



## STUDY ON PRICE BEHAVIOUR OF ONION IN KURNOOL DISTRICT OF ANDHRA PRADESH

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### ABSTRACT

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Onion (*Allium cepa*) is a popular and widely cultivated vegetable crop worldwide. It belongs to the *Allium* genus, which also includes garlic, leeks, and chives. Onions are known for their pungent flavour and distinctive aroma, making them a staple ingredient in many cuisines. Onions are cool-season crops and can be grown in a wide range of climates. They prefer well-drained, sandy-loam soil with a pH between 6.0 and 7.5. They require full sunlight, but they can tolerate partial shade. The ideal temperature for onion growth is between 55°F and 75°F (13°C to 24°C). There are numerous onion varieties, ranging in size, shape, and colour. Common types include yellow or brown onions, red onions, and white onions. They are a versatile and essential vegetable in the culinary world, adding flavour to a wide range of dishes. Their cultivation is practiced globally, both on a small scale for home gardening and on a large scale for commercial production. Understanding the price behaviour of onions in Kurnool district is vital for various stakeholders, including farmers, traders, policymakers, and consumers. This study aims to contribute valuable insights to the agricultural community, policymakers, and researchers. Furthermore, the findings of this research will aid in devising strategies to ensure a stable and sustainable onion market that benefits all stakeholders involved. To understand the price patterns and trends of onions in the Kurnool district, time series analysis was applied. Secondary data was used for studying the price behaviour and price trends in onion crop. This analytical approach helped identify fluctuations and changes in onion prices over time. A regression analysis was conducted on onion price data in selected markets to study the long-term fluctuations. Among these markets, the Kurnool market showed the lowest annual increase in prices, which amounted to 3.65 Rs/qt. This finding was statistically significant at a 1% level of significance. Within the Kurnool market, the month of August exhibited the highest seasonal index, reaching a value of 127.104. February and November had slightly lower seasonal indices, standing at 123.061 and 120.825, respectively. On the other hand, the lowest seasonal index of 59.15 was observed in May. This decline during the mentioned period was attributed to the arrival of rabi onions, known for their longer shelf life compared to the Kharif onion crop. However, despite the fluctuations, no distinct price cycles were detected for the onion crop in the chosen market. The irregular fluctuations in the Kurnool market did not exhibit any specific pattern or periodicity in their occurrence.

### KEYWORDS:

### INTRODUCTION

Onion is being cultivated in Andhra Pradesh over an area of 44,600 hectares with a yield of 16.2 tons per hectare, slightly lower than the national average of 18.64 tons per hectare. Kurnool district leads in both area and production in the state. The farmers in Kurnool district prefer traditional local varieties for the Kharif season due to a lack of awareness about improved high-yielding varieties. This results in poor yields and low net returns. To address this issue, there is a need to educate farmers about the latest suitable varieties for Kharif and promote their adoption to increase production, productivity, and net income. India's onion production is highly influenced by rainfall, making the crop susceptible to climatic changes. Additionally, onion prices in India are often volatile due to supply-demand imbalances, transportation bottlenecks, and inadequate storage facilities. In 2022,

Kurnool District experienced fluctuating onion prices, with wholesale prices dropping to Rs. 4 per kg in the agriculture market yard. This was attributed to a good harvest and low demand, exacerbated by incessant rains that damaged onion crops in several acres. Traders were reluctant to offer higher prices for the low-quality onions, with prices ranging from Rs. 400 to Rs. 420 per quintal, causing distress to the farmers who couldn't meet the Minimum Support Price of Rs. 770 announced by the State Government. This study aims to contribute valuable insights to the agricultural community, policymakers, and researchers. Furthermore, the findings of this research will aid in devising strategies to ensure a stable and sustainable onion market that benefits all stakeholders involved.

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## METHODOLOGY

Time series analysis was used to identify the patterns and trends in the price behaviour of onion in Kurnool district. Secondary data was used for studying the price behaviour and price trends in onion crop. The data was collected from registers maintained by the respective market committees, NHRDF (National Horticulture Research and Development Foundation). The time series data on monthly prices of onion for the period of 15 years from 2008 to 2022 required for the study was collected from the registers maintained by the Agriculture Produce Market Committees (APMCs), AGMARKNET and NHRDF.

**Time series analysis:** A time series is a set of observations taken at specified times, usually at equal intervals. The intervening period may be an hour, day, week, month, season or year. Database for time series analysis in the present study was the data on monthly prices from 2008 to 2022 in chronological order. Analysis of time series data on prices is of great importance.

The major time elements or components of time series have been identified as i) secular/long term/trend component (Tt) ii) seasonal variation/periodic movements (St) iii) cyclical movements (Ct) and iv) irregular movements (It).

**Secular / trend component:** The tendency of prices to move up or down over a longer period of time is termed as trend. The factors responsible for such changes in time series are the growth of population, change in the tastes of people, technological advances in the field etc.

**Seasonal variation/periodic movements:** The variation within a year is called as seasonal variation. Among the components of time series, seasonal variations cause the movements of the data very frequently which recur more or less regularly in the same months of successive years. The main cause of seasonal variations are customs, climate etc.

**Cyclical movements (Ct):** A cycle is defined as a regularly occurring phenomenon. When this phenomenon occurs in movement of prices, it is termed as price cycle. Cyclical variation is an oscillatory movement in a time series where the period of oscillation happens to be of more than one year. Oscillating movement of less than one year periodicity is termed as seasonal variation. Generally, the cyclical movements take the form of a

wave with an uneven length (intervening period between one peak and the next or between one trough and the next) and amplitude (extent of upswings and downswings) because of complex combination of forces affecting the equilibrium of demand and supply.

**Irregular variations (It):** Irregular or episodic price movements represent that part of the behaviour of prices which is not systematic. A particular price movement may not recur in the future. No generalizations can be made about such price fluctuations because of the diversity in their nature and irregularity of the cause-and-effect relationship in their occurrence. They may be of short or longer duration.

## RESULTS AND DISCUSSIONS

The examination of a time series involves studying of its different elements and their characteristics. There are four components in the time series, namely trend, cyclical, seasonal, irregular and these components are interconnected in a multiplicative manner.

This section focused on segregating these elements from a monthly pricing data of onion crop in Kurnool market. A complete understanding on price helps in making informed decisions which helps in shaping agricultural policies.

### Trends in prices of onion in Kurnool market

Examining the trend component in a monthly price series involves determining the overall trajectory of price fluctuations over a specific duration. Typically, the trend was represented by a linear expression. To determine the long-term fluctuations of onion prices in the chosen markets, the price data of onions were analysed using regression analysis.

The findings reported in the Table 1, indicated a notable upward trend in onion prices in the Kurnool market. These trends were observed to be statistically significant. The annual price increment at the Kurnool market was low. (3.65 Rs/qt). It was found to be statistically significant at 1% level of significance.

**Table 1. Trends in prices of onion**

Market	Fitted equation	Adj-R2	p-Value
Kurnool	757+3.65*t	0.0473	0.001958**

\*\* Significant at 1% level of significance

**Seasonal indices of onion prices in Kurnool market**

To analyse the seasonal fluctuations in onion prices within specific markets, seasonal indices were calculated using the 12-month moving average approach. The computed seasonal indices for monthly prices in the chosen markets were shown in Table 2.

**Table 2. Seasonal indices of onion prices**

Months	Seasonal indices
January	113.581
February	123.061
March	79.912
April	64.019
May	59.15
June	91.494
July	106.326
August	127.104
September	98.201
October	115.871
November	120.825
December	100.458

From the results it was found that in Kurnool market, August month had the highest seasonal index, with a value of 127.104, while February and November followed closely behind at 123.061 and 120.825 respectively. Conversely, the lowest seasonal index was observed in May measuring 59.15. In Kurnool, the market witnesses the commencement of the early kharif crop's arrival in the August month. Subsequently, the market experiences the entry of the late kharif crop in the months of October and November. It was evident from the table that highest seasonal indices for onion prices were recorded during the months of August, November, October and February at the Kurnool market. Conversely, the lowest seasonal indices were observed in the months of March, April and May.

**Cyclic variations in onion prices**

The Table 3, displayed the outcomes of cyclical fluctuations in onion prices in Kurnool market. The analysis revealed that there were no instances of price cycles detected in chosen market.

**Irregular variations in prices of onion**

Following Table 3, presented the non-systematic changes in onion prices in selected markets, while following figures visually illustrated these variations. The data in the table clearly indicated that the irregular

**Table 3. Cyclic and Irregular variations in prices of onion**

Year	Month	Cyclical indices (%)	Irregular indices (%)	Year	Month	Cyclical indices (%)	Irregular indices (%)
2008	January	*	*	2009	January	86.208	112.0174
	February	*	*		February	84.936	101.4564
	March	*	*		March	84.146	120.0307
	April	*	*		April	86.599	94.74474
	May	*	*		May	88.378	88.24481
	June	*	*		June	87.689	86.99153
	July	64.978	117.6567		July	88.640	85.3486
	August	69.440	128.0199		August	90.661	65.27393
	September	74.157	98.26045		September	90.339	92.56578
	October	78.295	75.69193		October	88.656	121.1187
	November	81.423	122.2063		November	87.731	107.2483
	December	84.539	139.4055		December	86.968	122.7187

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Table 3. Cont...

Year	Month	Cyclical indices (%)	Irregular indices (%)	Year	Month	Cyclical indices (%)	Irregular indices (%)
2010	January	86.190	151.4282	2014	January	171.973	44.94892
	February	85.948	117.2046		February	163.990	36.12171
	March	87.827	89.59545		March	147.937	67.16981
	April	90.735	70.50642		April	129.033	78.25673
	May	92.685	79.68711		May	114.604	109.9063
	June	100.271	61.94912		June	106.559	107.0872
	July	115.896	61.38176		July	106.071	152.3197
	August	129.699	44.63643		August	109.986	110.8768
	September	147.172	88.31979		September	114.145	88.33589
	October	160.584	81.47325		October	118.100	79.34293
	November	161.747	72.59176		November	121.918	73.12456
	December	163.026	162.8464		December	124.988	85.85864
2011	January	164.630	210.6226	2015	January	123.559	97.17868
	February	166.930	129.2698		February	123.547	89.38461
	March	166.939	229.4149		March	131.387	112.6375
	April	163.145	49.99785		April	140.212	105.0317
	May	158.788	53.00904		May	145.618	117.6311
	June	147.765	55.82377		June	146.998	96.9088
	July	125.809	70.94961		July	144.444	68.4909
	August	105.120	90.3653		August	139.334	132.2786
	September	83.527	111.4358		September	132.397	171.1776
	October	69.083	111.0114		October	124.400	144.4494
	November	68.927	97.19268		November	115.759	114.8161
	December	68.326	75.16612		December	107.045	90.29941
2012	January	66.194	51.25842	2016	January	100.789	68.88152
	February	63.103	50.79949		February	92.475	41.5907
	March	59.954	80.89869		March	78.362	68.22184
	April	57.934	119.7673		April	63.887	78.07692
	May	56.844	162.9143		May	52.816	116.0217
	June	58.434	102.0502		June	45.234	95.80404
	July	62.738	97.13252		July	40.166	119.2626
	August	69.197	71.01175		August	37.921	94.42789
	September	76.959	82.31786		September	38.132	95.51558
	October	83.558	69.33627		October	38.500	58.47273
	November	88.324	67.48109		November	38.321	63.63874
	December	93.463	103.6881		December	38.153	60.84974
2013	January	103.099	88.91745	2017	January	38.007	55.84498
	February	118.309	109.307		February	37.873	86.54186
	March	138.957	98.9781		March	37.758	170.0991
	April	160.913	86.2031		April	37.664	127.3019
	May	178.063	77.31028		May	37.590	156.7199
	June	187.773	73.44719		June	37.515	111.0676
	July	189.878	112.6692		July	37.445	123.0178
	August	186.359	140.1467		August	37.361	92.17633
	September	181.849	190.7418		September	37.209	94.15195
	October	178.686	168.6657		October	37.515	57.72624
	November	176.626	128.9476		November	37.427	62.69004
	December	175.147	92.37954		December	36.831	60.65271

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Table 3. Cont...

<b>Year</b>	<b>Month</b>	<b>Cyclical indices (%)</b>	<b>Irregular indices (%)</b>	<b>Year</b>	<b>Month</b>	<b>Cyclical indices (%)</b>	<b>Irregular indices (%)</b>
2018	January	38.347	53.26362	2021	January	137.028	119.7682
	February	41.347	76.29332		February	135.576	126.1831
	March	44.357	139.3737		March	137.577	78.37502
	April	47.312	121.95		April	134.345	65.40176
	May	49.076	95.84114		May	124.268	93.03682
	June	50.042	78.39415		June	112.608	102.5274
	July	50.571	167.8808		July	104.486	93.30437
	August	50.064	135.0511		August	98.867	72.73205
	September	49.383	150.003		September	95.298	81.05941
	October	49.893	107.3237		October	94.152	103.7471
	November	52.065	65.12821		November	91.463	95.19368
	December	54.817	63.99292		December	87.329	105.5938
2019	January	54.883	37.14629	2022	January	83.525	120.5304
	February	55.265	35.11626		February	80.595	123.664
	March	62.263	92.51883		March	78.455	119.2543
	April	71.317	103.9892		April	75.472	98.8923
	May	83.966	98.4851		May	72.355	88.8743
	June	100.673	69.17048		June	70.43	95.90799
	July	115.863	48.38128		July	*	*
	August	130.966	80.65147		August	*	*
	September	141.487	144.2041		September	*	*
	October	153.767	91.61719		October	*	*
	November	172.335	145.162		November	*	*
	December	185.775	118.2996		December	*	*
2020	January	194.531	102.943				
	February	196.305	102.9118				
	March	187.616	67.95476				
	April	183.765	162.7051				
	May	185.247	163.8283				
	June	184.797	92.75096				
	July	183.454	89.63827				
	August	180.659	22.03156				
	September	178.55	34.35284				
	October	168.933	113.1478				
	November	152.308	154.5907				
	December	142.149	157.3574				

fluctuations in Kurnool market do not display any specific pattern or periodicity in their occurrence.

In conclusion, studying the price behaviour of onions is essential for various stakeholders in the agricultural and food sectors. Understanding the underlying factors that influence onion prices can aid policymakers, farmers, traders, and consumers in making informed decisions, promoting stability in the market, and ensuring a steady and affordable supply of onions.

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