-6.2	2666.4	2560.7	-4.0
IRRI/Others	1105.2	1415.8	28.1	2764	3100	12.2	3054.1	4389.3	43.7
Punjab	1743.9	1954.2	12.1	1886	1843	-2.3	4288.8	5601.3	9.5
Basmati	1489.0	1524.4	2.4	1791	1680	-6.4	2666.4	2560.7	-4.0
IRRI/Others	254.9	429.8	68.6	2442	2421	-0.8	622.4	1040.6	67.2
Sindh (IRRI/Others)	578.3	733.5	26.8	3073	3510	14.3	1776.9	2574.7	44.9
NWFP (Others)	62.0	62.4	0.7	2094	2088	-0.3	129.8	130.3	0.4
Balochistan (IRRI)	210.0	190.1	-9.5	2500	3386	35.4	525.0	643.7	22.6

Sources:

- i) 89th meeting of FCA.
- ii) For achievements: Annex-1

27. Production achievements have been surpassed the targets in the Punjab, Sindh, NWFP and Balochistan by 9.5, 44.9, 0.4 and 22.6 per cent respectively. The yield of Punjab and NWFP has shortfall of 2.3 and 0.3 per cent while that of Sindh and Balochistan surpassed the target by 14.3 and 35.4 per cent. The achieved area in the Punjab, Sindh and NWFP surpassed their respective targets by 12.1, 26.8 and 0.7 per cent respectively but Balochistan faced a shortfall by 9.5 percent. Targets and achievements of area, yield and production of rice by province and variety are also depicted in Fig-3 and Fig-4.





4.6 Important Rice Producing Districts

28 Districts producing more than 50 thousand tonnes of rice include Gujranwala, Sialkot, Sheikhupura, Okara, Hafizabad, Nankana Sahib, Jhang, M.B. Din, Kasur, Narowal, Bahawalnagar, Pakpattan, Gujrat, Sargodha, Lahore, D.G. Khan, Sahiwal and T.T.Singh from the Punjab, Jacobabad/Kashmore, Larkana, Shikarpur, Kamber/Shahdadkot, Thatta Dadu/Jamshoro and Badin from Sindh and Jafarabad and Nasirabad from Balochistan. These 27 districts collectively account for 90.9 per cent of total production of rice. About 68.8 per cent of the total basmati is produced in districts of Gujranwala, Sialkot, Sheikhupura, Okara, Hafizabad, Nankana Sahib, Jhang, M.B.Din and Narowal. While 70.7 per cent of the total IRRI rice is contributed by Jacobabad/Kashmore, Larkana, Shikarpur, Kamber/Shahdadkot, Thatta, Nasirabad and Jafarabad. Districts, based on 2006-07 to 2008-09 average, are arranged in descending order of rice production, with varieties break-up in Annex-II.

5. DOMESTIC DEMAND, SUPPLY OF RICE AND PRICES OF RICE PADDY

5.1 Domestic Demand and Supply of Rice

29. Based on annual per capita availability of rice averaging at 12.39 kgs during the period 2005-06 to 2007-08 (Annex-III), the domestic consumption requirement in 2008-09 for population of 169.73 million has been estimated at 2103 thousand tonnes. Against this requirement total production of rice in the country from 2008-09 crops has been reported at

6950 thousand tonnes. Deducted the seed and wastage allowance @ 6 per cent of the production (417 thousand tonnes), the net available rice for consumption and trade comes to 6533 thousand tonnes. Thus Pakistan has an export surplus of 4430 thousand tonnes.

5.2 Domestic Prices of Rice Paddy

30. The wholesale markets prices of super basmati (paddy) depicted in Table-6 ranged between Rs 1020 per 40 kgs in Raheem Yar Khan market during December 2008 and Rs 1298 per 40 kgs in Faisalabad market during Oct 2009. The season average prices of super basmati in the Punjab have ranged between Rs 1119 and Rs1234 per 40 kgs.

Table-6: Monthly Average Wholesale Prices of Super Basmati Paddy in Major Producer Area Markets of the Punjab: Oct 08 to Feb 09

Market	October	November	December	January	February	Average
	-----Rupees per 40 kgs.-----					
Lahore	1237	1230	1154	1165	1126	1182
Faisalabad	1298	1287	1205	1207	1171	1234
Sargodha	1128	1164	1197	1286	1158	1187
Multan	1173	1156	1036	1180	1135	1136
Gujranwala	1239	1228	1198	1202	1167	1207
Okara	1250	1254	1152	1201	1139	1199
R.Y. Khan	1248	1219	1020	1022	1086	1119
Average	1225	1220	1137	1180	1140	1181

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

31. The average wholesale market prices of IRRI Paddy (Table-7) have ranged between Rs 535 to 726 per 40 Kgs in various markets of Punjab and Sindh during the post-harvest period 2008-09 crop.

Table-7: Monthly Average Wholesale Prices of IRRI-6 Paddy in Major Producer Area Markets of the Punjab and Sindh during Oct 2008 to Feb 2009

Market	October	November	December	January	February	Average
Rupees per 40 Kgs.						
A. Punjab						
Lahore	726	715	674	683	670	694
Faisalabad	678	670	633	636	634	650
Sargodha	685	690	659	697	685	683
Multan	712	687	670	651	637	671
Gujranwala	688	681	654	661	653	667
Okara	708	638	612	630	579	633
R. Y. Khan	632	619	578	634	630	619
Average	690	671	640	656	641	660
B. Sindh						
Badin	-	568	535	635	624	591
Larkana	-	577	543	561	560	560
Kashmore/ Kandhkot	-	621	609	686	608	620
Qamber/Shahdad Kot	-	544	535	562	580	555
Jacobabad	-	581	561	609	635	597
Average		578	557	611	601	585

Sources: i) Directorate of Agriculture (E&M) Punjab, Lahore.
ii) Market Committees, Sindh.

6. COST OF PRODUCTION OF RICE PADDY

32. The cost of production for various varietals groups of rice paddy in the Punjab and Sindh for the 2009-10 crop year has been worked out by using the input-output parameters as used in the Policy Report for Rice Paddy, 2008-09 crop along with the current market prices of farm inputs and custom hiring rates of various cultural operations. These rates have been supplemented with the information supplied by the representatives of the Provincial Governments, Farmers' Associations and Kissan/Abadgar Boards in the meeting of API's Standing Committee on rice paddy, held on 21st April 2009 at Islamabad. Details of the COP estimates for the Punjab and Sindh are given in Annex-IV to VI, while the summary of these is presented in Table-8.

6.1 **Average Farmers' Cost of Production of Rice Paddy: 2008-09 and 2009-10 Crops**

33. The cost of production estimates of basmati and IRRJ paddy in the Punjab and in Sindh (IRRI) for 2008-09 and 2009-10 crops are summarized and presented in Table-8.

Table-8: Average Farmers' Cost of Production of Rice Paddy: 2008-09 and 2009-10 crops

Item	Unit	Cost estimates		Increase in 2009-10 over 2008-09
		2008-09 crop	2009-10 crop	
Punjab				
Basmati				
1. Net cost of cultivation	Rs/acre	17119	21208	4089
2. Yield	Kgs/acre	893	893	-
3. Cost of production at farm level	Rs/40 kgs	767	950	183
4. Marketing cost i.e. loading, transport, commission etc.	"	20	22	2
5. Cost of production at market level	"	787	972	185
IRRI				
1. Net cost of cultivation	Rs/acre	15471	19590	4119
2. Yield	Kgs/acre	1341	1341	-
3. Cost of production at farm level	Rs/40 kgs	461	584	123
4. Marketing cost i.e. loading, transport, commission etc.	"	20	22	2
5. Cost of production at market level	"	481	606	125
IRRI Sindh				
1. Net cost of cultivation	Rs/acre	13948	17338	3389
2. Yield	Kgs/acre	1482	1482	-
3. Cost of production at farm level	Rs/40 kgs	376	468	92
4. Marketing cost i.e. loading, transport, commission etc.	"	20	22	2
5. Cost of production at market level	"	396	490	94

Source: Annex-IV to VI.

Punjab

- **Basmati**

34. Raising one acre of basmati paddy in the Punjab during 2009-10 is expected to cost at Rs 21208, including land rent. The farm level cost of production works out to Rs 950 per 40 kgs, based on an average yield of 893 kgs per acre. Taking marketing cost @

Rs 22 per 40 kgs, the cost of production to harvest and deliver the rice paddy at the market/sheller level would be Rs 972 per 40 kgs, higher than the corresponding cost of last year by Rs 185 per 40 kgs or 24 per cent.

IRRI

35. During 2009-10 crop year, the cost of growing one acre of IRRI paddy in the Punjab is estimated at Rs 19590, with land rent. Taking into account the average yield of 1341 kgs per acre, the farm level cost of production comes to Rs 584 per 40 kgs. Taking account of marketing charges @ Rs 22 per 40 kgs, the cost of IRRI paddy at the market/sheller level would be Rs 606 per 40 kgs, higher by Rs 125 per 40 kgs (26 per cent) than the cost estimates of the 2008-09 crop at Rs 481 per 40 kgs.

Sindh

36. Sindh, cultivating one acre of IRRI paddy during 2009-10 is likely to cost Rs 17338 inclusive of land rent. Distributing this over the average yield of 1482 kgs per acre, cost of production at farm level would be Rs 468 per 40 kgs. Adding marketing expenses @ Rs 22 per 40 kgs, the cost of produce to deliver at sheller/market would be Rs 490 per 40 kgs, showing an increase of Rs 94 per 40 kgs or 24 per cent over the last year.

37. The main causes of increase in the cost of production of rice paddy for the 2009-10 crop year in the Punjab and Sindh are escalations in cost of cultural operations, wage rates and tube well irrigation. The unusual rise in land rentals has also added substantially to the increase in cost of production. However, decreased prices of some phosphatic fertilizers like DAP and NP has partially offset the impact of rising prices of farm inputs and custom hiring rates of field operations on cost of cultivation of rice paddy.

6.2 Cost of Major Farm Operations/Inputs

38. During 2008-09 and 2009-10 crop years, the shares of different operations and farm inputs in the total cost of cultivation of rice paddy in the Punjab and Sindh is presented in the Table-9.

Table-9: Cost of major operations/inputs of Rice paddy: 2008-09 and 2009-10 Crops

Operations/inputs	2008-09 crop	2009-10 crop	Shares in increased cost
	(Rs/acre)		(Per cent)
Punjab			
Basmati			
1. Land preparation	2050 (11)	2470 (11)	10
2. Nursery/uprooting and transplanting	1698 (9)	2156 (10)	11
3. Weeding	298 (2)	378 (2)	2
4. Plant protection	295 (2)	354 (2)	1
5. Irrigation	5163 (28)	5926 (26)	18
6. Fertilizer including FYM	3266 (17)	2516 (11)	(-) 17
7. Land rent	2250 (12)	5000 (22)	63
8. Harvesting and threshing etc	2143 (12)	2589 (11)	9
9. Others	1207 (7)	1319 (5)	3
10. Total cost	18369 (100)	22708 (100)	100
IRRI			
1. Land preparation	1825 (12)	2260 (11)	9
2. Nursery/uprooting and transplanting	1673 (10)	2130 (10)	11
3. Weeding	423 (3)	530 (3)	2
4. Plant protection	305 (2)	365 (2)	1
5. Irrigation	3114 (19)	3659 (18)	13
6. Fertilizer including FYM	4186 (26)	3276 (16)	(-) 21
7. Land rent	1750 (11)	5000 (24)	75
8. Harvesting and threshing etc	1810 (11)	2146 (10)	8
9. Others	1135 (7)	1224 (6)	2
10. Total cost	16271 (100)	20590 (100)	100
Sindh			
IRRI			
1. Land preparation	2275 (15)	2600 (14)	9
2. Nursery/uprooting and transplanting	2200 (15)	2800 (15)	17
3. Weeding	365 (2)	487 (3)	3
4. Plant protection	263 (2)	316 (2)	1
5. Irrigation	1085 (7)	1385 (8)	9
6. Fertilizer including FYM	3754 (25)	2984 (16)	(-) 21
7. Land rent	1500 (10)	4000 (22)	70
8. Harvesting and threshing etc	2223 (15)	2594 (14)	10
9. Others	1083 (7)	1172 (7)	2
10. Total cost	14748 (100)	18338 (100)	100

Notes:

1. Others include mark-up, management, land tax, land revenue and drainage cess.
2. Figures in parenthesis are percent shares in total cost of cultivation.
3. Rounding off figures may result in a slight difference.

Punjab

- Basmati

39. In the cost of cultivation of basmati paddy in the Punjab for the 2009-10 crop, irrigation is the most important constituent, accounting for 26 per cent. The other leading components are: Land rent (22 %), Fertilizers including FYM, harvesting/threshing operations and land preparation (11 % each), nursery and related operations contribute by 10 per cent.

- IRRI

40. Land rent is the major component of the cost of cultivation of IRRI paddy in the Punjab during 2009-10 crop year, accounting for 24 per cent. Other important items are: Irrigation (18 %), fertilizer including FYM (16 %), land preparation (11 %), harvesting/threshing and nursery related operations (10 % each).

Sindh

- IRRI

41. In Sindh, land rent is the chief component of the cost of cultivation during 2009-10, accounting for 22 per cent. Other major components are: Fertilizers including FYM (16 %), nursery and related operations (15 %), and land preparation and harvesting/threshing operations (14% each) and irrigation (8 %).

6.3 Prices of Major Farm Inputs

42. In computation of cost of production of rice paddy for 2008-09 and 2009-10 crops, the average market prices of major farm inputs used and changes therein are shown below:

Items	Units	2008-09 crop	2009-10 crop	Per cent change
Punjab		Basmati		
1. HSD	Rs/litre	50.20	55.71	10.98
2. Power tariff	Rs/kwh	3.28	4.00	21.95
3. DAP	Rs/bag	3167	1896	(-) 40.13
4. Urea	Rs/bag	700	784	12.00
5. Nursery	Rs/acre	650	760	16.92
		IRRI		
1. HSD	Rs/litre	50.20	55.71	10.98
2. Power tariff	Rs/kwh	3.28	4.00	21.95
3. DAP	Rs/bag	3167	1896	(-) 40.13
4. Urea	Rs/bag	700	784	12.00
5. Nursery	Rs/acre	600	700	16.67
Sindh		IRRI		
1. HSD	Rs/litre	50.20	55.71	10.98
2. Power tariff	Rs/kwh	3.28	4.00	21.95
3. DAP	Rs/bag	2967	1953	(-) 34.18
4. Urea	Rs/bag	623	752	20.71
5. Nursery	Rs/ghunta	850	1000	17.65

7. ECONOMICS OF RICE PADDY AND COMPETING CROPS

43. Resource allocation among competing enterprises is primarily guided by economic considerations as reflected in their gross cost, gross income, gross margin, net income, output-input ratio, etc. Rice, a major kharif crop, competes with cotton for land, water and other farm resources in the areas where cultivation of both crops is technically feasible. The coarse and fine varieties of rice may also compete among themselves. Rice also faces indirect competition from sugarcane, an annual crop, which occupies the land throughout the year.

44. The economics of rice and competing crops has been analyzed in terms of input-output prices paid and received by the growers for the 2008-09 crops. A summary of the relevant economic indicators emerging from the analysis is presented in Table-10. The details of the analysis are provided in Annex- VII.

Table-10: Comparative Economics of Rice Paddy and Competing Crops at Prices Realized by the Growers in the Punjab: 2008-09 Crops

Crop/crop combination	Output-input ratio	Gross revenue per		
		rupee of purchased inputs cost	day of crop duration	acre-inch of irrigation water used
		----- Rupees -----		
1. Basmati paddy	1.4	2.5	151	469
2. IRRI paddy	1.3	2.3	124	361
3. Cotton	1.2	2.6	113	1227
4. Basmati+wheat	1.4	2.7	153	786
5. Basmati+sunflower	1.5	3.3	129	581
6. IRRI+wheat	1.4	2.7	139	678
7. IRRI+sunflower	1.4	3.3	116	495
8. Sugarcane	1.5	3.9	133	1092

Source: Annex-VII.

Punjab

45. The results of analysis summarized in Table-10, reveal that basmati paddy has, like previous year, maintained its economic edge over the cotton in terms of overall investment and crop duration while cotton could retain its superiority on basmati in context of returns to purchased inputs and irrigation water.

46. In case of indirect competition, rice combinations have, against the sugarcane, paid lower returns to the farmer in terms of output-input ratio. An identical picture also arises against entire economic criteria except crop duration. Still, rice and sunflower combinations couldn't compete sugarcane in this indicator too.

47. Government's intervention, despite a considerably higher produce and expectant crash of market prices, has generated better impacts as far the economic returns to rice farmer are concerned. This necessitates the notion that public sector intervention has not lost its importance, more specifically in the developing economies where market forces operate imperfectly.

Sindh

48. In Sindh too, rice farming has shown mix results if compared with the cotton crop. Rice farmers received higher returns to overall investment and crop duration. However its

position lags far behind seed cotton in respect of returns to irrigation water and marginally in respect of purchased inputs.

Table-11: Comparative Economics of IRRI Paddy and Competing Crops at Prices Realized by the Growers in Sindh: 2008-09 Crops

Crop/crop combination	Output-input ratio	Gross revenue per		
		rupee of purchased inputs cost	day of crop duration	acre-inch of irrigation water used
		----- Rupees -----		
1. IRRI paddy	1.4	3.0	121	388
2. Cotton	1.3	3.1	111	1482
3. IRRI+ wheat	1.4	3.1	129	681
4. IRRI+ sunflower	1.4	3.6	114	525
5. Sugarcane	1.5	4.3	128	882

49. In case of indirect competition with sugarcane, the economic position of rice combinations is weaker for this season. Performance of IRRI crop and its combinations has been lower than sugarcane against the entire criteria adopted for the economic analysis, except crop duration wherein the IRRI + wheat combination has nominally surpassed the sugarcane.

8. Nominal and Real Intervention/Indicative and Market Prices of Basmati and IRRI Paddy: 2000-01 to 2008-09

50. It is the policy of the government to annually review and announce intervention prices of Basmati and IRRI paddy well before sowing time so that rice growers decide their area according to the price announcement. To ascertain overtime changes in the purchasing power of basmati and IRRI paddy, the nominal intervention/indicative and market prices of these varieties from 2000-01 to 2007-08 crops were deflated by the Consumer Price Index (CPI), the most common measure of inflation. The results are given the Tables 12 and 13 and also depicted in Figures-5 to 8.

8.1 Nominal and Real Intervention/Indicative and Market Prices of Basmati Paddy in the Punjab

Table-12: Nominal and Real Prices of Basmati Paddy at Intervention/Indicative and Market Prices: 2000-01 to 2008-09 Crops

Crop year	Nominal Prices		Consumer Price Index (CPI)	Real Prices	
	Intervention/ Indicative	Market		Intervention/ Indicative	Market
1	2	3	4	5=(2/4)x100	6=(3/4)x100
	---- Rs per 40 kgs ----		1990-91=100	---- Rs per 40 kgs ----	
2000-01	460	410	100.00	460	410
2001-02	460	470	103.54	444	454
2002-03 @	485	502	106.75	454	470
2003-04	485	505	111.63	434	452
2004-05	510	560	121.98	418	459
2005-06@	560	537	131.64	425	408
2006-07@	585	594	141.73	413	419
2007-08@	650	920	155.74	417	591
2008-09	1500	1183	178.04	8439	664

Sources:

- i) Economic Survey of Pakistan 2008-09.
- ii) Directorate of Agriculture Economics and Marketing (E&M), Punjab, Lahore.

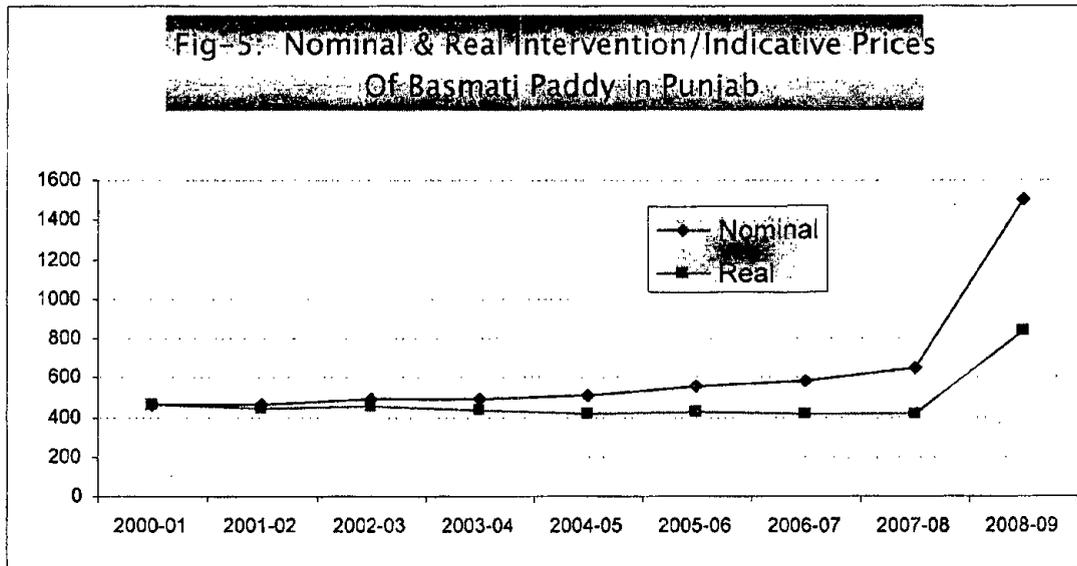
Notes:

1. The market prices are the average wholesale prices during the post harvest period i.e. October-January in important producer area markets in the Punjab.
- @. Recommended price of the crop by API, as the Indicative price was not announced.

8.1.1 Intervention/Indicative Prices of Basmati

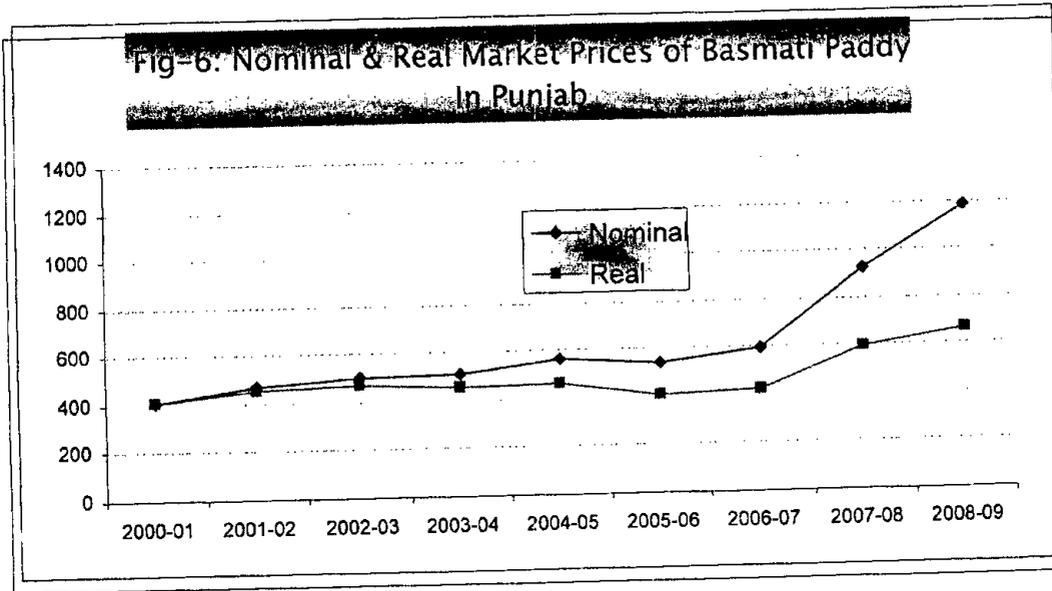
51. The nominal intervention price of Basmati paddy during the period of 2000-01 to 2008-09, reflects an overall increase of 226 percent i.e. from Rs. 460 per 40 Kgs in base year to Rs. 1500 per 40 kgs in 2008-09. During the same period, the CPI has surged by 78 percent. Consequently, the real intervention price of Basmati paddy in 2008-09 crop year, estimated at Rs. 843 per 40 kgs in terms of base-year prices. However, the real

intervention/indicative price has experienced unsteadiness during the period under review touching the lowest level of Rs. 413 in 2006-07. Real value of intervention price did not maintain the base year level for the entire period under consideration which reflects that the increase in the nominal price did not match inflationary trend, thus resulting into erosion of purchasing power of the rice farmer.



8.1.2 Market Prices of Basmati

52. The data in Table-12 above reveals that the nominal market price of Basmati paddy has evidenced 189 % increase against the base year while its real value improved only by 62%. The major reason for this slow increasing trend in the real purchasing power of the crop is the 78 % increase in general inflation observed for the same period.



53. For the major part of the period under review, the real market price remained above the real intervention price, which indicates that market prices have been giving more benefits to the farmer against the intervention price. The year 2008-09 proved the best crop season for the rice growers both in terms of real value of their commodity, both intervention and market, as they fetched the highest real value over the base year, i.e. 83 % and 62 %, respectively.

8.2 Nominal and Real Intervention/Indicative and Market Prices of IRRI-6 Paddy in Sindh.

54. The data on Nominal and Real prices of IRRI-6 Paddy at intervention/indicative and Market prices of Sindh and CPI are presented in Table-13.

Table-13: Nominal and Real Prices of IRRI-6 Paddy at Intervention/Indicative and Market Prices in Sindh: 2000-01 to 2008-09 Crops

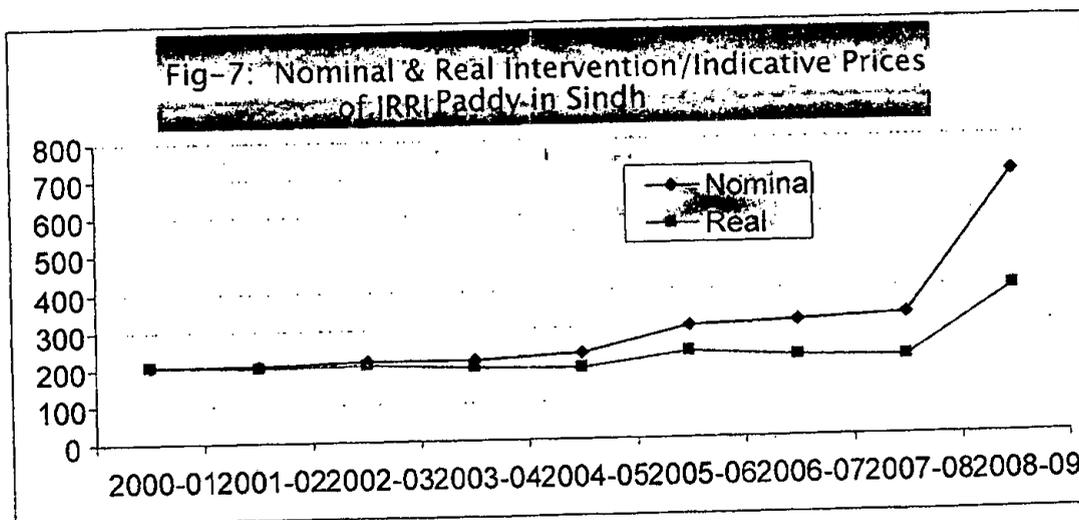
Crop year	Nominal prices		Consumer price Index(CPI)	Real Prices	
	Intervention/ Indicative	Market		Intervention/ Indicative	Market
1	2	3	4	5=(2/4)x100	6=(3/4)x100
	---- Rs per 40 kgs ----		2000-01=100	---- Rs per 40 kgs ----	
2000-01	205	180	100.00	205	180
2001-02	205	205	103.54	198	198
2002-03@	215	218	106.75	201	204
2003-04	215	257	111.63	193	230
2004-05	230	338	121.98	189	277
2005-06@	300	290	131.64	228	220
2006-07	306	310	141.73	216	219
2007-08@	325	509	155.74	209	327
2008-09	700	585	178.04	393	329

Source: Economic Survey of Pakistan 2008-09.

- Notes: 1. Market prices are the average wholesale prices during the post harvest period in important producer area markets.
 @. Recommended price of the crop by API, as the Intervention price was not announced.

8.2.1 Intervention/Indicative Prices

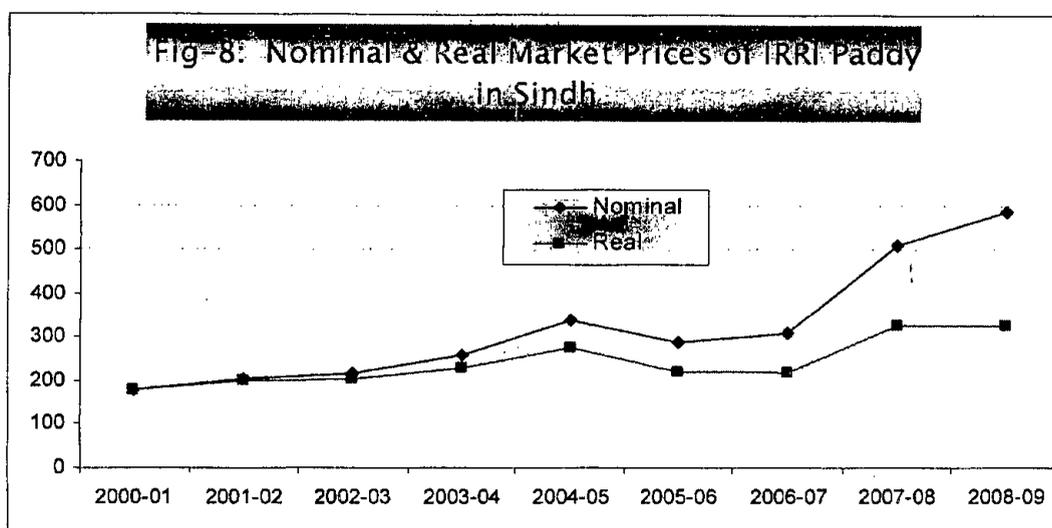
55. Table-13 reveals that the nominal intervention/indicative price of IRRI-6 paddy during the period under review indicate a cumulative surge of 241 per cent i.e. from Rs. 205 per 40 kgs in base-year to Rs.700 per 40 kgs in 2008-09. During the same period, the CPI ascended by 78 percent cumulatively. Consequently, the real intervention/indicative price in 2008-09 crop year registered at Rs. 393 per 40 kgs, showing an improvement of 92 percent over the corresponding price of the 2000-01 crop. However, the real value of intervention/indicative prices has experienced many fluctuations, during the period under review.



8.2.2 Market Prices

56. As per data given in Table-13, the nominal market price of IRRI-6 paddy in Sindh averaging at Rs. 180 per 40 kgs during the post harvest season of 2000-01 has, over the years, augmented to Rs 585 per 40 kgs in 2008-09, indicating overall increase of 225 percent. For the increase in CPI by 78 per cent, the consequent increase in the real market price is observed at 83 % i.e. Rs 329 per 40 kgs in 2008-09.

57. In Sindh, almost in all the years except 2000-01, 2005-06 and 2008-09, the market prices of IRRI-6 paddy ruled higher than intervention/indicative prices announced by the government. Excluding the last two years, the crop year 2004-05 was the best in terms of real market price as it fetched the highest market value of Rs. 277 per 40 kgs.



9. World Supply, Demand, Stocks, Trade and Prices Situation of Milled Rice

9.1 World Supply, Demand, Stocks, and Trade

58. With increase in production during 2008-09 (Table-14), global stocks have shown an upward trend implying likely downward trend in prices of milled rice (As seen in Table-15). Hence policy option for domestic producer prices of paddy 2009-10 crop needs to be based mainly on COP and current international prices rather than on support price announced for 2008-09 crop. Moreover special efforts shall be required for enhancing exports.

Table -14: World Supply, Demand, Stocks and Trade in Rice: 2007-08 to 2009-10

S.No	Item	2007-08	2008-09	2009-10 Forecast
		-----Million tonnes-----		
1.	Opening stocks	104.6	109.2	120.1
2.	Production	441.1	460.3	464.5
3.	Total supply (Items 1+2)	545.7	569.5	584.6
4.	Consumption/disappearance	437.9	449.8	457.6
5.	Closing stocks	109.2	120.1	127.2
6.	Trade	30.2	30.9	30.6

Note: The difference between closing and opening stocks are due to trade estimates refer to calendar year.

Source: Food Outlook, FAO, Rome, June 2009.

9.2. Export Parity Prices of Rice (Paddy)

59. To ascertain export competitiveness of Pakistani rice in the international market export parity prices have been calculated on the basis of actual export prices of both fine and coarse rice. The details of these calculations are given in Annexes-VIII and IX and a summary is given in table-15. Based on export prices actually realized in August 2009, export parity price of basmati & IRRI paddy come to Rs 1757 and 684 per 40 kgs respectively. However, perceiving hard competition from India and other rice exporting countries rational policy option would be to announce intervention prices if needed keeping in view COP and actual market prices prevailed during 2008-09 harvest season. These latter indicators have been discussed in other sections.

Table-15: Export Parity Prices Of Basmati And IRRI Paddy- 2008-09

Items	August 2009	2008-09	Average 2005-08
A) Export Parity Price Of Basmati Paddy			
Average fob Karachi prices (US\$/ton)	1030	1247	714
Exchange Rate (Rs/US\$)	83.00	80.50	80.50
Average fob Karachi prices (Rs/40Kgs)	3420	4015	2299
Mill-gate price of 40 Kgs paddy	1757	2089	1133
B) Export Parity Price Of IRRI Paddy			
Average fob (Karachi) prices (US\$/ton)	505	586	323
Exchange Rate (Rs/US\$)	83.00	80.50	80.50
Average fob Karachi prices (Rs/40Kgs)	1677	1887	1040
Mill-gate price of 40 Kgs paddy	684	788	370

10. RICE EXPORT FROM PAKISTAN

60. Pakistan has been a major exporter of rice with its share in global trade at 10.26 per cent during 2007-08. Export of basmati rice has shown an overall increase of 25.34 per cent in 2007-08 over 2006-07 (Table-16). The region-wise statistics show that export of basmati rice in 2007-08 increased by 144 percent to Europe while it decreased by 33

percent to CIS. However, export of coarse rice has not been encouraging and hence needs special attention of the Trade Development Authority of Pakistan (TDAP).

Table-16: PERCENT CHANGES IN EXPORT OF BASMATI AND COARSE RICE: 2007-08 OVER 2006-07

Region	Quantity		Percent share in total export			
	Basmati Rice	Coarse Rice	Basmati Rice		Coarse Rice	
			2006-07	2007-08	2006-07	2007-08
Asia	12.82	12.65	82.89	74.50	35.03	47.79
Oceania	24.04	-70.73	1.79	1.77	0.12	0.04
Europe	143.97	-44.70	7.48	14.43	5.58	3.74
Africa	76.48	-32.21	4.47	6.29	56.52	46.40
America	14.84	108.52	3.05	2.79	0.71	1.79
CIS	-33.14	-90.32	0.34	0.18	2.04	0.24
Total	25.34	-17.43	100.00	100.00	100.00	100.00

Source: Annex-X.

11. ECONOMIC EFFICIENCY OF RESOURCE USE IN RICE PRODUCTION

61. Under the current scenario of trade liberalization, profitability and competitiveness are considered as the most important aspects for exportable commodities. To analyze these aspects for rice, a major exportable commodity of Pakistan, the API has estimated some of the most commonly used economic indicators: Nominal Protection Coefficient (NPC), Effective Protection Coefficient (EPC), and Domestic Resource Cost Coefficient (DRC). The numeric of these indicators and their economic implications have been discussed in the following section.

11.1 Nominal and Effective Protection Coefficients (NPC and EPC)

62. Empirical estimates of NPCs, EPCs and DRCs for Basmati and IRRI rice are given in Table-17.

Table-17: Economic Efficiency Coefficients For Rice In Pakistan

POLICY ANALYSIS MATRIX (PAM)			
Province/Year	NPCs	EPCs	DRCs
Basmati (Punjab)			
2004-05	0.99	0.95	0.65
2005-06	0.73	0.59	0.61
2006-07	0.76	0.61	0.65
2007-08	0.73	0.68	0.31
2008-09	0.71	0.64	0.42
IRRI (Punjab)			
2004-05	0.97	0.90	0.91
2005-06	0.92	0.81	1.10
2006-07	0.89	0.74	1.08
2007-08	0.61	0.51	0.48
2008-09	0.93	0.92	0.72
IRRI (Sindh)			
2004-05	1.22	1.29	0.60
2005-06	0.95	0.90	0.68
2006-07	0.83	0.74	0.74
2007-08	0.66	0.60	0.37
2008-09	0.83	1.00	0.54

Source: Estimated from the data given in Annexes-XI to XIII.

- Basmati paddy

63. NPCs for basmati paddy have been less than one during the entire period under analysis implying rice producers have not received the economic price for their produce (export parity price). This further implies that domestic production of basmati rice is a profitable enterprise in the national context but simultaneously it also implies an implicit tax on the producers.

64. The perusal of the EPC also re-enforces the conclusions drawn above. However, the extent of implicit taxation on the domestic producers of basmati has been higher due to increased prices of tradable inputs.

- **IRRI Paddy**

65. In case of IRRI rice, the NPCs and EPCs for Punjab and Sindh remained less than one during the reference period except in 2004-05 and 2008-09 in case of Sindh. This implies no market protection to the growers rather a tax on the growers.

66. However, for Sindh the corresponding figures in 2004-05 and 2008-09 exceeded one which indicates only occasional market protection to IRRI rice growers in the Sindh province.

11.2 Domestic Resource Cost (DRC)

- **Basmati paddy**

67. Domestic Resource Cost (DRC) indicates the opportunity cost of domestic resources used in the production of a commodity. The DRC less than one indicates a commodity system having a comparative advantage and if it is greater than one a disadvantage situation. The results of the analysis indicate that DRCs for basmati have been less than one during the period under analysis implying that Pakistan has a comparative advantage in basmati production. It may be seen from Table-17 that DRCs for basmati production have ranged between 0.31 and 0.65 during the period implying that the cost of domestic resources involved in earning one US dollar through basmati rice exports has been consistently less than the corresponding exchange rates.

- **IRRI paddy**

68. Unlike basmati, global prices of IRRI rice do not indicate consistent comparative advantage for its export. The DRCs provided in Table-17 highlight the extent of the comparative disadvantage. For IRRI (Punjab) during 2005-06 and 2006-07, the DRC coefficients exceeded 1 which implies disadvantageous position in IRRI export. However, for Sindh the DRCs remained less than one throughout which reflect comparative advantage for IRRI rice.

12. RICE YIELD AMONG COMPETING COUNTRIES

69. Global rice during 2007 occupied an area of 156.95 million hectares with a total production of 434.50 million tonnes. The world top 11 producing countries contribute 86 per cent of total area and world top 12 producing countries contribute 89 per cent of total production (see Annex-XIV).

70. In terms of rice area India is on the top with 44 million hectares, followed by China with 29.5 million and Indonesia with 12.17 million hectares. Pakistan lies at 11th number in this regard.

71. In terms of rice production, China is on the top with 124.69 million tonnes, followed by Indian with 94.09 million tonnes and Indonesia with 38.03 million tonnes. However, Pakistan retained 12th position in rice production of the world.

72. In terms of yield per hectare, Chad lies at the top with 10,750 kgs per hectare followed by Egypt with 6,648 and Australia with 5,433. It is an alarming situation that Pakistan ranks at 59th in terms of yield while India lies at 58th position (Annex-XV). It implies that there is a lot of potential to raise rice productivity per hectare in Pakistan.

13. MAJOR RICE VARIETIES AND THEIR YIELD POTENTIAL IN PAKISTAN

73. In Pakistan rice is one of major food and cash crops. It is the 2nd most important crop that brings economic prosperity of the growers as well as earns billion of rupees through its export. The yield potential of rice by varieties being sown in Punjab and Sindh, the major producing provinces of Pakistan, are presented in the Table- 18 below:

Table-18: Yield Potential of Rice Paddy of Different Varieties Sown in Punjab and Sindh

Variety	Yield Potential				Shares in the total area of rice paddy
	Paddy		Rice		
	(Maund/acre)	(Kgs/acre)	(Maund/acre)	(Kgs/acre)	(Per cent)
Punjab					
a) Basmati					
Basmati-385	65	2600	43.33	1733	6.05
Super Basmati	65	2600	43.33	1733	70.72
Other	-	-	-	-	3.05
b) IRRI					
IRRI-6	80	3200	53.33	2133	4.86
NIAB- IRRI-9	75	3000	50.00	2000	1.95
KS-282	80	3200	53.33	2133	2.28
Other	-	-	-	-	11.09
Sindh					
a) IRRI-8					
IRRI-8	80	3200	53.33	2133	80.00
IRRI-6	70	2800	46.67	1867	
DR-82	70	2800	46.67	1867	
DR-83	50-55	2100	35.00	1400	
IRRI-92	70	2800	46.67	1867	
Khanewal 95	50-55	2100	35.00	1400	
Sada Hayat	60-65	2500	41.67	1667	
Shaheen	80	3200	53.33	2133	
Lateefy (Aromatic)	40	1600	26.67	1067	
b) In Pipe Line					
DR-57	80	3200	53.33	2133	
DR-58	85	3400	56.67	2267	
DR-65 (Aromatic)	40-45	1700	28.33	1133	

Note: Rice paddy conversion has assumed at the ratio of 2:3.

Sources:

- i) Nuclear Institute for Agriculture & Biology (NIAB), Faisalabd.
- ii) Rice Research Institute (RRI), Dokri Sindh.

74. Pakistan is one of the major rice exporting country. However, the national realized yield at farm level is low though higher yield potential exists throughout the country. Based on last three years of 2006-07 to 2008-09, the average per acre yield of rice paddy of different varieties in the Punjab and Sindh, the main producing provinces are as: 1043 kgs for Basmati, 1529 for IRRI and 1356 kgs for others in the Punjab and 2004 kgs for IRRI and 1310 kgs for others in Sindh. These yields are much below than the existing yield potential. In order to meet local needs and achieve competitiveness in the world markets,

there is a dire need to fetch the existing potential. The increase in yield level will be cost effective and will also enhance rice exports from Pakistan.

14. COST OF PRODUCTION AND SUBSIDY ON PRODUCTION OF RICE PADDY IN COMPETING COUNTRIES

14.1 Cost of Production

75. In respect of rice paddy, the competing countries with Pakistan include neighboring countries like China, India and Iran and other rice producing countries like Thailand, Vietnam, Russia and USA. The data on cost of production of paddy in these countries is not available. However, the cost of production of paddy in India and Philippines for 2007-08 crop is available. Cost of paddy production in India is estimated at Indian Rs 620 per quintal by the Commission for Agricultural Costs and Prices (CACP). Taking the current exchange rate into account, the cost of production of rice paddy in India works to Pak Rs 402 per 40 kgs. While in Philippines it is estimated at \$ 6.95 per 40 kgs, which is equal to Pak Rs 560. In Pakistan, the cost of production of basmati paddy in Punjab for 2007-08 crop was estimated at Rs 622 per 40 kgs and for IRRI paddy at Rs 363 in the Punjab and Rs 291 in Sindh by the Agriculture Policy Institute (API).

14.2 Subsidy on Paddy Production

76. The data of subsidy on production of paddy is also not available. However, it is known that Indian government is giving subsidy to its farmers in the shape of free electricity in the Punjab and at subsidized rates in other states for tubewell. Indian government is providing DAP fertilizer to its farmers at the subsidized rate of Indian Rs 955 per bag (Pak Rs 1547), while the cost of imported DAP was much higher. It is also reported that the resource poor farmers are receiving free seed in India. Agriculture Department of India aimed at facilitating the import of 700 mechanized transplanters and offered subsidy of 50 per cent of the cost of machine or Indian Rs 1.5 lakh (Pak Rs 2.43 Lakh) per transplanter. While the Philippines Agriculture Department released US \$ 21 million worth of fertilizer subsidy for 2008-09 paddy crop.

77. The Government of USA is providing a direct subsidy to its rice paddy growers @ Pak Rs 215 per 40 kgs. While no such subsidy is paid to paddy growers in Pakistan. However, Federal Government announced subsidy of Rs 2000 on per bag of DAP last year in view of very high prices of imported DAP.

15. IMPROVED SEED AVAILABILITY OF RICE PADDY

78. Seed is one of the important and basic agricultural inputs as return from other inputs depends on its quality. No other farm input can make up for the deficiency on this account. To obtain optimum responses of farm inputs and cultural operations, it is imperative to use quality seed of recommended varieties. In the self-pollinated crop like rice, the experts recommend to replace entire seed once in five years, implying that the fresh quality seed should at least replace 20 % of area under rice every year.

79. In order to review the overtime progress regarding coverage of quality seed, the annual gross and replacement requirement of certified seed of rice and its availability during the period from 2004-05 to 2008-09 have been presented in Annex-XVI.

80. The supply of certified seed has generally shown an irregular trend. Its supply of 10219 tones was the lowest during 2004-05 and hardly sufficient to cover 23 per cent area under rice. It continued to increase with some fluctuations and the supply of certified seed of 13685 tones in 2005-06 was the maximum and enough to plant 31 per cent of the total rice area. Afterwards this followed a continuous downward trend and finally coverage of rice area under certified seed came at 25 per cent in 2008-09 crop year.

81. Variety-wise breakup of the supply of certified seed of rice both in public and private sector for the crop year 2008-09 is presented in Table- 19.

Table-19: Variety wise Certified Seed of Paddy Supplied by Public and Private Sectors for 2008-09 Crop

Province/Variety	Seed Availability			Area Sown	Seed Requirement	Area covered by certified seed
	Public Sector	Private Sector	Total			
	--- Tonnes ---			000 hect.	Tonnes	Per cent
Punjab	3575	6187	9762	1954.2	29038	33.6
i) Basmati	2450	2897	5347	1524.4	18293	29.2
ii) IRRI & others	1125	3290	4415	429.8	10745	41.1
Sindh (IRRI + others)	512	2835	3347	733.5	18338	18.3
NWFP "others"	113	9	122	62.4	1560	7.8
Balochistan "IRRI"	0	225	225	190.1	4753	4.7
All Pakistan						
i) Basmati	2450	2897	5347	1524.4	18293	29.2
ii) IRRI+ others	1750	6359	8109	1415.8	35396	22.9
Total	4200	9256	13456	2940.2	53689	25.1

Notes:

- i) The seed requirements have been worked out by using the seed @ 12 kgs per hectare for basmati and 25 kgs for IRRI and others varieties.
- ii) Rounding off figures may result in slight differences.

Sources:

- i) For Area: Annex-1.
- ii) For Seed: FCA working paper for 90th meeting.

82. It may be seen from the Table-19 that the major source of supply of certified seed is private sector, accounting for 69 per cent at overall basis. The province of Punjab has done better than other provinces in this context. In 2008-09 crop year, about 34 per cent of area was covered with certified seed. Varietals position indicates that 41 per cent of IRRI and other varieties of rice were sown with certified seed while 29 % of basmati area was planted under basmati certified seed.

83. The situation in Sindh regarding supply of certified seed has been rather disappointing. During 2008-09 total supply of certified seed of IRRI and other rice paddy were 3347 tones (512 tones of public and 2835 of private) against requirement of 18338 tones, meeting only 18 per cent of gross requirement of the province. The public sector,

Sindh Seed Corporation has not been properly functioning since 2002. The private sector reportedly has no basic seed to multiply. The situation demands that financial constraints of the seed agencies, farmers and institutions involved in the improved seed production and distribution be removed through giving them soft term loans. Moreover, the research institutes need to be strengthened to produce more basic seed to meet the replacement requirement of the province.

84. The availability of quality seed of rice paddy in the NWFP during 2008-09 was 122 tones, lesser by 82 tones or 41 per cent than 207 tones in 2007-08 crop year. Consequently, serious efforts are needed to enhance the availability of quality seed. Provincial agriculture department of NWFP may be directed to perform motivating role to induce rice growers for cultivation of rice with certified seed.

85. In Balochistan, only 225 tones of quality seed of rice were supplied by the private agencies during 2008-09 crop year against the gross seed requirement of 4753 tones of the province which covered only 5 per cent of area under rice. Provincial agriculture department may take concrete steps to improve supply of certified seed in the province.

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**AREA, YIELD AND PRODUCTION OF RICE BY VARIETY AND PROVINCE:
1998-99 TO 2008-09**

Year	PUNJAB				SINDH			NWFP Total (Others)	Baloch. Total (IRRI)	Pakistan			
	Basmati	IRRI	Others	Total	IRRI	Others	Total			Basmati	IRRI	Others	Total
AREA													
----- Thousand hectares -----													
1998-99	1162.2	236.8	93.9	1492.9	628.7	75.4	704.1	68.2	158.4	1162.2	1023.9	237.5	2423.6
1999-00	1246.8	266.7	95.9	1609.4	616.9	73.5	690.4	67.1	148.5	1246.8	1032.1	236.5	2515.4
2000-01	1113.7	313.2	200.3	1627.2	481.4	58.7	540.1	66.4	142.9	1113.7	937.5	325.4	2376.6
2001-02	1293.8	147.7	34.4	1475.9	413.6	47.5	461.1	60.7	116.5	1293.8	677.8	142.6	2114.2
2002-03	1316.8	146.5	49.0	1512.3	438.3	50.0	488.3	61.0	163.6	1316.8	748.4	160.0	2225.2
2003-04	1426.1	138.0	123.8	1687.9	495.3	55.9	551.2	61.7	159.8	1426.1	793.1	241.4	2460.6
2004-05	1466.5	108.1	179.7	1754.3	484.9	58.9	543.8	59.9	161.5	1466.5	754.5	298.5	2519.4
2005-06	1534.9	131.9	95.6	1762.4	527.4	65.8	593.2	59.4	206.4	1534.9	865.7	220.8	2621.4
2006-07	1474.2	138.8	115.4	1728.4	534.3	63.8	598.1	60.8	193.9	1474.2	867.0	240.0	2581.2
2007-08	1377.1	159.8	186.6	1723.5	531.1	62.9	594.0	61.7	136.2	1377.1	827.1	311.2	2515.4
2008-09	1524.4	197.1	232.7	1954.2	560.3	173.1	733.5	62.4	190.1	1524.4	947.6	468.2	2940.2
YIELD													
----- kgs per hectare -----													
1998-99	1363	1783	1805	1458	2885	1548	2742	1959	2739	1363	2607	1768	1928
1999-00	1415	2005	1900	1542	3234	1743	3075	1925	2844	1415	2860	1858	2050
2000-01	1438	1891	1915	1584	3283	1738	3115	1976	2884	1438	2757	1896	2021
2001-02	1479	1928	1959	1535	2665	1200	2514	2005	2877	1479	2541	1726	1836
2002-03	1652	1977	2337	1706	2830	1184	2662	2159	2857	1652	2669	1909	2013
2003-04	1619	2084	2218	1701	2763	1147	2599	2120	2582	1619	2609	1945	1970
2004-05	1601	2188	2204	1699	2946	1209	2758	2057	2611	1601	2765	1978	1994
2005-06	1721	2387	2333	1804	3109	1239	2901	1978	2563	1721	2869	1911	2116
2006-07	1691	2409	2145	1779	3121	1475	2946	2021	2466	1691	2861	1935	2107
2007-08	1781	2593	2243	1907	3232	1609	3060	2079	2433	1781	2977	2083	2212
2008-09	1680	2553	2309	1843	3549	3386	3510	2087	3385	1680	3309	2678	2364
PRODUCTION													
----- Thousand tonnes -----													
1998-99	1584.3	422.2	169.5	2176.0	1813.6	116.7	1930.3	133.6	433.9	1584.3	2669.7	419.8	4673.8
1999-00	1764.0	534.8	182.2	2481.0	1994.9	128.1	2123.0	129.2	422.4	1764.0	2952.1	439.5	5155.6
2000-01	1601.0	592.4	383.6	2577.0	1580.3	102.0	1682.3	131.2	412.1	1601.0	2584.8	616.8	4802.6
2001-02	1913.8	284.8	67.4	2266.0	1102.1	57.0	1159.1	121.7	335.2	1913.8	1722.1	246.1	3882.0
2002-03	2175.5	289.7	114.5	2579.7	1240.6	59.2	1299.8	131.7	467.4	2175.5	1997.7	305.4	4478.6
2003-04	2309.2	287.6	274.6	2871.4	1368.7	64.1	1432.8	130.8	412.6	2309.2	2088.9	469.5	4847.6
2004-05	2347.9	236.4	396.0	2980.3	1428.4	71.2	1499.6	123.2	421.6	2347.9	2086.4	590.4	5024.7
2005-06	2641.8	314.8	223.0	3179.6	1639.5	81.5	1721.0	117.5	529.1	2641.8	2483.4	422.0	5547.2
2006-07	2493.6	334.4	247.5	3075.5	1667.7	94.1	1761.8	122.9	478.2	2493.6	2480.3	464.5	5438.4
2007-08	2453.1	414.4	418.5	3286.0	1716.5	101.2	1817.7	128.3	331.4	2453.1	2462.3	648.0	5563.4
2008-09	2560.7	503.2	537.4	3601.3	1988.5	586.2	2574.7	130.3	643.7	2560.7	3135.4	1253.9	6950.0

Note:- The varieties of basmati grown in the NWFP are of different characteristics than those in the Punjab, therefore, area and production of basmati varieties of this province have not been included with data of basmati of Punjab. Instead data of all varieties of rice in the NWFP have been included under "Others" in the province as well as on overall basis. Rice grown in Balochistan has been considered as of IRRI variety as variety-wise breakup is not available.

- Sources**
1. For 1998-99 to 2007-08, Agricultural Statistics of Pakistan 2007-08, MINFA Islamabad.
 2. For 2008-09 : Second estimates of the Punjab, Sindh, and NWFP and final estimate of Balochistan provided by concerned Provincial Agriculture Departments.

DISTRICT-WISE PRODUCTION OF RICE BY VARIETY: AVERAGE OF 2006-07 TO 2008-09

"000"tonnes

S. No	Province/District	Basmati	IRRI	Others	Total	Percent	S. No	Province/District	Basmati	IRRI	Others	Total	Percent
Punjab							NWFP						
1	Gujranwala	310.4	1.0	172.2	483.5	8.1	1	D.I.Khan	-	-	19.9	19.9	0.3
2	Sialkot	314.1	1.3	25.4	340.8	5.7	2	Swat	-	-	17.9	17.9	0.3
3	Sheikhupura	266.8	0.0	32.2	298.9	5.0	3	Dir Upper	-	-	17.2	17.2	0.3
4	Okara	115.6	149.8	2.7	268.2	4.5	4	Malakand	-	-	14.5	14.5	0.2
5	Hafizabad	132.5	0.3	94.9	227.7	3.8	5	Dir Lower	-	-	14.4	14.4	0.2
6	Nankana Sahib	135.7	0.0	47.1	182.8	3.1	6	Kurram AG.	-	-	8.5	8.5	0.1
7	Jhang	161.7	10.6	0.0	172.3	2.9	7	Bajour AG.	-	-	7.8	7.8	0.1
8	M.B.Din	147.6	0.9	1.8	150.3	2.5	8	Mansehra	-	-	5.1	5.1	0.1
9	Kasur	86.0	55.8	2.0	143.8	2.4	9	Battagram	-	-	4.2	4.2	0.1
10	Narowal	138.1	0.0	0.0	138.1	2.3	10	Bannu	-	-	3.9	3.9	0.1
11	Bahawalnagar	98.8	18.1	0.0	116.9	2.0	11	Chitral	-	-	3.5	3.5	0.1
12	Pakpattan	72.2	30.0	10.1	112.3	1.9	12	Shangla	-	-	3.4	3.4	0.1
13	Gujrat	83.0	0.0	0.0	83.0	1.4	13	Mardan	-	-	2.8	2.8	0.0
14	Sargodha	72.8	0.0	0.0	72.8	1.2	14	Tank	-	-	1.0	1.0	0.0
15	Lahore	49.2	11.2	5.5	66.0	1.1	15	Peshawar	-	-	0.7	0.7	0.0
16	D.G.Khan	0.0	63.4	0.0	63.4	1.1	16	Bunir	-	-	0.6	0.6	0.0
17	Sahiwal	50.8	0.3	0.0	51.1	0.9	17	N.Waziristan	-	-	0.3	0.3	0.0
18	T.T.Singh	46.5	0.0	3.4	49.9	0.8	18	Swabi	-	-	0.3	0.3	0.0
19	Faisalabad	43.8	0.0	3.9	47.7	0.8	19	Hangu	-	-	0.2	0.2	0.0
20	Khanewal	41.7	0.3	0.0	42.0	0.7	20	Orakzai AG	-	-	0.2	0.2	0.0
21	Muzaffargarh	11.2	29.6	0.0	40.8	0.7	21	Kohistan	-	-	0.2	0.2	0.0
22	Vehari	38.3	2.5	0.0	40.7	0.7	22	Nowshera	-	-	0.2	0.2	0.0
23	Khushab	33.1	0.0	0.0	33.1	0.6	23	Kohat	-	-	0.1	0.1	0.0
24	R.Y.Khan	13.0	16.3	0.0	29.3	0.5	24	Charsadda	-	-	0.1	0.1	0.0
25	Multan	17.4	4.0	0.0	21.4	0.4	25	Mohmand AG.	-	-	0.1	0.1	0.0
26	Rajanpur	0.0	15.7	0.0	15.7	0.3	26	F.R.D.I.Khan	-	-	0.1	0.1	0.0
27	Bahawalpur	5.6	2.8	0.0	8.4	0.1	27	Lakki Marwat	-	-	0.1	0.1	0.0
28	Mianwali	7.0	0.0	0.0	7.0	0.1							
29	Layyah	3.0	3.5	0.0	6.5	0.1							
30	Lodhran	4.0	0.0	0.0	4.0	0.1							
31	Jhelum	1.8	0.0	0.0	1.8	0.0							
32	Bhakkar	0.7	0.0	0.0	0.7	0.0							
	Sub Total	2502.5	417.3	401.1	3320.9	55.5		Sub Total	0.0	0.0	127.1	127.1	2.1
Sindh							Balochistan						
1	Jacobabad/Kashmore	-	410.5	57.2	467.7	7.8	1	Jaffarabad	-	320.0	-	320.0	5.3
2	Larkana	-	308.0	57.3	365.3	6.1	2	Nasirabad	-	157.4	-	157.4	2.6
3	Shikarpur	-	301.0	48.2	349.2	5.8	3	Khuzdar	-	6.1	-	6.1	0.1
4	Kambarshahdadkot	-	231.5	34.1	265.6	4.4	4	Jhal Magsi	-	0.4	-	0.4	0.0
5	Thatta	-	176.2	24.0	200.2	3.3	5	Awaran	-	0.2	-	0.2	0.0
6	Dadu/Jamshoro	-	121.9	27.0	148.9	2.5	6	Turbat	-	0.1	-	0.1	0.0
7	Badin	-	130.3	10.3	140.6	2.4	7	Lasbella	-	0.1	-	0.1	0.0
8	T.M.Khan	-	32.3	1.2	33.5	0.6							
9	Ghotki	-	23.2	0.2	23.4	0.4							
10	Sukkur	-	16.3	0.6	16.9	0.3							
11	Khairpur	-	15.7	0.2	15.9	0.3							
12	N.Feroze	-	13.5	0.1	13.6	0.2							
13	Sanghar	-	5.6	0.0	5.6	0.1							
14	Hyderabad/Matiari/	-	3.2	0.0	3.2	0.1							
15	Nawabshah	-	1.1	0.1	1.2	0.0							
16	Mirpurkhas/Umerkot	-	0.6	0.0	0.6	0.0							
	Sindh Total	-	1790.9	260.5	2051.4	34.3		Balochistan Total	-	484.4	-	484.4	8.1
								Pakistan Total	2502.5	2692.6	788.8	5983.9	100.0

Notes:

1. Data have been arranged in descending order on the basis of total production of rice in each district.
2. Percentage share calculated on the basis of country total.
3. Rounding may result in slight differences in figures.

PER CAPITA AVAILABILITY CONSUMPTION OF RICE: 1997-98 to 2007-08 (October - September)

S. No	Items	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
		-----Thousands tonnes-----										
1	Production	4333	4674	5156	4803	3882	4479	4848	5024	5547	5438	5563
2	Deduction for seed, feed and wastage @ 6 percent for production	260	280	309	288	233	269	291	301	333	326	334
3	Export	2091	1799	1916	2294	1684	1684	1817	2830	3718	3129	2599
4	Net availability	1982	2595	2931	2221	1965	2526	2740	1893	1496	1983	2630
		-----Million-----										
5	Population as on first January (a) i.e mid year rice	135.25	139.30	141.56	143.59	146.87	149.96	155.90	157.73	160.73	163.78	166.89
		-----Kgs per annum-----										
6	Per capita availability (consumption)	14.65	18.63	20.70	15.47	13.38	16.85	17.58	12.00	9.31	12.11	15.76
7	Average per capita availability											
	Average (1997-98 to 2007-08)			15.13								
	Average (2005-06 to 2007-08)			12.39								

Note: (a) Population of AJ&K, NAs and Afghan refugees have also been included.

Sources:

- 1 For Imports and Exports: Federal Bureau of Statistics, Karachi.
- 2 For Population of Pakistan: Economic Survey of Pakistan, 2008-09.
- 3 For Population of AJ&K and NAs: Population Census Organization, Islamabad.
- 4 For Population of Afghan refugee: Kashmir Affairs and Northern Areas and States and Frontier Regions Division, Government of Pakistan, Islamabad.

**AVERAGE FARMERS' COST OF PRODUCTION OF BASMATI PADDY IN THE
PUNJAB: 2008-09 AND 2009-10 CROPS**

Sr. No.	Operations/inputs	Average No./oprs/units/acre	2008 - 09 crop		2009 - 10 crop		Change in 2009-10 over 2008-09
			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 dry ploughing	4.000	250.00	1000.00	300.00	1200.00	200.00
	1.2 wet ploughing	2.000	350.00	700.00	425.00	850.00	150.00
	1.3 wet planking	2.000	175.00	350.00	210.00	420.00	70.00
2.	Nursery used (marlas)	3.390	-	650.00	-	760.00	110.00
3.	Uprooting, transporting and transplanting (contract)	-	-	900.00	-	1200.00	300.00
4.	Labour for bund making etc. (m.day)	0.984	150.00	147.60	200.00	196.80	49.20
5.	Weeding:						
	5.1 manual (m.day)	1.154	150.00	173.10	200.00	230.80	57.70
	5.2 weedicides (No)	0.367	340.00	124.78	400.00	146.80	22.02
6.	Plant protection including application	0.786	375.00	294.75	450.00	353.70	58.95
7.	Farm yard manure including transport and application (50%)	0.200	1200.00	120.00	1280.00	128.00	8.00
8.	Fertilizer (bags)						
	8.1 DAP	0.585	3167.00	1852.70	1896.00	1109.16	-743.54
	8.2 NP	0.195	2018.00	393.51	1298.00	253.11	-140.40
	8.3 Urea	1.146	700.00	802.20	784.00	898.46	96.26
	8.4 Zinc Sulphate	0.316	130.00	41.08	200.00	63.20	22.12
9.	Fertilizer transport and application	2.270	25.00	56.75	28.00	63.56	6.81
10.	Irrigation * (Nos)						
	10.1 Canal	10.776	-	85.00	-	85.00	0.00
	10.2 Private tubewell	8.321	500.00	4160.50	555.00	4618.16	457.66
11.	Labour used for irrigation and water course cleaning (man days)	6.116	150.00	917.34	200.00	1223.12	305.78
12.	Mark up on investment @ 12.0 % per annum for 6 months on item 1 to 11 minus item 10.1	-	-	761.06	-	822.89	61.83
13.	Harvesting, threshing and winnowing (kgs/acre)	89.280	24.00	2142.72	29.00	2589.12	446.40
14.	Management charges for 6 months	-	-	375.00	-	425.00	50.00
15.	Land rent for 6 months (Rs/acre/annum)	-	4500.00	2250.00	10000.00	5000.00	2750.00
16.	Land revenue, local rate, pachotra etc.	-	-	5.00	-	5.00	0.00
17.	Average land tax @ Rs 132/acre/annum for 6 months	-	132.00	66.00	132.00	66.00	0.00
18.	Gross cost (item 1 to 17)			18369.09		22707.88	4338.80
19.	Value of straw	-	-	1250.00	-	1500.00	250.00
20.	Net cost of cultivation (item 18-19)						
	20.1 with land rent			17119.09		21207.88	4088.80
	20.2 without land rent			14869.09		16207.88	1338.80
21.	Yield per acre (kgs)			893.00		893.00	0.00
22.	Cost of production at farm (Rs/40 kgs)						
	22.1 with land rent	-	-	766.81	-	949.96	183.15
	22.2 without land rent	-	-	666.03	-	726.00	59.97
23.	Marketing charges i.e. Loading, transport, commission, weightment (Rs/40 kgs)	-	-	20.00	-	22.00	2.00
24.	Cost of production at market level (Rs/40 kgs)						
	24.1 with land rent	-	-	766.81	-	971.96	205.15
	24.2 without land rent	-	-	666.03	-	748.00	81.97

* hrs/irrigation: Canal 1.96, Private tube-well = 2.38

**AVERAGE FARMERS' COST OF PRODUCTION OF IRRI PADDY IN THE
PUNJAB: 2008-09 AND 2009-10 CROPS**

Sr. No.	Operations/inputs	Average No./oprs/units/acre	2008 - 09 crop		2009 - 10 crop		Change in 2009-10 over 2008-09
			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 dry ploughing	4.000	250.00	1000.00	300.00	1200.00	200.00
	1.2 wet ploughing	2.000	350.00	700.00	425.00	850.00	150.00
	1.3 wet planking	1.000	175.00	175.00	210.00	210.00	35.00
2.	Nursery used (marlas)	3.494	-	600.00	-	700.00	100.00
3.	Uprooting, transporting and transplanting (contract)	-	-	900.00	-	1200.00	300.00
4.	Labour for bund making etc. (man day)	1.150	150.00	172.50	200.00	230.00	57.50
5.	Weeding:						
	5.1 manual (m.day)	1.338	150.00	200.70	200.00	267.60	66.90
	5.2 weedicides (No)	0.655	340.00	222.70	400.00	262.00	39.30
6.	Plant protection including application	0.812	375.00	304.50	450.00	365.40	60.90
7.	Farm yard manure including transport and application (50%)	0.196	1150.00	112.70	1225.00	120.05	7.35
8.	Fertilizer (bags)						
	8.1 DAP	0.702	3167.00	2223.23	1896.00	1330.99	-892.24
	8.2 NP	0.303	2018.00	611.45	1298.00	393.29	-218.16
	8.3 Urea	1.498	700.00	1048.60	784.00	1174.43	125.83
	8.4 Zinc Sulphate	0.818	130.00	106.34	200.00	163.60	57.26
9.	Fertilizer transport and application	3.337	25.00	83.43	28.00	93.44	10.01
10.	Irrigation * (Nos)						
	10.1 Canal	15.905	-	85.00	-	85.00	0.00
	10.2 Private tubewell	4.493	475.00	2134.18	530.00	2381.29	247.12
11.	Labour used for irrigation and water course cleaning (man days)	5.964	150.00	894.60	200.00	1192.80	298.20
12.	Mark up on investment @ 12.0 % per annum for 6 months on item 1 to 11 minus item 10.1	-	-	689.40	-	728.09	38.70
13.	Harvesting, threshing and winnowing (kgs/acre)	134.100	13.50	1810.35	16.00	2145.60	335.25
14.	Management charges for 6 months	-	-	375.00	-	425.00	50.00
15.	Land rent for 6 months (Rs/acre/annum)	-	3500.00	1750.00	10000.00	5000.00	3250.00
16.	Land revenue, local rate, pachotra etc.	-	-	5.00	-	5.00	0.00
17.	Average land tax @ Rs 132/acre/annum for 6 months	-	132.00	66.00	132.00	66.00	0.00
18.	Gross cost (item 1 to 17)			16270.67		20589.59	4318.91
19.	Value of straw	-	-	800.00	-	1000.00	200.00
20.	Net cost of cultivation (item 18-19)						
	20.1 with land rent	-	-	15470.67	-	19589.59	4118.91
	20.2 without land rent	-	-	13720.67	-	14589.59	868.91
21.	Yield per acre (kgs)			1341.00		1341.00	0.00
22.	Cost of production at farm (Rs/40 kgs)						
	22.1 with land rent	-	-	461.47	-	584.33	122.86
	22.2 without land rent	-	-	409.27	-	435.19	25.92
23.	Marketing charges i.e. Loading, transport, commission, weightment (Rs/40 kgs)	-	-	20.00	-	22.00	2.00
24.	Cost of production at market level (Rs/40 kgs)						
	24.1 with land rent	-	-	461.47	-	606.33	144.86
	24.2 without land rent	-	-	409.27	-	457.19	47.92

* hrs/irrigation: Canal = 1.96, Private tube-well = 2.22

**AVERAGE FARMERS' COST OF PRODUCTION OF IRRI PADDY IN SINDH:
2008-09 AND 2009-10 CROPS**

Sr. No.	Operations/inputs	Average No./oprs/units/acre	2008 - 09 crop		2009 - 10 crop		Change in 2009-10 over 2008-09
			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 dry ploughing	5.000	350.00	1750.00	400.00	2000.00	250.00
	1.2 dry planking	1.000	175.00	175.00	200.00	200.00	25.00
	1.3 levelling (tractor hour)	1.000	350.00	350.00	400.00	400.00	50.00
2.	Nursery (ghunta)	1.000	-	850.00	-	1000.00	150.00
3.	Uprooting, transporting and transplanting (contract)	-	-	1050.00	-	1400.00	350.00
4.	Labour for bund making etc. (man day)	2.000	150.00	300.00	200.00	400.00	100.00
5.	Manual weeding (m.day)	2.435	150.00	365.25	200.00	487.00	121.75
6.	Plant protection						
	6.1 granular pesticides	0.733	320.00	234.56	385.00	282.21	47.65
	6.2 formulated spray	0.076	375.00	28.50	450.00	34.20	5.70
7.	Farm yard manure including transport and application (50%)	0.028	1150.00	16.10	1225.00	17.15	1.05
8.	Fertilizer (bags)						
	8.1 DAP	0.947	2967.00	2809.75	1953.00	1849.49	-960.26
	8.2 Urea	1.384	623.00	862.23	752.00	1040.77	178.54
	8.3 Zinc sulphate	0.051	130.00	6.63	200.00	10.20	3.57
9.	Fertilizer transport and application	2.384	25.00	59.60	28.00	66.75	7.15
10.	Irrigation (Nos)						
	10.1 canal	17.939	-	88.78	-	88.78	0.00
	10.2 private tubewell	0.522	300.00	156.60	340.00	177.48	20.88
11.	Labour used for irrigation and water course cleaning (man days)	5.595	150.00	839.20	200.00	1118.94	279.73
12.	Mark up on investment @ 12.0 % per annum for 6 months on item 1 to 11 minus item 10.1	-	-	591.21	-	629.05	37.85
13.	Harvesting and threshing etc. (kgs/acre)	185.250	12.00	2223.00	14.00	2593.50	370.50
14.	Management charges for 6 months	-	-	375.00	-	425.00	50.00
15.	Land rent for 6 months (Rs/acre/annum)	-	3000.00	1500.00	8000.00	4000.00	2500.00
16.	Land revenue, local rate, pachotra etc.	-	-	5.00	-	5.00	0.00
17.	Land tax @ Rs 200/acre/annum for 6 months	-	200.00	100.00	200.00	100.00	0.00
18.	Drainage cess @ Rs 24/acre/annum for 6 months	-	24.00	12.00	24.00	12.00	0.00
19.	Gross Cost (Item 1 to 18)	-	-	14748.41	-	18337.51	3589.10
20.	Value of straw	-	-	800.00	-	1000.00	200.00
21.	Net cost of cultivation (Item 19-20)	-	-	13948.41	-	17337.51	3389.10
	21.1 with land rent	-	-	13948.41	-	17337.51	3389.10
	21.2 without land rent	-	-	12448.41	-	13337.51	889.10
22.	Yield per acre (Kgs)	-	-	1482.00	-	1482.00	0.00
23.	Cost of production at farm (Rs/40 kgs)						
	23.1 with land rent	-	-	376.48	-	467.95	91.47
	23.2 without land rent	-	-	335.99	-	359.99	24.00
24.	Marketing charges i.e. Loading, transport, commission, weighment (Rs/40 kgs)	-	-	20.00	-	22.00	2.00
25.	Cost of production at market level (Rs/40 kgs)						
	25.1 with land rent	-	-	376.48	-	489.95	113.47
	25.2 without land rent	-	-	335.99	-	381.99	46.00

* hrs/irrigation: Canal = 1.56, Private tube-well = 1.48

Notes for Annex-IV to VI

1. The input-output parameters for estimating cost of production for Rice Paddy, 2009-10 crop were adopted from the Policy Report of Rice Paddy, 2008-09 Crop, API Series No. 228.
2. The custom hiring rates of field operations, input prices, , wage rate, land rentals, value of straw and marketing cost have been revised in the light of the information provided by the Provincial Agriculture Departments, Farmers' Associations and Kissan/Abadgar Boards in the meeting of the Standing Committee on Rice, held on 21st April 2009 at Islamabad and other sources.
3. The cost of raising nursery has been revised according to the weighted average increase in the prices of major inputs/operations employed therein.
4. The prices of chemical fertilizers have been revised in the light of fertilizer prices published by the Federal Bureau of Statistics, Islamabad for the week ending on 21st May 2009.
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 BS-6 as per revised scale of July 2008.
6. The kind payments were valued at the post-harvest market prices of paddy prevailed during 2008-09 @ Rs 1183 per 40 kgs for basmati, Rs 664 for IRRI in the Punjab and Rs 585 for IRRI in Sindh. The marketing cost of Rs 22 per 40 kgs has been deducted from the market prices to bring at the farm level.
7. In both provinces, Punjab and Sindh, land rent is one of the principal components in cost of cultivation of rice paddy. It is affected by several parameters and substantially varies from region to region. To update land rent, there is no precise measure. However, keeping in view the discussion made by the crop experts and representatives of the rice paddy growers in the aforesaid meetings, land rentals have been revised accordingly.

**ECONOMICS OF RICE PADDY AND COMPETING CROPS AT
PRICES REALIZED BY THE GROWERS: 2008-09 CROPS**

S. No	Province/ crops/ crop combination	Crop duration	Water used	Gross cost	Cost of purchase d inputs	Gross revenue	Gross margin	Net income	Output- input ratio	Revenue per		
		Days	Acre inchesRupees per acre.....				RatioRupees.....			
		1	2	3	4	5	6	7=6-5	8=6-4	9=6/4	10=6/5	11=6/2
Punjab												
1	Basmati paddy	180	58	19197	11060	27214	16154	8017	1.4	2.5	151	469
2	IRRI paddy	180	62	16728	9646	22390	12744	5662	1.3	2.3	124	361
3	Seed cotton	240	22	22064	10277	27002	16725	4937	1.2	2.6	113	1227
4	Wheat	180	12	20312	9038	27816	18779	7505	1.4	3.1	155	2318
5	Sunflower (spring)	180	22	12805	3070	19230	16161	6425	1.5	6.3	107	874
6	Seed cotton + wheat	420	34	42376	19315	54818	35504	12442	1.3	2.8	131	1612
7	Seed cotton + sunflower	420	44	34870	13347	46232	32885	11362	1.3	3.5	110	1051
8	Basmati paddy+wheat	360	70	39508	20097	55030	34933	15522	1.4	2.7	153	786
9	Basmati paddy+sunflower	360	80	32002	14129	46444	32315	14442	1.5	3.3	129	581
10	IRRI paddy + wheat	360	74	37040	18683	50207	31523	13167	1.4	2.7	139	678
11	IRRI paddy+sunflower	360	84	29533	12715	41620	28905	12087	1.4	3.3	116	495
12	Sugarcane	394	48	34509	13387	52418	39031	17908	1.5	3.9	133	1092
Sindh												
1	IRRI paddy	180	56	15125	7341	21733	14392	6608	1.4	3.0	121	388
2	Seed cotton	240	18	21185	8690	26675	17985	5490	1.3	3.1	111	1482
3	Wheat	180	12	17385	7754	24550	16796	7165	1.4	3.2	136	2046
4	Sunflower (spring)	180	22	14434	4187	19230	15044	4796	1.3	4.6	107	874
5	Seed cotton + wheat	420	30	38570	16443	51225	34782	12655	1.3	3.1	122	1707
6	Seed cotton + sunflower	420	40	35620	16443	45905	29462	10285	1.3	2.8	109	1148
7	IRRI paddy+ wheat	360	68	32510	15095	46283	31188	13773	1.4	3.1	129	681
8	IRRI paddy+sunflower	360	78	29560	11528	40963	29435	11403	1.4	3.6	114	525
9	Sugarcane	488	71	41166	14404	62654	48250	21487	1.5	4.3	128	882

Notes for Annex-VII

1. The economic analysis presented in the above exercise is based on the input-output prices applicable for 2008-09 crops.
2. The data regarding input-output parameters have been adopted from the API's price policy papers for sugarcane, seed cotton, rice paddy and wheat, 2008-09 crops. However, the relevant data for sunflower and canola were adopted from the last support price policy for non-traditional oilseeds, 2000-01 crops with necessary adjustments in input prices for updating costs and incomes for the 2008-09 crops. To incorporate the escalations in input prices, which occurred during the growing period of 2008-09 crops, some marginal revisions have been made as under:
 - 2.1 The cost of supplementary irrigation has been adjusted in accordance with the variation in the electric charges; @ 22 % for sugarcane, seed cotton, & rice paddy and 8.23% for wheat. Similarly, diesel rates have also been adjusted @ 34% for sugarcane, 7% for seed cotton, 17.85 % for rice paddy and 11 % for wheat crop.
 - 2.2 The cost of fertilizers has been revised in view of their prices prevailed at the time of application for the respective crops in 2008-09 season.
3. Water use has been estimated from the number of irrigations as reported in the cost of production estimates of the respective crops assuming each irrigation of 3 inches and 'rauni' of 4 inches.
4. The following prices as realized by the growers for different crops are adopted for the analysis:
 - 4.1 The support price of Rs 950 per 40 kgs as announced by the government for 2008-09 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 have averaged at Rs 1183 and Rs 664 per 40 kgs, respectively. While, the average price of IRRI paddy in Sindh is reported at Rs 585 per 40 kgs.
 - 4.3 The wholesale market prices of seed cotton during the post-harvest months of Aug - Feb 2008-09 in the main producer area markets have averaged at Rs 1557 per 40 kgs in the Punjab. In Sindh, the corresponding prices are averaged at Rs 1525 per 40 kgs.
 - 4.4 The sunflower 2008-09 crop is yet to be harvested. However, it was reported by the PODB Islamabad that All Pakistan Solvent Extraction Association may purchase sunflower and canola at Rs 1300 per 40 kgs during the season.

- 4.5 The market prices of sugarcane at mill-gate in the major cane producing areas are reported to hover around Rs 100 per 40 kgs in the Punjab and Sindh.
5. The market prices have been adjusted for the marketing expenses to make them effective at the farm level. These expenses amount to Rs 7.25 per 40 kgs in Punjab and Rs 7.32 in Sindh for sugarcane, Rs 25 for seed cotton in Punjab and Rs 27 in Sindh, Rs 20 for rice paddy, and Rs 18 for wheat and oilseeds.
6. Gross income = (Yield per acre multiplied by price of principal produce at farm gate) plus (value of by-products per acre).
7. Cost of purchased inputs = Cost incurred on seed and related items, fertilizer, supplementary irrigation including labour, canal water rate, pesticides and weedicides.
8. Gross margin = Gross income minus cost of purchased inputs.
9. Net income = Gross income minus gross cost.
10. Output-input ratio = Gross income divided by gross cost
11. Revenue per rupee of purchased inputs cost = Gross income divided by cost of purchased inputs
12. Revenue per crop day = Gross income divided by crop duration in days.
13. Revenue per acre-inch of water used = Gross income divided by irrigation water used in acre inches.

EXPORT PARITY PRICES OF BASMATI PADDY ON THE BASIS OF FOB (KARACHI) PRICE OF BASMATI RICE

S.No	Item	August, 2009	2008-09	2005-08
		----- US\$ Per Tonne -----		
1.	Average fob (Karachi) prices			
	US\$ per tonne	1030	1247	714
	Exchange Rate (Rs per US\$)-- August, 2009	83.0	80.5	80.5
	Pak Rupees per tonne	85490	100384	57477
		----- Rs per 40 kgs -----		
		3420	4015	2299
2.	Expenses from sheller/ market to export point	200	200	200
3.	Producer area market level price of rice (item 1-item 2)	3220	3815	2099
4.	Product recoveries per 100 kgs of paddyKgs.....		
	i) Head rice of export quality @ 70 of normal recovery	35.0	35.0	35.0
	ii) Short grain rice @25% of normal recovery	12.5	12.5	12.5
	iii) Brokens	20.0	20.0	20.0
	iv) Tips	3.5	3.5	3.5
	v) Bran powder	6.0	6.0	6.0
	vi) Husk and dust	23.0	23.0	23.0
5.	Prices of products			
	i) Export quality rice as calculated in item 3	3220	3815	2099
	ii) Short grain rice (70% of export quality -item 3)	2254	2671	1469
	iii) Brokens (50% of short grainrice)	1610	1908	1050
	iv) Tips (30% of short grainrice)	966	1145	630
	v) Bran powder (15% of short grainrice)	483	572	315
	vi) Husk	150	150	150
6.	Value of products recoverable from 100 kgs paddy			
	i) Export quality rice	2817	3338	1837
	ii) Short grain rice	704	835	459
	iii) Brokens	805	954	525
	iv) Tips	85	100	55
	v) Bran powder	72	86	47
	vi) Husk	86	86	86
	vii) Total value of all products	4570	5399	3009
7.	Husking/Processing /financial charges of			
	i) 100 kgs paddy	127	127	127
	ii) Export quality rice @Rs1 per Kg	50	50	50
8.	Mill-gate price of paddy per 100 kgs	4393	5222	2832
9.	Mill-gate price of paddy per 40 kgs	1757	2089	1133

Sources:

- 1 Federal Bureau of Statistics, Karachi.
- 2 Rice Exporters/Millers for incidental charges.

EXPORT PARITY PRICE OF IRRI PADDY ON THE BASIS OF FOB (KARACHI) PRICE OF IRRI RICE

S.No	Item	August, 2009	2008-09	2005-08
		----- US\$ Per Tonne -----		
1.	Average fob (Karachi) prices			
	US\$ per tonne	505	586	323
	Exchange Rate (Rs per US\$)-- August, 2009	83.0	80.5	80.5
	Pak Rupees per tonne	41915	47173	26002
		----- Rs per 40 kgs -----		
		1677	1887	1040
2.	Expenses from sheller/ market to export point	200	200	200
3.	Producer area market level price of rice (item 1-Item 2)	1477	1687	840
4.	Product recoveries per 100 kgs of paddyKgs.....		
	i) Head rice of export quality @ 70 of normal recovery	33.6	33.6	33.6
	ii) Short grain rice @25% of normal recovery	12.4	12.4	12.4
	iii) Brokens	14.0	14.0	14.0
	iv) Tips	7.0	7.0	7.0
	v) Bran powder	7.0	7.0	7.0
	vi) Husk and dust	26.0	26.0	26.0
5.	Prices of products			
	i) Export quality rice as calculated in item 3	1477	1687	840
	ii) Short grain rice (70% of export quality -item 3)	1034	1181	588
	iii) Brokens (50% of short grainrice)	517	590	294
	iv) Tips (30% of short grainrice)	310	354	176
	v) Bran powder (15% of short grainrice)	155	177	88
	vi) Husk	100	100	100
6.	Value of products recoverable from 100 kgs paddy			
	i) Export quality rice	1240	1417	706
	ii) Short grain rice	320	366	182
	iii) Brokens	181	207	103
	iv) Tips	54	62	31
	v) Bran powder	27	31	15
	vi) Husk	65	65	65
	vii) Total value of all products	1888	2148	1102
7.	Husking/Processing /financial charges of			
	i) 100 kgs paddy	127	127	127
	ii) Export quality rice @Rs1 per Kg	50	50	50
8.	Mill-gate price of paddy per 100 kgs	1711	1971	925
9.	Mill-gate price of paddy per 40 kgs	684	788	370

Sources:

- 1 Federal Bureau of Statistics, Karachi.
- 2 Rice Exporters/Millers for incidental charges.

REGION WISE EXPORT OF BASMATI AND COARSE RICE DURING : 2006-07 AND 2007-08

Region	Quantity			Value		Unit Value			Shares in total export	
	2006-07	2007-08	%	2006-07	2007-08	2006-07	2007-08	%	2006-07	2007-08
	...000 tonnes....		Change	.. Million US \$ US \$/ tonne ..		Change	Per cent	
A. Basmati Rice										
Asia	752.68	849.14	12.82	457.97	825.45	608.45	972.10	59.77	82.89	74.49
Oceania	16.24	20.14	24.04	9.94	20.04	612.07	994.74	62.52	1.79	1.77
Europe	67.68	165.12	143.97	42.79	160.30	632.24	970.82	53.55	7.45	14.48
Africa	40.62	71.69	76.48	24.65	43.62	606.84	608.41	0.26	4.47	6.29
America	27.69	31.80	14.84	18.87	39.00	681.47	1226.53	79.98	3.05	2.79
CIS	3.12	2.09	-33.14	2.11	2.48	676.28	1189.62	75.91	0.34	0.18
Total	908.03	1139.98	25.54	556.33	1090.89	636.23	993.71	56.19	100.00	100.00
B. Coarse Rice										
Asia	753.78	849.14	12.65	206.96	312.18	274.56	367.64	33.90	35.03	47.79
Oceania	2.61	0.76	-70.73	1.02	0.45	390.80	584.28	49.51	0.12	0.04
Europe	120.18	66.46	-44.70	19.21	37.66	159.84	566.73	254.55	5.58	3.74
Africa	1216.2	824.41	-32.21	276.71	340.99	227.52	413.62	81.79	56.52	46.40
America	15.25	31.80	108.52	3.46	6.99	226.89	219.81	-3.12	0.71	1.79
CIS	43.86	4.25	-90.32	11.39	2.42	259.69	569.01	119.11	2.04	0.24
Total	2151.86	1776.82	-17.43	678.2	700.69	256.55	453.51	76.77	100.00	100.00

Source: FBS, Karachi.

ANNEX-XI

**ECONOMIC EFFECIENCY OF RESOURCE USE IN BASMATI
(PADDY) PRODUCTION IN PUNJAB**

POLICY ANALYSIS MATRIX (PAM)

Based on export parity prices

Description	Revenues	Traded cost	Domestic factors' cost	Profits
----- Rupees per acre -----				
2004-05				
Private Prices	12760	5417	5682	1661
Social Prices	12939	5178	5030	2731
Transfers	-179	239	652	-1070
2005-06				
Private Prices	12408	6070	6278	60
Social Prices	16583	5802	6608	4172
Transfers	-4175	268	-330	-4113
2006-07				
Private Prices	13351	6917	6531	-97
Social Prices	17169	6612	6885	3673
Transfers	-3818	306	-354	-3770
2007-08				
Private Prices	29520	7180	10169	12171
Social Prices	40102	7084	10397	22621
Transfers	-10582	96	-228	-10450
2008-09				
Private Prices	27622	9022	11924	6675
Social Prices	38251	9053	12186	17011
Transfers	-10629	-31	-262	-10336

**ECONOMIC EFFICIENCY OF RESOURCE USE IN IRRI
(PADDY) PRODUCTION IN PUNJAB**
POLICY ANALYSIS MATRIX (PAM)
Based on export parity prices

Description	Revenues	Traded cost	Domestic factors' cost	Profits
----- Rupees per acre -----				
2004-05				
Private Prices	9199	4799	4846	-446
Social Prices	9468	4589	4444	435
Transfers	-268	210	402	-881
2005-06				
Private Prices	9493	5269	5429	-1206
Social Prices	10264	5038	5744	-519
Transfers	-771	231	-315	-687
2006-07				
Private Prices	10054	5881	5597	-1424
Social Prices	11227	5623	6041	-437
Transfers	-1173	258	-444	-987
2007-08				
Private Prices	16507	6119	9422	966
Social Prices	26598	6167	9900	10531
Transfers	-10091	-48	-478	-9565
2008-09				
Private Prices	22930	8485	10797	3647
Social Prices	24506	8721	11356	4429
Transfers	-1576	-236	-559	-781

**ECONOMIC EFFICIENCY OF RESOURCE USE IN IRRI
(PADDY) PRODUCTION IN SINDH**
POLICY ANALYSIS MATRIX (PAM)
Based on export parity prices

Description	Revenues	Traded cost	Domestic factors' cost	Profits
----- Rupees per acre -----				
2004-05				
Private Prices	12554	3509	4884	4161
Social Prices	10405	3366	4199	2840
Transfers	2149	143	685	1321
2005-06				
Private Prices	10727	4010	5302	1414
Social Prices	11282	3858	5013	2411
Transfers	-556	152	290	-997
2006-07				
Private Prices	10381	4456	5707	218
Social Prices	12345	4284	5933	2128
Transfers	-1964	172	-225	-1910
2007-08				
Private Prices	19471	4603	8963	5906
Social Prices	29327	4693	9106	15528
Transfers	-9855	-90	-144	-9621
2008-09				
Private Prices	22474	6926	10410	5138
Social Prices	26994	7201	10594	9199
Transfers	-4520	-274	-184	-4062

ANNEX-XIV

**AREA AND PRODUCTION OF MAJOR RICE PRODUCING COUNTRIES
IN THE WORLD : 2007 CROP**

S. No.	Country	Area million(ha)	Per cent share
1	India	44.00	28.03
2	China	29.50	18.79
3	Indonesia	12.17	7.75
4	Bangladesh	11.20	7.14
5	Thailand	10.36	6.60
6	Myanmar	8.20	5.22
7	Viet Nam	7.31	4.65
8	Philippines	4.25	2.71
9	Nigeria	3.00	1.91
10	Brazil	2.90	1.85
11	Pakistan	2.60	1.66
	Sub-total	135.48	86.32
	World Total	156.95	100.00

S. No.	Country	Production million(tonnes)	Per cent share
1	China	124.69	28.7
2	India	94.09	21.65
3	Indonesia	38.03	8.75
4	Bangladesh	29	6.68
5	Viet Nam	23.71	5.46
6	Myanmar	21.74	5
7	Thailand	18.59	4.28
8	Philippines	10.67	2.45
9	Brazil	7.39	1.7
10	Japan	7.31	1.68
11	United States of America	5.97	1.37
12	Pakistan	5.53	1.27
	Sub-total	386.73	89.01
	World Total	434.5	100

Source: FAO.

Note: Rice production has been worked out from paddy production assuming rice paddy ratio of 2/3.

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

S. No.	Name of Country	Yield Kgs/hect	S. No.	Name of Country	Yield Kgs/hect
1	Chad	10750	31	Kazakhstan	2941
2	Egypt	6648	32	Rwanda	2933
3	Australia	5433	33	Russian Federation	2893
4	Turkey	5373	34	Azerbaijan	2882
5	United States of America	5369	35	Mauritania	2852
6	Greece	5206	36	Hungary	2694
7	El Salvador	4977	37	Honduras	2688
8	Peru	4831	38	Ecuador	2667
9	Spain	4597	39	Myanmar	2651
10	Morocco	4444	40	Sudan	2632
11	Uruguay	4444	41	Sri Lanka	2623
12	Argentina	4368	42	Solomon Islands	2621
13	Japan	4358	43	Bangladesh	2590
14	Italy	4282	44	Brazil	2546
15	China	4228	45	Korea, Democratic People's Republic	2510
16	Korea, Republic of	4182	46	Philippines	2510
17	Colombia	4167	47	Suriname	2500
18	Somalia	4103	48	Nicaragua	2494
19	Portugal	4058	49	Kenya	2378
20	Former Yugoslav Republic of Macedonia	3739	50	Lao People's Democratic Republic	2333
21	Islamic Republic of Iran	3704	51	Swaziland	2267
22	Chile	3521	52	Malaysia	2254
23	France	3444	53	Romania	2220
24	Venezuela, Bolivarian Republic	3333	54	Burundi	2206
25	Mexico	3286	55	Paraguay	2200
26	Dominican Republic	3264	56	Tajikistan	2175
27	Viet Nam	3246	57	Uzbekistan	2167
28	Indonesia	3126	58	India	2138
29	Ukraine	3082			
30	Guyana	3016	59	Pakistan	2128

Source: FAO.

AVAILABILITY OF CERTIFIED SEED OF RICE (PADDY): 2004-05 TO 2008-09

Year	Province	Area			Seed req.		Total seed available	Availability of seed as	
		Bas	Irri+other	Total	Gross	Replacemen @ 20 %		Gross requirement	Replacement requirement
		(000 hect.)			----- (tonnes) -----			(Per cent)	
2004-05	Punjab	1467	288	1754	24793	4959	9466	38	191
	Sindh		544	544	13600	2720	536	4	20
	NWFP		60	60	1500	300	169	11	56
	Balochistan		161	161	4025	805	48	1	6
	Total	1467	1053	2519	43918	8784	10219	23	116
2005-06	Punjab	1535	228	1762	24106	4821	12406	51	257
	Sindh		593	593	14825	2965	1086	7	37
	NWFP		60	60	1500	300	193	13	64
	Balochistan		162	162	4050	810	0	0	0
	Total	1535	1043	2577	44481	8896	13685	31	154
2006-07	Punjab	1474	254	1728	24045	4809	11409	47	237
	Sindh		598	598	14953	2991	1865	12	62
	NWFP		61	61	1520	304	240	16	79
	Balochistan		194	194	4848	970	60	1	6
	Total	1474	1107	2581	45365	9073	13574	30	150
2007-08	Punjab	1377	346	1724	25185	5037	10293	41	204
	Sindh		594	594	14850	2970	1788	12	60
	NWFP		62	62	1543	309	207	13	67
	Balochistan		136	136	3405	681	50	1	7
	Total	1377	1138	2515	44983	8997	12338	27	137
2008-09	Punjab	1524	430	1954	29038	5808	9762	34	168
	Sindh		734	734	18338	3668	3347	18	91
	NWFP		62	62	1560	312	122	8	39
	Balochistan		190	190	4753	951	225	5	24
	Total	1524	1416	2940	53688	10738	13456	25	125

Notes:

1. The area under rice for the Punjab province represents area under basmati and IRRI varieties while that of Sindh represents the area under IRRI and 'Other varieties'. For NWFP and Baluchistan total area under rice represents 'Others' and IRRI varieties respectively.
2. The seed requirement has been worked out by using the seed rate of 12 Kgs per hectare for basmati and 25 Kgs per hectare for IRRI and 'other' varieties.

Sources:

- i. Agricultural Statistics of Pakistan, 2007-08, MINFA, Islamabad.
- ii. Provincial Agriculture Departments.
- iii. FSC & RD, Islamabad.
- iv. Working Paper for 90th Meeting of the FCA.

