

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS

Biweekly Seminar Paper No. 6

December 1976

PARITY PRICING AS AN APPROACH TO PRICE SUPPORT
PROGRAMS A POLICY ANALYSIS IN PAKISTAN'S CONTEXT

M. Afzal

PARITY PRICING AS AN APPROACH TO PRICE SUPPORT PROGRAMS
A POLICY ANALYSIS IN PAKISTAN'S CONTEXT

M. Afzal

INTRODUCTION

Responsiveness of farm entrepreneurs to changes in agricultural prices, even in traditional agrarian setting, is well established. Research work on Pakistan's agriculture by Afzal, Gotsch and Falcon. / 1,6 / have shown that the response of the farm producers to prices is positive and rational and that they allocate their resources to crop and livestock activities under the influence of price and other relevant economic parameters instead of being guided by sheer traditions.

Desired development objectives in the farm sector can therefore be realized through judicious manipulation of the prices of farm products and farm inputs. Government has quite a few options to obtain desired changes in agricultural prices. These options range from direct intervention in the marketing of agricultural produce and supplies, to price fixation, international trade regulation, and the like.

The design and the use of agricultural price policy depends on the nature of the objectives to be achieved. The underlying objectives vary from country to country and from time to time depending on the national as well as the international economic situation in general and the performance of the agricultural sector in particular. In developed countries the major emphasis is mainly on providing a measure of protection and security to the growers against the hazards of price instability. In developing countries like Pakistan, where the

prime consideration is the transformation of the traditional agriculture, price policy has to be basically production oriented. By maintaining a favourable relationship between the prices of farm products and farm inputs, farm entrepreneurs are provided conducive environments for the adoption of new technologies and thus move on to higher productivity frontiers. Similarly, the relationship among the prices of competing crops is kept in a way that results in the achievement of the national production targets of various agricultural commodities.

Pakistan introduced the system of support price for wheat in 1960. The Government was to enter the market only when price fell below Rs.13.50 per maund. Later on, rice, cotton and sugarcane were also included in the programme. Quite recently, the Government of Pakistan has also extended support prices to potatoes, maize and onions. While everybody agrees on the utility and merits of price supports, the appropriate method of determining the level of support prices has yet to be devised. This paper analyses various approaches to support price determination and tests their appropriateness in this regard. The approaches analysed in this paper are:

- 1) the cost of production approach;
- 2) the parity price approach.

The parity price approach is then used to determine the desired support prices for selected farm products.

1. THE COST OF PRODUCTION

This approach aims to ensure a reasonable rate of return to various farm enterprises. Empirical or schematic estimates of cost of production of various crops are generally used to work out a set of support prices for various crops that are assumed to not only guarantee an attractive return to each crop activity but also establish a fair balance between the returns on competing crops. In Pakistan, cost of production approach has been used quite frequently. In order to analyse the effectiveness of this approach in achieving the underlying objective, per acre profitability of major agricultural crops, based on 1976 prices, for a typical progressive Punjabi farmer has been worked out.

Relative profitability is examined for each competing group based on the prevalent system of crop rotation. For this purpose, the period of crop rotation is taken as one year. Sugarcane is considered as a full year crop activity. On the other hand, either a combination of wheat and cotton or a combination of wheat and rice is considered as an alternate possibility. Thus three major combinations emerge. The relative profitability of each of these combinations is tabulated below.

TABLE 1

Profitability under Domestic Prices*

Alternate Crop combinations	Net Profit Per Acre	
	Excluding land rent	Including Land rent
1. Wheat + Rice	1001/50	502/50
2. Wheat + Cotton	1,167/00	667/00
3. Sugarcane	812/00	312/00

Source: Computed from appendix - A.

* Data on crop-wise cost of production, yields, and prices is shown in appendix-1.

The above table shows that the present support policy of the Government of Pakistan has tilted the balance in favour of wheat and cotton combination making it the most profitable production alternative. Wheat and Rice crop combination comes next in terms of profitability and the sugarcane crop gets the lowest rank on the profitability scale. The relatively constant or declining acreage under sugarcane production^{1/} in the last several years vis-a-vis other competing crops especially wheat and rice, supports the contention of declining profitability under sugarcane production, since the changes in land use have been in line with changes in profitability [1]. The seed-fertilizer revolution has led to better production alternatives for farmers especially to those who fall outside the sugarcane purchase area of the sugar mills. However, soil, climatic and other agronomic conditions suited to a particular crop may hamper inter-crop substitution in certain areas. In such cases, farmers may not have any option but to grow sugarcane regardless of the level of profitability in other crops.

Appropriateness of Cost Estimates

Cost of production is a good basis from the standpoint of guaranteeing adequate returns to farmer's resources. Policy makers in Pakistan seem to have devised a price package, although based on partially realistic cost of production estimates, that besides ensuring an attractive rate of return, at least to progressive farmers in

^{1/}The total acreage under sugarcane fell from 1,605 thousand acres in 1966-67 to 1,564 thousand acres in 1973-74. On the other hand the acreage under wheat rice increased from 13,205 thousand acres to 15,105 thousand acres and from 3,483 to 3,736 thousand acres respectively during the same time period. We have taken the year 1966-67, since this year is said to be the first year of the spread of Green Revolution in Pakistan.

some of the regions, has also facilitated the development of cropping patterns that correspond to the planned national production targets. With more rationalization that tends to prevail on the national agricultural policy horizon, it seems pertinent to emphasize the important considerations that should be attended to while surging towards representative and improved cost of production estimates for policy use. Some of the salient considerations are enumerated below.

i) Farm production utilizes several resources which are not priced in the market place. The problem of valuation, particularly for labour and management inputs, makes it difficult to come up with unbiased cost estimates. In addition the price of labour is also highly variable among regions and seasons depending on the degree of the labour constraint. This poses a problem regarding the selection of an appropriate estimate of cost of production for policy making.

Similarly, land rents constitute the single largest cost item in agricultural production. They may account for 25% - 40% of total production costs depending on the method of estimation. However valuation of the land input in itself poses serious problem particularly in situations where a land market does not exist and the rental charges either do not exist or are an imperfect index of the opportunity cost of land. In this case opportunity cost of land in its alternate uses is the logical basis for evaluating the land input.

ii) Costs of production also vary considerably depending on the technology used. Setting prices low on the basis of new technology will discriminate against farmers using more high cost traditional technology with adverse equity effects, particularly if now inputs are highly subsidized and/or if the bulk of the farmers do not have access to that

*:6:-

technology. Once food production has reached the level of domestic self sufficiency, prices may however have to be lowered to discourage further increase in food production and to diversify the composition of domestic production. A careful analysis of costs is, therefore, necessary by farm sizes, types of technology and regions on a regular basis to determine the level of support prices / 10 /.

2. PARITY APPROACH

Parity price is the price that will buy the same quantity of other products as it would during some specified base period ^{1/} whereas the method of parity price determination has been considerably refined ever since this concept became operational, the underlying objective continues to be essentially the same. That is, to provide a yard-stick designed to represent the "fair" price for the commodities which farmers produce in relation to the price of the commodities which they buy.

It is to be emphasized that the parity pricing approach contemplates guarantee of the minimum ceiling on the standard of living of the farm families. Improvement is not ruled out. Better market environments and rapid diffusion of new farm innovations may provide higher income levels to the farm entrepreneurs that may help them to achieve a significant improvement in their living standards. Reversal in the purchasing power and in that way a decline in the standard of living is the antithesis of parity pricing philosophy; improvement is not.

A METHODOLOGICAL DISCUSSION

The first step in computing parity prices is to compute the

^{1/}F.L. Thomsen and R.J. Foote, Agricultural Prices, Mc Graw-Hill Book Co., New York, 1952, p.265.

prices received and the prices paid by the farmers. These prices are then used to compute the index of prices received by farmers and index of prices paid by them.

a) Prices Received

The basic concept involved in the estimates of prices received by the farmers is that of a price which if multiplied by the total quantity of the commodity sold, would give the total amount received by all farmers for that commodity. That is, prices received by farmers are estimated to reflect sales of all classes and grades of the commodity being sold. Furthermore, in the case of certain products where various distinct varieties are produced and traded, necessary adjustment can be made in evaluating the product. Estimates relate generally to average annual prices farmers receive for their products at the point of first sale usually a local market or procurement centre. We have taken into account 16 items for the purpose of computing prices "received by farmers"^{1/}. The items included and their index numbers are given in appendix B.

Theoretically the universe for prices received by farmers refers to all sales in which the ownership of farm products is transferred from the farmer to the first buyer in the marketing process. Scientific sampling from this universe is an uphill task, not only because of the many outlets through which farmers sell their products, but more importantly because of the changes over the years in the structure of agriculture production. The marketing of different commodities varies from commodity to commodity and from area to area and marketing practices are constantly changing. Collection of valid and meaningful price data, has, therefore, become a very complicated procedure. We have taken average of the 12 monthly

^{1/}Reference S.K. Qureshi's article in PDR autumn 1974 which suggests the movements in prices in marketing towns is a good index of corresponding movements of prices paid to farmers in the villages.

prices prevailing in various important marketing centres of Pakistan which account for most of the marketing activity relating to the farm sector.

b) Prices Paid

Estimates of prices paid by farmers relate to average prices of production inputs as well as consumption items that the farmers buy. The total number of 20 items (as shown in appendix C) is considered for estimation of "prices paid by farmers" ^{1/}.

Since prices received by farmers reflect the sales of all classes and grades of the agricultural commodity being sold, a comparable concept is used in connection with prices paid. Prices paid also reflect average annual price of items farmers buy. The universe of enquiry for prices paid by farmer is conceptually the sum total of all purchase transactions by farmers to acquire the goods and services used for family living and farm production. It is readily apparent that a completely scientific sampling from this universe is very difficult. We have, therefore, relied mainly on published sources.

c) Index of Prices Received

This index of prices received provided a composite measure of the average yearly change in prices of agricultural products. The index or prices received by farmers has been computed with the following laspeyres index formula using 1959-60 as the base year ^{2/}.

This formula gives a weighted composite index showing the percentage

^{1/}We do realize that some items like transistor radio, watches and electric goods (where electricity is available) furniture, sewing machine, and some other durable consumer goods have been added to the consumer consumption basket. We have excluded those items from transaction between certain commodities takes place at village level, and therefore, such items of consumption have also been excluded from the list of items that farmers buy.

^{2/} The laspeyres index formula is:

$$I = E \left(\frac{p_{i1}}{p_{i0}} \cdot w_{i0} \right) \cdot (100) \quad i = 1 \text{ -- } n.$$

where I = Index for a particular group or sub-group

P_{i1} = Current price for commodity i

P_{i0} = Base period price for commodity i

w_{i0} = Base period weight for commodity i.

that the weight average prices in the given year are of the similarly weighted average prices during the base period.

d) Index of Prices Paid

The index of prices paid by farmers has been developed to have a better measure of changes in prices of goods and services bought by farmers and to determine whether prices of farm products have stayed in step with the prices of commodities bought by farmers. The two most important components in this index are household commodities and production inputs. Data from the "Household Income and Expenditure surveys and Consumer Price Index Numbers" were used to derive percentage weights to be used to combine commodity indexes into group indexes. A composite index was constructed with appropriate weights for different items of commodities and farm inputs.

From the indexes of prices received and paid by the farmers, parity ratios and parity prices have been computed. The following section focuses on these parity ratios and corresponding parity prices.

PARITY RATIO AND PARITY PRICES

Parity may be conceived of in a number of ways.

- a. Parity between agricultural commodities and non-agricultural commodities.
- b. Parity approach to price determination for each product.
- c. Parity between prices received for the farm products and prices paid for farm inputs.
- d. Parity under the assumption of different crop mixes.

a. Parity Between Agricultural and Non-agricultural Commodities

The parity ratios between agricultural and non-agricultural sectors assume great significance in any discussion of price policy because the sectoral relationships of prices affect production and facilitate the

transfer of economic surpluses from one sector to another. The study by Lewis and Hussain, updated by Lewis in August 1969, showed that the agriculture/non-agriculture terms of trade improved significantly in the 1960's over that which prevailed during the early 1960's [12].

Bose and Clark also observed that the improvement in agriculture's terms of trade in the early 1960s provided an incentive for increased agricultural production through the accelerated adoption of HYV technology [4].

The ratios of agricultural prices to non-agricultural prices from 1966-67 to 1975-76 were computed with the following formulae;

$$\text{Parity Ratio} = \frac{\text{Index of Prices received by farmers}}{\text{Index of Prices paid by farmers.}}$$

The individual commodity prices of major crop i.e. wheat, rice, cotton and sugarcane are compared with the parity index to determine parity ratio of these individual farm products, as shown in the following table.

TABLE 2

Parity Ratio Between Agricultural and Non-Agricultural Prices as well as for Individual Crops 1966/67 to 1975/76 (Base 1959/1960)

Year	Index of Prices received	Index of Prices paid (Parity Index)	Combined ^{1/} Parity Ratio	Rice	Wheat	Sugarcane	Cotton
1966/67	128.2	123.2	104.1	92.5	136.07	99.05	78.01
1967/68	125.7	124.6	100.8	101.4	114.28	65.37	77.02
1968/69	126.5	130.5	96.9	96.12	97.96	62.16	84.05
1969/70	122.4	131.7	93.0	90.8	97.09	61.06	89.09
1970/71	123.4	133.5	92.3	99.21	89.06	62.07	105.07
1971/72	133.3	147.4	90.4	100.08	87.29	57.01	102.55
1972/73	154.8	144	100.5	99.7	120.7	66.1	119.08
1973/74	214.6	194.7	110.2	97.87	122.43	58.07	135.09
1974/75	283.01	252.6	112.0 99.0	116.45	102.96	48.07	93.01
1975/76*	295.2	290.4	101.6	97.51	104.88	48.06	85.12

^{1/} Our estimates of parity ratio are based on index of prices received and index of prices paid by farmers (the appendixes B and C). The parity ratio between all agricultural prices and all non-agricultural prices is beyond the scope of our study. Our estimates of parity ratio, however can safely be taken as representative, since they take into account all the major items which constitute farmer's income or consumption.

*The index of wholesale prices for 1975/76 have been computed on basis of the monthly index of first six months of 1975/76 i.e. July to December 1975.

The above table shows that in the case of sugarcane the parity ratio remained unfavourable during all the years whereas for other crops, it fluctuated from year to year. Inter-crop price parity ratios have a significant impact on farmers cropping patterns. They must be given due consideration in determining the support prices of various agricultural products, so that the comparative advantage of producing various crops is kept in balance and no distortions in the relative price level take place.

b. Parity Approach To Price Determination For Each Product

The parity approach for determining support prices seems to be the most appropriate approach for determining prices for agricultural products because it does reflect the expenses which the farmer incurs on farm inputs and the consumption goods. It also throws light on the general demand conditions in the economy. We have estimated the parity prices by the following two methods;

i) Fixed Base Method;

The parity prices have been calculated by multiplying the average price received for a commodity during the base period by the appropriate index of prices paid by the farmers. We have used the year 1959/60 as a base for estimating parity prices. The formulae for parity price estimation is;

$$\text{Parity Price} = \frac{\text{Ap} \times \text{Ipp}}{100}$$

Where Ap = Average price received in the base period.

Ipp = Index of prices paid in the year to be calculated.

The estimated parity prices for some of the major farm products are given in table 3.

TABLE 3

Estimates Parity Prices With Fixed Base 1959/60=100

<u>Year</u>	<u>Wheat</u>	<u>Rice(Coarse)</u>	<u>Rice(Basmati)</u>	<u>Cotton</u>	<u>Sugarcane</u>
1966/67	15.4	19.7	28.3	97.6	2.15
1967/68	15.5	19.8	28.5	98.3	2.17
1968/69	16.3	20.9	30.0	103.4	2.28
1969/70	16.5	21.6	30.6	104.3	2.30
1970/71	16.7	21.36	30.7	105.8	2.33
1971/72	18.42	23.6	33.9	116.8	2.57
1972/73	19.24	24.6	35.4	122.0	2.69
1973/74	24.3	31.2	43.7	154.2	3.40
1974/75	31.57	40.4	58.1	200.2	4.42
1975/76	36.30	46.5	66.8	230.0	5.08

ii) Adjusted Base Method:

This method represents an improvement over the fixed base method to determine prices for agricultural products for two reasons. First, the adjusted base period price under the new formulae takes into consideration price relationship among commodities in the most recent 10 years, whereas the old formula retains the relationship that existed in the original base period. Any seasonal element, therefore, is averaged but out in the new formula and parity prices, therefore, need not to be adjusted for any seasonal variation.

Second, the ten year average in item I above, is adjusted to a 1959/60 level, using the average of the index of prices received for all commodities for the same period.

The adjusted base method thus retains the old base as the standard of equality between the prices received and the prices paid. At the same time, it also establishes relationships among parity prices taking into account the changes in the relevant prices over an extended period of average price relationship during the last ten years.

Method of Computation:

The actual method of computing parity price according to the adjusted base method is as follows / 26]

- i) The average of prices for each commodity received by farmers for the ten preceding years is calculated.

- ii) The ten years average is divided by the average of the index of prices received by farmers for the same time period.
- iii) Parity prices are computed by multiplying the adjusted base period prices by the current parity index.

The following table shows the prices of selected agricultural commodities as calculated with the use of this method.

TABLE 4

Estimated Parity Prices Based on Adjusted Base Method

Year	Wheat	Rice(Coarse)	Rice(Basmati)	Cotton	Sugarcane
1970/71	16.8	21.7	34.3	107.6	2.48
1971/72	19.1	23.9	38.7	125.0	2.07
1972/73	20.4	24.9	41.3	133.2	3.00
1973/74	25.2	30.3	53.2	167.4	3.8
1974/75	34.6	39.2	73.1	213.6	5.1
1975/76	39.4	43.5	85.5	223.6	5.8

The above table shows that in the year 1975/76 the level of support prices for wheat, rice coarse, cotton and sugarcane should have been higher, while that of Basmati rice should have been little low.

TABLE 5

Parity between Prices Received of the Farm Products And
Prices Paid for Farm Inputs

Year	Index of Prices Received	Index of Prices Paid ^{1/}	Parity Ratio
1966/67	128.2	113.6	112.8
1967/68	125.7	113.6	110.6
1968/69	126.5	118.2	107.0
1969/70	122.41	129.5	94.4
1970/71	123.30	140.9	87.1
1971/72	133.25	129.5	102.1
1972/73	154.82	227.7	69.1
1973/74	214.16	263.6	81.3
1974/75	275.1	340.9	73.6
1975/76	295.2	331.8	94.3

^{1/} Fertilizer only used as proxy.

c. Parity between Prices Received of the Farm Products and
Prices Paid for Farm Inputs

Table 5 shows that the parity ratio between index of prices paid for the Urea Brand of fertilizer and prices received by farmers has remained unfavourable to the farmers for 6 years out of 10 years period considered in this study. The parity ratio remained favourable only in the years, 1966/67, 1967/68, 1968/69 and 1971/72. The parity price of various agricultural commodities, by taking into account the out-of pocket costs of fertilizer was also calculated and is given in table 6.

TABLE 6

Estimated Parity Prices of Individual Agricultural Commodities
Computed with Index of Prices Paid

Year	Index of Prices Paid	Wheat	Rice (Coarse)	Rice (Basmati)	Cotton	Sugarcane
1969/70		18.0	23.9	37.00	117.9	2.7
1970/71		19.1	25.6	40.1	130.0	2.9
1971/72		18.6	23.2	37.70	121.6	2.7
1972/73		32.0	39.4	63.03	210.7	4.4
1973/74		37.0	44.1	76.1	244.2	5.0
1974/75		49.1	56.3	105.00	307.0	6.1
1975/76		46	51.2	100.1	263.0	6.2

Table 6 shows that the support prices of all the commodities should have been higher than the prevailing support prices. It may, however, be noted that we have taken into account only the out-of-pocket cost of the farmers for fertilizer purchases as it usually constitutes the most important cash cost, alongwith support prices of selected crops. Extension of this exercise covering other market purchased inputs may even give a stronger reason to make upward revision in the support prices.

d. Parity Under the Assumption of Different Crop Mixes

Another important parity relationship is between prices received under a certain cropping pattern and prices paid for family consumption and production inputs. The cropping pattern may vary from area to area and time to time under the influence of ecological, economic and several

factors. We have selected five most common cropping patterns prevailing in various areas of Pakistan and have computed the parity ratio by considering each of these cropping patterns. These are shown in table 7.

TABLE 7

Parity Ratio's for the Major Cropping Patterns in Pakistan

Year	Cropping Pattern	Index of Prices Received	Index of Prices Paid	Parity Ratio
1974/75	Wheat, Maize, Sugarcane	249.74	252.6	98.9
1975/76	" " "	293.11	290.4	100.9
1974/75	Wheat, Maize	139.4	252.6	94.7
1975/76	" "	290.5	290.4	100.0
1974/75	Wheat, Rice	256.7	252.6	100.2
1975/76	" "	296.3	290.4	102.0
1974/75	Wheat, Sugarcane, Cotton	239.7	252.6	94.8
1975/76	" " "	236.0	290.4	81.3
1974/75	Wheat, Rice, Sugarcane, Cotton	247.7	252.6	98.6
1975/76	" " " "	255.3	290.4	87.9

Table 7 shows that the parity ratio in 1975/76 as compared to 1974/75 moved slightly in favour of agricultural producers representing areas where the first three cropping patterns namely, wheat-maize-sugarcane; wheat-Maize; and wheat-rice are predominant. The parity ratio of areas where last two cropping patterns namely, wheat-sugarcane-cotton and wheat-rice-sugarcane-cotton are predominant, the parity ratios have further deteriorated in 1975/76 as compared to 1974/75.

CONCLUSIONS AND SUGGESTIONS

Cost of production approach used in isolation can, at best, assure an attractive rate of return to the resources used in farm production and help to maintain a desired balance in the relative profitability of the competing crops or crop combinations. Even these objectives can only be effectively served provided up - to - date and sound empirical estimates representative of diverse farm conditions with rational valuation of labour and land inputs are developed for policy use. In the past, use of schematic cost of production estimates for devising of support price packages have been mainly serving the interests of the progressive farmers of relatively well-off regions in the country.

The parity ratios and parity prices for individual agricultural commodities based on different approaches show that no single approach provides a consistently high or low parity price for all commodities. They however, provide a range within which prices might be located in order to satisfy the norms of equity as well as the influence of the forces of supply and demand. For example, parity prices based on adjusted base show interesting results and provide us with a substantial evidence to state that the parity yardstick is capable of indicating needed adjustment in prices to provide necessary incentives to the farm with the drive for increasing production.

It is strongly suggested that a comprehensive survey should be made for estimating monthly prices received by the farmers and the prices paid by them for family consumption and production inputs. Indexes of prices received by the farmers and paid by them should also be computed on regular

basis. The parity pricing approach should then be used in conjunction with the cost of production approach to work out support price programs that will not only provide needed incentives to use farm producers but will also keep the parity ratio for the agriculture sector as a whole in balance with the non-agriculture sector.

In the final analysis it may be mentioned that fixing of prices for individual commodities is invariably influenced by value judgements and political considerations. However, it is hoped that this analysis would serve the purpose of indicating the implications of determining prices of various agricultural commodities with different approaches and would be useful to the policy makers in rationalizing their approach to policy decisions.

REFERENCES

1. Afzal, M. "Implications of the green Revolution for land use patterns and relative crop profitability under domestic and international prices". The Pakistan Development Review Vol. No. 12 (2) 1973.
2. Afzal, and others. Pricing of Agricultural Capital In Pakistan, Pakistan Institute of Development Economics Monograph No. 18, Islamabad, 1974.
3. Afzal, M. Green Revolution and The Optimal Cropping Pattern in West Pakistan, Pakistan Institute of Development Economics Research Report No. 96, Islamabad, 1972.
4. Bose. S. and Edwin. H. Clark "Some Basic Considerations on Agricultural Mechanization in West Pakistan", The Pakistan Development Review, IX, 2 (1969).
5. Cocharane Willard W. Farm Prices Myth and Reality University of Minnesota Press, Minneapolis, 1959.
6. Gotsch. Carl. H. and Walter. P. Falcon, Agricultural Price Policy and Development of West Pakistan, Cambridge, Massachusetts, 1970.
7. Islam Nurul (edited) Agricultural Policy in Developing Countries, The Macmillan Press Limited, 1974.
8. Johl. S. S; M.V. George and A. J. Sing. "Agricultural Prices in Punjab- A Policy Analysis" Vol. XXV No. 1 January - March 1970.
9. Krenz Ronald D. Current Efforts at Estimation of costs of Production in ERS. American Journal of Agricultural Economics, 57 (5) 1975.
10. Lele Uma, "Considerations Related to Optimum Pricing and Marketing Strategies in Rural Development. Paper presented in International Association of Agricultural Economists, July 26 to August 4, 1976.
11. Lewis S.R. Recent Movements in Agriculture's Terms of Trade in Pakistan. William's Center for Development Economics Memorandum No. 30, August 1969.
12. Lewis S.R. and S.M. Hussain. Relative Price Changes and Industrialization in Pakistan 1951-64, Pakistan Institute Of Development Economics, Karachi, 1967.
13. Nadkarni. V.M. Agricultural Prices and Development with Stability National Publishing House Delhi, 1973.

14. Nulty Leslie, The Green Revolution in West Pakistan Implication of Technological Change, Praeger Publishers, INC New York, 1972.
15. Pakistan, Agricultural and Statistical Advisor to the Government, of Pakistan. Market and Prices, (Various issues).
16. Pakistan Ministry of Finance, Economic Survey, 1975-76 Islamabad.
17. Pakistan, Ministry of Finance, Statistical Division Consumer Price Index Numbers; July 1970-December 1973, Karachi 1974.
18. Household Income and Expenditure Survey (1963-64), (1966-67). Karachi (Various issues).
19. Monthly Statistical Bulletin. 23 (11, 12) November and December 1975. Islamabad, 1975.
20. Twenty Five Years of Pakistan in Statistics - 1972. Karachi 1972.
21. Pakistan, Ministry of Finance. Planning Commission, Agriculture and Food Section; Costs of Production of Major Crops, Average Leading Farmer, Punjab, January 1976. Islamabad, 1976.
22. Qureshi, Sarfraz K. "The Performance of viillage Markets for Agricultural Produce: A case study of Pakistan", The Pakistan Development Review, Vol.XIII No.3 Autumn 1974.
23. Qureshi Toaha. M. "Impact of Technolotical Changes on Per Unit Cost and Returns in Agriculture in Sind Province of Pakistan". Department of Agricultural Economics and Rural Sociology, Sind Agricultural College, Tandojan, 1974.
24. Sahota Gian. S. "Efficiency of Resource Allocation in Indian Agriculture", American Journal of Agricultural Economics, 50 (3) 1968.
25. Southworth Herman, M. and Bruce F. Jhonston (eds), Agricultural Development and Economic Growth, Cornell University Press, Ithaca, 1967.
26. U.S.D.A. "Farm Commodity and Related Programme", Agriculture Handbook No. 345, December 20, 1967.
27. Wilcox Walter W. and Willard. W. Cochrane "Economics of American Agriculture". Prentice Hall Inc. New York, 1953.

APPENDIX I

SUMMARY STATEMENT SHOWING PER ACRE PROFITABILITY OF AVERAGE
LEADING FARMER PUNJAB BASED ON JANUARY,
1976 PRICES

Crop	Rate	Acre- Yield	Gross return per acre	Cost of pro- duction per acre		Net Profit per acre		Cost of Production per maund	
				Exclu- ding land rent	Inclu- ding land rent	Exclu- ding land rent	Inclu- ding land rent	Exclu- ding land rent	Inclu- ding land rent
	Rs.	Mds/ acre	----- RUPEE -----						
Wheat (Maxipak)	37.00	25	1025	654	904	372	122	26	36
Rice (Basmati)	90.00	16	1460	820	1050	660	410	50	66
Rice (IRRI-6)	45.00	30	1400	799	1049	601	351	27	35
Cotton	100.00	14	1400	605	855	795	545	43	61
Sugar- cane	5.75	550	3163	2350	2850	812	312	4.27	5.18

Source: Planning Division, Agriculture and Food Section.

APPENDIX (A)

PER ACRE COST OF PRODUCTION OF MEXIPAK WHEAT
AVERAGE LEADING FARMER, PUNJAB

S.No.	Operation/Input	Rate	Expenditure	Remarks
(1)	(2)	(3)	(4)	(5)
		(Rupees)	(Rupees)	
1.	Preparatory tillage:			
2.	i) 4 Ploughings	18.00 per ploughing	72.00	
	ii) 2 Plankings	9.00 per planking	18.00	
	iii) 1 leavelling	9.00 per leavelling	9.00	
2.	Seed Bed Preparation:			
	i) 2 Ploughing	18.00 per ploughing	36.00	
	ii) 3 Plankings	9.00 per planking	27.00	
3.	Sowing	6.00 per acre	6.00	One Rabi drill can sow 4 acres in one day.
4.	Seed	50.00 per maund	50.00	Seed rate: One maund per acre.
5.	Bund Making	8.00 per man-day.	4.00	2 men for 1/4 day.
6.	Fertilizer			
	i) 1/2 bag of urea	75.00 per bag	112.50	
	1/2 bag of DAP	75.00 per bag	37.50	
	ii) Transport cost	1.00 per bag	2.00	
	iii) 2 Applications	8.00 per man-day	4.00	1/4 man-day per application.

(1)	(2)	(3)	(4)	(5)
7.	Irrigation:			
	i) Clearing of water courses.	8.00 per man-day.	4.00	1/2 man-day.
	ii) Labour charges for 5 irrigations	8.00 per man-day.	10.00	1/4 man-day per irrigation.
	iii) Tubewell irrigation (1 supplementary irrigation).	10.00 per hour	20.00	2 hours per acre.
8.	Interculture with bar harrow	6.00 per acre	6.00	One bar harrow can cover 4 acres in one day.
9.	Harvesting:			
	i) Harvesting	37.00 per maund	74.00	2.00 maunds of grain
	ii) Threshing:			
	3 man-days	8.00 per man-day	24.00	
	2 pairs of bullocks	12.00 per pair of bullock	24.00	
	iii) Winnowing	37.00 per maund	46.25	Two seers of grain per maund of wheat.
10.	Artisans	37.00 per maund	9.25	Ten seers of grain per acre.
11.	Land Revenue and other taxes.	9.12 per acre.	9.12	
12.	Water rate (canal water charges)	10.40 per acre	10.40	Fixed rate.
13.	Interest of investment at 12% per annum for 6 months on variable cost items (items 4-4 and 6-7).	24.48		
14.	Management charges	28.00 per acre per year	14.00	One Manager for 150 acres and 116% cropping intensity at Rs.400.00 per month.

1	2	3	4	5
15.	Rent of Land	500.00 per acre per year	250.00	for six months
	Cost of production per acre excluding land rent.	653.50		
	Cost of production per acre including land rent.	903.50		
	Gross Return	1025.00		25 maunds of grain @ Rs.37.00 per maund and 25 maunds of Bhousa @ Rs.500 per maund minus transport charges at the rate of Rs.1.00 per maund.
	Net Return:			
	i) excluding land rent		371.50	
	ii) including land rent		121.50	
	Cost of Production per maund of wheat:			
	i) excluding land rent		26.14	
	ii) including land rent		36.14	

PER ACRE COST OF PRODUCTION OF RICE (BASMATI) AVERAGE LEADING FARM,
PUNJAB

S.No	Operation/Input	Rate	Expenditure	Remarks
1	2	3	(4)	(5)
1.	Preparatory tillage and seed bed preparation.			
(a) i)	5 Ploughings	18.00 per ploughing	90.00	
ii)	4 plankings	9.00 per planking	36.00	
(b) i)	2 Puddings	30.00 per Pudding	60.00	
ii)	1 Planking	9.00 per planking	9.00	
2.	Raising of Nursery:			
i)	Cost of seed (paddy)	60.00 per maund	9.00	Seed rate: 6 seers.
ii)	Preparation of Nursery	8.00 per man-day	8.00	1 man-day.
iii)	Farm Yard manure.	20.00 per cart load	10.00	1/2 man-day
3.	Transplanting:			
i)	Uprooting of nursery.	8.00 per man-day	4.00	1/2 man-day.
ii)	Transportation of nursery	8.00 per man-day	2.00	1/4 man-day
iii)	Transplanting charges	8.00 per man-day	36.00	4 1/2 man-day
4.	Cost of fertilizer:			
i)	1 bag of urea	75.00 per bag	75.00	
	1/2 bag of DAP	75.00 per bag	37.50	
ii)	Transportation cost.	1.00 per bag	1.50	
iii)	2 applications	8.00 per man-day	4.00	1/4 man-day per application
5.	Irrigation:			
i)	Cleaning of water course	8.00 per man-day	8.00	1 man-day
ii)	Labour charges for 16 irrigations.	8.00 per man-day	32.00	1/4 man-day per irrigation
iii)	Tubewell irrigation (2 supplementary irrigations).	10.00 per man-day	40.00	2 hours per acre per irrigation.

(1)	2	3	4	5
6.	Weeding	8.00 per man-day	32.00	4 man-day
7.	Plant Protection charges:			
	i) 4 Nursery sprays	18.00 per acre/per spray	4.50	1/16 acre.
	ii) 2 crop sprays	18.00 per acre/per spray	36.00	
8.	Harvesting:			
	i) Harvesting	90.00 per maund of rice	180.00	5 seers per maund of paddy.
	ii) Threshing			
	iii) Cleaning			
9.	Arthisans	90.00 per maund.	12.00	8 seers of paddy per acre.
10.	Land revenue and other taxes.	12.15 per acre	12.15	
11.	Water Rate	16.86 per acre	16.86	
12.	Interest on variable costs at 12% for six months(items 1-5,&7)		30.15	
13.	Management charges	28.00 per acre per year	14.00	One Manager for 150 acres and 116% cropping intensity at Rs. 400.00 per math.
14.	Rent of land	500.00 per acre per year	250.00	For 6 months.
15.	Cost of production per acre excluding land rent.		799.66	
	Cost of production per acre including land rent.		1049.66	16 mds. of rice at Rs.90.00 per md. and 18 mds. of straw at Rs.2.00 per md. minus transport, octroi etc. at Rs.100.00 per md
Gross Return:			1460.00	

1	2	3	4	5
Net Return per acre				
	i)	excluding land rent	660.00	
	ii)	including land rent.	440.34	
Cost of production per maund of rice:				
	i)	excluding land rent	49.97	
	ii)	including land rent	65.60	

Note: Rice is 2/3 of paddy in weight.

basis. The parity pricing approach should then be used in conjunction with the cost of production approach to work out support price programs that will not only provide needed incentives to use farm producers but will also keep the parity ratio for the agriculture sector as a whole in balance with the non-agriculture sector.

In the final analysis it may be mentioned that fixing of prices for individual commodities is invariably influenced by value judgements and political considerations. However, it is hoped that this analysis would serve the purpose of indicating the implications of determining prices of various agricultural commodities with different approaches and would be useful to the policy makers in rationalizing their approach to policy decisions.

REFERENCES

1. Afzal, M. "Implications of the green Revolution for land use patterns and relative crop profitability under domestic and international prices". The Pakistan Development Review Vol. No. 12 (2) 1973.
2. Afzal, and others. Pricing of Agricultural Capital In Pakistan, Pakistan Institute of Development Economics Monograph No. 18, Islamabad, 1974.
3. Afzal, M. Green Revolution and The Optimal Cropping Pattern in West Pakistan, Pakistan Institute of Development Economics Research Report No. 96, Islamabad, 1972.
4. Bose. S. and Edwin. H. Clark "Some Basic Considerations on Agricultural Mechanization in West Pakistan", The Pakistan Development Review, IX, 2 (1969).
5. Cocharane Willard W. Farm Prices Myth and Reality University of Minnesota Press, Minneapolis, 1959.
6. Gotsch. Carl. H. and Walter. P. Falcon, Agricultural Price Policy and Development of West Pakistan, Cambridge, Massachusetts, 1970.
7. Islam Nurul (edited) Agricultural Policy in Developing Countries, The Macmillan Press Limited, 1974.
8. Johl. S. S; M.V. George and A. J. Sing. "Agricultural Prices in Punjab- A Policy Analysis" Vol. XXV No. 1 January - March 1970.
9. Krenz Ronald D. Current Efforts at Estimation of costs of Production in ERS. American Journal of Agricultural Economics, 57 (5) 1975.
10. Lele Uma, "Considerations Related to Optimum Pricing and Marketing Strategies in Rural Development. Paper presented in International Association of Agricultural Economists, July 26 to August 4, 1976.
11. Lewis S.R. Recent Movements in Agriculture's Terms of Trade in Pakistan. William's Center for Development Economics Memorandum No. 30, August 1969.
12. Lewis S.R. and S.M. Hussain. Relative Price Changes and Industrialization in Pakistan 1951-64, Pakistan Institute of Development Economics, Karachi, 1967.
13. Nadkarni. V.M. Agricultural Prices and Development with Stability National Publishing House Delhi, 1973.

14. Nulty Leslie, The Green Revolution in West Pakistan Implication of Technological Change, Praeger Publishers, INC New York, 1972.
15. Pakistan, Agricultural and Statistical Advisor to the Government, of Pakistan. Market and Prices, (Various issues).
16. Pakistan Ministry of Finance, Economic Survey, 1975-76 Islamabad.
17. Pakistan, Ministry of Finance, Statistical Division Consumer Price Index Numbers; July 1970-December 1973, Karachi 1974.
18. Household Income and Expenditure Survey (1963-64), (1966-67). Karachi (Various issues).
19. Monthly Statistical Bulletin. 23 (11, 12) November and December 1975. Islamabad, 1975.
20. Twenty Five Years of Pakistan in Statistics - 1972. Karachi 1972.
21. Pakistan, Ministry of Finance. Planning Commission, Agriculture and Food Section, Costs of Production of Major Crops, Average Leading Farmer, Punjab, January 1976. Islamabad, 1976.
22. Qureshi, Sarfraz K. "The Performance of viillage Markets for Agricultural Produce: A case study of Pakistan", The Pakistan Development Review, Vol.XIII No.3 Autumn 1974.
23. Qureshi Toaha. M. "Impact of Technolotical Changes on Per Unit Cost and Returns in Agriculture in Sind Province of Pakistan". Department of Agricultural Economics and Rural Sociology, Sind Agricultural College, Tandojan, 1974.
24. Sahota Gian. S. "Efficiency of Resource Allocation in Indian Agriculture", American Journal of Agricultural Economics, 50 (3) 1968.
25. Southworth Herman, M. and Bruce F. Jhonston (eds), Agricultural Development and Economic Growth, Cornell University Press, Ithaca, 1967.
26. U.S.D.A. "Farm Commodity and Related Programme", Agriculture Handbook No. 345, December 20, 1967.
27. Wilcox Walter W. and Willard. W. Cochrane "Economics of American Agriculture". Prentice Hall Inc. New York, 1953.

APPENDEK I

SUMMARY STATEMENT SHOWING PER ACRE PROFITABILITY OF AVERAGE
LEADING FARMER PUNJAB BASED ON JANUARY,
1976 PRICES

Crop	Rate	Acre- Yield	Gross return per acre	Cost of pro- duction per acre		Net Profit per acre		Cost of Production per ma'nd	
				Exclu- ding land rent	Inclu- ding land rent	Exclu- ding land rent	Inclu- ding land rent	Exclu- ding land rent	Inclu- ding land rent
	Rs.	Mds/ acre	RUPEE						
Wheat (Maxipak)	37.00	25	1025	654	904	372	122	26	36
Rice (Basmati)	90.00	16	1460	820	1050	660	410	50	66
Rice (IRRI-6)	45.00	30	1400	799	1049	601	351	27	35
Cotton	100.00	14	1400	605	855	795	545	43	61
Sugar- cane	5.75	550	3163	2350	2850	812	312	4.27	5.18

Source: Planning Division, Agriculture and Food Section.

APPENDIX (A)

PER ACRE COST OF PRODUCTION OF MEXIPAK WHEAT
AVERAGE LEADING FARMER, PUNJAB

S.No.	Operation/Input	Rate	Expenditure	Remarks
(1)	(2)	(3)	(4)	(5)
		(Rupees)	(Rupees)	
1.	Preparatory tillage:			
2.	i) 4 Ploughings	18.00 per ploughing	72.00	
	ii) 2 Plankings	9.00 per planking	18.00	
	iii) 1 leavelling	9.00 per leavelling	9.00	
2.	Seed Bed Preparation:			
	i) 2 Ploughing	18.00 per ploughing	36.00	
	ii) 3 Plankings	9.00 per planking	27.00	
3.	Sowing	6.00 per acre	6.00	One Rabi drill can sow 4 acres in one day.
4.	Seed	50.00 per maund	50.00	Seed rate: One maund per acre.
5.	Bund Making	8.00 per man-day.	4.00	2 men for 1/4 day.
6.	Fertilizer			
	i) 1½ bag of urea	75.00 per bag	112.50	
	½ bag of DAP	75.00 per bag	37.50	
	ii) Transport cost	1.00 per bag	2.00	
	iii) 2 Applications	8.00 per man-day	4.00	1¼ man-day per application.

(1)	(2)	(3)	(4)	(5)
7.	Irrigation:			
	i) Clearing of water courses.	8.00 per man-day.	4.00	1/2 man-day.
	ii) Labour charges for 5 irrigations	8.00 per man-day.	10.00	1/4 man-day per irrigation.
	iii) Tubewell irrigation (1 supplementary irrigation).	10.00 per hour	20.00	2 hours per acre.
8.	Interculture with bar harrow	6.00 per acre	6.00	One bar harrow can cover 4 acres in one day.
9.	Harvesting:			
	i) Harvesting	37.00 per maund	74.00	2.00 maunds of grain
	ii) Threshing:			
	3 man-days	8.00 per man-day	24.00	
	2 pairs of bullocks	12.00 per pair of bullock	24.00	
	iii) Winnowing	37.00 per maund	46.25	Two seers of grain per maund of wheat.
10.	Artisans	37.00 per maund	9.25	Ten seers of grain per acre.
11.	Land Revenue and other taxes.	9.12 per acre.	9.12	
12.	Water rate (canal water charges)	10.40 per acre	10.40	Fixed rate.
13.	Interest of investment at 12% per annum for 6 months on variable cost items (items 4-4 and 6-1).	24.48		
14.	Management charges	28.00 per acre per year	14.00	One Manager for 150 acres and 116% cropping intensity at Rs.400.00 per month.

1	2	3	4	5
15. Rent of Land		500.00 per acre per year	250.00	for six months
Cost of production per acre excluding land rent.		653.50		
Cost of production per acre including land rent.		903.50		
Gross Return		1025.00		25 maunds of grain @ Rs.37.00 per maund and 25 maunds of Bhousa @ Rs.500 per maund minus transport charges at the rate of Rs.1.00 per maund.
Net Return:				
i) excluding land rent			371.50	
ii) including land rent			121.50	
Cost of Production per maund of wheat:				
i) excluding land rent			26.14	
ii) including land rent			36.14	

PER ACRE COST OF PRODUCTION OF RICE (BASMATI) AVERAGE LEADING FARM,

PUNJAB

S.No	Operation/Input	Rate	Expenditure	Remarks
1	2	3	(4)	(5)
1.	Preparatory tillage and seed bed preparation.			
(a) i)	5 Ploughings	18.00 per ploughing	90.00	
ii)	4 plankings	9.00 per planking	36.00	
(b) i)	2 Puddings	30.00 per Pudding	60.00	
ii)	1 Planking	9.00 per planking	9.00	
2.	Raising of Nursery:			
i)	Cost of seed (paddy)	60.00 per maund	9.00	Seed rate: 6 seers.
ii)	Preparation of Nursery	8.00 per man-day	8.00	1 man-day.
iii)	Farm Yard manure.	20.00 per cart load	10.00	1/2 man-day
3.	Transplanting:			
i)	Uprooting of nursery.	8.00 per man-day	4.00	1/2 man-day.
ii)	Transportation of nursery	8.00 per man-day	2.00	1/4 man-day
iii)	Transplanting charges	8.00 per man-day	36.00	4 1/2 man-day
4.	Cost of fertilizer:			
i)	1 bag of urea	75.00 per bag	75.00	
	1/2 bag of DAP	75.00 per bag	37.50	
ii)	Transportation cost.	1.00 per bag	1.50	
iii)	2 applications	8.00 per man-day	4.00	1/4 man-day per application
5.	Irrigation:			
i)	Cleaning of water course	8.00 per man-day	8.00	1 man-day
ii)	Labour charges for 16 irrigations.	8.00 per man-day	32.00	1/4 man-day per irrigation
iii)	Tubewell irrigation (2 supplementary irrigations).	10.00 per man-day	40.00	2 hours per acre per irrigation.

(1)	2	3	4	5
6.	Weeding	8.00 per man-day	32.00	4 man-day
7.	Plant Protection charges:			
	i) 4 Nursery sprays	18.00 per acre/per spray	4.50	1/16 acre.
	ii) 2 crop sprays	18.00 per acre/per spray	36.00	
8.	Harvesting:			
	i) Harvesting	90.00 per maund of rice	180.00	5 seers per maund of paddy.
	ii) Threshing			
	iii) Cleaning			
9.	Arthisans	90.00 per maund.	12.00	8 seers of paddy per acre.
10.	Land revenue and other taxes.	12.15 per acre	12.15	
11.	Water Rate	16.86 per acre	16.86	
12.	Interest on variable costs at 12% for six months(items 1-5,&7)		30.15	
13.	Management charges	28.00 per acre per year	14.00	One Manager for 150 acres and 116% cropping intensity at Rs. 400.00 per math.
14.	Rent of land	500.00 per acre per year	250.00	For 6 months.
15.	Cost of production per acre excluding land rent.		799.66	
	Cost of production per acre including land rent.		1049.66	16 mds. of rice at Rs.90.00 per md. and 18 mds. of straw at Rs.2.00 per md. minus transport, octroi etc. at Rs.100.00 per md
Gross Return:			1460.00	

1	2	3	4	5
Net Return per acre				
	i)	excluding land rent	660.00	
	ii)	including land rent.	440.34	
Cost of production per maund of rice:				
	i)	excluding land rent	49.97	
	ii)	including land rent	65.60	

Note: Rice is 2/3 of paddy in weight.

PER ACRE COST OF PRODUCTION OF RICE (IRRI-6) AVERAGE LEADING
FARMER, PUNJAB

S.No.	Operation/Input	Rate	Expenditure	Remarks
1	2	3	4	5
		(Rupees)	(Rupees)	
1.	Preparatory tillage and seed bed preparation:			
	a) i) 5 ploughings	18.00 per ploughing	90.00	
	ii) 3 plankings	9.00 per planking	27.00	
	b) i) 2 Punddlings	25.00 per puddling	50.00	
	ii) 1 Planking	9.00 per planking	9.00	
2.	Raising of Nursery:			
	i) Cost of seed (paddy)	35.00 per maund	6.13	Seed rate:7 seers per acre.
	ii) Preparation of nursery bed and sowing	8.00 per man-day	8.00	One man-day per acre.
	iii) Farm Yard manure	20.00 per cart load	10.00	½ cart load
3.	Transplanting:			
	i) Uprooting of Nursery	8.00 per man-day	4.00	½ man-day
	ii) Transportation of Nursery	8.00 per man-day	2.00	¼ man-day
	iii) Transplanting charges	8.00 per man-day	36.00	4½ man-day.
4.	Fertilizer:			
	i) 1 bag of urea	75.00 per bag	75.00	
	1 bag of DAP	75.00 per bag	75.00	
	ii) Transportation cost	1.00 per bag	2.00	
	iii) 2 Applications	8.00 per man-day	4.00	¼ man-day
5.	Irrigation:			
	i) Cleaning of water courses	8.00 per man-day	8.00	1 man-day
	ii) Labour charges for 16 irrigations.	8.00 per man-day	32.00	¼ man-day per irrigation.
	iii) Tubewell irrigation (2 supplementary irrigations).	10.00 per hour	40.00	2 hours per acre per irrigation.

1			
6.	Weeding	8.00 per man-day	32.00 4 man-day
7.	Plant Protection Charges:		
	i) 4 Nursery sprays	18.00 per acre per spray	4 50 1/4% of an acre.
	ii) 2 crop sprays	18.00 per acre per spray	36.00
8.	Harvesting:		
	a) Harvesting)		
	b) Threshing)	45.00 per maund of rice.	168.75 5 seers per maund of paddy.
	c) Winnowing)		
9.	Artisans	45.00 per maund	5.96 8 seers of paddy.
10.	Water Rate	16.86 per acre	16.86
11.	Land Revenue and other taxes	12.15 per acre	12.15
12.	Interest on working capital @ 12% per annum for 6 months (items 1-5 and 7)		31.11
13.	Management charges	28.00 per acre per year	14.00 One Manager for 150 acres & 116% cropping intensity @Rs.400/- per month
14.	Rent of land	500.00 per acre	250.00 For 6 months.
	Cost of production per acre excluding land rent.		799.46
	Cost of production per acre including land rent		1400.00 30 mds. of rice @ Rs.45/- per md. & 40 mds. of straw @Rs.2/- per md. minus transportation charges @Rs.1/- per md.
Net Return per acre:-			
	i) excluding land rent		600.54
	ii) Including land rent		350.54
	Cost of production per maund of Rice (IRRI-6)		
	i) excluding land rent		26.64
	ii) including land rent		34.98

Note: Rice is 2/3 of paddy in weight.

PER ACRE COST OF PRODUCTION OF COTTON AVERAGE LEADING FARMER PUNJAB

S.No.	Operation/Input	Rate	Expendi- ture	Remarks
1	2	3	4	5
		(Rupees)	(Rupees)	
1-	Preparatory tillage:			
	i) 4 Ploughings	18.00 per ploughing	72.00	
	ii) 2 Plankings	9.00 per planking	18.00	
2-	Seed Bed Preparation			
	i) 2 Ploughings	18.00 per ploughing	36.00	
	ii) 2 Plankings	9.00 per planking	18.00	
3-	Sowing	3.75 per acre	3.75	One Kharif drill can 4 acres in a day
4-	Seed	65.00 per maund	13.00	Seed rate: 8 seers
5-	Bund making	8.00 per man-day	4.00	2 man for 1/2 day
6-	Interculture:			
	i) 2 Ploughings	18.00 per ploughing	36.00	
	ii) Thinning	8.00 per man-day	24.00	3 man-day
7-	Irrigation:			
	i) Cleaning of water courses	8.00 per man-day	8.00	1 man-day
	ii) Labour charges for 6 irrigations	8.00 per man-day	12.00	1/2 man-day per irrigation
8-	Fertilizer:			
	i) 1 bag of Urea	75.00 per bag	75.00	
	1/2 bags of DAP	75.00 per bag	37.50	
	ii) Transportation cost	1.00 per bag	1.50	
	iii) 2 Applications	8.00 per man-day	4.00	1/2 man-day per application
9-	Plant Protection 3 crop sprays	18.00 per acre per spray	54.00	
10-	Harvesting:			
	i) Picking	100.00 per md. of seed cotton	87.50	1/16 of produce
	ii) Harvesting of sticks	8.00 per man-day	8.00	1 man-day
11-	Artisans	100.00 per md. of seed cotton	7.50	3 seers per acre
12-	Land Revenue and other taxes	9.12 per acre	9.12	

1			
6.	Weeding	8.00 per man-day	32.00 4 man-day
7.	Plant Protection Charges:		
	i) 4 Nursery sprays	18.00 per acre per spray	4 50 1/4 of an acre.
	ii) 2 crop sprays	18.00 per acre per spray	36.00
8.	Harvesting:		
	a) Harvesting)		
	b) Threshing)	45.00 per maund of rice.	168.75 5 seers per maund of paddy.
	c) Winnowing)		
9.	Artisans	45.00 per maund	5.96 8 seers of paddy.
10.	Water Rate	16.86 per acre	16.86
11.	Land Revenue and other taxes	12.15 per acre	12.15
12.	Interest on working capital @ 12% per annum for 6 months (items 1-5 and 7)		31.11
13.	Management charges	28.00 per acre per year	14.00 One Manager for 150 acres & 116% cropping intensity @Rs.400/- per month
14.	Rent of land	500.00 per acre	250.00 For 6 months.
	Cost of production per acre excluding land rent.		799.46
	Cost of production per acre including land rent		1400.00 30 mds. of rice @ Rs.45/- per md. & 40 mds. of straw @Rs.2/- per md. minus transportation charges @Rs.1/4 per md.
Net Return per acre:-			
	i) excluding land rent		600.54
	ii) Including land rent		350.54
Cost of production per maund of Rice (IRRI-6)			
	i) excluding land rent		26.64
	ii) including land rent		34.98

Note: Rice is 2/3 of paddy in weight.

1	2	3	4	5
		(Rupees)	(Rupees)	
13-	Water rate	16.00 per acre	16.00	
14-	Interest on investment at 12% per annum for 6 months on variable costs (items 1-4 & 6-9)		25.96	
15-	Management charges	28.00 per acre per year	14.00	One Manager for 150 acres and 116% cropping intensity at Rs.400/- per month.
16-	Rent of land	500.00 per acre per year	250.00	For six months
	Cost of production per acre excluding land rent		604.83	
	Cost of production per acre including land rent		854.83	
	Bross Return		1400.00	14 mds. of seed cotton at the rate of Rs.100.00 per md. and 14 mds. of sticks @ Rs.2.00 per md. - minus transportation, Octroi & other charges @ Rs.2.00 per md.
Net Return per acre:				
	i) Excluding land rent		795.17	
	ii) including land rent		545.17	
	Cost of production per maund of seed cotton:			
	i) Excluding land rent		43.20	
	ii) including land rent		61.05	

PER ACRE COST OF PRODUCTION OF SUGARCANE AVERAGE LEADING
FARMER, PUNJAB

S.No	Operation/Input	Rate	Expenditure	Remarks
1	2	3	4	5
1.	Preparatory tillage and seed bed preparation:			
	i) 9 Ploughings	18.00 per ploughing	162.00	
	ii) 8 Plankings	9.00 per planking	72.00	
2.	Farm Yard Manure:			
	i) 8 cart loads	20.00 per cart load	160.00	
	ii) Loading, unloading and spreading	8.00 per man-day	24.00	3 man-day
	iii) One pair of Bullock	12.00 per pair of bullock	12.00	
3.	Cost of seed	6.00 per maund of seed	360.00	seed rate: 60 mds. assuming 25% rationed crop.
4.	Sowing operations:			
	i) Sowing of sets	8.00 per man-day	96.00	12 man-day
	ii) One ploughing	18.00 per ploughing	18.00	
	iii) One planking	9.00 per planking	9.00	
5.	Interculture:			
	i) One hoeing (blind)	8.00 per man-day	64.00	8 man-day
	ii) One hoeing with Kasola	8.00 per man-day	64.00	8 manday
	iii) One hoeing, with desi plough	18.00 per ploughing	18.00	
6.	Fertilizer: urea			
	i) Two bags of urea one bag of DAP.	75.00 per bag	150.00	
	One bag of DAP.	75.00 per bag	75.00	
	ii) Transport cost	1.00 per bag	3.00	
	iii) 2 Applications	8.00 per man-day	4.00	1/4 man-day per application.
7.	Irrigation:			
	i) Cleaning of water courses	8.00 per man-day	16.00	2 man-days
	ii) Labour charges for 16 irrigations.	8.00 per man-day	32.00	1/4 man-day per irrigation.
	iii) Tubewell irrigation (2 supplementary irrigations)	10.00 per hour	40.00	2 hours per acre per irrigation.

1	2	3	4	5
8.	Plant Protection 2 crop sprays	18.00 per acre per spray	36.00	
9.	Water rate	35.60 per acre	35.60	
10.	Land revenue and other taxes.	12.15 per acre	12.15	
11.	Artisans	5.75 per acre	14.37	10 seers of gur or 2½ mds. of cane
12.	Harvesting and loading at farm	0.20 per maund	110.00	550 mds. of cane
13.	Transportation	1.00 per maund	550.00	--do --
14.	Octroi	0.06 per maund	33.00	--do --
15.	Interest on Investment @ 12% per annum for 12 months (items 1-4, 6-8)		152.28	
16.	Management charges	28.00 per acre	28.00	One Manager for 150 acres & 116% cropping intensity @Rs.400/-per month
17.	Rent of land	500.00 per acre per year	500.00	
	Cost of production per acre excluding land rent.		2350.40	
	Cost of production per acre including land rent.		2850.40	
	Gross Return	5.75 per maund	3162.50	550 mds of cane @Rs. 5.75 per maund.
Net Return per acre			812.10	
	i) Excluding land rent		312.10	
	ii) Including land rent			
Cost of production per maund of sugarcane:				
	i) excluding land rent		4.27	
	ii) including land rent		5.18	

Source: Planning Division, Agriculture and food Section.

Bhatti/*

APPENDIX B

<u>Commodity</u>	<u>Price Index</u>
1. Rice	(not attached)
2. Wheat	
3. Barley	
4. Maize	
5. Jowar	
6. Bajra	
7. Gram	
8. Other	
9. Potatoes	
10. Onions	
11. Fruits	
12. Milk	
13. Ghee Desi	
14. Cotton	
15. Tobacco	
16. Sugarcane	

APPENDIX C

<u>Commodity</u>	<u>Price Index</u>
1. Agricultural Machinery	(Not attached)
2. Kerosine Oil	
3. Firewood	
4. Vegetable Ghee	
5. Meat	
6. Sugar Refined	
7. Tea	
8. Salt	
9. Cotton Manufacture	
10. Utensils	
11. Silk and Yarn	
12. Wook Manufactures	
13. Cement	
14. Tobacco Products	
15. Cycles	
16. Matches	
17. shoes	
18. Soap	
19. Fertilizer	
20. Drug and Medicines	

This work is licensed under a
Creative Commons
Attribution – NonCommercial - NoDerivs 3.0 Licence.

To view a copy of the licence please see:
<http://creativecommons.org/licenses/by-nc-nd/3.0/>