



## Study on the Variability In Prices of Sunflower at Selected Markets of Northern Karnataka

### KEYWORDS

Prices of sunflower, Descriptive statistics, Trend analyses.

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### ABSTRACT

The present study analyzes the trends and variability in prices of sunflower in selected markets of northern Karnataka. The time series data over a period of 16 years for Athani and Raibag markets indicated a raising trend and the trend co-efficient of prices were found to be significant. Trend analyses were carried out by fitting suitable polynomials for the prices during the study the period. The results revealed that the prices of sunflower were found to be best fit with a 6th degree polynomial for both the markets having R2 values of 0.91 and 0.96 respectively. It was observed that the maximum price recorded to be 4595 rupees in November during the year 2012 and 4965 rupees in September during the year 2014 of Athani and Raibag market respectively. Results revealed that the minimum price recorded to be 962 rupees in September and 910 rupees in June during the year 1999 of Athani and Raibag market respectively. The 43% and 35% variation in prices was observed in both the markets.

### INTRODUCTION

Agriculture is one of the important activities in both developed and developing countries which provide basic raw materials to human beings and various agro based industries.

Prices play a vital role in predominantly agriculture like India. It determines not only what shall be produced but also how much to be produced. The price system is a powerful tool to transmit essential economic information and stimulate appropriate decision by producers and consumers. Price is the most important determinant of profit or loss in the farm enterprise. In farm enterprise, time factor is very important, while crops are growth in one period and harvested in another period. This long gestation period exercise significant influence on price determination. Therefore, the prices prevailing during the marketing period are at great consequence.

The variations in market arrivals and prices can be classified into two kinds. The first one comprises of fluctuations observed over time, and are generally referred as "Temporal variations and is the result of complex mixture of changes associated with trend, cyclical, seasonal and irregular components. The second comprise of fluctuations over space and are referred as "spatial variation" and is the outcome of differences in location and seasonality of production, transportation bottlenecks etc. These factors in turn, lead to changes in the cropping pattern and the income of the farmers.

In a country which mainly depends on agriculture, it is absolutely necessary to modernize the age old traditional agriculture. The transformation of agriculture into dynamic business proposition is primarily a techno-economic process, which can be accelerated by providing a suitable environment to the farmers. The upward trends in arrivals are associated with development in technology of production, input supply and infrastructure mudinamani etal. According to Kumar et al.,(2000) the market arrivals of the selected commodities and their competing crops were the major factors influencing their prices in the market.

Instability in the farm prices tends to cause inefficient allocation of resources and induce income fluctuations over

time and across different categories of farmers. This results in distribution of changes in cropping pattern in the economy. On the contrary, a stable price level would provide incentive to the producers to increase the production of required commodities there by helping to achieve balanced growth of the economy.

Farmers always experience with lower prices for their produce when the bumper crop is harvested. They always commit the mistake in disposing off their produce at right time in order to get remunerative prices for their produce. Usually, they sell their produce when there is a glut in the market that is, immediately after the harvest of the crop. For this in appropriate time of sale, one can quote several reasons, but among them the most important is lack of awareness and knowledge about the proper time to sell their produce. This kind of study also helps in formulating appropriate policy measures to contain both over production as well as the forecasting of the remunerative prices for the commodity.

Kumar et al(1999). revealed that average price and production of the commodity were the major factors that determined market arrivals. Larger production and larger arrivals reflect adversely on the prices . As a result the prices usually go down. But in a mixed economy, a certain amount of direction is given to the market forces and this law may not always hold good. This control mechanism of the market forces may aim at regulating market supplies or consumption or both, particularly in the case of commodity in short reaction among the sellers and buyers. The effect of these reactions at once reflected in the supply and price position. Thus, in a mixed economy it would be necessary to study the market arrivals and prices and to know the factors influencing them. The behaviour of market arrivals and prices has been studied by Nahatkar et al(1998), khunt et al(2006). ,virender kumar et al. , yogish et al(2007). Ramachandra et al(2012). have studied an econometric analysis of sunflower arrives and prices.

Sunflower (*Helianthus annuus*) is an annual oilseed primarily grown for high quality edible oil (38-56% on dry matter basis) and easily digestible protein (13-37%) in its seeds. It is cultivated worldwide in tropical, sub tropical and warm temperatures located between 400N to 400S. In India, it

is spread over an area of 6.9 million hectare with the production of 7.6 million tones and productivity of 1175 kg/ha with production of 35.9 million tonnes at an area of 27.3 million hectare.

The study of trends and variability in prices is very useful. This control mechanism of the market forces may aim in regulating market supplies or consumption or both, particularly in the case of commodities in the short reaction among the sellers and buyers and effect this reaction at once are reflected in supply and price position. Thus, in a mixed economy, it would be necessary to study the trends and variability in prices and to know the factors influencing them.

**MATERIAL AND METHODS**

Realizing the above mentioned facts, the present study was conducted to analyse statistically the trends and variability in the prices of sunflower in two markets of northern Karnataka. A time series data on monthly market on prices for the period from 1998 to 2013 were collected from the Agricultural produce marketing committees (APMC's) located at Athani and Raibag.

Over a long period of time, time series is very likely to show a tendency to increase or decrease over time. The factors responsible for such changes in time series are the growth of population, change in the taste of people, technological advances in the field, etc.

There are different types of trends, some of them are linear and some are non linear in their form. For shorter period of time, in most of the situations the straight line provides the best description of the trend and for longer period of time, the non linear form generally provides a good description of the trend. Often, it may be possible to describe such movements with a structured mathematical model. In the absence of such a definite format, approximately a polynomial or a free hand curve could describe the movements. In the present study secular trend and variability in prices are considered.

**RESULTS AND DISCUSSION**

**Secular trend in prices of sunflower in Athani market**

In order to determine the nature of trend movement in the prices of sunflower crop in Athani market, the data was

adequately fitted to 6<sup>th</sup> degree polynomial equation. The multiple coefficient of determination (R<sup>2</sup>) was found to be 91 per cent. The fitted trend equation is given by

$$Y_t = 1021 - 17.8t + 1.4t^2 - 0.02t^3 + 0.0001t^4 - 0.000004t^5$$

Where,

Y<sub>t</sub> = predicted value of trend at time t

T = years, t = 0, 1, 2, .....16

It could be seen from the above equation that, the prices of sunflower, displayed an increasing trend over the years, the graph of the trends in prices over the years is shown in Fig. 1.

**Secular trend in prices of sunflower in Raibag market**

Similarly, in order to determine the nature of trend movement in the prices of sunflower crop in Raibag market, the data was fitted to sixth degree polynomial equation. The multiple coefficient of determination (R<sup>2</sup>) value obtained was 96 per cent. The fitted trend equation is given by

$$Y_t = 850.5 + 12.2t + 0.47t^2 - 0.00007t^4 - 0.000002t^5$$

Where,

Y<sub>t</sub> = Predicted value of trend at time t

T = years, t = 0, 1, 2, .....16

The temporal variations in prices of sunflower crop over the study period were carried out by descriptive statistics (Table-1 and 2) It was observed that the maximum price recorded 4490 Rs in November during the year 2012 and 3964 Rs in september minimum price recorded to be 962 rupees in September and 910 rupees in June during the 1999 of athani and raibag market respectively, also observed that the highest variation to be recorded 48% in both months of August and November in athani whereas 38% in the month of February. The overall variation was 43% and 44% in both the markets more variations in prices sunflower were observed athani market when compare to raibag market.

**Table-1: Descriptive statistics on sunflower prices of Athani market (Rs/Qntls)**

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1998	965	955	975	968	919	905	975	965	962	903	908	910	938
1999	1002	1018	965	946	978	1062	1135	1313	1389	1348	1289	1165	1118
2000	1195	1269	1157	1090	1045	1343	1279	1232	1345	1390	1057	1234	1203
2001	1388	1492	1238	1397	1434	1379	1525	1457	1299	1319	1263	1465	1389
2002	1597	1573	1652	1576	1408	1492	1575	1413	1485	1567	1682	1781	1566
2003	1642	1762	1525	1526	1468	1695	1521	1658	1780	1877	1535	1689	1637
2004	1852	1645	1798	1770	1885	1599	1689	1795	1877	1868	1972	1485	1750
2005	1895	1768	1645	1645	1598	1946	1820	1597	1689	1798	1870	1796	1756
2006	2120	1967	2014	1993	1870	2305	2393	2092	1830	2108	1970	2014	2056
2007	2112	2216	2352	2210	2139	2318	2357	2344	3331	2251	1989	2080	1115
2008	2210	2235	2203	2178	2062	2284	2209	2148	2052	2162	2614	2373	2226
2009	2379	1890	2343	2298	2377	2750	2793	2590	2840	2836	2639	2662	2532
2010	2806	1325	2616	2530	2651	4079	3660	3125	2600	3194	3306	4000	2956
2011	3736	3805	3879	3318	2296	3802	3750	4390	4359	4330	4495	4353	3876
2012	3837	3576	3896	3744	3972	3514	3056	3532	3119	3076	3358	3011	3476
2013	2507	3277	3139	3020	2935	3192	3006	3899	3640	3504	1389	3408	3256
MEAN	2078	2098	2087	2011	1932	2165	2167	2216	2131	2214	2215	2150	2131
MAX	3837	3806	3896	3744	3972	3803	3750	4386	4359	4330	4595	4353	3979
MIN	962	956	962	245	918	903	974	969	962	902	908	909	938
STD	850	889	928	825	805	893	865	1029	948	939	1018	940	992
CV(%)	41	42	44	41	42	41	40	46	44	42	46	43	42

**Table-2: Descriptive statistics on sunflower prices of Raibag market (Rs/Qntls)**

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1998	995	935	977	980	965	945	955	975	906	908	919	945	945
1999	982	991	965	906	1031	1158	1157	2345	1302	1391	1318	1183	1144
2000	1366	1142	1197	1598	1710	1514	1315	1579	1702	1888	1616	1609	1513
2001	1576	1702	1668	1616	1810	1803	1803	1806	1906	1809	1890	1798	1842
2002	1519	1675	1856	1595	1690	1914	1915	1852	1638	1578	1745	1875	1818
2003	1677	1580	1758	1895	1987	1994	1984	1096	1798	1802	1857	1755	1868
2004	1979	1809	1911	2010	3054	3190	2189	1905	2115	2052	2178	2355	2069
2005	2087	3365	2125	1945	3120	3386	3386	2153	2172	2058	2149	3336	3161
2006	2495	2513	2082	2109	1936	3096	3096	3343	2345	3337	2359	2515	3322
2007	2466	2599	2325	2482	2507	3472	4372	2444	2347	3396	2388	2435	2482
2008	2415	2667	2590	2539	2508	2488	2399	2480	2459	2465	2436	2526	2527
2009	2579	2583	2405	2728	2630	2733	2633	2705	2692	2745	2799	2790	2708
2010	2836	2828	2816	2964	2907	2967	2962	2897	2802	4081	4069	3259	2999
2011	3192	3296	4082	3522	4429	4427	4227	3245	4280	3593	3859	3992	4490
2012	3213	3095	3666	4259	3612	3505	3605	3662	3178	3415	3511	4358	4483
2013	3556	3623	4486	4455	4278	3774	3773	3899	4965	3467	4081	4209	4567
MEAN	2152	2250	2248	2272	2196	3282	3383	3371	3392	3397	2303	4423	4435
MAX	3556	3622	3666	4523	3610	3678	4673	3899	3965	4593	3859	3992	4567
MIN	982	936	965	980	960	955	955	983	906	909	919	945	945
STD	769	795	889	792	784	807	807	785	779	878	791	918	881
CV(%)	36	37	36	36	35	35	35	35	34	34	34	35	34

## CONCLUSION

This study has demonstrated that the temporal variability in prices of sunflower was observed to be highly variable. The results received that the price of sunflower were found to be best fit with a 6th degree polynomial for both the markets having R<sup>2</sup> values of 0.91 and 0.96 respectively. Further, the overall variation was 43% and 35% in both the markets and more variation in prices sunflower were observed in athani market when compare to raibag market.

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