

## Price dynamics of soybean in Belagavi district of Karnataka: A comprehensive study

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**Abstract:** Soybean (*Glycine max*) is a globally significant commodity, serving as a crucial source of edible oilseeds, vegetable protein and acting as a fundamental raw material for various chemical products. This study delves into the intricate dynamics of the soybean market by analyzing ten years of secondary data obtained from the Krishimaratavahini website, specifically focusing on market arrivals and prices of soybean. Bailhongal and Hukkeri markets have been selected for the study purpose in the Belagavi district as they are the major markets in the district. The research employs the calculation of seasonal indices to uncover nuanced patterns in market fluctuations, providing valuable insights for stakeholders, particularly farmers to make informed and strategic decisions. A key finding revealed a robust negative correlation coefficient of 0.89 (significant at the 1% level) and 0.67 (significant at the 5% level) between average monthly arrivals and prices of soybean in the selected markets. This emphasizes the inverse relationship between market arrivals and prices, underscoring the necessity for farmers to understand these dynamics for optimizing their selling strategies. Furthermore, the study identifies critical peaks in seasonal indices, highlighting October as the month with the highest market arrivals indexed at 241.09 and 366.13, April and May stand out as pivotal months, securing the highest seasonal indices for market prices in Bailhongal and Hukkeri markets, respectively indexed at 107.83 and 109.58. These insights offer a nuanced understanding of temporal fluctuations in the soybean market, enabling stakeholders to make decisions that maximize profits. The study stresses the imperative use of proper techniques aligned with the identified months of higher seasonal indices, ensuring optimal returns for farmers and contributing to the overall stability of the soybean market.

**Key words:** Correlation, Market arrivals prices, Price behaviour, Seasonal index

### Introduction

Agriculture stands as the cornerstone of India's economy, employing more than half of its work force and contributing approximately 17 per cent to the GDP. The soybean plant (*Glycine max*), also known as soya bean or soja bean, represents an edible seed of global economic significance. It plays a pivotal role in providing vegetable protein to millions and acting as a vital raw material for a multitude of chemical products. Functioning as a leguminous crop, soybean's suitability as an oilseed is counter balanced by challenges in terms of cookability and digestibility, primarily stemming from the presence of trypsin inhibitor. Its growing popularity can be attributed to its adaptable nature across diverse agro-climatic conditions.

Earning the title of a "wonder crop," soybean exhibits exceptional versatility and unparalleled nutritional advantages. Its utility spans various domains, with the production of vegetable oil and margarine constituting significant applications. Soybean oil finds use both in its pure form for salad dressings and in the creation of mayonnaise. This agricultural pursuit is estimated to employ around 6 million individuals within India. As of September 2021, the prospects for soybean cultivation within India displayed encouraging growth and expansion. The nation boasts a noteworthy standing as a key global producer and consumer of soybeans. This crop's cultivation has maintained a steady upward trajectory.

Agricultural marketing plays a multifaceted role extending beyond mere enhancement of productivity and consumption; it serves as an impetus for economic advancement. Its dynamic functions hold pivotal importance in stimulating economic development, thereby earning recognition as a potent driver of agricultural progress. Against this backdrop, endeavors have been undertaken to dissect the price behaviour of soybean in Belagavi district of Karnataka. Such analysis on price dynamics provides implications for agricultural extension agencies, emphasizing the urgency of raising awareness among farmers about opportune times for soybean sales.

### Material and methods

In Belagavi district, Bailhongal and Hukkeri taluks were selected for the study purpose as they are the major markets for soybean marketing in the district. The secondary data was collected through the krishimaratavahini website, pertaining to last 10 years data on market arrivals and prices of soybean in the selected markets.

Correlation is the analytical tool used. It is expressed as correlation coefficient (Karl Pearson's correlation coefficient) which ranges from -1 to +1, denoted by 'r' and calculated using the following formula.

$$r = \frac{[n(\sum xy)] - [(\sum x)(\sum y)]}{\sqrt{[n(\sum x^2) - (\sum x)^2][n(\sum y^2) - (\sum y)^2]}}$$

Table 1. Price behaviour of soybean in selected markets

Months	Bailhongal Market				Hukkeri Market			
	Average Arrivals(Qtl.)	Seasonal Index	Average Prices(₹ /Qtl.)	Seasonal Index	Average Arrivals(Qtl.)	Seasonal Index	Average Prices(/Qtl.)	Seasonal Index
January	13,525	110.07	3,862	96.40	1,217	37.68	3,269	98.79
February	10,957	89.17	3,939	98.32	1,555	48.14	3,331	100.67
March	8,968	72.98	4,064	101.44	1,597	49.44	3,521	106.41
April	8,624	70.18	4,320	107.83	1,169	36.19	3,309	100.00
May	3,832	31.18	4,283	106.91	727	22.51	3,626	109.58
June	3,020	24.57	4,102	102.39	325	10.06	3,494	105.59
July	2,792	22.72	4,138	103.29	590	18.26	3,445	104.11
August	2,601	21.16	4,289	107.06	489	15.14	3,211	97.04
September	21,245	172.91	3,829	95.58	5,718	177.04	3,127	94.50
October	29,623	241.09	3,575	89.24	11,825	366.13	2,988	90.30
November	25,105	204.32	3,794	94.70	10,688	330.93	3,226	97.49
December	17,148	139.56	3,877	96.77	2,856	88.43	3,158	95.44
C V (%)	71.94	-	5.53	-	119.51	-	5.34	-
r		-0.89***				-0.67**		

Note: \*\*\* represents 1 per cent level of significance and \*\* represents 5 per cent level of significance

where,

r = Karl Pearson’s correlation coefficient

x = Market arrivals

y = Market prices

n = 10 years

Correlation between arrivals and prices of soybean in Bailhongal is calculated by using the available last ten years monthly average data and similarly correlation between arrivals and prices of soybean in Hukkeri is calculated by using the available last eight years monthly average data.

Monthly seasonal index is calculated for the arrivals and prices of soybean in the selected markets. Seasonal Index of arrivals and prices of soybean in Bailhongal is calculated by using the available last ten years monthly average data and similarly seasonal index of arrivals and prices of soybean in Hukkeri is calculated by using the available last eight years monthly average data. It can be calculated by using the formula,

$$\text{Seasonal Index (\%)} = \frac{\text{Monthly average arrivals or prices}}{\text{Average of monthly averages of arrivals or prices}} \times 100$$

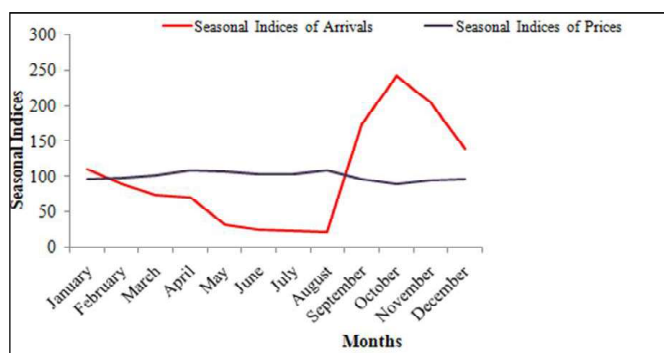


Fig1. Seasonal indices of market arrivals and prices of soybean in Bailhongal market

### Results and discussion

Table 1 depicts the price behaviour with the market arrivals. Correlation between arrivals and prices of soybean and seasonal indices in Bailhongal market is calculated by using the available last ten years monthly average data and similarly correlation between arrivals and prices of soybean and seasonal indices in Hukkeri market is calculated by using the available last eight years monthly average data. A negative correlation coefficient of 0.89 and significant at 1 per cent level of probability and 0.67 (significant at 5 per cent level of probability) was obtained between the average monthly arrivals and prices in the Bailhongal and Hukkeri markets respectively indicating the inverse relationship between the market arrivals and prices.

The CV of average arrivals was 71.94 per cent and 119.51 per cent and CV of average prices was 5.53 per cent and 5.34 per cent in Bailhongal and Hukkeri markets respectively indicating the more variation of arrivals in Hukkeri market when compared to Bailhongal market and more variation of prices in Bailhongal market when compared to Hukkeri market. The highest seasonal indices are 241.09 and 366.13 for market arrivals

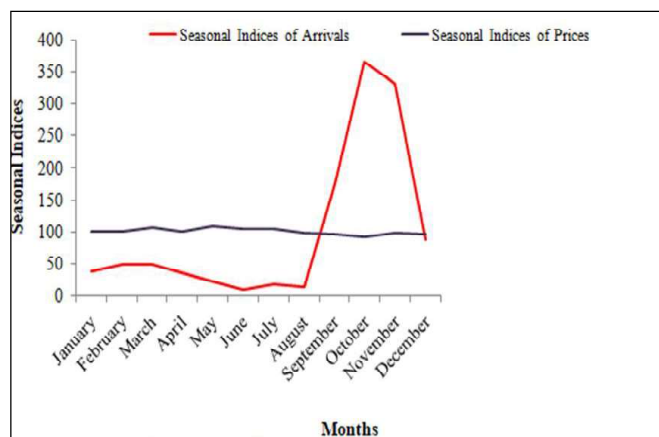


Fig 2. Seasonal indices of market arrivals and prices of soybean in Hukkeri market

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in October in Bailhongal and Hukkeri markets respectively indicating the month of highest arrivals and the highest seasonal indices are 107.83 and 109.58 for market prices in April and May in Bailhongal and Hukkeri markets respectively indicating the month of highest prices for soybean. The patterns in Figure 1 and Figure 2 depicts the negative correlation between market arrivals and market prices of soybean in both the selected market

In Bailhongal market, it is better to sell the soybean in the month of April and similarly in Hukkeri market, it is better to sell the soybean in the month of May to get the remunerative price for the produce. Similar results were observed in the study made by Meera and Hemant Sharma (2016) on the price and arrival trends of wheat in selected markets of Sriganganagar district of Rajasthan.

## **Conclusion**

The identified price dynamic nuances hold implications for future agricultural strategies and policies within the region. Soybean being the “wonder crop” due to its remarkable versatility and incredible nutritional benefits. A negative correlation coefficient average monthly arrivals and prices in the Bailhongal and Hukkeri markets respectively indicating the inverse relationship between the market arrivals and prices. Extension agencies have to create awareness among the farmers regarding the time of sale of soybean during the months with higher seasonal indices of prices, which fetches higher profit using proper forecasting techniques.

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