



## Research Article

# PERFORMANCE OF POTATOES IN NAGPUR APMC MARKET

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Received: July 02, 2018; Revised: July 08, 2018; Accepted: July 09, 2018; Published: July 15, 2018

**Abstract:** Agriculture is the base of the Indian economy but, in real terms the farmer does not get proper returns from his investment. The variations in prices of Potatoes have been one of the major factors affecting the income level of the Indian farmers. The knowledge on the interrelation between the arrival and prices of farm product (Potatoes) is required for assessing the extent of price fluctuation over time. The analysis of arrival and prices over time is important for formulating a sound agriculture price policy. The present paper is selected with the objectives to know the growth, instability, and trend of area, production and productivity for Potatoes crop. From the result, it found that though production of Potatoes is increasing significantly, arrival and prices of potatoes fluctuates regularly, the growth in arrival of Potatoes is increases in Nagpur market, in two decades.

**Keywords:** APMC Market, Farm product

**Citation:** Wankhede Priti and Warade Sangita (2018) Performance of Potatoes in Nagpur APMC Market. International Journal of Agriculture Sciences, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 10, Issue 13, pp.- 6536-6538.

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## Introduction

Potatoes, is called as 'The king of Vegetables', which is came up as fourth most important food crop in India after Rice, Wheat and Maize. Indian Vegetable basket is incomplete without Potatoes. The Potatoes content dry matter, edible energy and edible protein which makes it nutritionally superior vegetable as compared to other vegetables. It is staple food all over the world. Now, it becomes as an essential part of junk food worldwide. As it is short durational crop, it provides high quantity of dry matter, edible energy and edible protein in short time than cereals like Rice and Wheat. Therefore, it may be considered as major component in nutritional balance. It is Rabi seasonal crop. Presently, trend of diversification from cereals to horticultural crops, led to shifting from Wheat / Barley cultivation to Potatoes cultivation. It provides better returns to the farmers. The study of trend in arrival and prices of Potatoes in Nagpur district is necessary because Potatoes is most important Vegetable crop of India and the staple food of millions of Indians. In Nagpur area, very few of the farmers cultivate the Potatoes. But arrival is continuous in Nagpur due to staple food of citizens. Therefore, the study regarding the arrival and prices will focus on the stability in arrival and prices of Potatoes in Kalamna Market. The study focuses on trend in the area, production and productivity of Potatoes as well as on growth and instability in arrival and prices of Potatoes in APMC Market. The results of the this research work will be supportive for policy makers, farmers and input market participants involved in promotion of Potatoes cultivation, formulation of policies and strategies to boost the production of Potatoes.

## Objectives of Pape :

- To study the trend of area, production, productivity of Potatoes in Nagpur district.
- To workout growth in arrival and prices of Potatoes in APMC Kalamna Market Nagpur.
- To estimate the instability in arrival and prices of Potatoes in APMC Kalamna market Nagpur.

## Methodology

This section focuses on data source, period of study and analytical tools used for

estimating trend and instability.

## Source of data

The data was collected from Agriculture Produce Market Committee Nagpur (APMC), Department of Agriculture, Government of Maharashtra, on arrival and prices of the selected Potatoes crop. The Area, Production and Productivity data is collected from the website of <https://www.indiastat.com>.

## Period of the data

The monthly data of 20 years was collected from the year 1996-97 to 2016-17 on the arrival and prices of the Potatoes crop.

## Analytical tools

The analytical tools will be used to estimate growth, instability and trend in Area, Production and Productivity of Arrival and Price of Potatoes.

## Estimation of growth and trend in APY

In the present study, the compound growth rates and trend in APY of arrival and prices of Potatoes crop are estimated as follows.

The exponential equation of the following type is use:

$$Y=ab^t$$

Where, Y = Area, production, productivity, Arrival and prices

t = time period in years

b = trend value (coefficient)

a = intercept.

$$\text{Compound Growth Rate} = (\text{Antilog } b-1) \times 100. \text{ (Chand and et al. 2012)}$$

The significance of the estimated compound growth rates was tested with the help of 't' test.

For getting normal base year, the triennial average will be taken.

## Estimation of instability

To estimate the instability of arrival of Potatoes, the coefficient of variation and Cuddy Della Index is used. The formulae are as follows:

Coefficient of variation (CV): Standard deviation/mean

To avoid the over estimation of CV, the following Cuddy Della Index (Ix) is used in comparison with CV.

Cuddy Della Index (Ix) are calculated as follows:

$$I_x = CV \sqrt{(1 - R^2)}$$

Where,

CV= Coefficient of variation ( $\sigma/X$ )

= Adjusted coefficient of multiple determination.

### Results and Discussion

The result of trend, growth and instability of potatoes arrival and prices are discussed in subsequent topics:

#### Trend in Area, Production, Productivity of Potatoes

The trend in area, production and productivity of Potatoes in India and Maharashtra are explored and explained in this section.

#### Trend in Area, Production and Productivity of Potatoes in India

The [Table-1] represent trend in Area, Production and Productivity of Potatoes in India for the decades 1996-97 to 2006-07 and for the decades 2007-2008 to 2016-2017 as well as for the whole period of the two decades.

Table-1 Trend in Area, Production and Productivity of Potatoes in India

Year	Area	Production	Productivity
	CGR	CGR	CGR
1996-2007(1 <sup>st</sup> period)	1.34*	1.79*	0.46 <sup>NS</sup>
2007-2017(2 <sup>nd</sup> period)	2.13***	3.66***	1.53*
1996-2017 (Whole period)	3.41***	4.81***	1.34***

\*Significant at 10 percent, \*\*Significant at 5 percent, \*\*\*Significant at 1 percent, NS- Non-significant

The trend in area of Potatoes in India shows that the area increased by 1.34 percent per annum significantly in first period and by 2.13 percent per annum significantly in second period. While for whole period, it was increased by 3.41 percent per annum significantly. The trend in production of Potatoes in India revealed that in the first period, the production of potatoes increased by 1.79 percent per annum significantly and in second period, it is increased by 3.66 percent per annum significantly. While for whole period, it was increased by 4.81 percent per annum significantly. The productivity of Potatoes was increased in both periods. But it is increased significantly in second period (1.53 percent per annum). Overall, it was increased by 1.34 percent per annum significantly. Overall, the area, production and productivity increased in India over the period of 20 years.

#### Trend in APY of Potatoes in Maharashtra

The [Table-2] represent trend in Area, Production and Productivity of Potatoes in Maharashtra for the decades 1996-97 to 2006-07 and for the decades 2007-2008 to 2016-2017 as well as for the whole period of the two decades. The trend in area of Potatoes in Maharashtra was positively significant, by 0.87 percent per annum in first period and declined by 2.21 percent per annum non-significantly in second period. While for whole period, it was increased by 0.2 percent non-significantly. The trend in production of Potatoes in Maharashtra was positively significant, by 4.74 percent per annum significantly in first period and increased by 4.92 percent per annum non-significantly in second period. While for overall, it was increased by 11.13 percent per annum significantly.

Table-2 Trend in Area, Production and Productivity of Potatoes in Maharashtra

Year	Area	Production	Productivity
	CGR	CGR	CGR
1996-2007(1 <sup>st</sup> period)	0.87***	4.74*	3.9 <sup>NS</sup>
2007-2017(2 <sup>nd</sup> period)	-2.21 <sup>NS</sup>	4.92 <sup>NS</sup>	7.16**
1996-2017 (Whole period)	0.2 <sup>NS</sup>	11.13***	10.88***

\*Significant at 10 percent, \*\*Significant at 5 percent, \*\*\*Significant at 1 percent, NS- Non-significant

The trend in productivity of Potatoes in Maharashtra for first period was positively

3.9 percent per annum non- significantly and increased by 7.16 percent per annum significantly in second period. While for whole period, it was increased by 10.88 percent per annum significantly.

Overall, the area, production and productivity increased in Maharashtra over the period of 20 years.

#### Growth performance in arrival and price of Potatoes in APMC Nagpur Market.

[Table-3] represents growth in arrival and prices of Potatoes in APMC Nagpur Market for the decades of 1996-1997 to 2006-2007 and for the decades of 2007-2008 to 2016-2017 as well as for whole period of said two decades.

Table-3 Growth in Arrival and Prices of Potatoes in APMC Nagpur Market

Year	Arrival	Value	Model Price
	CGR	CGR	CGR
1996-2007 (1 <sup>st</sup> period)	-0.07 <sup>NS</sup>	0.33***	0.41***
2007-2017(2 <sup>nd</sup> period)	-0.52***	-0.06 <sup>NS</sup>	0.47***
1996-2017(Whole period)	0.28***	0.76***	0.48***

\*Significant at 10 percent, \*\*Significant at 5 percent, \*\*\*Significant at 1 percent, NS- Non-significant

The growth in arrival of Potatoes was declined by 0.07 percent per annum non-significantly for first decade while it was declined by 0.52 percent per annum significantly for second decade. For whole period, it was 0.28 percent per annum significantly. Which shown the growth in arrival was positive in whole period. The value of Potatoes was 0.33 percent per annum in first decade significantly and declined by 0.06 percent per annum was non-significant in second decade. For whole period, the value was increased by 0.28 percent per annum significantly. The model price of Potatoes increased in first decade was 0.41 percent per annum significantly, while for second period, it was increased 0.47 percent per annum significantly. For whole period, the model price was positively increased by 0.48 percent per annum significantly.

#### Instability in Arrival and Prices of Potatoes in APMC Nagpur Market

[Table-4] indicates the instability in Arrival and Price of Potatoes in APMC Kalamna market Nagpur for the decades of 1996-1997 to 2006-2007 and for the decades of 2007-2008 to 2016-2017 as well as for whole period of said two decades. Co-efficient of Variation and Cuddy-Della Index are showing instability in arrival and price. The instability indicates the variation in the selected indicator over the period of the study. The Cuddy-Della Index indicates instability at controlled level.

Table-4 Instability in Arrival and Prices of Potatoes in APMC Nagpur Market.

Year	Arrival		Price	
	CV	Cuddy Della	CV	Cuddy Della
1996-2007 (1 <sup>st</sup> period)	32.65	32.6	39.86	37.48
2007-2017 (2 <sup>nd</sup> period)	43.54	37.74	43.66	40.78
1996-2017 (Whole period)	53.69	49.63	54.53	42.37

The Co-efficient of Variation in Arrival of Potatoes in APMC Nagpur Market Nagpur was 32.65, 43.54 and 53.69 percent in first decade, second decade and for whole period respectively, while the CD Index for Arrival of Potatoes in APMC Nagpur Market was 32.6, 37.64 and 49.63 percent in first decade, second decade and for whole period respectively. The Co-efficient of Variation in Model Price of Potatoes in APMC Nagpur Market was 39.86, 43.66 and 54.53 percent per annum in first decade, second decade and for whole period respectively, while the CD Index for Model Price of Potatoes in APMC Nagpur Market was 37.48, 40.78 and 42.37 percent in first decade, second decade and for whole period respectively. Amongst the arrival and model price, instability was seen in arrival and prices over the period of time. Overall, instability index shows that the variations in arrival and prices was exists during selected period. The Co-efficient of Variation shows that variation of the almost all parameters is highest than the variation showed by Cuddy-Della Index.

## Conclusion

The major findings of the project work directed to draw few conclusions about the price behavior of Potatoes in APMC Kalamna are as listed below:

- ❖ The area, production and productivity increased significantly in India and Maharashtra state.
- ❖ Potatoes arrival and prices are very unstable and fluctuate regularly.

**Application of research:** Result and work of study will be helpful in policy making areas regarding production and distribution of potatoes in India. It can also help the researchers working in trend and tendencies of vegetables.

**Research Category:** Agriculture Marketing

**Abbreviations:** APMC: Agriculture Produce Market Committee

**Acknowledgement / Funding:** Author thankful to Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola, 444104, Maharashtra, India

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University: Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola, 444104, India

Research project name or number: PhD Thesis

**Author Contributions: All author equally contributed**

**Author statement:** All authors read, reviewed, agree and approved the final manuscript

**Conflict of Interest: None declared**

**Ethical approval:** This article does not contain any studies with human participants or animals performed by any of the authors.

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