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## Export performance of coconut products in India

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### Abstract

The study explores the export performance of coconut product in India to different countries during the period 2002-03 to 2016-17 (15 years). Only Three coconut products such as coconut oil, Desiccated coconut, coconut have been considered for the study purpose. The objective of the study was to estimate the growth rates, instability (trend) of area, Production and Productivity of coconut and export of selected coconut products. The secondary time series data for last 15 years was collected from Agri-stat India and analysed by using the statistical tools like CGR, CV and CDVI in order to complete the objectives of the study. There is increase in quantity of India's coconut products export during overall period and percentage share of world coconut products export to India's coconut products export was also increasing in whole period of study.

**Keywords:** coconut product, export, India, instability

### 1. Introduction

Export is one of the fastest growing segments of the agricultural sector in India today. The coconut palm may be the most useful tree in the world. Coconut tree provides food, drink, medicine, health, shelter, fuel, aesthetics and wealth. Because of its versatile nature it is known as "Tree of abundance", "Tree of Heaven", "Tree of Life", Nature's super market" "King of palm", "Kalpavriksha", "Tree of virtues " and by many names'. It is also known as lazyman's crop. Coconut palm (species *cocosnucifera* Linn.) is a tree of palm family (Arecaceae). Coconut tree provides food, drink, medicine, health, shelter, fuel, aesthetics and wealth. The area under coconut in India increased from 1930.16 ('000' Ha) to 2048.79 ('00' Ha) during 2002 to 2017. Coconut cultivation and industry plays a vital role in the sustainability of the rural economy of many state of the country. In the world top coconut product exporting countries are Indonesia, Philippines, India, Brazil, Sri Lanka, Vietnam, Mexico, Thailand, Malaysia and Myanmar. In India Cultivated area under coconut 2082.11Thousand ha. and estimated production of 23904.10 tones nuts during 2016-17. Coconut is a versatile product and has multiple uses. Almost all the parts of a freshly grown coconut, eatable or otherwise, are used in some or the other manner. India is oneof the leading coconut producers in the world, producing 13 billion nuts per annum. India rank third in Coconut production in world. After Indonesia and Philippines, India is mostly cultivated in the coastal regions of the country. The states that have abundant coconut growth are Andhra Pradesh, Assam, Goa, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu, Tripura, West Bengal, Andaman and Nicobar Islands, Lakshadweep and Pondicherry. In India, coconut cultivation in the past was mainly confined to the coastal belts of west and east coasts, and then it has spread to interior areas. Four southern states *viz.*, Kerala, Tamil Nadu, Andhra Pradesh, and Karnataka are contributing about 92 per cent of national coconut production.

### 2. Methodology

Whole India was taken into consideration at aggregate level so as to facilitate data compilation and prices in the international market. The nature of data used for the study is entirely based on secondary source of data. Data on export of orange from India was collected from Agri-stat Indian website. The data which was collected from secondary sources subjected to appropriate techniques in order to obtain a valid conclusion. The different techniques used for the study were- Growth rate analysis, Instability analysis and Trend analysis.

### 2.1 Compound growth rate

The growth rates was used to measure the past performance of the economic variables. The growth rates in Area, Production and Productivity of Coconut and export Coconut Products in India were analyzed by using exponential growth function as given below.

$$Y = a.b^t \dots\dots\dots (1)$$

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,  
 Log y = log a + t Log b..... (2)

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

$$CGR (g) = [Antilog (\log b) - 1] \times 100 \dots\dots\dots (3)$$

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

### 2.2 Instability analysis

In order to study the instability in the export of orange, Coefficient of variation and Cuddy Della Valle instability index will be used.

#### 2.2.1 Coefficient of variation (CV)

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

Where,

$\sigma$  = Standard deviation

X = Arithmetic mean

#### 2.2.2 Cuddy- Della Valle's Instability Indices (C & D)

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

Where,

CV = Simple Estimates of coefficient of variation in per cent

R<sup>2</sup> = Coefficient of determination from a time trend regression adjusted by the number of degree of freedom.

## 3. Results and Discussion

Considering the objectives of the study, the required data collected from Agri-stat was analysed and interpreted. The results obtained are presented and discussed below.

### 3.1 Growth rates of export of coconut

The results obtained by using the exponential growth function used for the estimation of export of coconut are presented in the following table. The compound growth rates with respect to export quantity and export value was evaluated for 15 years i.e. 2002-03 to 2016-17 and accordingly the results are presented in the table 1 and 2 respectively.

**Table 1:** Compound growth rate of export quantity and export value of coconut (2002-2017)

Particular	Quantity	value
CGR	44.07**	817.84**
SE	0.011	0.01
T- value	13.49	18.35
R2	0.93	0.96

**Note:** \* significant at 5% level, \*\* significant at 1% level

Table 1 revealed that coconut in export quantity, export value realized through exports have growth rate 44.07 per cent per annum, 817.84 per cent per annum. The CGR for quantity and value was found to be statistically significant at five per cent level and that for export quantity and export value were found to be statistically significant at one per cent level of significance.

**Table 2:** Compound growth rate of export quantity and export value of desiccated coconut (2002-2017)

Particular	Quantity	Value
CGR	26.75**	44.48**
SE	0.013	0.015
T- value	7.64	10.61
R2	0.81	0.89

**Note:** \* significant at 5% level, \*\* significant at 1% level

Table 2 revealed that desiccated coconut in export quantity, export value realized through exports have growth rate 26.75 per cent per annum, 44.48 per cent per annum. The CGR for quantity and value was found to be statistically significant at five per cent level and that for export quantity and export value were found to be statistically significant at one per cent level of significance.

**Table 3:** Compound growth rate of export quantity and export value of coconut oil (2002-2017)

Particular	Quantity	value
CGR	4.36*	17.19**
SE	0.008	0.006
T- value	2.25	10.33
R2	0.28	0.89

**Note:** \* significant at 5% level, \*\* significant at 1% level

Table 3 revealed that coconut oil in export quantity, export value realized through exports have growth rate 4.36 per cent per annum, 17.19 per cent per annum. The CGR for quantity and value was found to be statistically significant at five per cent level and that for export quantity and export value were found to be statistically significant at five per cent and one level of significance.

The compound growth rates during the study periods have shown positive and significant value indicating vast potential for the export of coconut, desiccated coconut, coconut oil from India.

### 3.2 Instability in export of coconuts

As growth rates will only explain the growth rate over period, while 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 export quantity and export value of oranges of different countries from India instability analysis is done. The simple coefficient of 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 4:** Instability of export quantity, export value of exports of Indian coconut, Desiccated coconut and coconut oil (2002-2017)

Coconut		
Particular	Quantity	value
Mean	16438.80	3920.86
SD	16441.38	4722.86
CV	100.01	120.45
CDVI	25.81	23.24
Desiccated Coconut		
Particular	Quantity	value
Mean	3130.13	2059.66
SD	3675.89	3737.84
CV	117.43	181.47
CDVI	50.08	58.39
Coconut oil		
Particular	Quantity	value
Mean	6811.80	7026.73
SD	3181.56	5848.16
CV	46.70	83.22
CDVI	39.58	27.41

**Note:** SD- Standard Deviation and CV- Coefficient of Variation

Variation in export quantity and export value in coconut, desiccated coconut and coconut oil from India. Table 4. There was moderate change in export quantity and export value of export of selected coconut products i.e. (coconut, desiccated coconut and coconut oil during 15 year period as indicated by lower coefficient of variation in coconut oil. Table 4 revealed that the export quantity exhibited less variability with coefficient of variation at 100.01 per cent and 117.43 per cent in coconut and desiccated, while it was lowest in coconut oil with co-efficient of variation at 46.70 percent.

Cuddy-Della instability index for export quantity and export value was found to be high in the desiccated coconut and low as compare to coconut and coconut oil, it was observed that the degree of stability increases for export quantity and export value for selected coconut products.

#### 4. Conclusions

Export of coconut in India performance is improved significantly during the study period. It is observed that the compound growth rates in which quantity and value of the export of the coconut product have shown positive growth. With a view to doubling the India's share in global export. The only area where India have chance of making a major market in global market is coconut products. There was an increase in trend in production, export value, domestic price and International price of coconut and coconut oil during overall period was positive and among the competitive parametric models, almost all cases Cubic models are found best fitted based on  $R^2$  and significance. But for export quantity, Inverse model is found best fitted based on the  $R^2$  significance.

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