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# **Effect of the Fluctuation of the Market Price of Potato on Farmers of Hooghly District, West Bengal**

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### **Abstract:**

*Potato is an important cash crop in India. Hooghly district of West Bengal is one of the main producers of potatoes. Extreme volatility and fluctuation of the market price is affecting the potato producers of this district for the last few years. In this study, an analysis of market price at different levels of the marketing chain and different periods of year has been attempted. Data has been collected mainly by a survey of different market and cold storages of this district and from secondary data of different business organizations and Govt. websites like [agmarknet.gov.in](http://agmarknet.gov.in). It is evident from the study that the market price of potato generally increases in the second half of the year and coincide with the planting season of potato. So, the farmers have to buy seed potatoes at a higher price. On the other hand, the market hit its lowest during February and march which is also the harvesting season for farmers of this district. So, they have to sell it at a minimum rate. The selling price of potatoes from the farmer's end is not sufficient to provide them with a handsome profit, and more often they have to face loss. Farmers, in general, does not have any direct access to the wholesale market and retail market and the middleman margin is playing a crucial role along with other marker pricing parameter in the fluctuation of the market rate of potato.*

***Keywords: Potato, Market-price, Hooghly, mudi, sustainability***

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**1. Introduction:** Potato is one of the important cash crops, it gives attractive returns to the farmers due to its extensive market demand nationally and internationally for different kinds of utilization. Further, it has been reported by the International Food Policy Research Institute (IFPRI) and International Potato Centre (IPC), India is likely to have the highest growth rate of potato production and productivity from 1993 to 2020. During the same period, demand for potato is expected to rise by 40 per cent worldwide. This indicates that a picture about a clear opportunity to capture the huge domestic and international market of potato by producing quality potato and their products (Singh, Praharaj, Singh, & Singh, Volume- X, Issue-III

2016). Potato is grown in more than 100 countries in the world with a production of around 3768.27 million tonnes during the year 2016-17. China (991.224 million tonnes) ranks first while India (437.70 million tonnes) and Russia (311.07 million tonnes) rank second and third respectively. In India, potato is cultivated in almost all states and under very diverse agro-climate conditions. The states of West Bengal, Uttar Pradesh, Bihar, Gujarat, and Madhya Pradesh accounted for more than 80 percent share of total production (Ministry of Agriculture and Farmers Welfare, Government of India, 2017). Uttar Pradesh (155.43 million tonnes) and West Bengal (110.53 million tonnes) ranked first and second respectively during 2016-17 followed by Bihar and Gujarat.

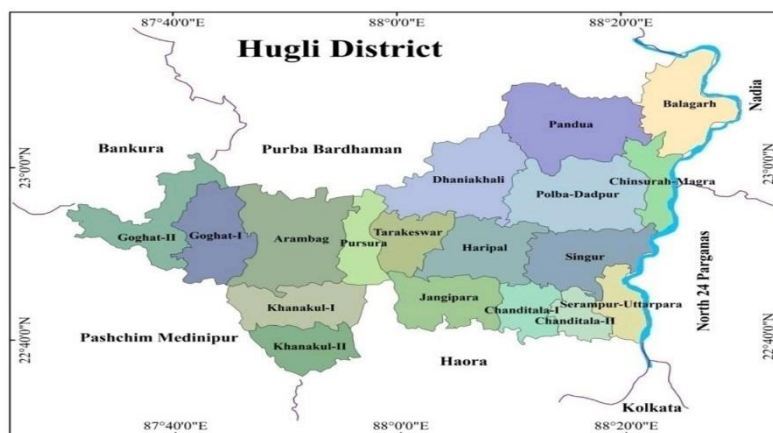
**2. Potato Cultivation in West Bengal:** West Bengal accounts for around a third of India's total potato production. In the districts investigated, highly is the most important crop. Potatoes are a winter crop, with planting occurring from October to December and harvesting occurring from January to March. Not all potatoes must be sold right away because they can be kept. Potato can be stored in either home stores (where they must be sold within two or three months) or cold storage (where they must be sold within two or three months) (where they can last until October when the new planting season begins). Farmers sell their potatoes to local dealers (*phorias*), who then resell them to larger merchants in adjacent wholesale marketplaces (*mandis*). These massive traders then sell them in the capital, Kolkata, or the big retail markets of neighbouring states like Orissa, Andhra Pradesh and North Eastern States.

**3. Agricultural Economy in West Bengal :** Potato prices fluctuate over seasons due to the variations in production and market arrival. Price fluctuations are a matter of concern among farmers, consumers and policymakers. Farmers of potato are concerned about increased price volatility in the potato market. According to several studies, potato prices fall every other year as a result of the market surplus (Singh, Pynbianglang, & Pandey, 2017).

Volatility is caused by supply disruptions as well as changes in output and, eventually, market arrivals (Latwal & Kumar, 2017). Sharp price changes are caused by supply disruptions linked to short-term demand and supply elasticity. Lack of information on possible markets, as well as potato arrival and price behaviour, exacerbates the situation for vegetable growers (Singh, Pynbianglang, & Pandey, 2017). Potato demand is relatively inelastic, and bigger price swings at the retail level reduce the farmer's profit (Bera, Dutta, & Nandi, 2017).

**4. Materials and methods:** The whole price in West Bengal for the last three years, and months wise have been studied and seasonal fluctuation has been analyzed as the period does not exceed one year. The wholesale prices are retrieved from the Directorate of Marketing & Inspection (DMI), Ministry of Agriculture and Farmers Welfare, Government

of India's official website. The sources of primary data relevant to the present work include the data and information generated from intensive field studies.



**Results and findings:** The seasonal variation indices (Table 1, 2, 3) clearly depict an inverse relationship between the prices and arrivals of potatoes during the year 2019 to 2021. The wide seasonal fluctuation in arrivals has a consequential unfavourable impact on prices in the regulated market over different months of the year. The huge quantity of arrivals during post-harvest months of the year leads to the decline in prices (Dhakre & Bhattacharya, 2014). As the harvesting season comes to an end the excess produce stored in the cold storages is released into the market at reasonable prices from the months of July to November.

*Table 1 Seasonal Indices of arrivals and prices of potato in Champadanga, Hooghly market from January, 2019 to December 2019*

Month	Total Arrivals (Tonnes)	Average Prices
January'19	921	589
February'19	1135	445
March'19	3208	536
April'19	1543	870
May'19	1748	973
June'19	2474	958
July'19	3912	909
August'19	4171	901
September'19	4340	920
October'19	2525	1252
November'19	1820	1555
December'19	1522	1923

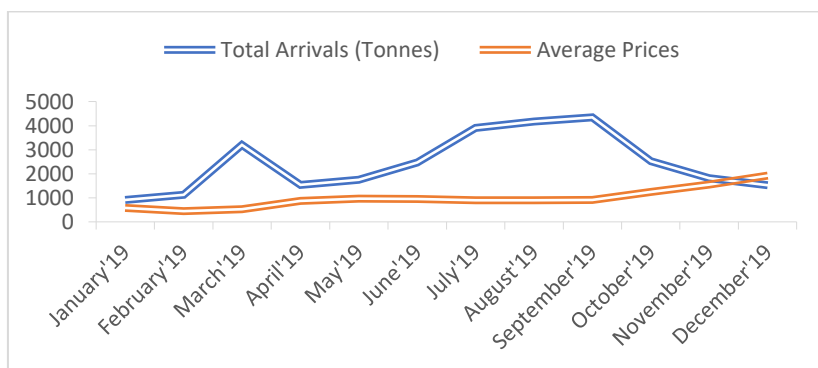


Figure 1 Seasonal Indices of arrivals and prices of potato in Champadanga, Hooghly market from January, 2019 to December 2019

Table 2 Seasonal Indices of arrivals and prices of potato in Champadanga, Hooghly market from January 2020 to December 2020

Month	Total Arrivals (Tonnes)	Average Prices
January'20	808	2026
February'20	1206	1255
March'20	1507	1302
April'20	1067	1650
May'20	1040	1739
June'20	1122	2008
July'20	1503	2322
August'20	1777	2474
September'20	1989	2786
October'20	2162	2830
November'20	2296	3514
December'20	2344	2067

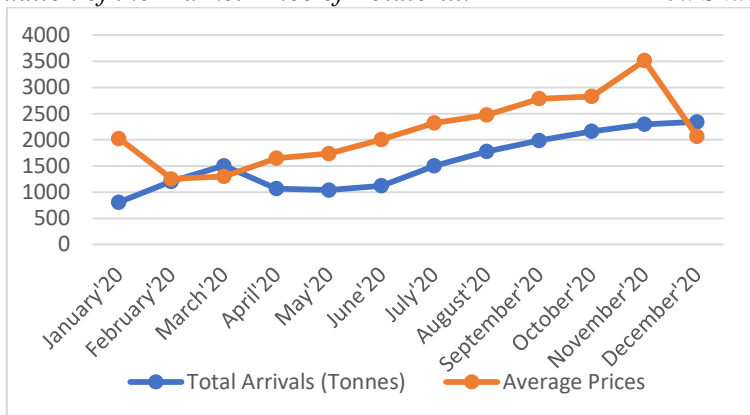


Figure 2 Seasonal Indices of arrivals and prices of potato in Champadanga, Hooghly market from January, 2020 to December 2020

Table 3 Seasonal Indices of arrivals and prices of potato in Champadanga, Hooghly market from January, 2021 to December 2021

Month	Total Arrivals (Tonnes)	Average Prices
January'21	946	984
February'21	1277	571
March'21	3619	867
April'21	1283	1037
May'21	1331	1157
June'21	1704	1046
July'21	2058	904
August'21	2445	988
September'21	2210	971
October'21	1331	1220
November'21	815	1217
December'21	598	1440

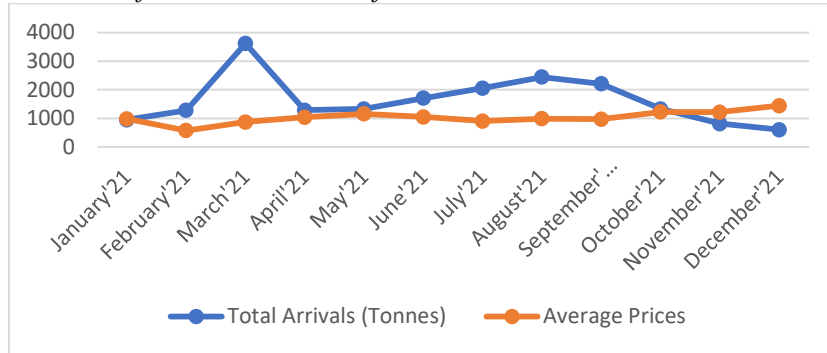


Figure 3 Seasonal Indices of arrivals and prices of potato in Champadanga, Hooghly market from January, 2021 to December 2021

The results of the analysis of factors affecting the potato prices in Champadanga, Hooghly market are presented in Table 1, 2, 3. It can be observed that potato prices showed a negative relation with the total arrivals and positive relationship relation to with the future prices and price lag. The elasticity of prices with respect to the total arrivals was found in total arrivals would decrease the price. The regression coefficient of production was found. The elasticity of prices with respect to production was found in total production would decrease the price. The regression coefficient for future prices was found indicating a positive relationship of market prices and future prices. The elasticity of market prices with respect to future prices was found increase in future price would increase the market prices. The coefficient of multiple regression was found indicating that total variation in price of potato was explained by the arrivals, future prices and lagged prices.

There are also other factors like pest and disease attacks, weather irregularities, marketing aspects like transportation, storage, inadequate and costly cold chain facilities which affect the prices of potato. We know that about 90 percent of potato in India is produced in rabi season hence storage plays an important role in distributing supply over the remaining months of the year. Shortage of cold storage space in many states of India and erratic electricity supply create problems for potato marketing. Wholesale price analysis from secondary data shows that the Potato price reaches the minimum level in February when the crop is harvested. Gradually it is in an increasing trend up to May. According to a cold storage survey, potatoes are kept in cold storage for a maximum of 8 months (March - October). The wholesale price remains steady from May to September because the majority of the price is set by the cold storage owners.

According to a field survey, the pricing trend varies year to year depending on seasonal differences such as early or late monsoon, winter rain, and so on. It was discovered through field study that the maximum percentage of the potato production was sold shortly after harvest to the *forums* by the smaller farmers, whereas less per cent was stored in the household for later sale after two or three months and rest was consumed in the household.

The market price of potato has a fluctuating trend both from field and store. The price of the potato is determined by the production of the crop and market forces. Whenever the production of this crop was high, the market price from the field gets decreased; again, a lesser supply of potato in the market raises its value in different periods of time.

But if we compare the price of potato from the field and store, then it can be said that due to the role played by the middlemen, the price of potato from the store remains higher. The middlemen always store potato in cold storage to create an artificial crisis so that it causes an abrupt rise in market price. Thus, the market price of potato from the store is always high compared to that from the field. The average market price of potato largely depends upon the demand for potato within and surrounding areas of the state. The market price of the crop is heavily influenced by the area, production, and yield rate. The above-mentioned data reflects a clear picture of the changing nature of the market price in my study area. It is evident from the study that the market price of potato generally increases in the second half of the year and coincides with the planting season of potato. So, the farmers have to buy seed potato at a higher price. On the other hand, the market hits its lowest during February and March which is also the harvesting season for farmers of this district. So, they have to sell it at a minimum rate. The selling price of potato from the farmer's end is not sufficient to provide them with a handsome profit, and more often they have to face loss.

Farmers also do not know the price at which middlemen resell potatoes to wholesale buyers. Survey responses indicated there were no explicit or implicit contracts between the middlemen and farmers. Instead, the market appeared to be characterized by ex-post bargaining between village traders and farmers, in which the farmers had limited outside options.

**5. Policy Implication:** The findings of the study have recommended that the farmer suffers from numerous constraints, which must be removed if their financial situation is to be strengthened. Some of the measures that could be adopted to achieve this result are indicated below.

(a) The wider and frequent fluctuations in wholesale prices, wide variation in arrivals, etc., affected the returns to the potato grower. In order to encourage the farmers to continue with potato products, the price should be stabilized by the potato marketing cooperatives, and minimum and maximum prices for the potato to be fixed.

(b) The wide seasonal fluctuation in arrivals of the product has a consequential unfavourable impact on prices in a regulated market over different months of the year. The huge quantity of arrivals during post-harvest months of the year leads to a decline in prices. The effective use of warehousing facilities and credit to the producer-seller against

warehouse receipts would go a long way in avoiding seasonal variation in arrivals and prices.

(c) The regulated market should take necessary steps to oversee the dissemination of the market information regarding the prices. It should reach the farmers of remote places.

(d) Since the potato is mainly used in making 'chips' which is a processed product. So, the establishment of processing units may provide value addition to potato as indicated by a lower number of processing industries. This would help the farmer to get a better income, reduce the price fluctuation, and alternatively trigger the interest of the farmer to produce a good quality product.

**6. Conclusion:** The present study examined the behaviour of prices and arrivals of potato in Hooghly district. There is huge inter-year and intra-year instability in the prices of potato. Production of potato and the seasonality in production are the two important factors affecting the same. Price discovery of potato is a complex process and is affected by a number of factors like production, total arrivals, lagged price, future prices, which have been quantified here and other factors like transportation, storage, weather uncertainties and pests and disease attack. Unexpected natural calamities and pests and diseases and frost have at times caused a sudden drop in production of the crop in some states leading to higher prices. These higher prices induce the potato growers to increase the area under potato next year resulting in increased production and arrivals leading to a glut in the market and a sharp decline in prices. Thus, the cobweb-type demand-supply cycle is prevalent in the potato production and marketing system in then country which brings violent fluctuations in potato prices and at the same time has serious political implications. Policymakers should emphasize price stabilization strategies to safeguard the interest of all stakeholders associated with potato farming and business.

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