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mand, what has been called, a certain "critical minimum quantum" of foodgrains. Only then could it effectively influence the demand and supply and hence the prices of foodgrains. Quantification of this critical minimum is rather a difficult job; if experience in the case of wheat is any guide one could perhaps say that about 50 per cent of the marketed surplus would give the necessary strength to the Corporation. Launching upon operations on this scale may not be feasible in the initial stages because the agencies connected with the implementation of the scheme—both institutional and administrative—have to be built up somewhat gradually. It, therefore, follows that in the meanwhile, if the foodgrains prices are to move within the framework of the desired structure, the operations of the Corporation will have to be necessarily supplemented by other measures designed to discipline private trade. If the operations of the Corporation were to set the tone for market prices, one or two areas in which a desirable change in the structure of prices could be brought about are indicated. Reduction in the degree of variation in prices over a year is one such measure which is likely to benefit the cultivators, particularly the small and the medium. Such a price pattern may also have a beneficial effect on the pace of market arrivals. These notes which cover an admittedly narrow field are submitted more with a view to stimulating further discussion rather than offering anything in the nature of an operationally usable conclusion.

A STUDY OF THE SEASONAL VARIATIONS IN THE FOOD PRICES FOLLOWING HEAVY AND LIGHT HARVESTS IN INDIA

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Seasonal variations in the prices of foodgrains are found to be the major grievance of the producers. The cultivators feel that they have to sell their grains at low prices during harvest and post-harvest months and do not get adequate returns. Very often, they purchase grains at higher prices for their own consumption in the later months of the year. Agricultural production is also characterised by heavy and light harvests depending upon weather conditions and natural calamities. Changing production may be an important cause for the deviations from the normal seasonal movements.

It is, therefore, necessary to study the extent of seasonal fluctuations in the prices of important foodgrains. Rice and wheat, two important grains which are used for consumption by the majority of the people in India, may be selected for this purpose. The prices of rice and wheat are subject to well-defined seasonal fluctuations. The usual tendency of agricultural prices to fall during the harvest and post-harvest months is easily marked out. The normal seasonal variations in the wholesale prices of rice and wheat at Calcutta and Bombay respectively

are given in Table I. Along with it seasonal movement of wholesale prices of raw jute and raw cotton at Calcutta and Bombay respectively, are also given for comparison of the seasonal variation of prices of cereals with that of non-cereals.

TABLE I—SEASONAL VARIATIONS IN THE MONTHLY WHOLESALE PRICES OF RICE (AVERAGE 1930-39) AND RAW JUTE (AVERAGE 1949-54) IN CALCUTTA AND WHEAT (AVERAGE 1925-42) AND COTTON (AVERAGE 1925-42) IN BOMBAY MARKETS*

Month	Calcutta		Bombay	
	Rice (Ballam No. 1)	Jute (First)	Wheat (White Delhi)	Cotton (M.G.F.G. Broach)
	Index of monthly prices (annual average = 100)†			
January	95	99	105	104
February	95	94	100	101
March	94	101	99	102
April	96	111	99	99
May	99	110	97	99
June	101	107	98	101
July	102	95	98	100
August	102	95	98	98
September	103	94	99	100
October	103	96	103	99
November	103	94	103	100
December	102	101	105	101

* *Source :* Calcutta (rice and jute) and Bombay (wheat and cotton), *Indian Trade Journal.*

† Calculated by Moving Average Method.

The figures in Table I indicate a distinct seasonal behaviour of the prices of rice and wheat in Calcutta and Bombay markets, where the lowest prices are recorded in the harvest and immediate post-harvest months (December and January being the harvest months for rice and February to April or May in case of wheat) and the highest prices in the months towards the end of the harvest year. The range between the highest and lowest prices varied between 9 per cent for rice and 8 per cent for wheat. In case of non-cereals, jute prices followed a seasonal pattern, while in case of cotton the seasonal variation was not marked. This is probably because the marketing conditions in respect of cotton are much better than in the case of foodgrains and jute. Both the growers and the buyers of cotton are fairly well organised and they have considerable holding and bargaining strength. Provision for storage facilities has added to the holding power. In addition, the price of cotton is also influenced by the international stock. As such, cotton prices are not very low in the harvest and post-harvest months (September to November).

In case of rice, Table I indicates that the prices were below the annual average in the months from January to May (harvest and post-harvest months), nearly

equal to the annual average in June and above it in the following months. The lowest point in the prices during the year was reached in March and highest in September. The highest price continued upto November. The fall from the highest point to the lowest did not seem to be very large. Moreover, the fall in prices was spread over four months from November to March. This revealed to some extent the relative efficiency of marketing at Calcutta. Calcutta is also an important consumer's market, obtaining its supplies from various parts of the country throughout the year. The Report on the Marketing of Rice in India states that the extent of fluctuation in prices from month to month varied from market to market depending on various factors such as the nature of the crop, the prospects of the next crop and the prices of the other competitive groups. In general, there is a tendency for cheap varieties of grains to show greater fluctuations than the fine ones because according to the well-known economic law, fine varieties are demanded by higher income groups, whose demand for such varieties is inelastic and hence does not respond as strongly to supply and price changes.[1]

In case of wheat (Table I) the prices were below the annual average in the months from March to September, equal to annual average in February and above it from October to January. The lowest point in prices during the year was reached in the month of May and highest point in December. The highest price continued up to January. The fall from the highest point to the lowest did not seem to be large. It is probably because Bombay is a central market and a consumer's market where supplies are obtained throughout the year from all parts of the country.

As regards other foodgrains, similar seasonal variations in the prices are observed. The Report on Marketing of Maize and Millets in India indicates that the variation from the lowest to the highest price was 12 per cent in case of maize and between 15 to 27 per cent in case of bajra.[2] The range of variation differs from one place to another. As for instance, the variation between the lowest and the highest price of maize ranged from 11.8 per cent at Saharanpur to 43.2 per cent at Bahraich; of jowar, the range varied from 11.1 per cent at Latur (Hyderabad) to 50.2 per cent at Agra.[3] The variations were reported to be low in places where the supply of maize and millets was large and high where the supply was small. It appears that the seasonal variations in the price of inferior grains are higher than those in the prices of superior grains. It is probably due to the fact that a greater proportion of inferior grains than the superior grains is disposed of by the producers immediately after the harvest.

DEVIATIONS FROM THE NORMAL SEASONAL VARIATION IN THE PRICES OF CEREALS AND NON-CEREALS AT CALCUTTA AND BOMBAY

It is important to have a knowledge of normal seasonal movement of prices, because it is useful to farmers and dealers in determining the best time for the sale of the product. Standard deviation (Table II) indicates the index of irregularity around the index of normal seasonal variations in the prices of rice and jute at Calcutta and wheat and cotton at Bombay.

1. Report on the Marketing of Rice in India, 1954, pp. 99-100.
2. Report on Marketing of Maize and Millets in India, pp. 27-28.
3. *Ibid.*

TABLE II—STANDARD DEVIATIONS FROM NORMAL SEASONAL VARIATION OF PRICES OF RICE, WHEAT, COTTON AND JUTE IN CALCUTTA AND BOMBAY

Month	Calcutta		Bombay	
	Rice	Jute	Wheat	Cotton
	Per cent (annual average = 100)			
January	7.3	20.5	8.4	12.6
February	6.7	15.5	3.6	9.6
March	3.3	13.6	5.1	9.9
April	2.6	22.0	6.4	8.5
May	3.1	23.6	4.5	8.6
June	2.9	24.2	7.1	11.3
July	4.4	13.4	8.1	10.8
August	4.3	9.7	9.2	9.0
September	3.9	7.4	6.7	16.8
October	4.6	7.2	5.4	8.6
November	5.3	9.9	5.0	7.9
December	6.2	14.2	7.2	9.2

Thus, it appears from Table II that the deviations from the normal seasonal pattern of prices of rice at Calcutta and of wheat at Bombay were small, and there are great probabilities that in any particular year, the general seasonal movement of the prices of the commodities will take place. Further, it may be noted that the deviations were greater in November, December, January and February in the case of rice and in the months of June, July and August in the case of wheat. It was probably due to the fact that the new crop was assessed during these months. On the other hand, the deviations from the normal seasonal variations of prices in the case of raw jute and raw cotton were greater than those in the case of rice and wheat. It means that the seasonal pattern is disturbed by other factors. Both jute and cotton being commercial crops, the demand for them is greatly influenced by the national and international position of the commodities in different seasons. These factors counteract the effects of seasonal supply to a certain extent.

SEASONAL VARIATIONS IN THE PRICES OF RICE AND WHEAT FOLLOWING HEAVY AND LIGHT HARVESTS

Tables III and IV show the seasonal variations in the price of rice and wheat in the years of bumper and lean harvests.

TABLE III—SEASONAL VARIATIONS IN THE WHOLESALE PRICES OF RICE (BALLAM NO. 1) AT CALCUTTA IN 'SMALL CROP' AS WELL AS 'BIG CROP' YEARS

(Average 1930-39)*

Month	Small Crop Years (5)	Big Crop Years (5)
	Index of monthly prices (annual average = 100)	
January	96	95
February	96	94
March	95	94
April	96	98
May	101	98
June	102	101
July	105	101
August	104	102
September	104	103
October	103	104
November	100	106
December	99	106

* (*i*) *Source :* Same as in Table I.

(*ii*) Calculated by Moving Average Method.

(*iii*) 'Small crop years'—the years in which the yield per acre was less than the 10 years-moving average centred.

'Big crop years'—the years in which the yield per acre was more than the 10 years-moving average centred.

TABLE IV—SEASONAL VARIATIONS IN THE WHOLESALE PRICES OF WHEAT (WHITE DELHI) AT BOMBAY IN 'SMALL CROP' AS WELL AS 'BIG CROP' YEARS

(Average 1925 to 1942)*

Month	Small Crop Years (11)	Big Crop Years (7)
	Index of monthly prices (annual average = 100)	
January	104	105
February	100	99
March	98	100
April	96	103
May	95	99
June	96	99
July	96	99
August	97	98
September	100	96
October	103	103
November	110	101
December	105	102

* *Source :* Same as in Table III.

It will be observed from Tables III and IV that in Calcutta, in years following both heavy and light harvests the prices went down quickly following heavy harvests. Thus, the fall was not spread over a number of months. In the years following light harvests, the prices went down gradually and the fall in prices was spread over a number of months. On the other hand, in case of wheat, the price fall in the years following light harvests was greater than those following heavy harvests. Moreover prices did not go down quickly during the years of heavy harvests. The fall in prices was spread over a number of months in the case of years following heavy harvests. This is probably on account of greater amount of regulation in supply due to better storage facilities in the beginning of the marketing season in good years. It may also be noted that in the case of rice the difference between the lowest and the highest prices of the year was greater in years following heavy harvests than those following light harvests. As for instance, in the case of rice, the margin of difference was 12 per cent in the years following heavy harvests and 9 per cent in the years following light harvests. But, in the case of wheat, the fall was greater in small crop years. As for instance, it was 9 per cent for big crop years and 15 per cent for small crop years. This tendency is probably due to better storage facilities for wheat than for rice.

SEASONAL VARIATIONS IN THE PRICES IN THE RURAL AREAS AND THE CENTRAL MARKETS LIKE CALCUTTA OR BOMBAY

The seasonal variations in the prices in the rural areas are greater than in the central markets like Calcutta or Bombay. As for instance, in Hooghly the fall from the highest to the lowest point in the prices of rice was 14 per cent, while it was only 8 per cent in Calcutta, and the fall in Hooghly from October prices to the prices in November was much steeper, about 12 per cent in one month.[4] This shows that farmers in rural areas try to sell a large part of their crop in the very first month of harvesting (November-December). Similarly, the difference between the highest and the lowest prices of paddy was greater (15 per cent) than that of rice (14 per cent). Similarly, in case of wheat, it is observed that at Hapur (U.P.) and Amritsar (Punjab), seasonal variations were comparatively larger.[5] This behaviour is mainly attributed to the fact that paddy is brought to the primary market by the cultivator who has no means to regulate supplies to demand. On the other hand, rice is primarily sold by a merchant, a miller or a professional dehusker, who can regulate supplies to demand and can counteract to some extent disadvantageous price movements. Moreover, farmers do not have the facilities of milling, storing, credit, and transport. They are forced to sell a large part of their produce in the shape of paddy. Further, Calcutta market prices are based on dealers' prices. They are not cultivators' prices. Naturally, it is possible to expect larger seasonal variation in the prices of rice and paddy and wheat in the rural areas.

MEASURES FOR CORRECTING SEASONAL VARIATION IN PRICE OF FOODGRAINS

The reasons for the seasonal behaviour of the prices of foodgrains in India are many. Very often it is due to the condition of supply. The foodgrains are

4. B. Misra, Economic Aspects of Grain Production and Prices in Major Parts of Monsoon Asia (unpublished thesis), p. 125.

5. J. P. Bhattacharjee (Ed.) : Studies in Indian Agricultural Economics, Indian Society of Agricultural Economics, 1958, p. 53.

produced in one season and consumed throughout the year. The commodity is stored and payments have to be made for storage. Capital thus gets held up and there are risks involved. Naturally, prices vary from month to month. Thus, seasonal variations will always be there due to interest and storage costs and the economic condition of the grower. The problem is how to smooth out the large margin of fluctuations.

The inability of growers to hold the stock in the post-harvest period is attributed to four causes. Firstly, the farmers suffer scarcity of capital resources. They have low incomes and many financial commitments in the shape of rent, taxes, loans and other expenses which must be met immediately after the harvest. Secondly, there is lack of storage facilities on the farms. Thirdly, the difficulties of communication are to be faced and fourthly, the lack of market intelligence on the part of the farmers reduces their holding power and bargaining capacity.

Of the four causes, the most important is the poverty of the farmers and their pre-harvest financial commitments. The farmers borrow money from many sources, namely, moneylenders, merchants, rich tenants, friends and relatives before the harvest period both for productive and unproductive purposes. They have to meet many other expenses, namely, water rates, taxes, and various family expenditures, after the harvest. In such circumstances, the crop is, in many cases, sold away straight from the threshing floor. A survey conducted by the Punjab Board of Economic Enquiry revealed that 30.6 per cent of the sales of wheat were undertaken for repayment of debt, 51.4 per cent on account of government dues and 6 per cent accounted for land rent.[6] Further, the cost of storage to the merchants is high due to the high rate of interest and the loss in storage due to driage and pests like weevils, rats, etc., is considerable.[7] The storage capacities in the local and central markets have been inadequate to meet the seasonal demand.

Thus, better transport and credit facilities are desirable for orderly marketing. Undue seasonal fluctuations could also be prevented if State purchase of stocks is made in the harvest season to be sold in the same market at a reasonable price in the lean season. In the long run, minimisation of seasonal variations in prices of foodgrains will depend to a great extent upon the improvement in the general economic condition of the farmers. Improvements in the incomes of farmers through better yields of crops and supplementary village industries will go a long way in improving their general economic condition so that their necessity for post-harvest sale will be less. It will then be possible to spread the sales of farm products over the period of an year with the help of other measures like better credit, transport, storage and orderly marketing facilities and minimise the seasonal variation in prices.

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6. Punjab Board of Economic Enquiry : Finance and Marketing of Cultivators Wheat in the Punjab, p. 57.

7. The Report on the Marketing of Rice in India, 1954 (p. 390), estimated the loss in driage at between 2 and 3 per cent and due to weevil, damp and vermin about 1 per cent in the whole of India.