APCOM SERIES No. 195

SUPPORT PRICE POLICY
FOR
RICE (PADDY), 2001-02 CROP

AGRICULTURAL PRICES COMMISSION
GOVERNMENT OF PAKISTAN
ISLAMABAD

April, 2001

Confidential

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ABBREVIATIONS

AARI	:	Ayub Agricultural Research Institute
ADA	:	Agriculture Development Authority
ALMA	:	Agricultural Livestock and Marketing Adviser
APCOM	:	Agricultural Prices Commission
BOS&P	:	Bureau of Supply and Prices
CBR	:	Central Board of Revenue
COP	:	Cost of production
CIF	:	Cost, Insurance and Freight
CPI	:	Consumer Price Index
E&M	:	Economics and Marketing
FAO	:	Food and Agriculture Organization
FAQ	:	Fair Average Quality
FBS	:	Federal Bureau of Statistics
FCA	:	Federal Committee on Agriculture
FOB	:	Free on Board
FMI	:	Farm Machinery Institute
FSC&RD	:	Federal Seed Certification and Registration Department
FYM	:	Farm Yard Manure
GDP	:	Gross Domestic Product
HMC	:	Heavy Mechanical Complex
IPM	:	Integrated Pest Management
IRRI	:	International Rice Research Institute
MINFAL	:	Ministry of Food, Agriculture and Livestock
NARC	:	National Agricultural Research Centre
NFDC	:	National Fertilizer Development Centre
NSC	:	National Shipping Corporation
PARC	:	Pakistan Agricultural Research Council
PASSCO	:	Pakistan Agricultural Storage and Services Corporation
PSC	:	Punjab Seed Corporation
PSI	:	Pakistan Standards Institute
RECP	:	Rice Export Corporation of Pakistan
RRI	:	Rice Research Institute
SSC	:	Sindh Seed Corporation
VEC	:	Variety Evaluation Committee
WBPH	:	White Back Plant Hopper
WTO	:	World Trade Organization

SUPPORT PRICE POLICY FOR RICE PADDY, 2001-02 CROP

INTRODUCTION

Rice, the third largest crop after wheat and cotton, is cultivated over an area of around 2.44 million hectares accounting for 11 per cent of the total cropped area and 19 per cent of acreage under cereals. The annual rice production has averaged at 4.88 million tonnes, constituting 19 per cent of the production of all cereals. The share of rice in the value-added by major crops has been estimated at 16 per cent.

2. Rice exports have hovered around 2 million tonnes accounting for 6 per cent of the annual foreign exchange earned from the merchandize exports. Pakistan ranking 5th among the rice exporting countries after Thailand (25 per cent), Viet Nam (16 per cent), India (14 per cent) and USA (12 per cent) accounts for 8 per cent of the global exports.

3. The government annually review and announce the support prices of major crops, including rice. The support price is designed to provide a floor to the market during the post-harvest period when market prices tend to crash. It is meant to correct the short comings of the market and not to replace the market price. The sale of produce at the support price by the growers to the designated agency is voluntary. In case market prices rule higher than the government fixed price, farmers are free to sell their produce through whatever channels they like.

4. In a special meeting presided over by the Chief Executive on 22nd September, 2000, following support prices were fixed for various varieties of rice (paddy), for the 2000-01 crop:

Variety	Rs per 40 kgs
Super basmati	460
Basmati-385	385
Basmati-386	240
IRRI-6	205
KS-282, DR-82, DR-83 and DR-92 (FAQ)	220

5. In connection with formulating the price policy recommendations for the 2001-02 crop, forwarded in this Report, following steps were taken by the Agricultural Prices Commission:

i) A mini field survey in important rice growing areas of the Punjab and Sindh was organized to collect data on prices of inputs, custom rates of various field operations and marketing costs.

ii) The data on crop area, yield and production; stocks, trade, domestic as well as world, and prices of rice were collected from various agencies and sources. These data have been analysed to reflect the domestic and international position on various aspects of rice production and marketing.

iii) The annual meeting of APCom's Standing Committee on Rice was held on 29th March, 2001 at Islamabad. The meeting was attended by rice growers, representatives of farmers organizations, rice millers and traders, crop experts and officials from the Federal and Provincial Governments and discussed, at length, issues relating to the production and marketing of rice. The views expressed in the meeting have been duly considered in formulating policy recommendations.

6. 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. The water shortage, rising input prices and depressed domestic and world prices, not boding good for economics of rice cultivation, have increased the incidence of risk in rice farming. Despite technological advances, average rice yield in Pakistan is comparatively low indicating considerable potential for increasing rice production. There is an urgent need for increasing productivity to reduce unit cost of production. However, this requires a conducive economic environment for adoption of technology. Announcement of guaranteed prices with surety of their effective

implementation can be helpful in this context. The quality of produce also suffers from traditional harvesting methods and outdated processing technology. The admixtures during various stages of processing and marketing also adversely affect the quality of produce. The Commission have proposed a number of measures in this context in the Report. The implementation of these measures would not only help in increasing exports but also fetch higher prices in export markets.

(Dr. Abdul Salam)
Member(Economics)

April 12, 2001

2. SUMMARY OF FINDINGS AND RECOMMENDATIONS

2.1 Findings

Provincial Shares in Area and Production

7. The shares of Punjab, Sindh, NWFP and Balochistan in total area under rice work out to 64, 27, 3 and 6 per cent, respectively with corresponding shares in rice production estimated at 49, 39, 3, 9 per cent.

8. Basmati, and IRRI varieties account for 48 and 41 per cent of the total area under rice and 34 and 56 per cent of the total rice production. 'Other' varieties make up the balance of area and production.

Important Rice Producing Districts

9. About 50 per cent of the Basmati production comes from Sheikhupura, Sialkot, Gujranwala and Hafizabad districts. Larkana, Jacobabad, Shikarpur and Jafarabad districts account for 59 per cent of the total IRRI production.

Area, Yield and Production

Long-term changes: 1990-91 to 2000-01

10. During the decade ending 2000-01 rice production is estimated to have increased @ 5.0 per cent per annum based upon 1.9 per cent enlargement in area and 3.0 per cent improvement in yield. The production of different varietal groups i.e. Basmati, IRRI and 'Other' varieties increased at the rates 4.9, 4.4 and 9.6 per cent per annum, due to both expansion in area and improvement in yield.

Short-term changes: 2000-01 vs 1999-2000

11. According to the Second estimates provided by the Provincial Agriculture Departments rice production from the 2000-01 crop is placed at 4.8 million tonnes, 6.9 per cent less than 5.2 million tonnes harvested in 1999-2000. The short fall in production is attributable to decreases of 5.5 and 1.5 per cent in area and yield, respectively.

12. In the Punjab rice production reported at 2.6 million tonnes in 2000-01 is up by 3.9 per cent as compared to that of last year. The increase in production has been on account of 1.1 per cent expansion in area and 2.7 per cent rise in yield.

13. Rice production in Sindh reported at 1.7 million tonnes in 2000-01 is short by 20.9 per cent primarily because of 21.8 per cent contraction in area.

14. During the 2000-01 rice production in the NWFP has been estimated at 131 thousand tonnes which is 1.5 per cent higher as compared to that of last year. In Balochistan production reported at 412 thousand tonnes is down by 2.5 per cent because of 3.8 per cent reduction in area.

Targets Vs Achievements: 2000-01 Crop

15. In 2000-01 rice production of 4.8 million tonnes, as per second estimates has fallen short of the target of 5.1 million tonnes by 5.9 per cent. Production of both basmati and IRRI is less by 9.2 and 11.2 per cent from their respective targets. However, production of 'Other' varieties has exceeded the target by 45.6 per cent.

Domestic Demand and Supply

16. Rice production from the 2000-01 crop has been reported at 4,799 thousand tonnes. Domestic requirements for rice consumption are estimated at 2,709 thousand tonnes, for a mid year population of 144.84 million as on 1st January 2001 @ 18.70 kgs per capita per annum. Accounting for 6 per cent allowance for seed, feed and wastage i.e. 288 thousand tonnes and consumption requirements of 2,709 thousand tonnes, as mentioned above, the exportable surplus in 2000-01 works out to 1,802 thousand tonnes, assuming no change in stocks. By the end of January 2001, 1,188 thousand tonnes of rice are reported to have been exported.

Prices of Paddy in Domestic Markets

- **Super basmati**

17. The monthly average wholesale prices of Super basmati (paddy) during the post harvest season of 2000-01 crops i.e. October-January, ranged between Rs 381 and Rs 429 per 40 kgs while its support price was fixed at Rs 460 per 40 kgs.

- **Basmati 385 (paddy)**

18. The support price of Basmati-385 (paddy) was fixed at Rs 385 per 40 kgs. However, average prices in the producing area markets ranged between Rs 291 and Rs 309 per 40 kgs.

- **IRRI-6 (paddy)**

19. The monthly average of wholesale prices of IRRI paddy in main producing areas of Punjab and Sindh generally remained below the support prices of Rs 205 per 40 kgs. In the Punjab, average prices in major markets ranged between Rs 168 and Rs 187 per 40 kgs. In Sindh these prices ranged between Rs 177 and Rs 183 per 40 kgs.

World Supply, Demand, Stocks, Trade and Prices Situation of Rice

20. World production of rice in 2000-01 is projected at 397 million tonnes, 11 million tonnes less than the production of 408 million tonnes in 1999-00. Adding the opening stocks of 163 million tonnes, total supplies during 2000-01 are likely to be 560 million tonnes against the global consumption projected at 405 million tonnes. For 2000-01, international trade in rice is projected at 24 million tonnes i.e. 1 million tonnes more than that of previous year. End year stocks are expected to decline to 155 million tonnes from the opening stocks of 163 million tonnes.

International Prices

21. Thailand is the largest rice exporter and considered trend setter in the international market. Fob (Bangkok) prices of 100 per cent second grade Thai white rice fluctuated between US $ 282 and $ 365 per tonne during 1994-95 to 1998-99. In 1999-00, prices averaging at $ 235 per tonne are reported to have declined and averaged at $ 188 during 2000-01. Prices of 15 per cent broken Thai white rice averaging at US $ 260 per tonne during 1994-95 had increased to US $ 336 by 1995-96 which have since declined to 177 per tonne during the 2000-01 (July-Jan).

22. Fob (Bangkok) export price of 35 per cent broken Thai White rice averaging at $ 244 per tonne in 1994-95, increased to $ 305 in 1995-96. The prices have since declined and were reported around $ 154 per tonne in 2000-01 (Jul-Jan).

Export Parity Prices

23. Export parity prices of paddy, as worked back from the actual fob export prices of Pakistani rice, and quoted export prices of Thai white rice, 35 per cent brokens' have been calculated and summarised below:

Export Parity Prices of Paddy for Various Varieties

Base	Base price of rice		Mill gate price of paddy	
	Basmati	IRRI	Basmati	IRRI
	US $ per tonne		Rs. per 40 kgs	
i) Average fob (Karachi) actual Price Of rice exported during:				
- 1995-96 to 1999-00	462	207	490	228
- 2000-01 (Jul-Jan)	481	169	509	170
ii) Average fob (Bangkok) price of Thai White Rice 35 % brokens during:				
- 1995-96 to 1999-00	-	247	-	307
- 2000-2001 (Jul – Jan)	-	154	-	157

Cost of production

- **Basmati**

24. The farm gate cost of production of basmati paddy in the Punjab, from the 2001-02 crop is estimated at Rs 382 per 40 kgs. Adding marketing expenses @ Rs 12 per 40 kgs, the cost of produce at the market/procurement centre would come to Rs 394 per 40 kgs, indicating an increase of Rs 32 or 9 per cent over the corresponding cost of Rs 363 in 2000-01.

- **IRRI**

25. Ex-farm cost of production of IRRI paddy from the 2001-02 crop in the Punjab works out to Rs 227 per 40 kgs. Accounting for the marketing cost @ Rs 12 per 40 kgs, the growers would have to spend Rs 239 to produce and deliver 40 kgs of IRRI paddy at the market/procurement centre which exceeds the corresponding cost of 2000-01 crop by Rs 20 (9 per cent).

Sindh

- **IRRI**

26. The farm level cost of production of IRRI paddy in Sindh during 2001-02 crop year, is calculated at Rs 176 per 40 kgs. Adding the marketing charges @ Rs 12 per 40 kgs, the cost of paddy at the market/procurement centre comes to Rs 188 per 40 kgs, representing an increase of Rs 10 (6 per cent) over the cost estimates of 2000-01 crop.

27. The increases in COP of basmati and IRRI paddy have been mainly contributed by the rises in the costs of tillage operations and transportation because of rises in the prices of diesel. Rise in land rents and application of GST on pesticides and weedicides have also added to the higher costs. The lower values of kind payments for harvesting, threshing and winnowing resulting from the lower market prices of paddy have partly offset the rise in cost of cultivation.

28. In the Punjab, where rice farming heavily depends on supplementary irrigation, escalations in power tariff and diesel prices have further added to the cost of growing rice.

Nominal and Real Prices of Basmati and IRRI Paddy

Basmati

- **Support Price**

29. The nominal support price of basmati paddy has increased from Rs 143.50 per 40 kgs in 1990-91 to Rs 385.00 in 2000-01, an overall increase of 168 per cent. During the same period, the cumulative inflation in terms of CPI has been 136 per cent. Consequently, the real value of the support price of basmati paddy for the 2000-01 crop, estimated at Rs 163 per 40 kgs in terms of 1990-91 prices, shows an improvement of 14 per cent in relation to the price of Rs 143.50 for 1990-91 crop.

- **Market Price**

30. The market price of basmati paddy, averaging at Rs 141.50 per 40 kgs, in the important producer area markets, during the post harvest season of 1990-91 crop have since experienced a number of ups and downs. Accordingly, real value of market prices of basmati paddy has been fluctuating. The real value estimated at Rs 127 per 40 kgs for the 2000-01 crop, in terms of 1990-91 prices, reflects an overall decline of 10 per cent in relation to the base year's price of Rs 141.50. The market price which averaged at Rs 361 per 40 kgs during 1999-00 declined to Rs 300 in 2000-01 season.

IRRI Paddy

- **Support Price**

31. The nominal support price of IRRI paddy (FAQ) has increased from Rs 73 per 40 kgs in 1990-91 to Rs 205 in 2000-01, an overall rise of 181 per cent. During the same

period, cumulative inflation in terms of CPI, has been 136 per cent. Consequently, the real value of support price of IRRI paddy for 2000-01 crop, estimated at Rs 86.81 per 40 kgs in terms of 1990-91 prices, shows an increase of 19 per cent in relation to the corresponding price of Rs 73 for 1990-91 crop.

- **Market Price**

32. The market prices of IRRI paddy averaging at Rs 77.75 per 40 kgs in the important producing markets of Sindh during the harvest season of 1990-91 crop have since experienced wide swings, also reflected in their real value. The nominal prices averaging at Rs 230.78 per 40 kgs in 1998-99 plumetted to Rs 180 during 2000-01 season. The real values of market prices of IRRI paddy, which had ranged between Rs 86 and Rs 107 per 40 kgs during the period of 1996-97 to 1999-00, fell to Rs 76.22 in 2000-01 crop year, the 2nd lowest value during the period of analysis. It has been noted that market prices of IRRI paddy though fluctuating yet ruled higher than the support price fixed by the government except in 2000-01 crop year.

Comparative Economics of Rice Paddy and Competing Crops

- **Punjab**

33. The economics of rice crops, in the Punjab, as compared to cotton is quite inferior. Both basmati and IRRI do not compare favourably with cotton in terms of various economic indicators such as output-input ratio, revenue per day of crop duration, etc. In case of indirect competition too, rice combinations with wheat or sunflower lag much behind sugarcane. Inferior position of rice crops is primarily attributable to low market prices realized by the growers. It may be noted that market prices of basmati and IRRI paddy ruled much below the support prices and did not even cover the cost of production. However, market prices of both seed cotton and sugarcane were quite attractive during the 2000-01 crop year.

- **Sindh**

34. In Sindh too, economic position of rice crop is poor in relation to cotton. IRRI lies far behind cotton in terms of all the economic criteria adopted in this analysis. In respect of indirect competition too, economic position of rice combinations with wheat or sunflower is much inferior to sugarcane in terms of various economic indicators. The poor economics of rice crop is mainly on account of low market prices realized by the growers during the 2000-01 crop season, while the prices of seed cotton and sugarcane were quite remunerative.

Export of Rice from Pakistan

35. Rice is one of the major exports of Pakistan and a valuable source of foreign exchange. Rice exports, by and large in the private sector, have increased from 984 thousand tonnes in 1992-93 to 1916 thousand tonnes in 1999-00. Export of Basmati has increased from 306 thousand tonnes to 570 thousand tonnes and that of 'Other' varieties from 678 thousand tonnes to 1346 thousand tonnes.

36. In value terms rice exports have grown from $ 242 million in 1992-93 to $ 540 million in 1999-00: basmati rice from $ 126 million to $ 291 million and 'Other' varieties from $ 116.2 million to $ 249 million. The share of Basmati in total value of rice exports has been around 54 percent.

2.2 Recommendations

Support Price

37. In view of the increasing input prices and shortage of water, incidence of risk in farming is on the rise. Adoption of improved technology and husbandry practices can help in minimizing this risk. However, this requires a conducive economic environment for adoption of technology. Assured prices at the harvest time and their effective implementation can play an important role in this direction. Thus, support price of paddy as recommended below be announced before the start of planting season.

38. The country is faced with serious water shortage which is likely to persist during the current kharif season. Rice is a high water delta crop and given the water situation its cultivation needs to be curtailed to the most suitable areas for its farming. In some of the rice growing areas, there may not be many other viable crops to replace it. Nevertheless, in many regions/districts other crops can also be cultivated. It is in these areas where crop substitution needs to be encouraged. Prices play an important role in farmers' allocation of resources among competing enterprises. Notwithstanding the increase in cost of production of rice (paddy), other factors as summarized in paras 126 to 138 of the Report do not favour increase in the support prices of paddy. Accordingly, the Commission do not propose any increase in the support prices of paddy for the 2001-02 crop, and recommend to maintain them at last year's level as given below:

Variety	Support Price	
	2000-01 crop (actual)	2001-02 crop (proposed)
	Rs per 40 kgs	
Super basmati and basmati 2000[a]	460	460
Basmati-385	385	385
IRRI-6	205	205
KS-282, DR-82, DR-83 and DR-92 (FAQ)	220	220

[a] Basmati 2000 added this year.

39. PASSCO, the implementing agency for the support prices of paddy should be ensured timely availability of funds to enable it to start its field operations, well in time, in case of need.

Improving Productivity

Improved Seed

40. To enhance the production and distribution of certified seed of rice, the Government should arrange to:-

a) Increase the supply of pre-basic seed by providing additional facilities to the research stations and or allow the private seed companies to produce pre-basic seed to meet their own requirements.

b) Increase credit facilities to seed companies;

c) Provide relief in terms of taxes (custom, import duties, income and local taxes) to the seed companies;

d) Check the marketing of seed of unknown quality by un-registered seed companies.

Mechanical Transplanting

41. To facilitate the introduction and adoption of mechanical transplanter by growers so as to increase plant population in rice fields, it is suggested that:-

a) PARC should provide adequate funds to its FMI for undertaking the work needed to refine the designing of mechanical transplanter for its smooth working;

b) Farmers be trained in raising nursery in plastic trays to facilitate machine transplanting of seedlings.

Soil Management - Use of Gypsum

42. To encourage the use of gypsum for ameliorating the conditions of marginal lands and brackish tube well waters:-

a) Growers be educated about the importance of the use of gypsum by launching promotional campaigns.

b) To reduce the cost of gypsum, incentives in the form of rebates in taxes be provided to the gypsum suppliers.

Use of Zinc Sulphate

43.

a) Agriculture Departments should educate growers about the benefits of the use of zinc sulphate in rice cultivation;

b) Public sector fertilizer distributing agencies be asked to arrange the supply of zinc sulphate and propagate its use through aggressive marketing.

Threshing of Rice

44. To check the deterioration in the quality of rice due to poor threshing practices particularly in Sindh, it is suggested that:-

a) The growers be educated for adopting the use of combines or resorting to manual threshing of the crop immediately after harvest;

b) Incentives be provided to private sector for importing already tested Head Feeding Combines, developed in Japan for supplying to growers on custom hire rates;

c) Feasibility of importing re-conditioned combines be studied and their imports allowed, if cost effective.

Weed Control

45. PARC and Provincial research institutes should undertake the testing of all available weedicides and publicise the use of those weedicides which have minimum impact on growth and other characteristics of rice plant.

Integrated Pest Management

46. To minimise the use of chemicals efforts should be made to encourage growers to adopt following cultural, mechanical and biological measures:-

a) Avoiding the cultivation of varieties susceptible to various pests and diseases of area;

b) Selection of varieties resistant to one or more prominent pest of area;

c) Adhering to the recommended time of sowing of nurseries and transplanting of seedlings, disposal of rice straw to distant place after harvest, rotavating of rice stubbles and keeping 'watts' and 'bunds' of fields free of grasses during spring;

d) To minimise the plant population of WBPH in Sindh, water should not be allowed to stand in the field after 3-4 weeks of transplanting;

e) The chemical control of pests, if needed, should be preferred through the use of granular pesticide to the extent feasible as their application does not kill predators of rice pests;

f) The infested leaves containing larvae of leaf roller be destroyed; and

g) 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.

Implementation of Support Price

47.

i) Early announcement of support prices by the government should be ensured.

ii) Procurement agency should be assigned the paddy procurement on permanent footings which should make all arrangements regarding storage, milling etc.

iii) Procurement specifications need to be reviewed because harvesting/threshing practices have changed over time. For this purpose, an expert committee headed by Rice Commissioner, MINFAL may be constituted which should include in addition to rice experts, the growers and millers also.

iv) Supervisory committees at tehsil level should check the paddy procurement operations. These committees should have officials from the civil administration, Agriculture Department and representative of growers.

v) Support prices of cleaned rice duly protecting the prices of paddy fixed by the government should also be announced and implemented.

Improving Quality and Marketing

48. The following recommendations of APCom crop are reiterated.

1. Moisture meters and paddy dehuskers

49 In order to objectively determine the quality of paddy, MINFAL should ensure implementation of the Cabinet decision regarding compulsory use of moisture meters and paddy de-huskers by all the dealers and millers purchasing paddy.

2. Processing

50.

i) Import of modern machinery for processing/polishing etc. should be duty free. Tax holiday should also be given for establishing such industry.

ii) Institutional credit for the balancing and modernization of rice mills i.e. for installing paddy separators, cleaners, de-stoners and polishers etc. be made available.

iii) Strict quality control be exercised at various stages of processing and marketing to improve the quality of the product.

iv) Prices of cleaned rice for exports need to be based on the standards fixed by PSI and enforced by the concerned agencies.

3. Improving quality of exportable rice

51.

i) The Government should allow the import of light weight reapers/combine harvesters from Japan, Korea and China. Then proto-type manufacturing of such machines within the country should also be facilitated.

ii) The Government should exercise strict quality check on the rice exports and each export consignment should have the label indicating its specifications along with an essentially approved trade mark. Export consignment must be accompanied by a quality certificate from the authorized agency.

iii) Pakistan embassies should be asked to inquire into and inform the government about marketing techniques adopted by our competitors which are defaming Pakistani basmati in the international markets so that corrective steps may be taken. A conference of Commercial Attachees in major rice importing countries may be helpful in thrashing out the problems in export markets of rice and enhance the efficiency of export cells in our embassies.

3. SOWING TIMES OF RICE CROP

52. Rice crop is planted in two stages comprising raising of nursery and transplanting of seedlings in the field. Direct seeding is also practised but on a limited scale. The time for sowing of nurseries and transplantation of seedlings in the field recommended by the experts for different regions is presented in Table-1.

Table-1: Sowing Times of Rice Crop

Province	Variety	Time for	
		Sowing nursery	Transplanting
Punjab	Basmati	20 May to 20 June	20 June to 20 July
	IRRI	20 May to 7 June	20 June to 7 July
Sindh			
Lower Sindh	IRRI	20 April to 5 July	20 May to 5 August
Upper Sindh	IRRI	1 May to 30 June	1 June to 10 August
NWFP			
Plains	All varieties	1 to 31 May	1 June to mid July
Hilly areas	All varieties	1 to 20 May	3rd week of May to end June
Balochistan	All varieties	20 May to 30 June	15 June to end July

Note: The wide range in the recommended times of sowing of nursery and transplanting in the field inter alia is because of variation in the fertility levels of soils, manuring practices and methods of nursery raising (i.e. dry or wet) followed by growers in different areas.

Sources:
1) R.R.I, Dokri
2) Rice Research Institute, Kala Shah Kaku.

4. PROVINCIAL SHARES IN AREA AND PRODUCTION

53. The annual production of rice during 1998-99 to 2000-01 has averaged at 4.9 million tonnes and rice area at 2.4 million hectares (6 million acres). The provincial shares in area and production and by variety are given in Table-2.

Table-2: Provincial Shares in Area and Production of Rice: Average of 1998-99 to 2000-01

	Pakistan		Punjab	Sindh	NWFP	Balo-Chistan
A.Area	**000 ha**	**Per cent**		**--------- Per cent ----------**		
Total	2414 5966	100	64	27	3	6
Basmati	1159 2864	48	100	-	-	-
IRRI	990 2447	41	27	58	-	15
Others	265 656	11	48	26	26	-
B.Production	**000 tonnes**					
Total	4851	100	49	39	3	9
Basmati	1632	34	100	-	-	-
IRRI	2728	56	19	66	-	15
Others	491	10	50	23	27	-

Notes:
1. Figures in thousand hectares are followed by thousand acres.
2. Coarse varieties other than IRRI are grouped under 'Others'.
3. ha = hectares.

Source: Worked out from data in Annex-I.

54. The contributions of Punjab, Sindh, NWFP and Balochistan in the total area under rice work out to 64, 27, 3 and 6 per cent respectively. Their corresponding shares in rice production are 49, 39, 3 and 9 per cent respectively.

55. The respective shares of Basmati, IRRI and "Other" varieties in total area under rice are 48, 41 and 11 per cent. The varietal make up of rice production comes to 34, 56 and 10 per cent respectively for basmati, IRRI and Others.

5. IMPORTANT RICE PRODUCING DISTRICTS

56. Districts have been arranged in descending order of production alongwith their varietal break up in Annex-II.

57. Districts which grow more than 50 thousand tonnes of rice include Gujranwala, Sheikhupura, Sialkot, Okara, Hafizabad, M.B.Din, Narowal, Jhang, Kasur, Pakpattan, Bahawalnagar, Gujrat and Lahore from the Punjab; Larkana, Jacobabad, Shikarpur, Dadu, Badin, Thatta from Sindh and Jafarabad and Nasirabad from Balochistan. These 21 districts collectively produce 87 per cent of the total production of rice. About 50 per cent of the Basmati production comes from Sheikhupura, Sialkot, Gujranwala and Hafizabad districts. Larkana, Jacobabad, Shikarpur and Jafarabad account for 59 per cent of the total IRRI production.

6. CHANGES IN AREA, YIELD AND PRODUCTION

58. During the ten years period of 1990-91 to 2000-01 area under rice has ranged from 1.97 to 2.52 million hectares (4.87 to 6.23 million acres). While production oscillated between 3.1 and 5.2 million tonnes. Long and short term changes in area, yield and production of rice are discussed below:

6.1 Long term changes: 1990-91 to 2000-01

59. During the decade ending 2000-01 rice production is estimated to have increased @ 5.0 per cent per annum based upon 1.9 per cent enlargement in area and 3.0 per cent improvement in yield (Table-3). The production of different varietal groups i.e. Basmati, IRRI and "Other" increased at the rates of 4.9, 4.4 and 9.6 per cent per annum. Both expansion in area and improvement in yield have contributed to the rising production of rice.

Table-3: Average Annual Growth Rates of Area, Yield and Production of Rice: 1990-91 to 2000-01

Country/Province		Area	Yield	Production
			-- Per cent per annum --	
Pakistan		**(+) 1.9**	**(+) 3.0**	**(+) 5.0**
	Basmati	(+) 1.2	(+) 3.7	(+) 4.9
	IRRI	(+) 1.8	(+) 2.6	(+) 4.4
	Others	(+) 6.4	(+) 3.1	(+) 9.6
Punjab		**(+) 2.9**	**(+) 3.8**	**(+) 6.8**
	Basmati	(+) 1.2	(+) 3.7	(+) 4.9
	IRRI	(+) 4.7	(+) 2.4	(+) 7.1
	Others	(+)38.8	(+) 7.7	(+)49.5
Sindh		**(-) 0.4**	**(+) 3.8**	**(+) 3.4**
	IRRI	(+) 0.2	(+) 3.5	(+) 3.7
	Others	(-) 4.0	(+) 4.3	(+) 0.1
NWFP	(Others)	**(+) 0.9**	**(+) 0.5**	**(+) 1.4**
Balochistan	(IRRI)	**(+) 3.6**	**(+) 1.0**	**(+) 4.6**

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

60. In the Punjab rice production has increased @ 6.8 per cent on account of increases of 2.9 and 3.8 per cent in area and yield, respectively. Entire basmati production comes from Punjab. Its area and yield have increased at the rates of 1.2 and 3.7 per cent resulting in the annual growth rate of 4.9 per cent in production. Area under IRRI has expanded @ 4.7 per cent and yield improved @ 2.4 per cent which pushed the production to grow @ 7.1 per cent. The production of "Other" varieties has gone up @ 49.5 per cent due to hefty increase in area @ 38.8 per cent and 7.7 per cent in yield.

61. In Sindh, mostly cultivating coarse rice, production of rice has increased @ 3.4 per cent per annum entirely because of 3.8 per cent annual rise in yield as area contracted @ 0.4 per cent per annum.

62. In the NWFP, where only "Other" varieties are cultivated, rice production has increased @ 1.4 per cent due to increases of 0.9 and 0.5 per cent in the area and yield.

63. Rice production in Balochistan has grown @ 4.6 per cent which is attributable to increases of 3.6 and 1.0 per cent in area and yield, respectively.

6.2 Short term changes: 2000-01 vs 1999-2000

64. According to the Final estimates of the Punjab and NWFP and Second estimates of Sindh and Balochistan provided by the Provincial Agriculture Departments, rice production from 2000-01 crop is placed at 4.8 million tonnes, 6.9 per cent less than the production of 5.2 million tonnes harvested in 1999-2000 (Table-4). The short fall in production is based upon decreases of 5.5 and 1.5 per cent in area and yield respectively. The production of Basmati and IRRI has decreased while that of "Other" varieties has increased.

Table-4: Area, Yield and Production of Rice by Variety: 1999-00 and 2000-01 Crop

Country/ Province	Area		Changes In 1999-00 over 2000-01	Yield		Changes in 1999-00 over 2000-01	Production		Changes In 1999-00 over 2000-01
	1999-2000	2000-2001		1999-2000	2000-2001		1999-00	2000-01	
	000 ha		Per cent	-- Kgs --		Per cent	000 tonnes		Per cent
Pakistan	**2515.4**	**2376.6**	**(-) 5.5**	**2050**	**2019**	**(-)1.5**	**5155.6**	**4799.1**	**(-) 6.9**
Basmati	1246.8	1113.7	(-) 10.7	1415	1438	(+)1.6	1764.0	1601.0	(-) 9.2
IRRI	1032.1	937.5	(-) 9.2	2860	2758	(-)3.6	2952.1	2589.8	(-) 12.3
Others	236.5	325.4	(+) 37.5	1858	1888	(+)1.6	439.5	614.3	(+) 39.8
Punjab	1609.4	1627.2	(+) 1.1	1542	1584	(+)2.7	2481.0	2577.0	(+) 3.9
Basmati	1246.8	1113.7	(-) 10.7	1415	1438	(+)1.6	1764.0	1601.0	(-) 9.2
IRRI	266.7	313.2	(+) 17.4	2005	1891	(-)5.7	534.8	592.4	(+) 10.8
Others	95.9	200.3	(+)108.9	1900	1915	(+)0.8	182.2	383.6	(+)110.5
Sindh	**640.1**	**640.1**	**(-) 21.8**	**3076**	**3108**	**(+)1.1**	**2123.0**	**1678.9**	**(-) 20.9**
IRRI	616.9	481.4	(-) 22.0	3234	3281	(+)1.5	1994.9	1579.4	(-) 20.8
Others	73.5	58.7	(-) 20.1	1743	1695	(-)2.7	128.1	99.5	(-) 22.3
NWFP (Others)	**67.1**	**66.4**	**(-) 1.0**	**1926**	**1976**	**(+)2.6**	**129.2**	**131.2**	**(+) 1.5**
Balochistan (IRRI)	**148.5**	**142.9**	**(-) 3.8**	**2844**	**2883**	**(+)1.4**	**422.4**	**412.0**	**(-) 2.5**

Source: Annex-I.

65. In the Punjab total rice production in 2000-01 is reported at 2.6 million tonnes, showing an increase of 3.9 per cent over last year. Increases of 1.1 and 2.7 per cent in area and yield has contributed in 3.9 per cent increase in production. Basmati production in 2000-01 is down by 9.2 per cent because of 10.7 per cent contraction in area. The production of "Other" varieties has recorded increase of 110.5 per cent, increased in the wake of 108.9 per cent enlargement in their area.

66. Rice production in Sindh reported at 1.7 million tonnes in 2000-01 is short by 21 per cent as compared to 2.1 million tonnes of last year. Fall in production is because of 22 per cent contraction in area.

67. In the NWFP production has increased by 1.5 per cent entirely due to 2.6 per cent improvement in yield.

68. In Balochistan rice production is down by 2.5 per cent because of 3.8 per cent reduction in area.

7. TARGETS VS ACHIEVEMENTS: 2000-01 CROP

69. FCA had set rice production target for 2000-01 crop at 5.1 million tonnes. Actual production as per second estimates, has fallen short of target by 5.9 per cent due to short falls of 1.4 and 4.6 per cent in area and yield targets (Table-5). Production of Basmati and IRRI is less by 9.2 and 11.2 per cent from their respective targets because of 4.2 and 9.2 per cent under achievements in area targets and 5.3 and 4.3 per cent less achievements in yield. However "Other" varieties has exceeded the production target by 45.6 per cent due to excess achievements of 37.3 and 6.0 per cent in their area and yield targets.

Table-5: Targets and Estimated Achievements of Area, Yield and Production of Rice: 2000-01 Crop

Country/ Province	Area		Deviation from target	Yield		Deviation from target	Production		Deviation from target
	Targets	Achieve-ments		Targets	Achieve-ments		Targets	Achieve-ments	
	000 ha		Per cent	-- Kgs --		Per cent	000 tonnes		Per cent
Pakistan	**2411.0**	**2376.6**	**(-) 1.4**	**2116**	**2019**	**(-)4.6**	**5102.0**	**4799.1**	**(-) 5.9**
Basmati	1162.0	1113.7	(-) 4.2	1518	1438	(-)5.3	1764.0	1601.0	(-) 9.2
IRRI	1032.0	937.5	(-) 9.2	2881	2758	(-)4.3	2916.0	2589.8	(-) 11.2
Others	237.0	325.4	(+) 37.3	1781	1858	(+)4.0	422.0	614.3	(+) 45.6
Punjab	**1493.0**	**1627.2**	**(+) 9.0**	**1592**	**1584**	**(-)0.5**	**2377.0**	**2577.0**	**(+) 8.4**
Basmati	1162.0	1113.7	(-) 4.2	1518	1438	(-)5.3	1764.0	1601.0	(-) 9.2
IRRI	237.0	313.2	(+) 32.2	1869	1891	(+)1.2	443.0	592.4	(+) 33.7
Others	94.0	200.3	(+)113.1	1809	1915	(+)5.9	170.0	383.6	(+)125.6
Sindh	**704.0**	**540.1**	**(-) 23.3**	**3096**	**3108**	**(+)0.4**	**2179.0**	**1678.9**	**(-) 23.3**
IRRI	629.0	481.4	(-) 23.5	3273	3281	(+)0.2	2059.0	1579.4	(-) 23.3
Others	75.0	58.7	(-) 21.7	1600	1695	(+)5.9	120.0	99.5	(-) 17.1
NWFP (Others)	**68.0**	**66.4**	**(-) 2.4**	**1941**	**1976**	**(+)1.8**	**132.0**	**131.2**	**(-) 0.6**
Balochistan (IRRI)	**146.0**	**142.9**	**(-) 2.1**	**2836**	**2883**	**(+)1.7**	**414.0**	**412.0**	**(-) 0.5**

Sources: 1. For targets: Minutes of the 73rd meeting of FCA held on 31-10-2000.
2. For achievements: Annex-I.

70. In the Punjab total rice production has exceeded the target by 8.4 per cent. While other provinces have reported shortfalls of varying degrees

8. FACTORS CONSIDERED IN DETERMINING THE SUPPORT PRICE

71. The following factors having impact on the demand, supply and prices of rice paddy have been considered and analysed in formulating the support price proposals for various varieties of rice paddy, for the 2001-02 crop:

8.1 Domestic demand and supply of rice;
8.2 Prices of rice paddy in domestic markets;
8.3 World supply, demand, stocks, trade and price situation of rice;
8.4 Export parity prices;
8.5 Cost of production of rice paddy;
8.6 Nominal and Real prices of basmati and IRRI paddy;
8.7 Comparative economics of rice paddy and competing crops;

8.1 Domestic Demand and Supply of Rice

72. Data on domestic production, stocks, exports and availability/consumption of rice for the last ten years i.e. 1990-91 to 1999-00 are presented in Annex-III.

73. Based on the supply and demand position of rice during the last decade, average per capita availability/consumption forecast for 2000-01 comes to 18.70 kgs per year. Domestic requirement of rice during the year 2000-01 for a mid year population of 144.84 million (as on 1st January 2001) works out to 2,709 thousand tonnes. According to the latest estimates, production is reported at 4,799 thousand tonnes of rice from the 2000-01 crop. After deducting 288 thousand tonnes as allowance for seed, feed and wastage @ 6 per cent of production and consumption requirement of 2,709 thousand tonnes as worked out above, exportable surplus calculates to 1802 thousand tonnes. About 1188 thousand tonnes are reported to have been exported upto the end of January 2001. Thus, 614 thousand tonnes are available for exports during rest of the year.

8.2 Prices of Paddy in Domestic Markets

74. Prices of various groups of rice (paddy) prevailing in the main producing area markets of the country during the post harvest season of 2000-01 crop are described below:

- **Super basmati (paddy)**

75. Average monthly wholesale prices of Super basmati (paddy) prevailing in the main producing area markets of the Punjab during October 2000 to January 2001 are presented in Table-6.

Table-6: Monthly Average Wholesale Market & Support Prices of Super Basmati (Paddy) in Main Producing Area Markets of the Punjab: October 2000 to January, 2001

Markets	October	November	December	January	Average	Support price
---------- Rupees per 40 kgs ----------						
Gujranwala	390	395	448	455	422	460
Sialkot	388	403	442	460	423	460
Sheikhupura	350	339	431	460	395	460
Kasur	345	343	379	455	381	460
Muridkey	388	394	442	450	419	460
Kamoke	400	406	460	450	429	460
Okara	360	359	435	455	402	460
Average	374	377	434	455	410	460

Sources:

1. MINFAL, Islamabad.
2. Directorate of Agriculture (E&M), Punjab, Lahore.

76. Data in Table-6 reveal that market prices of Super basmati (paddy) during October to December ruled below the support price of Rs 460 per 40 kgs. However, by January, 2001 prices had moved quite close to support price.

77. The average prices of Super basmati (paddy) ranged between Rs 381 per 40 kgs in Kasur and Rs 429 in Kamoke.

Basmati 385 (paddy)

78. Data on average monthly wholesale prices of basmati-385 (paddy) prevailing in the main producing area markets of the Punjab during the post harvest period of 2000-01 crop (i.e. October to January) are presented in Table-7.

Table-7: Monthly Average Wholesale Market & Support Prices of Basmati-385 (Paddy) in Main Producing Area Markets of the Punjab: October 2000 to January, 2001

Markets	October	November	December	January	Average	Support price
---------- Rupees per 40 kgs ----------						
Gujranwala	299	287	297	300	296	385
Sialkot	295	291	307	320	303	385
Sheikhupura	279	281	308	325	298	385
Hafizabad	276	274	302	320	293	385
Kamoke	287	291	300	303	295	385
Lahore	272	304	294	340	303	385
Muridkey	280	291	300	312	296	385
Okara	308	281	261	312	291	385
Sargodha	291	324	306	315	309	385
Average	**287**	**291**	**298**	**316**	**298**	**385**

Sources:

1. MINFAL, Islamabad.
2. Directorate of Agriculture (E&M), Punjab, Lahore.

79. The wholesale prices of basmati-385 (paddy) during the season ranged between Rs 261 per 40 kgs in Okara market during the month of December 2000 and Rs 340 per 40 kgs in Lahore market during January 2001. The overall average of wholesale prices in the main markets ranged between Rs 291 and Rs 309 per 40 kgs. As per data prices of Basmati-385 paddy in all markets remained much below the support price of Rs 385 per 40 kgs throughout the season.

- **IRRI-6 (paddy)**

80. Average monthly wholesale prices of IRRI-6 (paddy) obtaining in important markets of the Punjab and Sindh during the post harvest period of 2000-01 crop (i.e. October, 2000 to January, 2001) are tabulated below:

Table-8: Monthly Average Wholesale Market & Support Prices of IRRI-6 (Paddy) in Main Producing Area Markets of the Punjab and Sindh: October 2000 to January, 2001

Markets	October	November	December	January	Average	Support price (FAQ)
	---------- Rupees per 40 kgs ----------					
- Punjab						
Sargodha	166	166	207	210	187	205
Okara	151	162	177	184	169	205
Lahore	151	162	177	182	168	205
Faisalabad	165	166	177	180	172	205
Average	**158**	**164**	**185**	**189**	**174**	**205**
- Sindh						
Sukkur	183	173	176	183	179	205
Larkana	188	177	179	186	183	205
Jacobabad	180	173	173	180	177	205
Shikarpur	185	175	178	183	180	205
Average	**184**	**175**	**177**	**183**	**180**	**205**

Sources:

1. MINFAL, Islamabad.
2. Directorate of Agriculture (E&M), Punjab, Lahore.
3. Bureau of Supply and Prices, Government of Sindh, Karachi.

81. Table-8 reveals that the monthly average wholesale prices of IRRI-6 (paddy) in the main producer area markets of the Punjab and Sindh in the post harvest season of 2000-01 crop generally remained below the support price fixed at Rs 205 per 40 kgs. In the Punjab, average prices ranged between Rs 168 in Lahore market and Rs 187 per 40 kgs in Sargodha market.

82. In Sindh, average wholesale prices ranged between Rs 177 per 40 kgs in Jacobabad and Rs 183 per 40 kgs in Larkana market. In Sindh market prices during the months of November and December were relatively lower as compared to those in the beginning and closing of the harvesting months of October and January respectively.

8.3 World Supply, Demand, Stocks Trade and Price Situation of Milled Rice

8.3.1 World Supply, Demand, Stocks, and Trade.

83. The world production of milled rice estimated at 408 million tonnes for 1999-00 was 18 million tonnes higher than that of previous year. Total supply including opening stocks of 158 million tonnes was estimated at 566 million tonnes in 1999-00, up by 21 million tonnes over 1998-99 (Table-9).

Table -9: World Supply, Demand, Stocks and Trade in Rice: 1997-98 to 2000-01

Item	1997-98	1998-99	1999-00 Estimated	2000-01 Forecast
1. Opening stocks	146	155	158	163
2. Production	387	390	408	397
3. Total supply (Items 1+2)	533	545	566	560
4. Consumption	381	389	404	405
5. Closing stocks	152	156	162	155
6. Trade	28	25	23	24

Note: Opening and closing stocks may not tally because of quantity in pipeline.
Source: Food Outlook, FAO, Rome, February 2001.

84. For 2000-01, rice production is forecast to decline to 397 million tonnes because of short crops in China, India, Bangladesh, Thailand, Indonesia and Vietnam due to drought and flood conditions. Including carry over stocks of 163 million tonnes, the world supply of milled rice totals to 560 million tonnes, which is 6 million tonnes less than that in 1999-00. The global consumption of rice estimated at 404 million tonnes in 1999-00 is forecast to increase to 405 million tonnes during 2000-01.

85. The closing stocks in 2000-01 are projected to decline to 155 million tonnes from 162 million tonnes in last year. World imports of rice estimated at 23 million tonnes during 1999-00 are projected to rise to 24 million tonnes in 2000-01.

86. It may be noticed from Table-9 that during 1997-98 to 1999-00, world consumption of rice was less than the annual production. Accordingly closing stocks were on the increase. However, in 2000-01 as the consumption is likely to exceed the production, end year stocks are expected to decline.

8.3.2 International Prices

87. Thailand the largest producer and exporter of rice is considered as the trend setter in the world markets. Average fob (Bangkok) prices of three grades of Thai white rice, from 1994-95 to 2000-01, are presented in Table-10 and discussed in the following paragraphs.

Table-10: Fob (Bangkok) Prices of Thai White Rice: 1994-95 to 2000-01

Year (July-June)	100 percent second grade	15 percent brokens	35 percent brokens
	---------- US $ per tonne ----------		
1994-95	282	260	244
1995-96	365	336	305
1996-97	242	308	255
1997-98	308	299	247
1998-99	290	270	235
1999-00	235	231	193
2000-01 (Jul-Jan)	188	177	154
July	192	180	157
August	189	178	155
September	182	171	149
October	190	179	156
November	190	179	156
December	187	176	153
January	187	176	153

Note: The prices of Thai rice 15 % and 35 % brokens were available up to February 2000, thus from March 2000 and onward these have been estimated on the basis of their historical relationship with the prices of 100 per cent whole rice.

Sources: i) Food Outlook (for 100 percent Second Grade Rice).
ii) Reuters: (For 15% and 35% broken Rice)

88. During 1994-95, fob (Bangkok) prices of 100 percent second grade Thai white rice averaging at $ 282 per tonne increased to $ 365 per tonne in 1995-96. Thereafter prices declined continuously and averaged at $ 235 per tonnes in 1999-00. The prices of Thai white rice in 2000-01 from July to January have averaged at $ 188 per tonne.

89. The Fob (Bangkok) prices of Thai white rice, 15% brokens and 35% brokens had averaged at $ 260 and 244 per tonne respectively during 1994-95. The price of these grades following the pattern of 100 percent second grade rose to $ 336 and $ 305 per tonne respectively in 1995-96. The prices declined during the next four years and averaged at $ 231 and $ 193 per tonne in 1999-00. During July 2000 to January 2001 prices of 15% and 35% brokens Thai white rice have averaged at $177 and $ 154 per tonne.

8.4 Export Parity Prices

90. Rice is a major export of Pakistan and a source of valuable foreign exchange earnings. In 1999-00 Pakistan exported 1.9 million tonnes of rice, worth $ 474 million. Estimation of export parity price of rice can be helpful in determining its competitiveness in the world market and indicating the opportunity cost of resources used in domestic production. It also provides a reference point in setting the domestic prices.

91. The export parity prices of various vartietal groups of rice (paddy) have been calculated on the following bases:

i) Average fob (Karachi) export prices of rice:

- **During 1995-96 to 1999-00**
- **During 2000-01 (July-January)**

ii) Average fob (Bangkok) quoted prices of Thai white rice:

- **During 1995-96 to 1999-00**
- **During 2000-01 (July-January)**

92. On the bases of export prices of Pakistani and Thailand's rice, export parity prices of rice paddy have been worked in detail in Annexes IV to VI and summarised in Table-11.

Table 11: Export Parity Prices of Paddy for Various Varieties

Base	Base Price of Rice		Mill Gate Price of Paddy	
	Basmati	IRRI	Basmati	IRRI
	US $ Per Tonne		Rs. Per 40 Kgs	
i) Average fob (Karachi) actual Prices of rice exported during				
- 1995-96 to 1999-00	462	207	490	228
- 2000-01 (Jul-Jan)	481	169	509	170
ii) Average fob (Bangkok) price of Thai White Rice 35 % brokens during				
- 1995-96 to 1999-00	-	247	-	307
- 2000-2001 (Jul – Jan)	-	154	-	157

Source: Annex IV to VI

i) Average fob (Karachi) prices of Pakistani rice:

During 1995-96 to 1999-00

Basmati

93. The fob (Karachi) prices of basmati rice exported during 1995-96 to 1999-00 has averaged at US $ 462 per tonne. At the exchange rate of one US $ equal to 60.55[1] Pakistani Rupees, the export price of basmati in Pakistani currency works out to Rs 27,974 per tonne or Rs 1,119 per 40 kgs. Accounting for expenses incurred on transporting of basmati rice from Hafizabad to Karachi @ Rs 157 per 40 kgs, the mill-gate price of cleaned rice works out to Rs 962 per 40 kgs. Again taking into consideration the processing cost of 100 kgs paddy into rice @ 122.95 and the recoveries from the sale of by products, the mill gate price of basmati paddy works back to Rs 490 per 40 kgs (Annex-IV).

IRRI

94. The fob (Karachi) price of IRRI-6 rice exported during 1995-96 to 1999-00 have averaged at US $ 207 per tonne. At the existing exchange rate of one US $ equal to 60.55 Pakistani Rupees, the export price of IRRI-6 rice in terms of Pakistani currency works out to Rs. 12,534 per tonne or 501 per 40 kgs. After deducting the transport expenses for IRRI-6 rice from Jacobabad to Karachi export point @ Rs 80 per 40 kgs, the mill-gate price of cleaned rice comes to Rs 421 per 40 kgs. Subtracting the processing cost of 100 kgs of paddy into rice @ Rs 98.19 per 40 kgs and following the procedure adopted for the calculation of basmati paddy price mentioned in the above paragraph, the mill-gate price of IRRI-6 paddy works back to Rs 228 per 40 kgs (Annex-IV).

! As on 26th March, 2001 quoted by Habib Bank Limited

- **During 2000-01 (July-Jan)**

- **Basmati**

95. The fob (Karachi) prices of basmati rice exported during 2000-01 (July-Jan) have averaged at US $ 481 per tonne. At the existing exchange rate of one US $ equal to 60.55 Pakistani Rupees, the export prices of basmati rice in Pakistani currency work out to Rs 29,125 per tonne or Rs 1,165 per 40 kgs. Accounting for export incidentals @ Rs 157 per 40 kgs, and accounting for various expenses involved in the processing of paddy into rice @ of 122.95 per 100 kgs and recoveries from the sale of by-products, the millgate prices of basmati should work back to Rs 509 per 40 kgs respectively (Annex-V).

- **IRRI**

96. The fob (Karachi) prices of IRRI-6 rice exported during 2000-01 (Jul-Jan) averaged at US $ 169 per tonne. At the existing exchange rate of one US dollar equal to 60.55 Pakistani Rupees, the export prices of these varieties of rice in terms of Pakistani currency work out to Rs 10,233 per tonne or Rs. 409 per 40 kgs. Following the procedure as outlined in the earlier cases, the millgate prices of IRRI paddy work back to Rs 170 per 40 kgs (Annex-V)

ii) **Average fob (Bangkok) quoted prices of Thai white rice:**

- **During 1995-96 to 1999-00**

97. The fob (Bangkok) quoted price of Thai white rice during 1995-96 to 1999-00 average at US $ 247 per tonne for 35% brokens. However, actual export prices of Thai rice are generally lower than the prices quoted by Thai Board of Trade. Moreover, Thai rice may be superior to Pakistani IRRI rice in terms of lower admixtures, better finishing, grading etc or may have higher acceptability for the buyers and fetching higher prices in the international market. Thus, paddy prices calculated on the bases of Thai rice may not exactly applicable to Pakistani rice, However, these may be used as indicative prices in case quality of Pak rice is improved to the level of Thai rice. At the existing exchange rate of one US dollar equal to 60.55 Pakistani Rupees, the price of FAQ grades of rice in

terms of Pakistani currency would come to Rs. 14,956 per tonne or 598 per 40 kgs. After accounting for various export incidentals @ Rs 80 per 40 kgs, financial charges and processing cost @ 98.19 per 100 kgs, the value of mill gate prices of IRRI-6 grades of rice works back to Rs 307 per 40 kgs (Annex-VI).

- **During 2000-01 (Jul-Jan)**

98. For the year 2000-01 prices of 35% Thai white rice were not available. However, these are estimated from 100% whole rice prices on the basis of historical trend. The prices of Thai white rice (35% brokens) during 2000-01 (Jul-Jan.) have calculated at US $ 154 per tonne. Following the above mentioned assumptions and the procedure, the mill gate prices of IRRI paddy in Pakistan work back to Rs 157 per 40 kgs (Annex-VI).

8.5 Cost of Production of Rice Paddy

99. The cost of production is an important factor in formulating proposals for the support price of farm commodities. However, its empirical estimation is confronted with several conceptual and practical difficulties because of wide variation in agro-climatic and cultural practices, inputs use level across various regions and resulting yields.

100. The costs of production of rice (paddy) for various varietal groups for the 2001-02 crop year have been estimated by adopting the input-output parameters from the Support Price Policy for 2000-01 crop alongwith the latest prices of various inputs and custom hire rates of cultural operations. The input prices and rates of field operations were collected by the APCom through a mini field survey conducted during January, 2001 in major rice growing areas of the Punjab and Sindh. These were also discussed in the meeting of the APCom's Standing Committee on rice paddy, held on 29th March 2001 at Islamabad and supplemented with the information provided in the meeting by the representatives of the Provincial agriculture departments and Farmers' associations. The detailed COP estimates are presented in Annexes VII to IX, while a summary of the results is given in Table-12.

Table -12: Average Farmers' Cost of Production of Rice Paddy: 2000-01 and 2001-02 Crops

Item	Unit	Cost estimates		Increase in 2001-02 over 2000-01
		2000-01 crop	2001-02 crop	
PUNJAB				
Basmati				
1. Net cost of cultivation	Rs/acre	7871.62	8530.33	658.71
2. Yield	Kgs/acre	893.00	893.00	0.00
3. Cost of production at farm level	Rs/40 kgs	352.59	382.10	29.51
4. Marketing cost	"	10.00	12.00	2.00
5. Cost of production at market/procurement centre	"	362.59	394.10	31.51
IRRI				
1. Net cost of cultivation	Rs/acre	7029.58	7624.69	595.11
2. Yield	Kgs/acre	1341.00	1341.00	0.00
3. Cost of production at farm level	Rs/40 kgs	209.68	227.43	17.75
4. Marketing cost	"	10.00	12.00	2.00
5. Cost of production at market/procurement centre	"	219.68	239.43	19.75
Sindh				
IRRI				
1. Net cost of cultivation	Rs/acre	6222.45	6510.51	288.06
2. Yield	Kgs/acre	1482.00	1482.00	0.00
3. Cost of production at farm level	Rs/40 kgs	167.95	175.72	7.77
4. Marketing cost	"	10.00	12.00	2.00
5. Cost of production at market/procurement centre	"	177.95	187.72	9.77

Source: Annexes VII to IX.

Punjab

Basmati

101. The cost of growing one acre of basmati in the Punjab during 2001-02 is expected at Rs 8530, inclusive of land rent. Based on the average yield of 893 kgs per acre, the COP at the farm level would work out to Rs 382 per 40 kgs. Accounting for marketing cost @ Rs 12 per 40 kgs, the market/procurement centre level cost of the

produce should come to Rs 394 per 40 kgs, reflecting an increase of Rs 32 or 9 per cent over the corresponding cost of Rs 363 for the 2000-01 crop.

102. In the Punjab, supplementary irrigation of rice crop through tube-wells is the major component of the cost of cultivation, accounting for 32 per cent of the total cost. Other important constituents are: land rent (15 per cent), cultural operations (12 per cent), chemical fertilizers (11 per cent), nursery raising/up-rooting and transplanting (10 per cent), and harvesting and threshing operations (7 per cent).

IRRI

103. The cultivation cost of IRRI paddy in the Punjab for the 2001-02 crop at the existing input prices is estimated at Rs 7625 per acre, including land rent (Table-12). Distributing this cost over the average yield of 1341 kgs per acre, farm level cost of production would be Rs 227 per 40 kgs. Adding marketing cost @ Rs 12 per 40 kgs, the cost of the produce at market/procurement centre would come to Rs 239 per 40 kgs, higher by Rs 20 or 9 per cent than the previous year's cost of Rs 220.

104. Irrigation is the principal constituent of the cost of cultivation of IRRI paddy, accounting for 22 per cent of the overall cost. The chemical fertilizers constitute 17 per cent, land rent 14 per cent, cultural operations 12 per cent, nursery raising/up-rooting and transplanting 12 per cent, and harvesting and threshing 7 per cent of the gross cost of cultivation.

Sindh

105. For the 2001-02 crop year the cost of raising one acre of IRRI in Sindh at the ruling input prices is calculated at Rs 6511 per acre, including land rent. With the average per acre yield of 1482 kgs, farm level cost of production comes to Rs 176 per 40 kgs. Accounting for the marketing cost @ Rs 12 per 40 kgs, the cost of produce at the market/procurement centre level should work out to Rs 188 per 40 kgs, reflecting a rise of Rs 10 or 6 per cent over the previous year's estimates of Rs 178.

106. The major components of the cost of cultivation of IRRI paddy in Sindh are: chemical fertilizers (18 per cent), cultural operations (18 per cent), nursery raising/up-rooting and transplanting (17 per cent), harvesting/threshing (11 per cent), land rent (11 per cent) and irrigation (10 per cent).

107. The higher cost of production of rice paddy in the Punjab as well as in Sindh is attributable to the increases in the rates of cultural operations and transportation on account of increase in the prices of diesel. Rise in land rents and application of GST on plant protection measures have also added to the higher costs. The lower values of kind payments for harvesting, threshing and winnowing resulting from the lower market prices of paddy have partly offset the rise in cost of cultivation.

108. In Punjab, where rice farming heavily depends on supplementary irrigation, escalating power tariff and rising diesel prices have substantially raised the cost of growing rice crop.

8.6 Nominal and Real Prices of Basmati and IRRI Paddy

109. The government annually review the support prices of basmati and IRRI paddy. To ascertain changes in the real value/purchasing power of paddy, nominal prices of basmati and IRRI paddy for the period 1990-91 to 2000-01, both support and market prices, were deflated by the Consumer Price Index (CPI), the most commonly used measure of inflation in the economy. The results of the exercise are set out in Tables-13 and 14 and presented in figures 1 to 4.

8.6.1 Nominal and Real Prices of Basmati Paddy

110. The nominal and real prices of basmati paddy, at support and market prices, for the period of 1990-91 to 2000-01 have been given in Table-13 and shown in figs 1 and 2.

Table-13: Nominal and Real Prices of Basmati-385 Paddy at Support and Market Prices: 1990-91 to 2000-01

Crop year	Nominal prices of basmati paddy		Consumer Price Index (CPI)	Real prices of basmati paddy	
	Support	Market		Support	Market
1	2	3	4	5=(2/4)x100	6=(3/4)x100
	Rs per 40 kgs		1990-91=100	Rs per 40 kgs	
1990-91	143.50	141.50	100.00	143.50	141.50
1991-92	155.00	154.00	110.58	140.17	139.27
1992-93	175.00	189.00	121.45	144.09	155.62
1993-94	185.00	193.00	135.14	136.90	142.81
1994-95	210.90	189.20	152.73	138.09	123.88
1995-96	222.00	224.00	169.21	131.20	132.38
1996-97	255.30	283.00	189.18	134.95	149.59
1997-98	310.00	290.00	203.96	151.99	142.18
1998-99	330.00	370.00	215.66	153.02	171.57
1999-00	350.00	361.00	223.39	156.68	161.60
2000-01	385.00	300.00	236.15	163.03	127.04

Sources: 1) Economic Survey of Pakistan 1999-00: (Statistical Supplement).

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

Notes: 1) The CPI for 2000-01 has been projected in view of the average rise in CPI during the last 3 years.

2) Market prices are the average wholesale prices during the post harvest period i.e. October to January in important producer area markets of Lahore, Gujranwala, Sargodha and Okara for basmati-385 in the Punjab.

- **Support Price**

111. The nominal support price of basmati paddy has increased from Rs 143.50 per 40 kgs in 1990-91 to Rs 385.00 in 2000-01 (Table-13), an overall increase of 168 per cent. During the same period, the cumulative inflation in terms of CPI has been 136 per cent. Consequently, the real value of the support price of basmati paddy for 2000-01 crop estimated at Rs 163.03 per 40 kgs in terms of 1990-91 prices shows an improvement of 14 per cent in relation to the price of Rs 143.50 for 1990-91 crop.

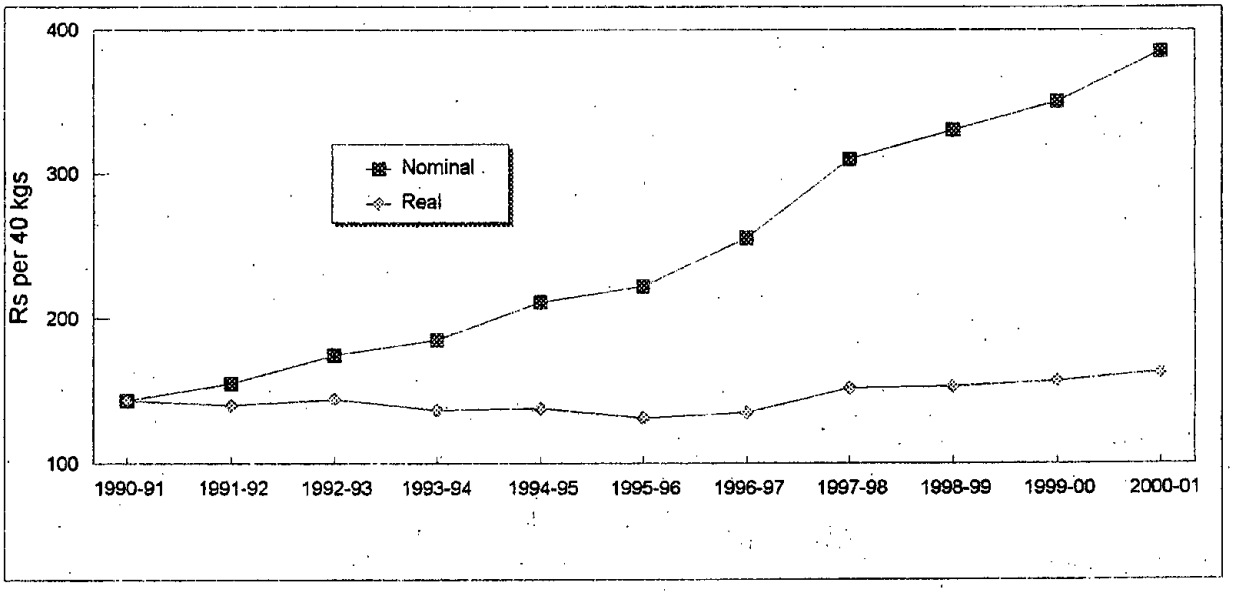

FIG-1: NOMINAL AND REAL SUPPORT PRICES OF BASMATI PADDY: 1990-91 TO 2000-01

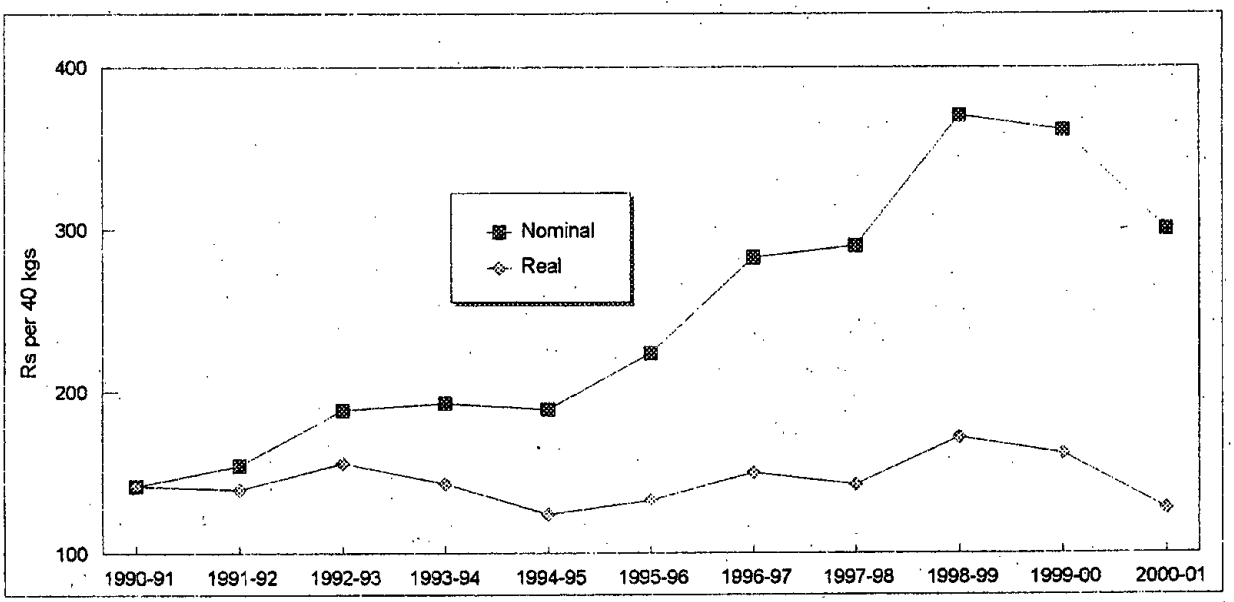

FIG-2: NOMINAL AND REAL MARKET PRICES OF BASMATI PADDY: 1990-91 TO 2000-01

112. During 1990-91 to 1996-97 the support price of basmati paddy increased by 78 per cent while CPI rose by 89 per cent. As a result, the real value of the support price of basmati paddy declined by 6 per cent. In the wake of 21 per cent increase in the nominal value of support price of basmati paddy in 1997-98 its real value jumped by 13 per cent. The real value of support price of basmati paddy in subsequent years hovered between Rs 153 to Rs 163 per 40 kgs in terms of 1990-91 prices, the highest level observed during the period under review.

- **Market Price**

113. The market prices of basmati paddy averaging at Rs 141.50 per 40 kgs in the important producer area markets during the post harvest season of 1990-91 crop have since experienced a number of ups and downs. The market prices averaging at Rs 361 per 40 kgs during 1999-00 are reported at Rs 300 in 2000-01 season. During the period under reference, cumulative inflation in terms of CPI (1990-91=100) has been estimated around 136 per cent. The real values of market prices of basmati paddy during the period under review as presented in Table-13 have undergone wide fluctuations. The real value estimated at Rs 127.04 per 40 kgs for the 2000-01 crop, in terms of 1990-91 prices, reflects an overall decline of 10 per cent in relation to the base year's price of Rs 141.50.

8.6.2 Nominal and Real Prices of IRRI Paddy

114. The nominal and real prices of IRRI paddy at support and market prices from 1990-91 to 2000-01 are set out in Table-14 and depicted in figures 3 and 4.

Table-14: Nominal and Real Prices of IRRI Paddy at Support and Market Prices: 1990-91 to 2000-01

Crop year	Nominal prices of IRRI paddy		Consumer Price Index (CPI)	Real prices of IRRI paddy	
	Support	Market		Support	Market
1	2	3	4	5=(2/4)x100	6=(3/4)x100
	Rs per 40 kgs		1990-91=100	Rs per 40 kgs	
1990-91	73.00	77.75	100.00	73.00	77.75
1991-92	78.00	100.00	110.58	70.54	90.43
1992-93	85.00	114.00	121.45	69.99	93.87
1993-94	90.00	99.83	135.14	66.60	73.87
1994-95	102.60	161.00	152.73	67.18	105.41
1995-96	112.00	204.00	169.21	66.19	120.56
1996-97	128.80	161.80	189.18	68.08	85.53
1997-98	153.00	207.00	203.96	75.01	101.49
1998-99	175.00	230.78	215.66	81.15	107.01
1999-00	185.00	203.25	223.39	82.81	90.98
2000-01	205.00	180.00	236.15	86.81	76.22

Sources: 1) Economic Survey of Pakistan 1999-00: (Statistical Supplement).

2) Bureau of Supply and Prices, Government of Sindh, Karachi.

Notes: 1) The CPI for 2000-01 has been projected in view of the average rise in CPI during the last 3 years.

2) Market prices are the average wholesale prices during the post harvest period i.e. October to January in important producer area markets of Larkana, Jacobabad, Shikarpur and Sukkur for IRRI-6 in Sindh.

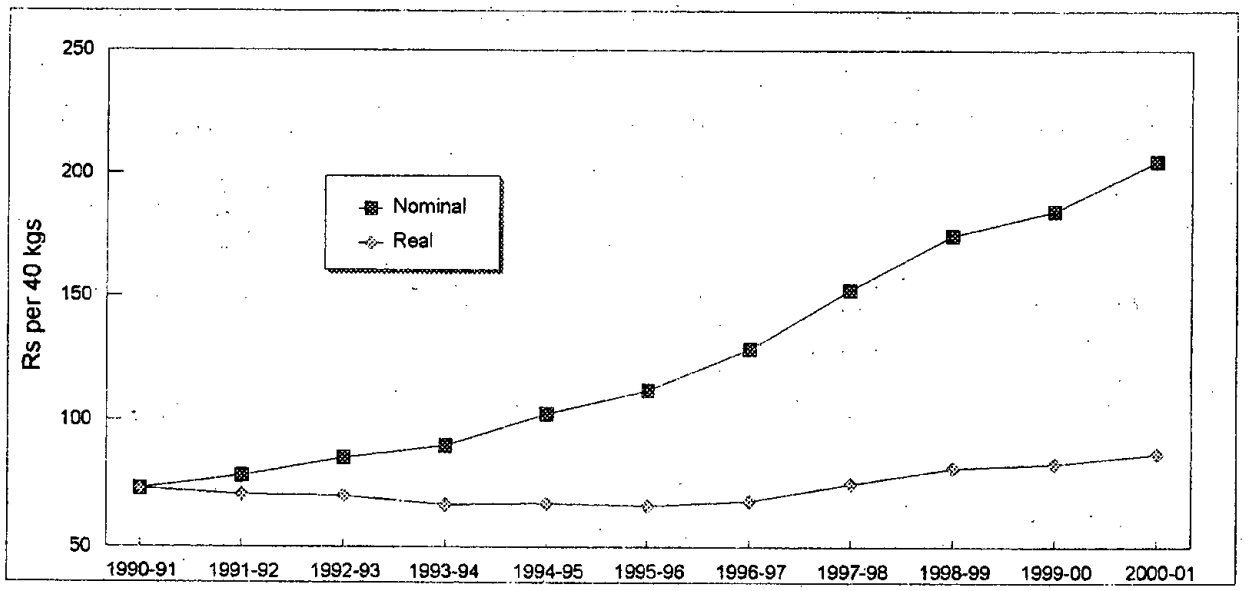

FIG-3: NOMINAL AND REAL SUPPORT PRICES OF IRRI PADDY: 1990-91 TO 2000-01

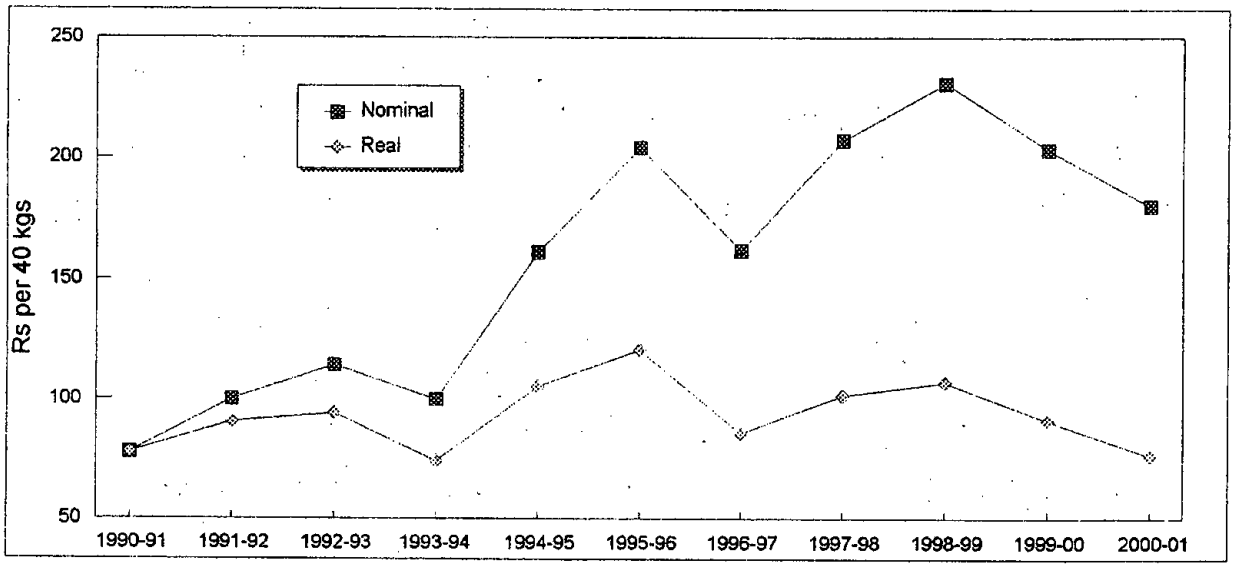

FIG-4: NOMINAL AND REAL MARKET PRICES OF IRRI PADDY: 1990-91 TO 2000-01

- **Support Price**

115. The nominal support price of IRRI paddy as reported in Table-14 has increased from Rs 73 per 40 kgs in 1990-91 to Rs 205 in 2000-01, an overall rise of 181 per cent. During the same period, cumulative inflation in terms of CPI has been 136 per cent. Consequently, the real value of support price of IRRI paddy for 2000-01 crop, estimated at Rs 86.81 per 40 kgs in terms of 1990-91 prices shows an increase of 19 per cent in relation to the corresponding price of Rs 73 for 1990-91 crop.

116. During the period of 1990-91 to 1996-97 crop years the nominal support price of IRRI paddy increased by 76 per cent while CPI rose by 89 per cent. As a result, the real value of IRRI paddy during this period declined by 7 per cent. However, during 1997-98 to 2000-01, the nominal support price of IRRI paddy was raised by 34 per cent. Consequently, the real value of support price of IRRI paddy improved, reaching Rs 86.81 per 40 kgs for the 2000-01 crop, the highest level in the period under reference.

- **Market Price**

117. The market prices of IRRI paddy averaging at Rs 77.75 per 40 kgs in the important producing markets of Sindh during the harvest season of 1990-91 crop have since experienced wide swings. The prices averaging at Rs 230.78 per 40 kgs in 1998-99 plumetted to Rs 180 during 2000-01 season. During the period under reference cumulative inflation in terms of CPI (1990-91=100) has been around 136 per cent. The real values of market prices of IRRI paddy for the period of 1990-91 to 2000-01 have been reported in Table-14. It has been noted that market prices of IRRI paddy though fluctuating yet ruled higher than the support price fixed by the government except in 2000-01.

118. During 1990-91 to 1995-96, the nominal market prices of IRRI paddy increased by 162 per cent while CPI rose by 69 per cent. As a result, the real value of market price of IRRI paddy jumped by 55 per cent to reach Rs 120.56 per 40 kgs in terms of 1990-91

prices, the highest level observed during the period under review. The real values of market prices of IRRI paddy which had ranged between Rs 86 and Rs 107 per 40 kgs during the period of 1996-97 to 1999-00 fell to Rs 76.22 in 2000-01 crop year as nominal market prices crashed from Rs 203 in 1999-00 to Rs 180 per 40 kgs in 2000-01 crop year. The real value of the market prices of paddy in 2000-01 crop year was the 2nd lowest during the period of analysis reported here

8.7 Comparative Economics of Rice Paddy and Competing Crops

119. Resource allocation by farmers among competing crops is, **inter alia**, governed by economic considerations like gross cost, out of pocket expenses, gross margin, net income, output-input ratio and returns to purchased inputs, etc. Estimation of such indicators may provide useful insights to policy makers about the allocative behaviour of growers and help in formulating future course of action in line with the changing requirements.

120. The use of multiple indicators, however, may provide conflicting signals. These economic indicators are derived from the farm management data and input-output prices which are subject to change over time and space. These limitations of data and analysis need to be kept in view while interpreting the results of comparative analysis.

121. Rice, a major kharif crop, competes against cotton in certain areas where both crops can be cultivated. In the rice growing areas of the Punjab, basmati and IRRI varieties compete against each other. Rice also competes indirectly with sugarcane, as the latter occupies the land round the year. In such a situation, combination of certain other crops like wheat and sunflower, with rice would need to be considered for comparative analysis with sugarcane.

122. In the wake of increasing liberalization, bulk of produce in most of the farm commodities is being transacted at market prices. Therefore, comparative economics of rice paddy and competing crops has been analysed in terms of prices realized by the growers.

123. The details about the comparative economics of rice paddy and competing crops are set out in Annex-X, while a summary of the important indicators is provided in Table-15.

- **Punjab**

124. The economics of rice crops in the Punjab as compared to cotton is quite inferior. Both basmati and IRRI do not compare favourably with cotton in terms of various economic indicators such as output-input ratio, revenue per day of crop duration etc. In case of indirect competition too, rice combinations with wheat or sunflower lag much behind sugarcane whatever economic criterion is taken to evaluate their performance. Inferior position of rice crops is primarily attributable to low market prices realized by the growers. It may be noted that market prices of basmati and IRRI paddy ruled much below the support prices and did not even cover the cost of production whereas the market prices of seed cotton and sugarcane were quite attractive during the 2000-01 crop year.

Table-15: Comparative Economics of Rice paddy and Competing Crops at Prices Realized by the Growers in the Punjab and Sindh: 2000-01 Crops

Crops/crop combinations	Output-input ratio	Gross revenue per		
		rupee of purchased Inputs cost	day of crop duration	acre-inch of water used
		----- Rupees -------		
Punjab				
1. Basmati Paddy	0.80	1.46	37.22	115.52
2. IRRI paddy	0.81	1.46	32.49	94.32
3. Cotton	1.34	3.18	63.26	690.10
4. Basmati paddy+wheat	0.88	1.80	40.99	196.76
5. Basmati paddy+sunflower	0.94	2.12	44.34	179.56
6. IRRI paddy+wheat	0.89	1.83	38.63	176.02
7. IRRI paddy+sunflower	0.95	2.19	41.71	160.87
8. Sugarcane	1.55	4.68	53.30	477.30
Sindh				
1. IRRI paddy	0.93	2.01	32.82	105.49
2. Cotton	1.42	3.41	55.79	743.85
3. IRRI paddy+wheat	0.98	2.28	36.94	187.32
4.IRRIpaddy+sunflower	1.02	2.66	41.89	174.01
5. Sugarcane	1.79	4.69	55.17	464.22

Source: Annex-X.

- **Sindh**

125. In Sindh too, economic position of rice crop is quite poor in relation to cotton. IRRI paddy lies far behind cotton in terms of all the economic criteria adopted in this analysis. In respect of indirect competition too, the economic position of rice combinations with wheat or sunflower is much inferior to sugarcane in terms of various economic indicators. The poor economics of rice crop is mainly on account of low market prices realized by the growers during the 2000-01 crop season, while the prices for seed cotton and sugarcane were quite remunerative.

9. THE SUPPORT PRICE

126. Domestic production of rice has increased from 3.26 million tonnes in 1990-91 to 4.80 million tonnes in 2000-01. The average growth rate works out to 5.0 per cent per annum. In 2000-01, rice production reported at 4.8 million tonnes is lower by 6.9 per cent than the record production of 5.16 million tonnes in 1999-00. This decline is attributable to 5.5 per cent contraction in area and 1.5 per cent fall in yield. The production has also fallen short of the target of 5.10 million tonnes by 5.9 per cent due to shortfalls of 1.4 per cent in area and 4.6 per cent in yield. Based on the per capita annual availability of 18.70 kgs, domestic requirements for 2000-01 calculate to 2,709 thousand tonnes. Accounting for the allowance for seed and wastage @ 6 per cent of the production, the exportable surplus from the 2000-01 crop is estimated at 1,802 thousand tonnes. A quantity of 1,188 thousand tonnes has been exported by the end of January 2001.

127. The world rice production estimated at 408 million tonnes in 1999-00 is forecast to decline to 397 million tonnes in 2000-01, against likely consumption of 405 million tonnes. Thus, closing stocks are expected to decline to 155 million tonnes in 2000-01 from 162 million tonnes. The world rice trade at 23 million tonnes in 1999-00 is projected to rise to 24 million tonnes in 2000-01. According to **Food Outlook**, No.1, Feb 2001, year 2000 ended with the lowest rice price since 1987, and FAO Export Price Index for rice (1982-84=100) averaged at 98 as compared to 114 in 1999. Thus, prices of rice in the international markets are under downward pressure.

128. The government annually review and announce the support price of rice (paddy), in order to provide a floor to the market during the post-harvest period when market prices tend to crash. Accordingly, a number of factors like domestic production, stocks and prices of rice, world supply, demand and trade situation, international prices, export of rice, export parity price, cost of production, nominal and real prices, and comparative economics were analysed. The details of the analysis are provided in the Report, while a summary of the emerging price policy options is presented in Table-16:

Table-16: Options for Price Policy of Rice Paddy

	Criterion	Base price of rice	Mill-gate price of paddy
		US $ per tonne	Rs per 40 kgs
1.	Average fob (Karachi) price of Pak rice exported During:		
	i) 1995-96 to 1999-2000 (Annex-IV)		
	- Basmati	462	490
	- IRRI-6	207	228
	Ii) 2000-01 (Jul-Jan) (Annex-V)		
	- Basmati	481	509
	- IRRI-6	169	170
2.	Average fob (Bangkok) price of 35 % broken Thai White rice during:		
	i) 1995-96 to 1999-00 (Annex-VI)	247	307
	ii) 2000-01 (Jul-Jan) (Annex-VI)	154	157
4.	Real prices: To maintain the parity of 2001-02 crop with The 1990-91 level:		
	- Basmati	-	356
	- IRRI-6	-	181
5.	Average market prices (2000-01 crop):		
	- Super Basmati	-	410
	- Basmati-385	-	298
	- IRRI-6 (Punjab)	-	174
	- IRRI-6 (Sindh)	-	180
6.	Average cost of production (2001-02 crop):		
	- Basmati (Annex-VII)	-	394
	- IRRI (Punjab) (Annex-VIII)	-	239
	- IRRI (Sindh) (Annex-IX)	-	188

129. Based on the average fob (Karachi) prices of Pak rice exported during 1995-96 to 1999-00, the mill-gate price of basmati paddy works back to Rs 490 and that of IRRI paddy to Rs 228 per 40 kgs. Taking the average fob (Karachi) price of 2000-01 (Jul-Jan) as the reference price, the mill-gate price of basmati paddy calculates to Rs 510 and that of IRRI paddy to Rs 170 per 40 kgs.

130. In case average fob (Bangkok) price of Thai White rice (35 per cent broken) during 1995-96 to 1999-00 is taken as the base price, ex-mill price of IRRI paddy works back to Rs 307 per 40 kgs. The mill-gate price calculates to Rs 157 per 40 kgs, if the average fob (Bangkok) price of same quality of Thai rice during 2000-01 (Jul-Jan) is taken as the reference price.

131. The real support price of basmati paddy in terms of 1990-91 rupee has enhanced from Rs 144 per 40 kgs in 1990-91 to Rs 163 in 2000-01, a rise of 14 per cent. The real support price of IRRI paddy has increased from Rs 73 per 40 kgs in 1990-91 to Rs 87 in 2000-01, showing a rise of 19 per cent.

132. The average of market prices of Super basmati (paddy) during the post harvest period of 2000-01 crop, in major producing area markets, has ranged between Rs 381 and Rs 429 per 40 kgs, against the support price of Rs 460. The average of market prices of basmati-385 (paddy) hovered around 300 per 40 kgs, against its support price of Rs 385.

133. The Wholesale prices of IRRI-6 in the Punjab markets in 2000-01 crop season averaged around 174 per 40 kgs, while that in Sindh was Rs 180, against the support price of Rs 205.

134. The cost of production for the 2001-02 crop is estimated at Rs 394 per 40 kgs, a rise of 9 per cent over the last year. The cost of production of IRRI paddy in Sindh works out to Rs 188 per 40 kgs, reflecting an increase of 6 per cent. The cost escalation is attributable to higher costs of cultural operations, supplementary irrigation, chemical fertilizers, GST on plant protection measures, land rentals and marketing of the produce.

135. The substantial quantity of rice stocks available in the world and domestic markets has depressed its prices. The market prices of both rice and paddy in the domestic market have been weak. The prices of paddy in the important producer area markets during 2000-01 season ruled much below the support prices fixed by the Government for various grades/varieties of paddy.

136. In the wake of prolonged drought, country is faced with serious water shortage which is likely to persist during the current kharif season. Rice is a high water delta crop and given the water situation its cultivation needs to be curtailed to the most suitable areas for its farming. In some of the rice growing areas, there may not be many other viable crops to replace it. Nevertheless, in many regions/districts other crops can also be cultivated. It is in these areas where crop substitution needs to be encouraged. Prices play

an important role in farmers' allocation of resources among competing enterprises. Notwithstanding the increase in cost of production of rice (paddy), other factors as summarized above do not favour increase in the support prices of paddy. It is in this context and background that the Commission do not favour any increase in the support prices of paddy for the 2001-02 crop, and recommend to maintain them at last year' level as given below:

Variety	Support Price	
	2000-01 crop (actual)	2001-02 crop (proposed)
	Rs per 40 kgs	
Super basmati and basmati 2000	460	460
Basmati-385	385	385
IRRI-6	205	205
KS-282, DR-82, DR-83 and DR-92 (FAQ)	220	220

Rice Research Institute, Kala Shah Kaku, another fine variety named as Basmati-2000 has been approved for general cultivation by the Punjab Seed Council and also cleared by the Variety Evaluation Committee for its approval by the National Seed Council. As the grain quality characteristics of Basmati-2000 are reported to be similar to Super basmati, it has been included in the support price programme, and grouped with Super basmati (Annex-XI).

137. However, the Commission strongly recommends the announcement of the support price decision and its effective implementation. In the absence of a second buyer the farmers in the post harvest season due to abundant supply of the produce may get a raw deal from the traders.

138. In view of the increasing input prices and shortage of water, incidence of risk in farming is on the rise. Adoption of improved technology and husbandry practices can help in minimizing this risk. However, this requires a conducive economic environment for adoption of technology. Assured prices at the harvest time and their effective

implementation can play an important role in this direction. Thus, support price of paddy as recommended be announced before the start of planting season.

10. IMPLEMENTATION OF SUPPORT PRICE

139. For implementation support price of rice paddy 2000-01 crop, PASSCO was designated which opened 41 purchase centres in main rice producing areas of the country. Of these procurement centres 14 were in the Punjab and 27 in Sindh/Balochistan. The procurement targets of paddy alongwith their achievements by PASSCO are given below:

		Procurement	
Province	Variety	Target	Achievement
		--------- tonnes----------	
Punjab	IRRI-6	20,000	7,000
	Basmati (Super)	25,000	4,000
	Basmati (385)	25,000	20,000
Sindh/Balochistan	IRRI-6	63,000	60,000
	Total	133,000	91,000

140. The target of 133 thousand tonnes both for Basmati and IRRI paddy was only 1.85 per cent of the total production of 7.2 million tonnes (4.8 million tonnes of milled rice) during 2000-2001. The support price of paddy was also fixed quite late (i.e. on 22-9-2000). PASSCO is reported to have started procurement operation during 1st week of October in Punjab and by the end of 2nd week in Sindh/Balochistan.

141. The prices of Super Basmati paddy, in the main producing area markets during the beginning of the post-harvest period of 2000-2001 crop (October 2000 to January 2001) remained much below the support price of Rs 460/- per 40 kgs. However, in January 2001, the prices started rising and reached the support price level. In case of Basmati 385 and IRRI-6 the market prices have remained below the support prices throughout the season. The procurement of Basmati-385 and IRRI-6 were too small to

have much impact on the market prices. For affective implementation of support prices the targets fixed and the quantities procured should be such which can be helpful in raising the market prices to the desired level. For paddy procurement during the current season PASSCO faced the problems like; (i) lack of storage and processing facilities and of trained manpower well versed with paddy procurement operations.

142. The farmers attending the meeting of APCom's Standing Committee meeting on Rice held on 29-3-2001 complained that:

- decision about support price was announced too late.
- not only the procurement agency entered the market late but its procurement targets were also too low.
- PASSCO purchased paddy mostly from middlemen and not from growers.
- PASSCO's deduction of 'Bardana' weight was 2 kgs instead of 1 kg/bag as permissible under the procurement rules.
- paddy price was discounted much, on the pretext of high moisture contents and inert matter determined subjectively.

143. In order to improve the procurement operations of paddy following steps are worth considering:

i) Early announcement of support prices.

ii) Procurement agency should be assigned the task of paddy procurement on permanent footings which should make all arrangements regarding storage, milling etc.

iii) Procurement specifications should be revised because harvesting/threshing practices have changed over time. For this purpose, an expert committee headed by Rice Commissioner, MINFAL may be constituted which should include in addition to rice experts, the growers and millers.

iv) Supervisory committees at tehsil level should check the paddy procurement operations. These committees should consist officials from the civil administration, Agriculture Department and representative of growers.

v) Support prices of cleaned rice may be announced and implemented which have been abandoned since 1997-98

11. EXPORT OF RICE FROM PAKISTAN

144. Pakistan is one of the largest rice exporters with 8 percent share in global exports. Rice exports, by and large in the private sector, have increased from 984 thousand tonnes in 1993-94 to 1916 thousand tonnes in 1999-00. Export of Basmati has increased from 306 thousand tonnes to 570 thousand tonnes and that of other varieties from 678 thousand tonnes to 1346 thousand tonnes.

Table-17: Export of Pakistani Rice by Region

Region	During 2000-01 (Jul-Jan)				During 1999-00			
	Bamati		Other (IRRI)		Bamati		Other (IRRI)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	Tonnes	000 $	Tonnes	000 $	Tonnes	000 $	Tonnes	000 $
Asia	217823	101296.99	380828	70382.96	454703	222206.35	721487	136651.77
CIS	209	136.38	1030	198.50	243	154.30	6421	1304.37
Oceania	4423	2212.38	166	56.81	8162	4835.19	341	72.60
Europe	31047	16511.62	18049	2794.90	63108	38213.71	28190	5188.61
Africa	12374	6127.83	510111	80606.23	25497	13334.11	581429	104397.18
N.C America + North Amrica	10688	6684.75	1514	239.74	18110	11770.99	8363	1733.28
Total	276564	132969.95	911698	154279.13	569823	290514.64	1346231	249347.82

Source: Federal Bureau of Statistics

145. In value terms rice exports have grown from $ 242 million in 1992-93 to $ 540 million in 1999-00, basmati rice from $ 126 million to $ 291 million and other varieties from $ 116.2 million to $ 249 million in 1999-00. The share of Basmati during 1999-00 in total rice exports has been around 54 percent.

146. It may be seen from Table–17 that during 1999-00 in term of value more than 76 per cent of Basmati rice exports from Pakistan were destined to Asian countries and about 13 per cent to European countries, while small quantity was exported to America, Africa, Oceania and CIS countries. In case of IRRI main destination was Asia with a share of 55 percent and second largest market of IRRI rice was Africa with a share of 42 percent.

12. IMPROVING PRODUCTIVITY AND MARKETING

12.1 Improving Productivity

147. Rice is an important food and foreign exchange earning crop of the country. However, economics of rice cultivation, in view of the impending water shortages and depressed prices in domestic and world markets is facing a difficult challenge. The increasing prices of inputs particularly that of energy, power tariff and diesel, because of intensive requirements for supplementary irrigation has further complicated the situation. Thus to meet the domestic and export requirements of rice, policy should be directed to improve the productivity of rice. There is considerable scope of increasing its yield as the average provincial and national yields of different varieties are about 50 per cent of the yields realised by 'progressive' growers. The yield gaps can be removed by proper management of soils alongwith the use of quality seed of recommended varieties and adoption of improved agronomic and pest management practices. These aspects were discussed in price policies for earlier years. However during various field visits, it has been observed that there still exists a considerable gap between recommended and farmers practices in rice cultivation. Hence various measures required to be taken to remove deficiencies in crop production have been discussed again to facilitate action by policy makers and executing agencies.

12.1.1 Improved Seed

148. Seed is one of the most important and basic agricultural inputs as return from other inputs also depends on its quality and no other input can make up for the deficiency on this count. To obtain optimum responses to various inputs and cultural operations, it is imperative to use quality seed of recommended varieties. The experts recommend that the seed should be replaced atleast every five years i.e. 20 per cent of the area under paddy be planted with certified seed every year. However, the non-availability of sufficient quantity of improved seed and lack of its adoption by growers continue to be a major constraint in raising crop productivity in the country. In order to review the progress regarding the availability of quality seed data on the quantities of seed certified

by the FSC&RD for the period 1991-92 to 2000-01 in the Punjab, Sindh and NWFP have been presented in Annex-XII. The variety wise availability of seed in the public and private sector during 2000-01 is given in Table-18.

149. It may be seen from the data in Annex-XII that on overall basis the availability of certified seed of paddy in the country has improved from 2054 tonnes in 1991-92 to 3998 tonnes in 1999-2000 and to 4536 tonnes in 2000-01. However, the supply of certified seed was hardly sufficient to meet 10 per cent of the total requirement of seed except in 2000-01 when the supply of certified seed was enough to plant 13 per cent of total rice area. Of the total supply during 2000-01, 56 per cent was supplied by public sector and rest by the private sector.

150. In the Punjab, the supply of certified seed has shown an irregular pattern. Its supply of 811 tonnes in 1991-92 was the lowest during the last ten years. It continued to increase with some fluctuations and finally reached at 3919 tonnes in 2000-01. Thus, the area covered with certified seed in the province increased from 4.74 per cent in 1991-92 to 19.53 per cent in 2000-01. The supply of certified seed has increased due to induction of private sector. Of the total supply during 2000-01, 37 per cent of seed of basmati varieties and 71 per cent of IRRI varieties were supplied by private sector.

151. In Sindh, the supply of quality seed during the last 10 years varied widely, it was 1243 tonnes during 1991-92, 171 tonnes in 1992-93 and 827 tonnes in 1993-94. It declined to 208 tonnes in 1994-95 and to 109 tonnes in 1995-96 and then jumped to 1560 tonnes in 1996-97. Thus 8.86 per cent of the area under rice in the province was covered with certified seed in 1996-97. However, in the following years the supply of certified seed again showed a downward trend and reached 617 tonnes in 2000-01. As a result, the coverage of area by certified seed in 2000-01 decreased to 4.57 per cent from 8.86 per cent in 1996-97. The private sector contributed only 22 per cent and the rest, 78 per cent, was supplied by the public sector seed corporation of the province.

152. In the NWFP, area under rice has increased from 63 thousand hectares in 1991-92 to 66 thousand hectares in the year 2000-01. The varieties which neither fall in basmati nor in IRRI groups and are clubed as "other" varieties are grown in the province. No certified seed was supplied in the province during the period 1991-92 to 1994-95. However, in 1995-96 the availability of quality seed was sufficient to cater for 17.19 per cent of the requirement. This position could not be maintained in the following years as the availability of quality seed during 1996-97, 1997-98 and 1998-99 was hardly sufficient to cover 2.19, 1.35 and 4.94 per cent of the rice area in the province. No quantity of seed was presented to FSC&RD for certification, by the public and private sector seed agencies, during the last two years. However, ADA arranged ten tonnes of certified seed of IRRI-6 variety from Punjab Seed Corporation, lent but only 6.64 tonnes could be sold. Thus almost entire crop in the province during 1999-00 and 2000-01 was sown with uncertified seed.

153. Variety-wise data presented in Table-18 show that major source of the supply of certified seed is public sector. The data indicate that public sector in the Punjab during 2000-01 supplied 63 per cent of the total supply of certified seed of basmati rice against 37 per cent provided by the private sector. However, the share of private sector in the supply of seed of IRRI varieties was 71 per cent compared to 29 per cent of the public sector in the province. In Sindh, public sector contributed 78 per cent in the total supply of improved seed of IRRI varieties while the share of private sector was only 22 per cent in 2000-01.

154. APCom in its support price policy papers for earlier years has repeatedly emphasised the need of increasing the production and distribution of quality seed of paddy so as to raise the productivity and quality of rice. However, the supply has not yet reached the desired level especially in Sindh and the NWFP. The situation explained above suggests that private sector is not coming forward in the production of quality seed

of rice especially in Sindh and NWFP. Some of the problems in this regard are listed below:-

i) Short supply of pre-basic seed and lack of permission (as well as inability of some seed companies) to produce basic seed;

ii) Lack of support from financial institutions;

iii) Non-availability of relief (custom and import duties, income tax and various local taxes) in terms of various taxes

iv) Inadequate arrangements to control the marketing of seed of unknown quality by unregistered seed companies.

Table-18: Certified Seed of Paddy Supplied by Public and Private Sector in the Punjab, Sindh and NWFP by Variety for 2000-01 Crop

Province	Variety	Public Sector	Private Sector	Total
		----------Tonnes----------		
Punjab	Basmati	1733	1032	2765
		(63)	(37)	(100)
	IRRI	340	814	1154
		(29)	(71)	(100)
Sindh	IRRI-6	479	138	617
		(78)	(22)	(100)
NWFP	Others	-	-	-
Total		2552	1984	4536
		(56)	(44)	(100)

Note: Figures in parentheses are per cent of the total.

Source: FSC&RD, Islamabad

155. To encourage the seed agencies both in public and private sectors for the production and distribution of quality seed, government should consider to solve the above and other problems faced by the seed industry. The likely cost to the Government through concessions to the seed industry would be more than paid off from enhanced production of rice.

12.1.2 Mechanical Transplanting

156. Sub optimal plant population resulting from traditional method of transplanting of seedlings has been recognized as one of the factors for low yield of rice in the country. Against the recommended level of 80-95 thousand hills per acre, hardly 50-55 thousand hills are planted by contract labour. Efforts to raise plant population to the optimum level through the manual labour have not been successful while the mechanical transplanters have not yet been introduced due to very high cost of imported machines and problems in raising nursery in trays to suit requirement of these machines. Scientists of FMI of the PARC modified a chinese rice transplanter a few years back. PARC in order to reduce cost of raising nursery which can be used on machine, developed a technique for raising nursery on plastic sheets. The cost of modified transplanter is estimated to be around Rs. 1.50 lac and the experts are of the view that it is cost effective as mechanical transplanting can increase yield of rice by 30 per cent.

157. Four units of the machine developed by PARC were manufactured by HMC Taxila for testing. During testing some technical defects both in designing and manufacturing were noticed. These are required to be removed before undertaking its commercial production. The work to remove these defects is reportedly held up because of lack of funds with PARC. It is imperative to provide funds to FMI - PARC for undertaking the work needed to refine the designing of the machine for its smooth working. It has also been reported that during testing it was noticed that the seedlings raised in plastic trays gave better performance compared to those raised on plastic sheets. The extension worker should therefore continue their efforts for transferring technology of raising nursery which suit the requirement of transplanter.

12.1.3 Soil Management - Use of Gypsum

158. The wealth of a nation is in her soils and her strength lies in its intelligent development. Wisely managed soils can go on yielding good harvests year after year while carelessly managed soils can get eroded, damaged and even become unfit for growing crops. Rice cultivation in the country is spread over lands having poor physico - chemical conditions mostly developed through the use of brackish ground water. The shortage of surface water has intensified the use of ground water without regard to its chemical composition and without using needed amendments and management practices. This has further aggravated the salinity and sodicity problems of our soils which in turn has lowered their productivities.

159. Gypsum can revive the productivity of marginal lands. The high cost of gypsum, its inadequate supply together with lack of knowledge on the part of growers about the benefits of its application to soils and amelioration of ground water has discouraged its use. In India, supply of gypsum as soil amendment is subsidized to the extent of 25 - 100 per cent in different states. Against this, the programme for its supply as well as for imparting education to the growers about its use are lacking in Pakistan. The amelioration of marginal lands and brackish tubewell waters with gypsum can greatly help to improve the productivity of soils. To encourage the use of gypsum its cost needs to be reduced by providing incentives to the private sector in the form of tax rebates and simultaneously propagating its use through education of the growers by extension staff.

12.1.4 Use of Zinc Sulphate

160. Zinc, a micro nutrient, increases the productivity of rice crop directly as well as by enhancing the efficiency of other fertilizer elements applied to soil. Its use has suffered both due to lack of knowledge of the growers about the benefits of its use as well as its poor supply. Zinc sulphate is mainly recommended for top dressing to remove the deficiency of zinc in soils and plants. The application of zinc sulphate is quite negligible notwithstanding its utility and importance in rice farming. The limited

quantity of various products of zinc marketed by different private agencies, hardly any product reportedly contain the ingredients labelled on the packing. The agencies involved in this business are cheating and exploiting the farmers and also shaking their confidence in the utility of this important nutrient in rice production. To encourage the use of zinc on rice public sector fertilizer distributing agencies be asked to arrange the supply of zinc sulphate in rice areas and launch campaign for its use and marketing in collaboration with provincial agriculture departments.

12.1.5 Threshing of Rice

161. Manually threshed rice fetches higher price because on milling it gives less brokens. In Punjab, most of the crop is manually harvested and threshed. Against this bullock or tractor threshing is done in most areas of Sindh. This adversely affects the quality of the produce which on milling give brokens ranging from 35-40 per cent against the desired level of 5-7 per cent. The foreign exchange earnings from Sindh rice can be increased by atleast 25 per cent by lowering the percentage of brokens through improvement of threshing practices.

162. Some of the rice area in the Punjab is harvested and threshed with combine harvesters meant for wheat. The paddy threshed with these combines fetches lower price as on milling it gives higher brokens. However, the loss in price and higher broken percentage on milling is compensated by higher yield of paddy obtained with combine threshing. In Sindh, on the other hand the harvesting and threshing of rice with combines meant for wheat is very limited. Farmers prefer to stack the manually harvested paddy till the completion of sowing of wheat or other rabi crops. The stored paddy is threshed by treading of bullocks or moving tractor with intermittent sprinkling of water. To discourage this practice there is a need to:-

a) Educate the growers for adopting the use of combines or resorting to manual threshing of the crop immediately after harvest.

b) Provide incentives to private sector for importing already tested Head feeding combines developed in Japan for providing to growers on custom hire rates.

c) Feasibility of importing reconditioned combines be also studied as its cost effectiveness can attract private sector in this business.

12.1.6 Weed Control

163. Repeated cultivation of a crop on the same fields promotes the development of crop specific weeds. These weeds consume considerable portion of applied fertilizer and water, thereby curtailing their availability to the crop. According to a study one plant per square foot of some of obnoxious and most common weeds of rice namely didhan and swank belonging to Eichonochloa Crusqualli family reduces the yield upto 57 per cent, 5 plants per sq. ft reduces yield upto 80 per cent and 25 plants per sq.ft cause yield loss upto 95 per cent, some other weeds like Fimbristylis lateralis (chottic guin) cyperus iria (Bari guin) and cyprus rotundas (Deela) also greatly affect the yield.

164. Presently the chemical control of weeds have become quite popular in main rice growing areas. However, some of the chemicals/weedicides reportedly also impact the growth, tillering character of plants and in turn yield of the crop. Provincial research departments and PARC should undertake testing of all available weedicides and publish a list of such weedicides which have minimum impact on growth and other characteristics of rice plant for information of the growers.

12.1.7 Integrated Pest Management (IPM)

165. Rice crop is attacked by a large number of pests and atleast 15 to 25 per cent loss in yield is attributed to their inadequate control. The indiscriminate use of chemicals as presently in vogue with out regard to their residual effect on soil, crop and grain is not only affecting the human and animal health, soil microflora and environment but also making the control of pests difficult and expensive due to killing of natural enemies/predators of various pests. This on the one hand has made the control of pests

difficult because the population of some pests which otherwise do not pose any serious problem can increase beyond economic injury level while on the other hand, the use of chemicals with regard to its residual effect on grain can hamper our rice exports if the phyto sanitary conditions agreed under world Trade Agreement effective from 2001 are not strictly observed. To maintain unhampered export of rice it is important to undertake measures which help in maintaining W.T.O phyto sanitary standards. For this purpose research needs to be undertaken to identify such chemicals/pesticides which beside controlling various rice pests do not leave any residue on the grains or such residues do not exceed the prescribed limits. In view of the difficulties in the selection of chemicals which are effective in the control of pests but simultaneously leave no toxic residue for human health on grain, it is imperative to minimise the use of chemicals and concentrating efforts for the control of pests through Integrated Pest Management (IPM) techniques. These inter alia include adoption of cultural, mechanical/physical and biological measures. Some of salient measures are briefly listed below:-

a) Avoiding ,the cultivation of varieties susceptible to various pests and diseases of area;

b) Selection of varieties resistant to one or more prominent pest of area;

c) Adhering to the recommended time of sowing of nurseries and transplanting of seedlings, disposal of rice straw to distant place after harvest, rotavating of rice stubbles and keeping 'watts' and 'bunds' of fields free of grasses during spring;

d) To minimise the plant population of WBPH in Sindh, water should not be allowed to stand in the field after 3-4 weeks of transplanting;

e) The chemical control of pests if needed should be preferred through the use of granular pesticide to the extent feasible as their application do not kill the predators;

f) The infested leaves containing larvae of leaf roller be destroyed; and

g) Extracts of some plants (like Nimbokil EC extracted from Neem) are effective in the control of sucking pests, leaf roller, and rice borers and also do not kill predators be used.

12.2 Improving Quality and Marketing

166. Pakistan falls in the ranks of major rice producing and exporting countries of the world. However, Pak rice fetches comparatively lower price in the international market due to poor preparation and the use of out-dated technology in rice milling/processing. In order to improve this state of affairs, APCom in its previous support price policies had suggested a number of non-price measures which have not been implemented properly. So these measures are reviewed and highlighted below for their implementation during the 2001-02 crop season.

12.2.1 Use of paddy de-huskers and moisture meters

167. The quality of cleaned rice depends upon the quality of rice paddy. It is determined by the brokens percentage and moisture content of the paddy. The use of moisture meters and de-huskers at the procurement stage can effectively help to improve the quality of paddy by its objective assessment. Due to this, the Cabinet had approved the use of these devices at the marketing stage of paddy by all the authorized dealers and millers of rice. But due to one or the other reason these devices have not been adopted by the trade. So, the paddy quality continues to be determined through the subjective methods which is disadvantageous to the growers as various deductions in the name of low quality are recovered from the growers. For improving the situation it is necessary that Cabinet decisions in respect of the use of paddy de-huskers and moisture meters should be implemented by all the dealers and millers trading in paddy.

12.2.2 Processing

168. The rice quality is affected by the extent of brokens in it which depends upon the milling techniques and other facilities. By adopting the modern techniques of processing, which reduce the brokens percentage rice quality can be improved to a considerable extent. Most of the shellers in operation in Pakistan are locally made and produce low quality rice. There are only a few modern rice plants in the country which can process the

rice of international quality. In order to compete in the international market, it is of utmost importance to modernize rice processing and milling operations in line with the international standards and requirements.

169. For improving rice quality APCom had recommended a number of non-price measures in its previous support price policy reports which needs implementation. These measures are reiterated below.

i) Import of modern machinery for processing/polishing etc. should be duty free. Tax holiday should also be given for establishing such units.

ii) Institutional credit for the balancing and modernization of rice mills i.e. for installing paddy separators, cleaners, destoners and polishers etc. be made available at concessional rates.

iii) Prices of cleaned rice should be based on the standards fixed by PSI and enforced by all the concerned agencies.

iv) Strict quality control be exercised at various stages of processing and marketing to improve the quality of the product.

12.2.3 Improving quality of exportable rice

170. Rice is a major source of foreign exchange earnings for the country. These earnings from rice exports can be enhanced to a considerable extent, by improving the quality of exportable rice. The problem of broken percentage in rice is due to; (a) harvesting of immature crop having light, immature and chalky grains, (b) unfavourable weather conditions before threshing (c) use of wheat threshers without proper adjustments/devices for improvement, and (d) threshing of paddy by the use of bullocks or tractors. By adopting the improved methods of harvesting and threshing of paddy the brokens percentage can be minimized. Some minor adjustments in wheat combine harvesters are proving successful in this respect. Moreover, light weight reapers/harvesters can also be used in some areas. The import of such equipments be explored in addition to its local fabrication.

171. For improving the quality of exportable rice APCom in the Support Price Policy reports for Rice (paddy) 1999-00 and 2000-01 Crops, suggested the following measures, which have not been implemented. Therefore these are reiterated for implementation during 20001-02 crop year.

i) The Government should allow the import of light weight reapers/combine harvesters from Japan, Korea and China. Then proto-type manufacturing of such machinery within the country should also be facilitated.

ii) The Government should exercise strict quality check on the rice exports and each export consignment should have the label indicating its specifications along with an essentially approved trade mark. Export consignment must be accompanied by a quality certificate from the authorized agency.

iii) Pakistan Embassies should be asked to inquire into and inform the government about marketing techniques adopted by our competitors which are defaming Pakistani basmati in the international markets so that corrective steps may be taken. A conference of Commercial Attachees may be helpful in thrashing out the problems in export markets of rice and enhance the efficiency of export cells in our embassies.

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ANNEX-I

AREA, YIELD AND PRODUCTION OF RICE BY VARIETY AND PROVINCE: 1990-91 TO 2000-01

Year	PUNJAB				SINDH			NWFP	Baloch.	Pakistan			
	Basmati	IRRI	Others	Total	IRRI	Others	Total	Total (Others)	Total (IRRI)	Basmati	IRRI	Others	Total
AREA	---------- Thousand hectares ----------												
1990-91	1087.4	164.3	10.1	1261.8	567.6	112.3	679.9	62.3	108.7	1087.4	840.6	184.7	2112.7
1991-92	1032.7	189.0	9.7	1231.4	591.7	100.7	692.4	63.1	110.0	1032.7	890.7	173.5	2096.9
1992-93	1006.8	205.6	9.3	1221.7	487.3	81.5	568.8	62.1	120.8	1006.8	813.7	152.9	1973.4
1993-94	1074.0	218.5	8.1	1300.6	630.1	72.8	702.9	62.7	120.9	1074.0	969.5	143.6	2187.1
1994-95	1107.6	222.6	8.5	1338.7	535.6	62.7	598.3	63.3	124.3	1107.6	882.5	134.5	2124.6
1995-96	1109.2	214.5	4.1	1327.8	570.9	71.4	642.3	63.7	128.0	1109.2	913.4	139.2	2161.8
1996-97	1133.1	216.5	4.9	1354.5	625.5	76.3	701.8	64.7	130.1	1133.1	972.1	145.9	2251.1
1997-98	1055.0	221.4	133.5	1409.9	614.4	74.9	689.3	66.8	151.3	1055.0	987.1	275.2	2317.3
1998-99	1162.2	236.7	93.9	1492.8	628.7	75.4	704.1	68.2	158.4	1162.2	1023.8	237.5	2423.5
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
YIELD	---------- kgs per hectare ----------												
1990-91	1065	1544	990	1127	2308	1098	2108	1894	2641	1065	2202	1361	1543
1991-92	1001	1580	990	1090	2327	1100	2148	1949	2640	1001	2207	1403	1547
1992-93	1069	1550	1000	1149	2402	1256	2238	1802	2711	1069	2233	1462	1579
1993-94	1132	1654	1333	1221	2921	1570	2781	1888	2756	1132	2615	1696	1826
1994-95	1170	1690	1388	1258	2473	1308	2351	1867	1912	1170	2197	1576	1622
1995-96	1276	1780	1463	1358	2790	1461	2642	1856	2720	1276	2543	1642	1835
1996-97	1312	1708	1566	1376	2953	1503	2795	1909	2735	1312	2646	1685	1912
1997-98	1273	1793	1560	1382	2822	1433	2671	1949	2736	1273	2578	1620	1870
1998-99	1363	1784	1805	1458	2885	1548	2742	1959	2739	1363	2608	1768	1929
1999-00	1415	2005	1900	1542	3234	1743	3075	1925	2844	1415	2860	1858	2050
2000-01	1438	1891	1915	1584	3281	1695	3108	1976	2883	1438	2756	1888	2019
PRODUCTION	---------- Thousand tonnes ----------												
1990-91	1158.6	253.7	10.0	1422.3	1310.1	123.3	1433.4	118.0	287.1	1158.6	1850.9	251.3	3260.8
1991-92	1033.9	298.7	9.6	1342.2	1376.7	110.8	1487.5	123.0	290.4	1033.9	1965.8	243.4	3243.1
1992-93	1075.9	318.7	9.3	1403.9	1170.4	102.4	1272.8	111.9	327.5	1075.9	1816.6	223.6	3116.1
1993-94	1215.9	361.5	10.8	1588.2	1840.6	114.3	1954.9	118.4	333.2	1215.9	2535.3	243.5	3994.7
1994-95	1295.9	376.3	11.8	1684.0	1324.7	82.0	1406.7	118.2	237.6	1295.9	1938.6	212.0	3446.5
1995-96	1415.1	381.9	6.0	1803.0	1592.8	104.3	1697.1	118.2	348.1	1415.1	2322.8	228.5	3966.4
1996-97	1486.6	369.8	7.6	1864.0	1846.8	114.7	1961.5	123.5	355.8	1486.6	2572.4	245.8	4304.8
1997-98	1342.9	396.9	208.2	1948.0	1733.6	107.3	1840.9	130.2	413.9	1342.9	2544.4	445.7	4333.0
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	1579.4	99.5	1678.9	131.2	412.0	1601.0	2583.8	614.3	4799.1

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 break-up is not available.

Sources
1. For 1990-91 to 1999-00, Agricultural Statistics of Pakistan 1999-00, MINFAL Islamabad.
2. For 2000-01: Final estimates of Punjab and NWFP and Second estimates of Sindh and Balochistan provided by Provincial Agriculture Departments.

ANNEX-I-A

AREA (ACRES), YIELD AND PRODUCTION OF RICE BY VARIETY AND PROVINCE: 1990-91 TO 2000-01

Year	PUNJAB				SINDH			NWFP	Baloch.	Pakistan			
	Basmati	IRRI	Others	Total	IRRI	Others	Total	Total (Others)	Total (IRRI)	Basmati	IRRI	Others	Total
AREA	---------- Thousand acres ----------												
1990-91	2687.1	406.0	25.0	3118.0	1402.6	277.5	1680.1	153.9	268.6	2687.1	2077.2	456.4	5220.7
1991-92	2551.9	467.0	24.0	3042.9	1462.1	248.8	1711.0	155.9	271.8	2551.9	2201.0	428.7	5181.6
1992-93	2487.9	508.1	23.0	3018.9	1204.2	201.4	1405.6	153.5	298.5	2487.9	2010.7	377.8	4876.4
1993-94	2654.0	540.0	20.0	3214.0	1557.0	179.9	1736.9	154.9	298.8	2654.0	2395.8	354.8	5404.6
1994-95	2737.0	550.1	21.0	3308.1	1323.5	154.9	1478.5	156.4	307.2	2737.0	2180.7	332.4	5250.1
1995-96	2740.9	530.1	10.1	3281.1	1410.8	176.4	1587.2	157.4	316.3	2740.9	2257.1	344.0	5342.0
1996-97	2800.0	535.0	12.0	3347.0	1545.7	188.5	1734.2	159.9	321.5	2800.0	2402.1	360.4	5562.6
1997-98	2607.0	547.1	329.9	3484.0	1518.2	185.1	1703.3	165.1	373.9	2607.0	2439.2	680.0	5726.3
1998-99	2871.9	584.9	232.0	3688.9	1553.6	186.3	1739.9	168.5	391.4	2871.9	2529.9	586.9	5988.7
1999-00	3081.0	659.0	237.0	3977.0	1524.4	181.6	1706.0	165.8	367.0	3081.0	2550.4	584.4	6215.8
2000-01	2752.1	773.9	495.0	4021.0	1189.6	145.1	1334.6	164.1	353.1	2752.1	2316.7	804.1	5872.8
YIELD	---------- kgs per acre ----------												
1990-91	431	625	401	456	934	444	853	766	1069	431	891	551	625
1991-92	405	640	401	441	942	445	869	789	1068	405	893	568	626
1992-93	432	627	405	465	972	508	906	729	1097	432	903	592	639
1993-94	458	669	540	494	1182	635	1125	764	1115	458	1058	686	739
1994-95	473	684	562	509	1001	529	951	756	774	473	889	638	656
1995-96	516	720	592	550	1129	591	1069	751	1101	516	1029	664	742
1996-97	531	691	634	557	1195	608	1131	772	1107	531	1071	682	774
1997-98	515	725	631	559	1142	580	1081	789	1107	515	1043	655	757
1998-99	552	722	730	590	1167	626	1109	793	1109	552	1055	715	780
1999-00	573	811	769	624	1309	705	1244	779	1151	573	1157	752	829
2000-01	582	765	775	641	1328	686	1258	800	1167	582	1115	764	817
PRODUCTION	---------- Thousand tonnes ----------												
1990-91	1158.6	253.7	10.0	1422.3	1310.1	123.3	1433.4	118.0	287.1	1158.6	1850.9	251.3	3260.8
1991-92	1033.9	298.7	9.6	1342.2	1376.7	110.8	1487.5	123.0	290.4	1033.9	1965.8	243.4	3243.1
1992-93	1075.9	318.7	9.3	1403.9	1170.4	102.4	1272.8	111.9	327.5	1075.9	1816.6	223.6	3116.1
1993-94	1215.9	361.5	10.8	1588.2	1840.6	114.3	1954.9	118.4	333.2	1215.9	2535.3	243.5	3994.7
1994-95	1295.9	376.3	11.8	1684.0	1324.7	82.0	1406.7	118.2	237.6	1295.9	1938.6	212.0	3446.5
1995-96	1415.1	381.9	6.0	1803.0	1592.8	104.3	1697.1	118.2	348.1	1415.1	2322.8	228.5	3966.4
1996-97	1486.6	369.8	7.6	1864.0	1846.8	114.7	1961.5	123.5	355.8	1486.6	2572.4	245.8	4304.8
1997-98	1342.9	396.9	208.2	1948.0	1733.6	107.3	1840.9	130.2	413.9	1342.9	2544.4	445.7	4333.0
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	1579.4	99.5	1678.9	131.2	412.0	1601.0	2583.8	614.3	4799.1

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 break-up is not available.

Sources
1. For 1990-91 to 1999-00, Agricultural Statistics of Pakistan 1999-00, MINFAL Islamabad.
2. For 2000-01: Final estimates of Punjab and NWFP and Second estimates of Sindh and Balochistan provided by Provincial Agriculture Departments.

Annex-II

DISTRICT-WISE PRODUCTION OF RICE BY VARIETY: AVERAGE OF 1997-98 TO 1999-00 CROPS

Production: 000 tonnes

S NO.	District	Basmati	IRRI	Other	Total	Percent	S NO.	District	Basmati	IRRI	Others	Total	Percent
	PUNJAB							***NWFP***					
1	Gujranwala	175.58	64.27	112.99	352.84	7.47	1	Dir	-	-	25.97	25.97	0.55
2	Sheikhupura	287.82	8.06	45.02	340.90	7.22	2	D.I.Khan	-	-	25.87	25.87	0.55
3	Sialkot	211.74	0.94	12.36	225.04	4.77	3	Swat	-	-	17.27	17.27	0.37
4	Okara	85.91	84.01	0.00	169.92	3.60	4	Malakand	-	-	12.83	12.83	0.27
5	Hafizabad	109.09	48.69	10.65	168.43	3.57	5	Mansehra	-	-	6.27	6.27	0.13
6	M.B.Din	87.77	9.59	3.77	101.13	2.14	6	Chitral	-	-	6.10	6.10	0.13
7	Narowal	92.03	1.17	0.35	93.54	1.98	7	Kurram AG.	-	-	5.80	5.80	0.12
8	Jhang	83.57	3.49	0.00	87.06	1.84	8	Battagram	-	-	5.60	5.60	0.12
9	Kasur	57.64	23.29	0.00	80.93	1.71	9	Orakzai AG	-	-	5.37	5.37	0.11
10	Pakpattan	31.42	35.76	0.00	67.17	1.42	10	Bannu	-	-	4.63	4.63	0.10
11	Bahawalnagar	51.96	5.29	0.00	57.25	1.21	11	N.Waziristan	-	-	2.90	2.90	0.06
12	Gujrat	53.56	0.22	0.00	53.78	1.14	12	Bajour AG.	-	-	2.37	2.37	0.05
13	Lahore	40.47	9.58	0.48	50.53	1.07	13	Mardan	-	-	2.17	2.17	0.05
14	Sargodha	36.02	9.06	0.00	45.09	0.96	14	Shanglapar	-	-	2.07	2.07	0.04
15	D.G.Khan	0.00	39.14	0.48	39.63	0.84	15	Swabi	-	-	1.37	1.37	0.03
16	Muzaffargarh	0.53	33.99	0.00	34.52	0.73	16	Kohat	-	-	0.90	0.90	0.02
17	R.Y.Khan	9.69	23.84	0.00	33.53	0.71	17	Tank	-	-	0.70	0.70	0.01
18	Faisalabad	31.55	0.00	0.00	31.55	0.67	18	Peshawar	-	-	0.63	0.63	0.01
19	Sahiwal	25.99	1.23	0.00	27.22	0.58	19	Bunir	-	-	0.58	0.58	0.01
20	T.T.Singh	27.14	0.00	0.00	27.14	0.57	20	S.Waziristan	-	-	0.40	0.40	0.01
21	Khushab	6.51	19.35	0.00	25.86	0.55	21	Charsadda	-	-	0.33	0.33	0.01
22	Vehari	21.41	0.00	0.00	21.41	0.45	22	F.R.D.I.Khan	-	-	0.20	0.20	0.00
23	Rajanpur	0.00	18.38	0.00	18.38	0.39	23	Lakki Marwat	-	-	0.19	0.19	0.00
24	Khanewal	16.17	0.46	0.53	17.16	0.36	24	Kohistan	-	-	0.18	0.18	0.00
25	Multan	5.72	6.06	0.00	11.78	0.25	25	Nowshera	-	-	0.13	0.13	0.00
26	Bahawalpur	5.94	5.42	0.00	11.36	0.24	26	F.R.Bannu	-	-	0.10	0.10	0.00
27	Lodhran	4.54	0.00	0.00	4.54	0.10	27	F.R.Peshawar	-	-	0.03	0.03	0.00
28	Layyah	1.60	0.00	0.00	1.60	0.03	28	Abbottabad	-	-	0.03	0.03	0.00
29	Jhelum	0.98	0.00	0.00	0.98	0.02	29	Mohmand AG.	-	-	0.01	0.01	0.00
30	Mianwali	0.87	0.00	0.00	0.87	0.02							
31	Bhakkar	0.51	0.00	0.00	0.51	0.01							
	Sub-total	**1563.74**	**451.28**	**186.63**	**2201.65**	**46.64**		**Sub-total**	**-**	**-**	**131.00**	**131.00**	**2.77**
	SINDH							***BALOCHISTAN***					
1	Larkana	-	635.15	36.99	672.14	14.24	1	Jafarabad	-	252.9	-	252.9	5.36
2	Jacobabad	-	387.88	29.47	417.35	8.84	2	Nasirabad	-	155.2	-	155.2	3.29
3	Shikarpur	-	324.07	19.88	343.95	7.29	3	Khuzdar	-	11.7	-	11.7	0.25
4	Dadu	-	157.81	11.29	169.10	3.58	4	Turbat	-	2.6	-	2.6	0.06
5	Badin	-	120.65	8.53	129.18	2.74	5	Jhal Magi	-	0.6	-	0.6	0.01
6	Thatta	-	118.35	9.37	127.73	2.71	6	Sibi	-	0.2	-	0.2	0.00
7	Hyderabad	-	35.25	0.34	35.58	0.75	7	Lasbela	-	0.1	-	0.1	0.00
8	N.Feroze	-	19.11	0.38	19.49	0.41	8	Panjgoor	-	0.1	-	0.1	0.00
9	Nawabshah	-	13.10	0.26	13.36	0.28							
10	Sukkur	-	9.27	0.18	9.46	0.20							
11	Ghotki	-	8.44	0.21	8.65	0.18							
12	Khairpur	-	8.25	0.22	8.47	0.18							
13	Sanghar	-	6.99	0.17	7.16	0.15							
14	Mirpurkhas	-	1.79	0.05	1.84	0.04							
15	Umer kot	-	1.25	0.01	1.26	0.03							
	Sub-total	**-**	**1847.36**	**117.34**	**1964.71**	**41.62**		**Sub-total**	**-**	**423.39**	**-**	**423.39**	**8.97**
								Total (Pakistan)	**1563.74**	**2722.03**	**434.97**	**4720.75**	**100.00**

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

Source: Respective Provincial Agriculture Departments.

ANNEX-III

DOMESTIC PRODUCTION, CONSUMPTION AND STOCKS OF RICE: 1990-91 TO 1999-00

Year	Opening stocks(as on 1st July) (a)	Production	Deduction for seed & wastage @ 6 percent	Closing stocks as on 30th June	Exports	Net availability	Population (as on 1st Jan.) i.e mid of rice year	Per capita availability
	Thousand tonnes						Million	Kgs/annum
1990-91	837	3261	196	802	1205	1895	115.93	16.3
1991-92	802	3243	195	826	1512	1512	117.39	12.9
1992-93	826	3116	187	766	1032	1957	120.11	16.3
1993-94	766	3995	240	1085	984	2452	123.09	19.9
1994-95	1085	3447	207	612	1852	1861	126.04	14.8
1995-96	612	3966	238	132	1685	2523	129.06	19.5
1996-97	132	4305	258	44	1767	2368	132.11	17.9
1997-98	44	4325	260	0	2091	2019	135.25	14.9
1998-99	0	4674	280	0	1789	2605	138.30	18.8
1999-00	0	5156	309	0	1916	2931	141.56	20.7
					Average (1990-91 to 1999-00) =			17.2
					Forecast for 2000-01			18.7

Notes: a) Stocks have been used of the public sector. (upto December, 1996 stocks with RECP and since December, 1996 with TCP.

b) Population of AJ&K, Northern Areas and Afghan Refugees has been included in the the population estimates for estimating per capita availability.

Sources:

1 For production, exports and population of Pakistan: Economic Survey, 1999-00, Finance Division, Economic Adviser's Wing, Government of Pakistan, Islamabad.

2 For population of AJ&K, NA's: Population Census Organization, Islamabad.

3 For population of Afghan Refugees: Kashmir Affairs and Northern Areas and States and Frontier Regions Division, Government of Pakistan, Islamabad.

ANNEX-IV

ESTIMATED MILL-GATE PRICES OF PADDY ON THE BASIS OF AVERAGE FOB (KARACHI) PRICES OF PAK RICE EXPORTED BY PRIVATE SECTOR DURING 1995-96 TO 1999-00

Item	Basmati	IRRI - 6
	.....US $ per tonne.....	
1. Average fob (Karachi) prices	462.00	207.00
	OR .....Rs per 40 kgs (a).....	
	1118.96	501.35
2. Expenses from sheller/ market to export point	157.00	80.00
3. Producer market level price of rice(item 1-item 2)	961.96	421.35
4. Product recoveries per 100 kgs of paddy	.....Kgs.....	
i) Rice	45.00	48.60
ii) Brokens	14.00	11.40
iii) Tips	5.00	7.00
iv) Bran powder	8.00	7.00
v) Husk	28.00	26.00
5. Prices of products	.....Rs per 40 kgs.....	
i) Rice (as calculated in item 3)	961.96	421.35
ii) Brokens	577.18	294.95
iii) Tips	252.81	252.81
iv) Bran powder	139.05	139.05
v) Husk	6.50	6.50
6. Value of products recoverable from 100 kgs of paddy	.....Rupees.....	
i) Rice	1082.21	511.95
ii) Brokens (b)	202.01	84.06
iii) Tips (c)	31.60	44.24
iv) Bran powder (c)	27.81	24.33
v) Husk	4.55	4.23
vi) Total value of all products	1348.18	668.81
7. Processing and financial charges per 100 kgs of paddy	122.95	98.19
8. Mill-gate price of paddy per 100 kgs {item 6(vi) - item 7}	1225.23	570.62
9. Mill-gate price of paddy per 40 kgs	490.09	228.25

Notes:

(a) Exchange rate of one US $ = 60.55 Pak Rupees as on 26th March 2001.
(b) Prices of broken have been taken as 60% of the prices of whole rice in case of basmati , and 70% in case of IRRI.
(c) Prices of tips and bran powder for IRRI and basmati both have been taken as 60% and 33% respectively of the prices of IRRI.

Sources:

i) Federal Bureau of Statistics, Karachi for fob (karachi) prices.
ii) Rice Exporters' Association, Lahore for incidental charges.
iii) APCom Support Price Policy for Rice (cleaned), 1997-98 crop for product recoveries, prices of products and processing charges.

ANNEX - V

ESTIMATED MILL-GATE PRICES OF PADDY AS WORKED BACK FROM AVERAGE FOB KARACHI PRICES OF PAK RICE EXPORTED BY PRIVATE SECTOR DURING 2000-01 (Jul-Jan)

Item	Basmati	IRRI - 6
	.....US $ per tonne.....	
1. Average fob (Karachi) prices	481.00	169.00
OR	.....Rs per 40 kgs (a).....	
	1164.98	409.32
2. Expenses from sheller/ market to export point	157.00	80.00
3. Producer market level price of rice(item 1-item 2)	1007.98	329.32
4. Product recoveries per 100 kgs of paddy	.....Kgs.....	
i) Rice	45.00	48.60
ii) Brokens	14.00	11.40
iii) Tips	5.00	7.00
iv) Bran powder	8.00	7.00
v) Husk	28.00	26.00
5. Prices of products	.....Rs per 40 kgs.....	
i) Rice (as calculated in item 3)	1007.98	329.32
ii) Brokens	604.79	230.52
iii) Tips	197.59	197.59
iv) Bran powder	108.67	108.67
v) Husk	6.50	6.50
6. Value of products recoverable from 100 kgs of paddy	.....Rupees.....	
i) Rice	1133.98	400.12
ii) Brokens (b)	211.68	65.70
iii) Tips (c)	24.70	34.58
iv) Bran powder (c)	21.73	19.02
v) Husk	4.55	4.23
vi) Total value of all products	1396.64	523.64
7. Processing and financial charges per 100 kgs of paddy	122.95	98.19
8. Mill-gate price of paddy per 100 kgs {item 6(vi) - item 7}	1273.69	425.45
9. Mill-gate price of paddy per 40 kgs	509.48	170.18

Notes:

(a) Exchange rate of one US $ = 60.55 Pak Rupees as on 26th March 2001.
(b) Prices of broken have been taken as 60% of the prices of whole rice in case of basmati , and 70% in case of IRRI.
(c) Prices of tips and bran powder for IRRI and basmati both have been taken as 60% and 33% respectively of the prices of IRRI.

Sources:

i) Federal Bureau of Statistics, Karachi for fob (karachi) prices.
ii) Rice Exporters' Association, Lahore for incidental charges.
iii) APCom Support Price Policy for Rice (cleaned), 1997-98 crop for product recoveries, prices of products and processing charges.

ANNEX - VI

ESTIMATED MILL-GATE PRICES OF PADDY ON THE BASIS OF AVERAGE FOB (BANGKOK) PRICE OF 35 PER CENT BROKEN OF THAI WHITE RICE

Item	DURING 2000-1	DURING 1995-96 TO 1999-00
	.....US $ per tonne.....	
1. Average fob (Karachi) prices	154.00	247.00
	OR .....Rs per 40 kgs (a).....	
	372.99	598.23
2. Expenses from sheller/ market to export point	80.00	80.00
3. Producer market level price of rice(item 1-item 2)	292.99	518.23
4. Product recoveries per 100 kgs of paddy	.....Kgs.....	
i) Rice (broken)	60.00	60.00
ii) Tips	7.00	7.00
iii) Bran powder	7.00	7.00
iv) Husk	26.00	26.00
5. Prices of products	.....Rs per 40 kgs.....	
i) Rice (as calculated in itemitem 3).	292.99	518.23
ii) Tips	175.79	310.94
iii) Bran powder	96.69	171.02
iv) Husk	6.50	6.50
6. Value of products recoverable from 100 kgs of paddy	.....Rupees.....	
i) Rice	439.48	777.35
ii) Tips (b)	30.76	54.41
iii) Bran powder (b)	16.92	29.93
iv) Husk	4.23	4.23
v) Total value of all products	491.39	865.92
7. Processing and financial charges per 100 kgs of paddy	98.19	98.19
8. Mill-gate price of paddy per 100 kgs {item 6(vi) - item 7}	393.20	767.73
9. Mill-gate price of paddy per 40 kgs	157.28	307.09

Notes:

(a) Exchange rate of one US $ = 60.55 Pak Rupees as on 26th March 2001.
(b) Prices of tips and bran powder have been taken as 60% and 33% respectively of rice.

Sources:

i) Federal Bureau of Statistics, Karachi for fob (karachi) prices.
ii) Rice Exporters' Association, Lahore for incidental charges.
iii) APCom Support Price Policy for Rice (cleaned), 1997-98 crop for product recoveries, prices of products and processing charges.

ANNEX- VII

AVERAGE FARMERS' COST OF PRODUCTION OF BASMATI PADDY IN THE PUNJAB: 2000-01 AND 2001-02 CROPS

Sr. No.	Operation/input	Average No. of oprs/ units/ acre	2000 - 01crop		2001 - 02 crop		Change in 2001-02 over 2000-01
			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	120.00	480.00	130.00	520.00	40.00
	1.2 wet ploughing	2.000	180.00	360.00	190.00	380.00	20.00
	1.3 wet planking	2.000	90.00	180.00	95.00	190.00	10.00
2.	Nursery used (marlas)	3.390	-	275.00	-	290.00	15.00
3.	Uprooting, transporting and transplanting (contract)	-	-	546.00	-	546.00	0.00
4.	Labour for bund making etc. (m.day)	0.984	90.00	88.56	90.00	88.56	0.00
5.	Weeding:						
	5.1 manual (m.day)	1.154	90.00	103.86	90.00	103.86	0.00
	5.2 weedicides (No)	0.367	274.00	100.56	311.00	114.14	13.58
6.	Plant protection including application	0.786	304.00	238.94	345.00	271.17	32.23
7.	Farm yard manure including transport and application (50%)	0.200	630.00	63.00	700.00	70.00	7.00
8.	Fertilizer (bags)						
	8.1 DAP	0.585	640.00	374.40	710.00	415.35	40.95
	8.2 NP	0.089	460.00	40.94	475.00	42.28	1.34
	8.3 Urea	1.146	325.00	372.45	390.00	446.94	74.49
	8.4 Others	0.134	-	41.93	-	47.00	5.07
	8.5 Zinc Sulphate	0.316	95.00	30.02	120.00	37.92	7.90
9.	Fertilizer transport and application	2.270	12.75	28.94	15.00	34.05	5.11
10.	Irrigation * (Nos)						
	10.1 Canal	10.776	-	88.53	-	88.53	0.00
	10.2 Private tubewell	8.321	231.00	1922.15	275.00	2288.28	366.13
11.	Labour used for irrigation and water course cleaning (man days)	6.116	90.00	550.41	90.00	550.41	0.00
12.	Mark up on investment @ 14.0 % per annum for 6 months on item 1 to 11 minus 10.1	-	-	405.80	-	450.52	44.72
13.	Harvesting, threshing and winnowing (Kgs/acre)	89.280	8.85	790.13	6.78	605.32	-184.81
14.	Management charges for 6 months	-	-	185.00	-	195.00	10.00
15.	Land rent for 6 months	-	2500.00	1250.00	2800.00	1400.00	150.00
16.	Land revenue (where applicable),local rate,pachotra, etc.	-	-	5.00	-	5.000	0.00
		-	-		-		
17.	Gross cost (item 1 to 16)	-	-	8521.62	-	9180.33	658.71
18.	Value of straw	-	-	650.00	-	650.00	0.00
19.	Net cost of cultivation (item 17-18)						
	19.1 with land rent	-	-	7871.62	-	8530.33	658.71
	19.2 without land rent	-	-	6621.62	-	7130.33	508.71
20.	Yield per acre (kgs)	-	-	893.00	-	893.00	0.00
21.	Cost of production at farm (Rs/40 kgs)						
	21.1 with land rent	-	-	352.59	-	382.10	29.51
	21.2 without land rent	-	-	296.60	-	319.39	22.79
22.	Marketing charges (Rs/40 kgs)	-	-	10.00	-	12.00	2.00
23.	Cost of production at market/procurement centre (Rs/40 kgs)						
	23.1 with land rent	-	-	362.59	-	394.10	31.51
	23.2 without land rent	-	-	306.60	-	331.39	24.79

* hrs/irrigation

Canal= 1.96 Private tubewell= 2.38

ANNEX-VIII

AVERAGE FARMERS' COST OF PRODUCTION OF IRRI PADDY IN THE PUNJAB: 2000-01 AND 2001-02 CROPS

Sr. No.	Operation/input	Average No. of oprs/ units/ acre	2000 - 01crop		2001 - 02 crop		Change in 2001-02 over 2000-01
			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	120.00	480.00	130.00	520.00	40.00
	1.2 wet ploughing	2.000	180.00	360.00	190.00	380.00	20.00
	1.3 wet planking	1.000	90.00	90.00	95.00	95.00	5.00
2.	Nursery used (marlas)	3.494	-	265.00	-	280.00	15.00
3.	Uprooting, transporting and transplanting (contract)	-	-	546.00	-	546.00	0.00
4.	Labour for bund making etc. (man day)	1.150	90.00	103.50	90.00	103.50	0.00
5.	Weeding:						
	5.1 manual (m.day)	1.338	90.00	120.42	90.00	120.42	0.00
	5.2 weedicides (No)	0.655	274.00	179.47	311.00	203.71	24.24
6.	Plant protection including application	0.812	304.00	246.85	345.00	280.14	33.29
7.	Farm yard manure including transport and application (50%)	0.196	630.00	61.74	700.00	68.60	6.86
8.	Fertilizer (bags)						
	8.1 DAP	0.702	640.00	449.28	710.00	498.42	49.14
	8.2 NP	0.197	460.00	90.62	475.00	93.58	2.96
	8.3 Urea	1.498	325.00	486.85	390.00	584.22	97.37
	8.4 Others	0.122	-	40.20	-	45.00	4.80
	8.5 Zinc Sulphate	0.818	95.00	77.71	120.00	98.16	20.45
9.	Fertilizer transport and application	3.337	12.75	42.55	15.00	50.06	7.51
10.	Irrigation * (Nos)						
	10.1 Canal	15.905	-	88.53	-	88.53	0.00
	10.2 Private tubewell	4.493	217.00	974.98	258.00	1159.19	184.21
11.	Labour used for irrigation and water course cleaning (man days)	5.964	90.00	536.76	90.00	536.76	0.00
12.	Mark up on investment @ 14.0 % per annum for 6 months on item 1 to 11 minus 10.1	-	-	360.64	-	396.39	35.76
13.	Harvesting, threshing and winnowing (Kgs/acre)	134.100	4.97	666.48	3.93	527.01	-139.47
14.	Management charges for 6 months	-	-	185.00	-	195.00	10.00
15.	Land rent for 6 months	-	1900.00	950.00	2200.00	1100.00	150.00
16.	Land revenue (where applicable),local rate,pachotra, etc.	-	-	5.00	-	5.000	0.00
17.	Gross cost (item 1 to 16)	-	-	7379.58	-	7974.69	595.11
18.	Value of straw	-	-	350.00	-	350.00	0.00
19.	Net cost of cultivation (item 17-18)						
	19.1 with land rent	-	-	7029.58	-	7624.69	595.11
	19.2 without land rent	-	-	6079.58	-	6524.69	445.11
20.	Yield per acre (kgs)	-	-	1341.00	-	1341.00	0.00
21.	Cost of production at farm (Rs/40 kgs)						
	21.1 with land rent	-	-	209.68	-	227.43	17.75
	21.2 without land rent	-	-	181.34	-	194.62	13.28
22.	Marketing charges (Rs/40 kgs)	-	-	10.00	-	12.00	2.00
23.	Cost of production at market/procurement centre (Rs/40 kgs)						
	23.1 with land rent	-	-	219.68	-	239.43	19.75
	23.2 without land rent	-	-	191.34	-	206.62	15.28

* hrs/irrigation
Canal=1.96 Private T.well=2.22

ANNEX-IX

AVERAGE FARMERS' COST OF PRODUCTION OF IRRI PADDY IN SINDH: 2000-01 AND 2001-02 CROPS

Sr. No.	Operation/input	Average No. of oprs/ units/ acre	2000 - 01crop		2001 - 02 crop		Change in 2001-02 over 2000-01
			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	180.00	900.00	190.00	950.00	50.00
	1.2 dry planking	1.000	90.00	90.00	95.00	95.00	5.00
	1.3 levelling (tractor hour)	1.000	180.00	180.00	190.00	190.00	10.00
2.	Nursery (ghunta)	1.000	-	380.00	-	400.00	20.00
3.	Uprooting, transporting and transplanting (contract)	-	-	610.00	-	610.00	0.00
4.	Labour for bund making etc. (man day)	2.000	90.00	180.00	90.00	180.00	0.00
5.	Manual weeding (m.day)	2.435	90.00	219.15	90.00	219.15	0.00
6.	Plant protection						
	6.1 granular pesticides	0.733	254.00	186.18	288.00	211.10	24.92
	6.2 formulated spray	0.076	304.00	23.10	345.00	26.22	3.12
7.	Farm yard manure including transport and application (50%)	0.028	630.00	8.82	700.00	9.80	0.98
8.	Fertilizer (bags)						
	8.1 DAP	0.932	640.00	596.48	710.00	661.72	65.24
	8.2 Urea	1.384	325.00	449.80	390.00	539.76	89.96
	8.3 Others	0.017	-	3.38	-	4.00	0.62
	8.4 Zinc sulphate	0.051	95.00	4.85	120.00	6.12	1.28
9.	Fertilizer transport and application	2.384	12.75	30.40	15.00	35.76	5.36
10.	Irrigation * (Nos)						
	10.1 canal	17.939	-	88.78	-	88.78	0.00
	10.2 private tubewelll	0.522	139.00	72.56	155.00	80.91	8.35
11.	Labour used for irrigation and water course cleaning (man days)	5.595	90.00	503.52	90.00	503.52	0.00
12.	Mark up on investment @ 14.0 % per annum for 6 months on item 1 to 11 minus 10.1	-	-	310.68	-	330.61	19.94
13.	Harvesting and threshing etc: (kgs/acre)	185.250	4.83	894.76	4.20	778.05	-116.71
14.	Management charges for 6 months	-	-	185.00	-	185.00	0.00
15.	Land rent for 6 months	-	1300.00	650.00	1500.00	750.00	100.00
16.	Land revenue (where applicable),local rate,pachotra, etc.	-	-	5.00	-	5.00	0.00
17.	Gross cost (item 1 to 16)	-	-	6572.45	-	6860.51	288.06
18.	Value of straw	-	-	350.00	-	350.00	0.00
19.	Net cost of cultivation (item 17-18)						
	19.1 with land rent	-	-	6222.45	-	6510.51	288.06
	19.2 without land rent	-	-	5572.45	-	5760.51	188.06
20.	Yield per acre (kgs)	-	-	1482.00	-	1482.00	0.00
21.	Cost of production at farm (Rs/40 kgs)						
	21.1 with land rent	-	-	167.95	-	175.72	7.77
	21.2 without land rent	-	-	150.40	-	155.48	5.08
22.	Marketing charges (Rs/40 kgs)	-	-	10.00	-	12.00	2.00
23.	Cost of production at market/procurement centre (Rs/40 kgs)						
	23.1 with land rent	-	-	177.95	-	187.72	9.77
	23.2 without land rent	-	-	160.40	-	167.48	7.08

* hrs/irrigation
Canal =1.56 Private t.well =1.48

Notes for Annexes-VII to IX

1. The physical input-output parameters for estimating cost of production for Rice Paddy, 2001-02 Crops, have been adopted from the Support Price Policy for Rice Paddy, 2000-01 Crops, APCom Series No.187.

2. The latest prices of farm inputs, custom hire rates of field operations, wage rate and marketing cost of the produce have been revised in view of the data collected through; (i) mini field survey conducted by the APCom during January,2001 in the major paddy growing areas of the Punjab and Sindh, (ii) discussion in the meeting of the Standing Committee on Rice paddy, held on 29th March, 2001 and (iii) information provided by the Provincial Agriculture Departments and Farmers' Associations.

3. The cost of raising nursery has been revised according to the weighted average increase in the prices of major inputs employed therein.

4. The cost of supplementary irrigation has been revised in view of rises @ about 20.8 per cent in diesel and 7.8 per cent in electric power during April, 2000 to March, 2001. Based on the ratios of electric and diesel tube-wells i.e.; 15:85 in the Punjab and 72:28 in Sindh as reported in the Agricultural Statistics of Pakistan, 1999-00, the weighted average increase in energy charges has been estimated at 19.0 per cent in the Punjab and 11.5 per cent in Sindh.

5. The cost of FYM has been revised in view of rises in the prices of fertilizers.

6. The transportation costs have been revised in the light of escalation in prices of diesel.

7. 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 at Rs 3250 per month in view of the latest salary package for a Field Assistant at the 10th stages in BPS-6, including allowances, inter alia, 25 per cnet increase in the budget 1999-00, ad-hoc relief of Rs 100 per month announced in December, 1999 and interim relief of Rs 2000 once a year granted in the budget, 2000-01.

8. The kind payments are valued at the post-harvest prices of paddy prevailed @ Rs 283 per 40 kgs for basmati-385 and Rs 169 for IRRI in the Punjab and Rs 180 for IRRI in Sindh in the markets of major rice producing areas during 2000-01. The marketing cost of Rs 12 per 40 kgs has been deducted from the market prices to bring these at the farm level.

9. Large variations have been observed in the land rent reported by the growers during the field survey conducted by the APCom in the Punjab and Sindh in January, 2001. The situation was discussed at length with the knowledgeable growers, crop experts, and members of the Standing Committee on Rice Paddy. The land rents have been adjusted in view of the varying prospects for different crops and depressed market prices of rice paddy this year.

ANNEX-X

ECONOMICS OF RICE PADDY AND COMPETING CROPS AT PRICES REALIZED BY THE GROWERS IN THE PUNJAB AND SINDH: 2000-01 CROPS

Province/crops/ crop combinations	Crop duration	Water used	Gross cost	Cost of purcha-sed inputs	Gross revenue	Gross margin	Net income	Output-input ratio	Revenue per		
									Rupee of Purchased inputs	Crop day	Acre inch of water used
1	2	3	4	5	6	7=6-5	8=6-4	9=6/4	10 = 6/5	11=6/2	12 = 6/3
	Days	Acre inches	----- Rupees per acre -----						------- Rupees ---------		
Punjab											
1 Basmati paddy	180	58	8330	4605	6700	2096	-1630	0.80	1.46	37.22	115.52
2 IRRI paddy	180	62	7255	4017	5848	1831	-1407	0.81	1.46	32.49	94.32
3 Cotton	240	22	11300	4777	15182	10406	3882	1.34	3.18	63.26	690.10
4 Wheat	180	17	8456	3595	8057	4462	-399	0.95	2.24	44.76	473.95
5 Sunflower (spring)	144	22	6918	2158	7665	5507	747	1.11	3.55	53.23	348.41
6 Basmati paddy + wheat	360	75	16786	8200	14757	6558	-2029	0.88	1.80	40.99	196.76
7 Basmati paddy + sunflower	324	80	15248	6763	14365	7617	-882	0.94	2.12	44.34	179.56
8 IRRI paddy + wheat	360	79	15711	7612	13905	6293	-1806	0.89	1.83	38.63	176.02
9 IRRI paddy + sunflower	324	84	14164	6175	13513	7338	-636	0.95	2.19	41.71	160.87
10 Suagarcane	394	44	13547	4485	21001	16516	7454	1.55	4.68	53.30	477.30
Sindh											
1 IRRI paddy	180	56	6365	2942	5908	2965	-458	0.93	2.01	32.82	105.49
2 Cotton	240	18	9450	3921	13389	9468	3939	1.42	3.41	55.79	743.85
3 Wheat	180	15	7118	2883	7392	4509	274	1.04	2.56	41.07	492.83
4 Sunflower (Spring)	144	22	6918	2158	7665	5507	747	1.11	3.55	53.23	348.41
5 IRRI paddy+Wheat	360	71	13607	5825	13300	7474	-308	0.98	2.28	36.94	187.32
6 IRRI paddy+Sunflower	324	78	13283	5100	13573	8472	192	1.02	2.66	41.89	174.01
7 Suagarcane	488	58	15048	5740	26925	21185	11877	1.79	4.69	55.17	464.22

Notes for the Annex-X

1. The economic analysis presented in the above exercise is based on the input-output prices of the crops raised during 2000-01 season.

2. The data regarding input-output parameters have been adopted from the APCom's support price policies for sugarcane, seed cotton, rice paddy, wheat and Non-traditional oilseeds, 2000-01 crops. To incorporate the escalations in input prices which occurred during the growing period of 2000-01 crops, some marginal revisions have been made as under:

   2.1 The cost of supplementary irrigation for sugarcane and seed cotton has been revised in view of 11 per cent increase in diesel prices during March 2000 and for wheat by 12.96 per cent effected in September 2000. The cost of electric tubewells remained constant because the G.S.T @ 15 per cent effective from January 2000 is adjusted through reduction in additional surcharge to make the electric bill neutral. The ratio of diesel and electric tubewels in the Punjab is 85 and 15 per cent and in Sindh 28 and 72 per cent. Based on these ratios, the expenses on supplementary irrigation have been revised by applying the weighted average increase in diesel prices at 9.35 per cent in the Punjab and 3.08 per cent in Sindh for seed cotton and at 9.35 per cent in Punjab for sugarcane while at 11.02 per cent for the Punjab and 3.63 per cent for Sindh for wheat.

   2.2 The cost of fertilizers has been revised in view of their prices prevailed at the time of their application for the respective crops during 2000-01 season.

   2.3 The value of kind payments has been revised in view of prices applicable during the post-harvest for the respective crops.

   2.4 The marketing expenses have been revised as applicable during the post-harvest for the respective crops.

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

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

4.1 The Government is the major buyer of wheat during the post-harvest season. Accordingly, the bulk of the transactions of wheat take place at the support price. As the support price of wheat for 2000-01 has been maintained at Rs 300 per 40 kgs, the same has been adopted for the current analysis.

4.2 The rice paddy is primarily transacted by the private sector in the open market. The wholesale market prices of rice paddy during the post-harvest (Nov-Dec 2000) in the main producing area markets have averaged at Rs 283 per 40 kgs for Basmati-385 and Rs 176 for IRRI in the Punjab as reported by the Directorate of Agriculture (E&M), Lahore. The same for Sindh has been reported at Rs 162 per 40 kgs of IRRI paddy in the APCom's field survey.

4.3 The wholesale market price of seed cotton during the post-harvest months of September to December, 2000 in the Multan market has averaged at Rs 907 per 40 kgs in the Punjab as reported by the Directorate of Agriculture (E&M) Lahore. The same for Sindh in major producing area markets has been reported at Rs 883 by the PCCC, Karachi during September to December 2000.

4.4 The 2000-01 sunflower crop is yet to be harvested. The market prices of this crop are not regularly reported by any agency. However, the average price in the open market was reported by the PODB and APCom's Standing Committee at Rs 525 per 40 kgs for the last crop, which has been adopted.

4.5 The market prices of sugarcane are not available from any agency. However, the mill-gate prices in the major cane producing areas of Punjab were reported around Rs 45 per 40 kgs in view of the APCom field survey and information media. In Sindh, the price of sugarcane was hovering around Rs 50 per 40 kgs.

5. The prices for various commodities have been adjusted for the marketing expenses to make them effective at the farm level. In case of sugarcane, these expenses amount to Rs 4.90 per 40 kgs. The market expenses have been taken at Rs 12 per 40 kgs for rice paddy and seed cotton and Rs 14 per 40 kgs for wheat and oilseed crops.

6. Gross income = (Yield per acre multiplied by price of principal produce at farm gate) plus (value of by-products per acre).

7. Cost of purchased inputs = Cost incurred on seed and related items, fertilizer, supplementary irrigation including labour, canal water rate, pesticides and weedicides.

8.	Gross margin	=	Gross income minus cost of purchased inputs
9.	Net income	=	Gross income minus gross cost.
10.	Output-input ratio	=	Gross income divided by gross cost
11.	Revenue per rupee of purchased inputs cost	=	Gross income divided by cost of purchased inputs
12.	Revenue per crop day	=	Gross income divided by crop duration in days
13.	Revenue per acre-inch of water used	=	Gross income divided by irrigation water used in acre inches.

Annex-XI

Ph: 042-290368

No.553/6-24
Dated: 6.4.2001

The Chairman,
Agricultural Prices Commission
Mandir Plaza, G-8 Markaz, P.O. Box - 1739
Islamabad.

Subject: **SUPPORT PRICE OF NEW RICE VARIETY 'BASMATI 2000'**

Basmati 2000, an extra long grain Basmati variety has been approved for general cultivation by the Punjab Seed Council and Variety Evaluation Committee (VEC), Pakistan Agricultural Research Council, Islamabad on 19.04.2000 and 09.01.2001, respectively. The grain quality characteristics of Basmati 2000 are equal to Super Basmati (copy attached).

It is, therefore, requested that support price of Basmati 2000 may be fixed at par with Super Basmati.

Sd/-
DIRECTOR
RICE RESEARCH INSTITUTE,
KALA SHAH KAKU

QUALITY CHARACTERISTICES OF BASMATI 2000 IN COMPARISON WITH SUPER BASMATI

Characters	Super Basmati	Basmati 2000
Paddy Length (mm)	10.99	10.89
Paddy Width (mm)	1.89	1.97
Paddy Thickness (mm)	1.86	1.92
Rice Kernel Length (mm)	7.45	7.68
Rice Kernel Width (mm)	1.72	1.83
Rice Kernel Thickness (mm)	1.62	1.64
Lenth/Width ratio	4.33	4.19
Shape	**Slender**	**Slender**
Size	**Extra-long**	**Extra-long**
Boiled Kernel Length (mm)	13.9	13.8
Milling recovery (%)	68.0	69.5
Head rice recovery (%)	50.5	53.0
Broken (%)	17.5	16.5
Aroma	**Present**	**Present**
Amylose content %	24.6	23.2
Gel length (mm)	78.0	77.0
Alkali Spread Value	5.1	5.0

ANNEX-XII

AVAILABILITY OF CERTIFIED SEED OF RICE IN THE PUNJAB, SINDH AND NWFP: 1991-92 TO 2000-01

Year	Province	Area under rice	Total seed required	Total seed available	Available as per cent of the requirement
		000 hect	000 tonnes	Tonnes	Per cent
1991-92	Punjab	1222.00	17.10	811.00	4.74
	Sindh	692.00	17.30	1243.00	7.18
	NWFP	63.00	1.60	-	0.00
	Total	**1977.00**	**36.00**	**2054.00**	**5.71**
1992-93	Punjab	1212.00	17.20	1539.00	8.95
	Sindh	569.00	14.20	171.00	1.20
	NWFP	62.00	1.60	-	0.00
	Total	**1843.00**	**33.00**	**1710.00**	**5.18**
1993-94	Punjab	1293.00	18.30	1317.00	7.20
	Sindh	703.00	17.60	827.00	4.70
	NWFP	63.00	1.60	-	0.00
	Total	**2059.00**	**37.50**	**2144.00**	**5.72**
1994-95	Punjab	1330.00	18.90	2294.00	12.14
	Sindh	598.00	15.00	208.00	1.39
	NWFP	63.00	1.60	-	0.00
	Total	**1991.00**	**35.50**	**2502.00**	**7.05**
1995-96	Punjab	1324.00	18.70	1625.00	8.69
	Sindh	642.00	16.10	109.00	0.68
	NWFP	64.00	1.60	275.00	17.19
	Total	**2030.00**	**36.40**	**2009.00**	**5.52**
1996-97	Punjab	1350.00	19.00	1847.00	9.72
	Sindh	702.00	17.60	1560.00	8.86
	NWFP	65.00	1.60	35.00	2.19
	Total	**2117.00**	**38.20**	**3442.00**	**9.01**
1997-98	Punjab	1276.00	18.20	1633.00	8.97
	Sindh	689.00	17.20	878.00	5.10
	NWFP	67.00	1.70	23.00	1.35
	Total	**2032.00**	**37.10**	**2534.00**	**6.83**
1998-99	Punjab	1399.00	19.87	2679.00	13.48
	Sindh	704.00	17.60	325.00	1.85
	NWFP	68.00	1.70	84.00	4.94
	Total	**2171.00**	**39.17**	**3088.00**	**7.88**
1999-00	Punjab	1514.00	21.63	3260.00	15.07
	Sindh	690.00	17.25	738.00	4.28
	NWFP	67.00	1.68	0.00	0.00
	Total	**2271.00**	**40.56**	**3998.00**	**9.86**
2000-01	Punjab	1358.00	20.07	3919.00	19.53
	Sindh	540.00	13.50	617.00	4.57
	NWFP	66.00	1.65	10.00*	0.61
	Total	**1964.00**	**35.22**	**4536.00**	**12.88**

Notes:
1) The area under rice for the Punjab province represents the area under basmati and IRRI varieties while that of Sindh and NWFP represents the area under IRRI and "other" varieties.
2) The seed requirement has been worked out by using the seed rate of 12 kgs/hect. for basmati and 25 kgs/hect. for IRRI and "other" varieties.

* Procured from PSC for distribution in the province.

Sources:
1) Agricultural Statistics of Pakistan, 1999-00, MINFAL, Islamabad
2) Provincial Agriculture Departments.
3) FSC&RD, Islamabad