CONTEMPORARY RESEARCH IN INDIA
ISSN 2231 - 2137

EXPORT PERFORMANCE OF NATURAL HONEY IN INDIA

Utkarsha P. Gaware, N. V. Shende, S. M. Thawale, P. P. Baviskar and A. D. Dhunde

Agricultural Economics and Statistics Section, College of Agriculture, Nagpur (MS)

Received: 10/05/2018	Edited: 19/05/2018	Accepted: 30/05/2018

Abstract: *The study explores the export performance of natural honey in India for the period 1997-97 to 2015-16 (20 years). The objective of the study was to analyse the growth rates, instability and trends of the natural honey in India. The secondary time series data for the last 20 years was equally divided into three periods i.e., period I (1997 to 2006), period II (2007-2016) and overall period (1997-2016). The collected data were analysed with the help of statistical tools like CGR, CV, Cuddy-Della Instability Index and trend analysis in order to fulfil the objective of the study. The study indicate that, the compound growth rate for natural honey was highest in period II (1.81 per cent per annum). Similar results were found in export quantity as well as unit value of export of natural honey i.e., period I (54.97 per cent per annum, -6.10 per cent per annum). Cuddy-Della instability index of honey for export quantity and export value was found to be high in first period and less in second period i.e. period II (13.51 and 16.45) whereas for production and unit value of export it was found to be high in period II and less in period I (0.48 and 13.93). Stability in export quantity and export value was observed during period II compared to period I. There was increase in trend in production, export quantity and export value of natural honey during overall period was positive and cubic model was found best fitted based on R^2 and significance of coefficients.*

Thus, the study concluded that the natural honey have better export potential in future. Hence, it is suggested that to achieve the breakthrough in natural honey export, there is need to initiate a systematic and long term export planning at the national levels.

Key words: *Export, Export Performance, Natural honey.*

Introduction

Honey is a sweet, viscous, yellowish-brown fluid made by bees and other insects from nectar collected from flowers in the honey sac of various bees. Honey is collected from wild bee colonies, or from hives of domesticated bees, a practice known as beekeeping.Honey and beekeeping have a long history in India. Honey was the first sweet food tasted by the ancient Indian inhabiting rock shelters and forests.

Our country has a huge potential of honey production since it has more than 500 species both wild and cultivated plant species that are good source of nectar and pollen, they do also have five species of true honey bees (Apis dorsata, Apis mellifera, Apis dorsata laboriosav, Apis cerana indica and Apis florea) and other stingless bees. India's place on the list of top producing natural honey countries is for the sixth spot with its exported value of $ 121,662 reported in 2015. In 2016, global production of honey was 1.8 million tonnes, led by China with 27 per cent of world total production. Other major producers were Turkey, United States and Russia. In 2016 the country exported 38177.08 MT of honey to countries such as Bangladesh, United States of America, Morocco, Saudi-Arabia among other places and has exported 45,537.99 MT of natural honey to the world for the worth of Rs. 563.21 crore/84.33 USD Millions during the year of 2016-17. While India stands at 13th place among the countries that exported the highest dollar value worth ($70.8 miilion) of natural honey during 2016. Therefore with a view to analyze India's export performance of natural honey the present study was under taken with the specific objectives (1)To measure growth in export of natural honey. (2) To estimate the instability in export of natural honey. (3) To analyze the trends in export of natural honey.

Methodology

Selection of Period

Based on the objectives the data regarding production, export quantity and export value of natural honey in India were collected from 1997-98 to 2015-16, which include 20 years data. The period has been divided into three periods,

Period I (1997-98 to 2005-06)

Period II (2007-08 to 2015-16)

Overall period (1997-98 to 2015-16)

Nature and Source of data

The nature of data used for the study was entirely based on secondary source of data. The secondary data was collected on volume of trade from the official website of FAO.

Analytical tools and techniques

The data was collected from secondary source subjected to appropriate analytical techniques in order to arrive at a meaningful conclusion. The different analytical technique used for the study were - Growth rate analysis, Instability analysis and Trend analysis.

Estimation of Growth Rates

The first objective of the present study is to estimate the growth in production and export of natural honey in India.

The growth rates in production and export of natural honey in India was studied by using compound growth rates.

The growth rate was estimated by using following model

$$Y = a.t^b \quad \text{..... (1)}$$

Where,

Y = Depended variable for which growth rate is to be estimated

(Quantity exported / export value / unit value)

a = Intercept

b = Regression Coefficient

t = Time Variable

This equation was estimated after transforming (1) as follows,

$$\text{Log } y = \log a + t \text{ Log } b \quad \text{..... (2)}$$

Then the percent annual compound growth rate (g) was computed by using the relationship.

$$\text{CGR} = [\text{Antilog (log b)} - 1] \times 100 \text{ ……..... (3)}$$

The significance of the regression coefficient was tested using the student's t' test.

Degree of instability in production and export of natural honey

In order to study the instability in the export of natural honey, the Coefficient of variation and Cuddy Della Valle instability index was used.

- **Coefficient of variation (CV)**

Coefficient of variation (CV) = $\frac{\sigma}{\bar{x}} \times 100$

Where,

σ = Standard deviation

$$S = \sqrt{\frac{\sum (X - \bar{X})^2}{n}}$$

$\bar{X}$ = Arithmetic mean

X = Variable

n = Number of observation

- **Cuddy Della Valle's Instability Indices (CDVI)**

It was used to measure instability in export of natural honey which was close to approximation of the average year to year percent variation adjusted for trend. The algebraic form of it was;

$$\textbf{Instability Index} = CV\sqrt{(1 - R^2)}$$

Where,

CV = Simple Estimates of coefficient of variation in per cent and

R^2 = Coefficient of determination from a time trend regression adjusted by the number of degree of freedom.

Trend Analysis

The trend in production, export quantity and export value of natural honey was computed for the series data of 1996-97 to 2016-17. To trace the path suitable function was used.

Result and Discussion

Keeping in view the objectives of the study, the necessary data collected from different sources were analysed and interpreted. The results obtained are presented and discussed below.

Growth rates in production and export of natural honey

The exponential growth function used for estimation of compound growth rates in production, export quantity, export value and export unit value of natural honey are presented in the following tables. The export performance of natural honey from India with respect to production, export quantity, export value and export unit value was evaluated for the period I (1997-2006), period II (2007-2016) and overall period (1997-2016) and the results are presented in the table 1.

Table 1: Period-wise Compound growth rates of production, export quantity, export values and export unit value of Natural Honey (1996-2016)

	Production	Export Quantity	Export Value	Unit Value
Period I(1997-2006)				
CGR	0.22**	36.72**	45.54**	-6.06**
x-variable	0.01	0.14	0.16	-0.03
t value	3.91	7.64	7.67	-3.31
R square	0.66	0.88	0.88	0.58
Period II(2007-2016)				
CGR	1.18**	14.44**	23.43**	-7.29**
x-variable	0.01	0.06	0.09	-0.03
t value	4.77	7.95	9.13	-4.18
R square	0.74	0.89	0.91	0.69
Overall Period(1997-2016)				
CGR	1.17**	21.36**	30.11*	-6.80**
x-variable	0.01	0.08	0.11	-0.03
t value	8.95	12.57	15.99	-11.37
R square	0.82	0.89	0.93	0.88

Note: **- denote significant at 1 % level and *- denote significant at 5 % level

Table 1 reveals that in period I production, export quantity, export value and unit value of export of natural honey have growth rate 0.222 per cent per annum, 36.724 per cent per annum, 45.543 per cent per annum and -6.059 per cent per annum, respectively and were found to be statistically significant at one per cent level of significance.

In the period II the production, export quantity, export value and unit value of export of natural honey going significantly at the rate of 1.183 per cent per annum, 14.44 per cent per annum, 23.43 per cent per annum and -7.29 per cent per annum, respectively.

The overall 20 years growth rate of export value of natural honey in India was highly significant at 30.11 per cent per annum and much higher that the growth rate of production, export quantity and unit value of export of natural honey for overall period was 1.174 per cent per annum, 21.26 per cent per annum and -6.80 per cent per annum, respectively and significant at one per cent level.

The export of natural honey has shown a positive and significant growth trend for the entire study period for production, export quantity and export value while it showed negative but significant growth trend for the entire study period for unit value of export of natural honey.

Instability in production and export of natural honey

There should not be obviousness regarding instability by considering the growth rates as growth rates will only explain the growth rate over the period, while the instability will judge the stability of growth performance for period for the pertinent variable. Therefore for better understanding of magnitude and pattern of changes in the level of production, export and unit value of natural honey in India instability analysis is done. The simple

coefficient of the variation (CV) often contains the trend component and hence overtimes the level of instability in the time series data characterized by long term trend. So as to overcome this problem, the study of instability index given by Cuddy Della Valle (1978), which corrects the coefficient of variation was used.

Table 2 reveals that the production of honey exhibited less variability with co-efficient of variation at 6.1 per cent and 7.8 per cent in period II and overall period, while lowest in period I with co-efficient of variation at 0.8 per cent.

Table 2: Instability of production, export of Natural Honey (1997-2016)

	Production	Export Quantity	Export Value	Unit Value
Period I(1997-2006)				
Mean	51736.90	5806.42	4129.76	1.65
SD	426.95	5059.49	3746.96	0.40
CV	0.83	87.13	90.73	23.60
CDVI	0.48	30.24	31.37	13.93
Period II(2007-2016)				
Mean	58545.50	26016.79	36111.18	0.82
SD	3572.65	10482.40	20078.15	0.23
CV	6.10	40.29	55.60	28.55
CDVI	2.11	13.51	16.45	15.89
Overall Period(1997-2016)				
Mean	55141.20	15911.61	20120.47	1.24
SD	4281.53	13107.62	21606.87	0.53
CV	7.76	82.38	107.38	42.85
CDVI	3.35	26.34	27.54	15.47

As regard the quantity of honey exported the highest variation was observed 87.1 per cent in period I with co-efficient of variation at 40.3 per cent in period II and 82.4 per cent in overall period.

Export earnings in terms of value showed higher instability in overall period with 107.4 per cent of coefficient of variation when compared to period I and period II. However, the instability observed in unit value of honey exported was observed highest variation in overall period with co-efficient of variation at 42.8 per cent and 28.6 per cent and 23.6 per cent in period I and period II respectively.

Cuddy-Della instability index for export quantity and export value was found to be high in the first period and low in the second period while production and unit value of export was found to be low in the first period and high in the second period, on whole it was observed that the degree of stability increases for export quantity and export value for second period.

Trend in production and export of natural honey

The trend equations were fitted to assess the production, export quantity and export value. Depending upon its better fit, was analyzed by the production functions viz., linear, logarithmic, inverse, quadratic, cubic, compound, power, s, growth, exponential, logistic the trend and the results are assessed and presented under different categories namely trends in production, export quantity and export value.

Table 3: Trend in production and export of Natural Honey

Sr. No	Particulars	Function	R^2	Coefficients		
				b_1	b_2	b_3
1	Production	Cubic	0.90	-1249.36	169.37*	-4.24
2	Export quantity	Cubic	0.95	1631.11	-79.04	5.46
3	Export value	Cubic	0.95	-783.50	120.24	4.06

Table 3 reveals that only coefficient b_2 for production of natural honey was significant at 5 per cent level while other coefficients was found to be non-significant.

Conclusion

The present study was undertaken to analyse the compound growth rates, during the study periods have shown positive and significant value indicating a wide scope for export from India. Therefore it is needed to make aware the policy makers so as to make appropriate policy to increase the production so that India can rise its export performance in world and higher its position in international market. While the trend analysis showed that only production found to be significant which may be due to the changes in policies and its execution at different periods of time.

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