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AGRICULTURAL GROWTH AND PRICE FLUCTUATIONS
A Case Study of Production and Prices of Potato in Tripura

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INTRODUCTION

Like industrial development, agricultural growth also requires a leading sub-sector to generate dynamism in production, capital formation and technology. A predominantly cash crop like potato has the potential to play such a leading role in rural development in North East India. In terms of total production of energy for human consumption, potato is one of the five major crops in the world, others being wheat, rice, maize and barley. On an average, potato yields two times more calories per unit area than any other cereal.

In Tripura also, potato as a crop has been associated with agricultural diversification and modernization. The area under cultivation of potato has increased remarkably during the plan period. The trend in productivity is also encouraging considering the overall backwardness of Tripura's economy especially, the prevalence of peasant and tribal mode of production in the rural area. In spite of these encouraging signs, one cannot say that producers are getting adequate incentive for higher work and investment efforts from market behaviour. One important obstacle to further development in respect of potato cultivation is created by price fluctuations of this agricultural product. It affects both the producer and the consumer by creating a wide difference between the average annual price that the consumers pay and the price that the producers receive. The present paper is intended to be an attempt to understand the problems associated with growth and price fluctuations of potato in Tripura. The thrust of the study will be on the analysis of the nature and causes of price fluctuations and tom suggest measures with a view to ensuing sustained development in respect of this important agricultural crop.

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As mentioned earlier, Tripura has achieved remarkable progress in the production of potato which increased spectacularly from 3.16 thousand metric tonnes in 1950-51 to 56.19 thousand metric tonnes in 1989-90. Much of this increase in production has been achieved through increase in the area under cultivation dictated by the growth of population in the State. However, rise in productivity has also been spectacular and yield per hectare registered an increase from 4.93 M.T. to 14.62 M.T. during the same period. Even in the later years from 1989-90 to 1992-93 there has an increasing trend in production and area under cultivation. It can be seen from Table 1 that total area under potato cultivation increased from 2.99 thousand hectares in 1989-90 to 3.89 thousand hectares in 1992-93. Total production increased from 54.4 thousand M.T. to 65.5 M.T. during the same period. However, increase in the average yield was quite insignificant during these years. During 1992-93 the average yield fell to 16.84 M.T. in spite of an increase in production and area under cultivation.

To have an idea on the rates of growth of production, yield and the area under cultivation of potato the corresponding trend equations were estimated for the period from 1998 to 1993 applying the OLS method. The estimated equations were as follows:

Area under Production:	$A = 3.33 + 0.22\ t$
Production:	$P = 60.12 + 3.02\ t$
Average Yield:	$Y = 18.10 + 0.26\ t$

The trend values estimated from the above equations are shown in Table 1. The result shows that in the case of area under cultivation of potato there has been minor difference between the actual values and the trend values. But is a fact that there has been an increasing trend in the area under cultivation of potato in Tripura. It can also be concluded from the result shown in the table that both the area under cultivation and production of potato are showing almost the same trend over the time period from 1988-89 to 1992-93.

As far as the yield per hectare is concerned, it has a different trend. Actual data show increase in the yield of potato up to 1990-91 and decline thereafter, but the trend show a continuous fall in the average yield during the entire period from 1988 to 1993.

District-wise data reveal that total area under cultivation of potato in the West and South Tripura districts have almost been equal as is evident from Table 2. But in the North Tripura district, the area has been less compared to the other two districts. Nevertheless, in all the districts, there has been an increasing trend in the area under cultivation. As far as the production of potato is concerned it increased till 1991-92 in North Tripura district, but during 1992-93 it dropped marginally. In the West Tripura district the production fell during 1989-90 and again picked up in the subsequent years till 1992-93 after which it declined marginally. Compared to the North and West Tripura districts, the performance of South Tripura district was better. Production in this district increased continuously during the period. Though there was a steady overall increase in production and area under cultivation of potato, the average yield did not show similar trend. In the North Tripura district, it showed an increasing trend till 1990-91 after which it started declining. But in case of West and South Tripura districts the increasing trends in average yield were revealed till 1991-92 after which started declining. District-wise analysis, thus, revealed that the performance of South Tripura district in terms area, production and average yield of potato was quite appreciable in comparison to other two districts.

SEASONAL FLUCTUATION

With all kinds of market imperfections and semi-perishable nature of the commodity, the prices of potato like other agricultural commodities are subject to large fluctuations. A special feature of price fluctuation of potato is its seasonal character. In the post harvest period the prices are considerably at lower side whereas in the lean season these are quite high. Thus, from the farmers' point of view they are denied of reasonable prices for their produce during post harvest period on the consumers' side they are to pay high prices during lean season. Since potato cultivation starts in the months of October-November and harvesting in February-March, the prices go up during October-November after which it drops significantly in February-March. Prices remain stabilized at low rates for a short period of one month or two after which it start picking up from June-July.

In order to analyse the nature of seasonal price fluctuation of potato seasonal indices were calculated for each district using the average percentage method and presented in Table 3. Comparing the indices of the three districts it can be said that there were three distinct spatial price fluctuations. During the entire period the seasonal index was maximum in North Tripura district and minimum in South Tripura district. This trend of spatial variation was reversed during June-September and accordingly seasonal index during this period turned out to be highest in South Tripura district and lowest in North Tripura district. During May the seasonal index was minimum in North Tripura district and maximum in West Tripura district. For the rest of the period of the year the seasonal index was minimum in West Tripura district and marginally higher in North Tripura district as compared to South Tripura district, excepting in January when it was higher in South Tripura district over North Tripura district.

A close look at the average prices of potato shown in Table 4 revealed that it was highest in South Tripura district. This was particularly because of the fact that the district is most backward in transport and storage facilities. From the standard deviation figures, further it can be concluded that seasonal variation of potato prices in South Tripura district was maximum among all the three districts which might be due to poor marketing facilities. Seasonal fluctuation was lowest in North Tripura district probably because of the fact that the Panichowki market in Kailasahar had comparatively better communication facilities in comparison to Shantirbazar market in South Tripura district. Moreover, Kailasahar is not very far from Kumarghat through which lifeline of Tripura runs. Any imported amount of potato from Guwahati to this market came through this route leading to less transportation cost and less price fluctuation.

CAUSES OF PRICE FLUCTUATIONS

Among the several reasons for seasonal and spatial price fluctuations, the problem of storage, transportation, marketing and warehousing facilities are the most important ones. It may therefore be hypothesized that time distance between harvesting and consumption of potato is one the important factor contributing to price fluctuation. In order to test this hypothesis the correlation coefficient between the prices of potato and

time distance from the month of harvesting was estimated and found to be quite high (i.e., r=0.72) and statistically significant.

As far as storage of potato is concerned no such facilities are available in North Tripura district. Only one cold storage has just started functioning recently in South Tripura district. In the absence of proper storage system quite a large chunk of production are getting damaged every year in Tripura. Lack of warehousing facilities is also causing distress sales of potatoes in the State.

The problem of price fluctuation could have been avoided to a great extent provided the State had been endowed with good communication and transportation facilities. It may be mentioned in this connection that the State gets excommunicated from Guwahati, the principal node of the North Eastern Regional economy during the lean season of potato because of flood caused due to incessant rain in the State.

STATE INTERVENTION AND FAILURE

In order to stabilize the prices of potato in the State, the Government has taken only two important steps. The minimum support price has been fixed to ensure remunerative price to the local potato growers. It is a fact that the prices of potato are determined by the market forces of demand and supply. On the one hand the Government is unable to control the fall in prices below the minimum support prices during harvesting time, on the other, it has no control over the upper limit of the prices in lean season. Thus it has failed in achieving its objective in spite of introducing the scheme of support price. Besides, the Government which has established four cold storages in the State three of which are concentrated in the West Tripura district and one in South Tripura district are quite inadequate in controlling price fluctuation.

CONCLUSION

The foregoing analysis highlights the problem of sharp fluctuation of potato prices in Tripura over time and space. This is to the detriment of the interest of both producers and consumers so far as incentives and utilities are concerned. It has also been observed that the State intervention has failed to achieve the stability objective so far as potato price is concerned. This is not only due to perishable nature of the commodity and

the time distance between production and consumption but also due to poor infrastructure created in the State in the form of transport, communication and storage network. While the problem of price fluctuation should be fought at the level of Government by strengthening pro-stabilisation machinery and infrastructural network, it is also necessary to evolve several types of potato seeds which can be cultivated during any season. There is a need for making attempt on the part of the scientists to evolve seeds with greater capacity to tolerate heat and moisture in the peculiar soil-climatic conditions of the State. Finally, another of way of price stabilisation is through ensuring regional export of potato in harvesting period and provision of transport subsidy to regional importers during lean period. Of course, in the process the Government has a role to ensure that higher potato prices charged while exporting them during harvest adequately compensate the transport subsidy given to the regional importers while importing during lean period.

Table 1

Area, Production and Yield of Potato and their Trend Values in Tripura

Year	Area ('000 Hectares)		Production ('000 M.T.)		Average Yield	
	Actual	Trend	Actual	Trend	Actual	Trend
1988-89	2.99	2.89	54.40	54.08	18.14	18.62
1989-90	3.04	3.11	56.19	57.10	18.48	18.36
1990-91	3.25	3.33	60.30	60.12	18.55	18.10
1991-92	3.48	3.55	64.20	63.14	18.47	17.84
1992-93	3.89	3.77	65.50	66.16	16.84	17.58

Source: Directorate of Agriculture, Govt. of Tripura, Agartala.

Table 2

Area, Production and Yield of Potato and their Trend Values in Tripura

Year	Area ('000 Hectares)			Production ('000 M.T.)			Average Yield		
	North	West	South	North	West	South	North	West	South
1988-89	0.89	1.08	1.08	13.91	19.41	21.08	15.71	17.93	19.50
1989-90	0.93	1.03	1.08	15.50	18.76	21.92	16.60	18.30	20.28
1990-91	0.99	1.13	1.13	16.82	21.00	22.48	16.92	18.59	19.96
1991-92	1.14	1.19	1.14	17.50	22.85	23.85	15.32	19.22	20.85
1992-93	1.16	1.30	1.43	16.45	22.66	26.38	14.18	17.43	18.45

Source: Directorate of Agriculture, Govt. of Tripura, Agartala.

Table 3

District-wise Seasonal Indices of Potato Prices
(1989-1993)

Month	North Tripura	West Tripura	South Tripura
January	105.56	93.59	110.79
February	80.82	59.98	53.60
March	79.15	68.85	52.62
April	86.82	84.59	66.07
May	88.43	102.20	90.67
June	92.73	105.08	115.85
July	81.10	101.89	109.04
August	96.60	110.36	119.22
September	109.29	114.91	118.72
October	125.48	117.54	122.44
November	138.03	131.95	130.09
December	116.58	109.08	116.92

Source: Directorate of Agriculture, Govt. of Tripura, Agartala.

Table 4

Seasonal and District-wise Variation of Potato Prices

Month	North Tripura	West Tripura	South Tripura
January	380.50	356.29	448.33
February	289.50	225.93	215.00
March	281.67	261.25	211.80
April	308.20	319.97	266.84
May	313.70	313.75	371.15
June	330.20	398.41	470.00
July	315.85	387.33	444.00
August	350.80	420.18	486.00
September	398.25	437.83	485.00
October	458.00	447.86	500.00
November	491.06	500.60	525.00
December	426.27	417.77	479.00
Average Prices	362.00	373.93	408.51
Standard Deviation of Prices	65.74	77.39	109.16

Source: Directorate of Agriculture, Govt. of Tripura, Agartala.

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