

Growth rates of major seed spices in Rajasthan and export performance from India

V. K. Boyal, J. Mehra*

Agro Economic Research Centre, Anand, Gujarat

*Department of Horticulture, Government of Rajasthan, Kota (Rajasthan)

Abstract

This paper attempts to know the growth of major seed spices in Rajasthan and export performance of these major seed spices from India. The data of major seed spices in Rajasthan for 23 years from the year 1991-92 to 2013-14 of coriander, cumin, fenugreek and export data of same in India for 20 years from the year 1995-96 to 2014-15 were selected for the analysis. This study has made an attempt to analyze the past trend of export of Indian spices industry. Analysis of past trend implies the spices industry has an inconsistent growth. The results revealed that the growth in area and production of major seed spices in Rajasthan was found to be positive, while growth in productivity of cumin in Jodhpur and Rajasthan were found to be negative and fenugreek productivity was also found negative in Sikar district. The exports growth of selected seed spices in terms of quantity and value were found to be increasing.

Key words : Export, growth, instability, production, Rajasthan, spices

Introduction

India is known as the "Land of Spices" and produces a large variety and quantity of spices. About sixty-three spices are grown in the country, which includes pepper (King of Spices), cardamom (Queen of Spices), chillies, ginger, turmeric, coriander, cumin, fenugreek and many others (Ashoka, 2013). The spices production in India was 6161 thousand MT from an area of about 3325.35 thousand hectares in the year 2014-15 (Annual report, 2014-15, Spice Board of India, Cochin). India is one of the key exporters of spices products. The export of the basic agricultural commodities by developing countries can be relied upon to earn valuable foreign exchange due to the ever demand of spices. Indian spices exports have gained value realization despite very small growth in volumes (Sarangi and Singh, 2014).

However, Marketing problems are more frequently faced by growers and exporters mainly due to failure in establishing market linkages rather than lack of market opportunities (Rohatash *et al.*, 2011). In the financial year 2014-15, a total of 8,93,920 tonns of spices and spice products valued at ` 14899.68 crore (US\$2432.85 Million) were exported, registering 9 per cent increase in volume and 8 per cent in rupee terms and 7 per cent in dollar terms in value as compared to 8,17,250 tonns valued at ` 13735.39 crore (US\$ 2267.67 Million) in financial year 2013-14. The total export of spices during 2014-15 exceeded the target of 7,55,000 tonns valued at ` 12304.90 crore (US\$2000 million) in terms of both volume

and value for the financial year 2014- 15. In 2014-15, chilli, cumin, turmeric, coriander and ginger accounted for more than 70 per cent of the total volume of spice exports whereas mint, chilli, spice oils & oleoresins, cumin and pepper accounted for around 70 per cent of the total export earnings.

Coriander is exported to more than 19 different countries. The major importers are Malaysia, UAE, Saudi Arabia and South Africa, constitute more than 50 per cent of the total export share. Cumin is imported by more than 50 countries of the world but the major importer countries are Vietnam, USA, UAE and Egypt. Fennel and fenugreek were exported to more than 20 countries. The major share of fenugreek export quantity goes to Egypt, China, USA and Japan. (Annual Report, 2014-15, Spices Board, Cochin).

Materials and methods

The time series data regarding area, production and productivity for the three major seed spices were considered for the present study for the period of 20 years i.e. 1990-91 to 2013-14. The important seed spices grown in the state of Rajasthan are coriander, cumin, fenugreek, fennel and ajwain. Among these seed spices, coriander, cumin and fenugreek together accounted for 86.60 per cent of the area and 65.97 per cent of the total production of seed spices in the state of Rajasthan during 2006-07 to 2010-11 (five year average). Three districts for each spice were selected on the basis of highest average production of the latest last five year i.e. 2006-07 to 2010-

11. The study is based on secondary data. These secondary data of past years were collected from Directorate of Economics and Statistics, Jaipur, Rajasthan, Department of Agriculture, Government of Rajasthan, Jaipur, and Revenue records. Secondary data of export value and volume were collected from following sources: Spices Board of India, Spices Board Reports, India brand equity foundation and also necessary information gathered from various journals, books, media reports and internet website. The data of export and import for 20 years from the year 1995-96 to 2014-15 of these three spices coriander, cumin, fenugreek and total spices for the analysis. The data have been analysed with use of various statistical techniques for calculate compound annual growth and instability in production and export.

To estimate the trends of growth in area, production and productivity of the selected spices in the state and major producing districts of the state, exponential function of the form $Y_t = ab^t \cdot U_t$ was used. Where Y_t is area/production/productivity of major seed spices in time period t, t is time element that takes the values 1, 2, 3, n, a and b are parameters to be estimated, and U_t is the error term. $b = (1 + r)$, Where 'r' is compound growth rate. The above equation can be rewritten as $Y_t = a(1 + r)^t \cdot U_t$ and logarithmic transformation of this equation we get $\text{Log } Y_t = \log a + t \log (1 + r) + \log U_t$. The compound growth rate was obtained as $r = [(\text{Antilog of } b) - 1] \times 100$. Student's t test was used to test the significance of the estimated compound growth rates.

The extent of variability in export of coriander, cumin, fenugreek and total spices were analyzed through coefficient of variation i.e., Instability index

$$(I) = \frac{SD}{AM} \times 100 \text{ or } \frac{\sigma}{\bar{X}} \times 100.$$

Where SD and AM are standard deviation and arithmetic mean of export value and volume of the spices, for specified period (Purbia, 2002).

Results and discussion

Compound growth rates of coriander

The compound growth rates of area, production and productivity of coriander crop in selected districts and for the state as a whole for the period (1991-92 to 2013-14) were worked out and depicted in Table 1. The production of coriander crop increased positively in Kota (4.50 per cent), Jhalawar (5.94 per cent), Baran (2.39 per cent) districts and state as a whole (3.90 per cent) during study period, which was solely due to increased in productivity under the crop by 1.30, 3.73, 0.80 and 1.86 per cent per annum, respectively. It was observed that positive growth in area were recorded in Kota (2.72 per cent), Baran (1.58 per cent) districts, Jhalawar (2.13 per cent) district and state as a whole (2.01 per cent) during study period.

Compound growth rates of cumin

It is evident from table 1 that during the study period, the area under cumin in the state showed positive growth rate of 4.38 per cent per annum. A positive growth rate of area was observed in Barmer district (5.97 per cent). Highest growth rate was found in Jodhpur district (9.35 per cent), while Jalor district showed slow growth rate of 1.85 per cent per annum. At state level, the cumin production has shown a positive growth rate of 3.96 per cent per annum. The district wise analysis revealed that a remarkable growth in production was observed in Jodhpur district (9.18 per cent) followed by Barmer district (5.97 per cent) and Jalor (2.51 per cent). Barmer and Jalor district showed a meagre growth rate of 0.01 and 0.65 per cent respectively, per annum, while Jodhpur district and state as a whole showed a negative growth of -0.17 and -0.42 per cent respectively, in productivity.

Table 1. Compound growth rates of area, production and productivity of major seed spices

(Per cent per annum)				
S.N.	Districts	Area	Production	Productivity
Coriander				
1.	Kota	2.72	4.05	1.30
2.	Jhalawar	2.13	5.94	3.73
3.	Baran	1.58	2.39	0.80
	Rajasthan	2.01	3.90	1.86
Cumin				
1.	Barmer	5.97	5.97	0.01
2.	Jalor	1.85	2.51	0.65
3.	Jodhpur	9.35	9.18	-0.17
	Rajasthan	4.38	3.95	-0.42
Fenugreek				
1.	Sikar	2.72	1.05	-1.63
2.	Kota	10.32	14.00	3.34
3.	Jhunjhunu	14.52	15.03	0.45
	Rajasthan	7.03	4.80	0.17
Total Spices				
	Rajasthan	3.54	4.92	2.35

Compound growth rates of fenugreek

Table 1 depicts that the area under fenugreek cultivation at state level has increased at the rate of 7.03 per cent per annum. Jhunjhunu district showed highest annual growth rate in area of 14.52 per cent followed by Kota (10.32 per cent) and Sikar district (2.72 per cent). Fenugreek production has shown a positive annual growth of 4.80 per cent at state level. Jhunjhunu showed highest growth rate of 15.03 per cent per annum, followed by Kota

district (14.00 per cent). Sikar district showed a meagre growth of 1.05 per cent per annum. The productivity of fenugreek has shown a positive growth rate of 0.17 per cent per annum at state level. Kota district showed the highest growth rate of 3.34 per cent per annum. Jhunjhunu district (0.45 per cent) had shown a meagre growth rate, while Sikar district showed a negative growth rate of -1.63 per cent per annum. Similar results were observed for coriander by Kumawat and Meena (2005).

Compound growth rates of total spices

The area under spices cultivation in Rajasthan has shown a positive growth of 3.54 per cent as revealed by table 1. The spices production in Rajasthan showed a positive growth rate of 4.92 per cent, while the productivity showed a growth of 2.35 per cent per annum.

Growth in export of selected spices

The compound growth rates for export of coriander, cumin and fenugreek and total spices during the period 1995-96 to 2014-15 were computed and growth trends are shown in Fig.1, 2, 3 and 4, respectively. From table 2, it is evident that coriander registered a significant and positive growth rate of 6.76 per cent per annum in terms of volume of exports. In terms of export value coriander showed significant growth rate of 14.67 per cent per annum. Table 2 reveals that the quantity of cumin exported has shown positive growth rate of 16.67 per cent per annum. At the same time export value showed positive significant growth rate of 23.10 per cent per annum. It is evident from table 2 that, in terms of volume of trade fenugreek export has shown positive and significant growth rate of 6.75 per cent per annum. In terms of export value it showed significant growth rate of 13.24 per cent per annum.

Table 2. Export growth performance of selected spices from India

(Per cent per annum)					
S.N.	Spices	Export Quantity	R Square	Export value	R Square
1	Coriander	6.76**	0.72	14.67**	0.68
2	Cumin	16.67**	0.63	23.10**	0.65
3	Fenugreek	6.75**	0.62	13.24**	0.77
Total Spices		8.68**	0.87	14.99**	0.78

** Significant at the level of 5 per cent

Total spices

From table 2, it is evident that total spices export has shown significant growth rate of 8.68 per cent per annum in terms of quantity. Export value showed significant growth rate of 14.99 per cent per annum.

Instability in export of selected spices

The instability in export of selected spices during the period 1995-96 to 2014-15 were computed and presented as follows.

It is understandable from Table 3 that, the export of coriander has shown instability in terms of volume and value of 44.01 per cent and 96.22 per cent respectively. From Table 3 it is evident that cumin exports have shown instability in terms of volume and value of 113.15 per cent and 130.73 per cent respectively, indicated by high coefficient of variation. From Table 3 it is evident that fenugreek exports have shown instability in terms of volume and value of 51.00 per cent and 83.88 per cent respectively.

Total spices

The exports of total spices showed 53.51 per cent and 91.05 per cent of instability in volume and value respectively as revealed by Table 3.

Table 3. Instability in export of selected spices from India

(Per cent)			
S.N.	Spices	Export quantity	Export value
1	Coriander	44.01	96.22
2	Cumin	113.15	130.73
3	Fenugreek	51.00	83.88
Total Spices		53.51	91.05

Conclusion

Positive growth in production of coriander crop was found in Kota, Jhalawar and Baran districts and state as a whole during study period which was due to significant increase in productivity under the crop during the same period and positive growth in area were recorded in Kota and Baran districts as well as state as a whole during study period. The area under cumin crop was observed to increase positively in Barmer and Jodhpur districts during study period. There were positive growth in production of fenugreek crop in Kota and Jhunjhunu districts during study periods which was due to positive growth in area and in Rajasthan; there was positive growth in area, production and productivity of fenugreek during study period. The exports of coriander, cumin, fenugreek and total spices in terms of quantity and value were found to be of increasing trend. Appropriate measures should be taken to augment and stabilise the export earnings from spices.

References

- Annual report, 2014-15, Spice Board of India, Cochin, Ministry of Commerce & industry, government of India.
- Ashoka, N., C. Kuldeep, V. A. Ramachandra and R. A. Yeledhalli. 2013. A study on growth, instability and direction of chilli trade in India. *Journal of Spices and Aromatic Crops*, 22 (1): 76-80.

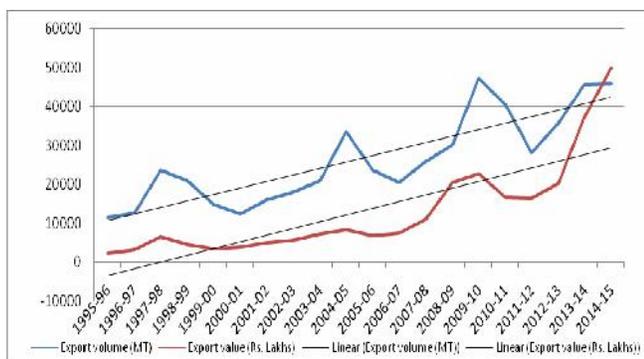


Fig. 1: Trend in export performance of coriander

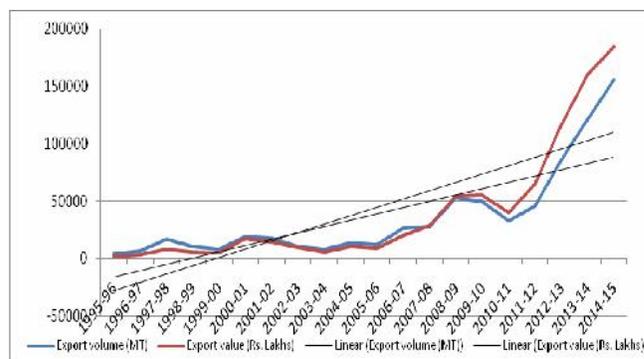


Fig. 2: Trend in export performance of cumin

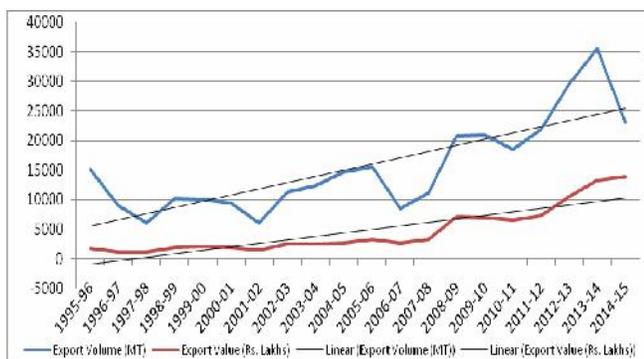


Fig. 3: Trend in export performance of fenugreek

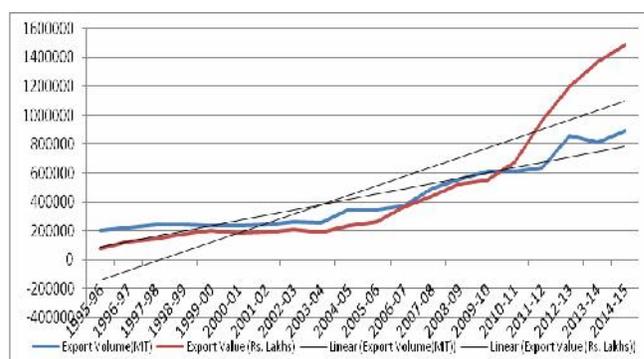


Fig. 4: Trend in export performance of total spices

Kumawat, R.C. and Meena, P.C. 2005. Growth and instability in area, production and yield of major spice crops in Rajasthan vis-à-vis India. *Journal of Spices and Aromatic Crops*, 14(2): 102-111.

Purbia, B. 2002. Analysis of trend, growth and instability in production of major crops in Rajasthan, M.Sc. thesis (unpublished). Maharana Pratap University of Agriculture & Technology, Udaipur.

Rohatash, K. B. and Sikka, B.K., Singh, A., Sharma, M.L. and Singh, N.K. 2011. Challenges and constraints of marketing and export of Indian spices in India. International Conference on Technology and Business Management, March 28-30, 2011.

Sarangi, P.K. and Singh, S. 2014. Growth rate of Indian spices exports: past trend and future prospects. *Journal of Management Sciences and Technology* 2(1).

Yogesh, M. S and Mokshapathy, S. 2014. Growth of Indian export and import of spices. *International Journal of Humanities, Arts, Medicine and Sciences*. 2(9): 41-46.

Directorate of Economics and Statistics Department of Agriculture, Government of Rajasthan.

<http://www.krishi.rajasthan.gov.in> (Area, production and productivity of coriander, cumin and fenugreek)

Received : February 2016; Revised : April 2016;
Accepted : May 2016.