



PRODUCTION PERFORMANCE OF GRAPES IN TAMILNADU

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Abstract

Grape cultivation is one of the most remunerative farming enterprises in India. Grape is cultivated over an area of 34,000 hectares with an annual production of 1,000,000 tonnes. Grape production at the world level, Europe the more grape cultivated area than the rest of the continents and it produces more amount of grape. The productivity of grape was the highest in India. The total area under grape cultivation in India increased significantly during the study period 24.734 per cent. The area under grape cultivation in India at rate of 8.393 per cent per annum where as the production decreased at 4.71 percent per annum where as the production increased at 81.483 percent per annum and productivity at -2.329 percent per annum. The area, Production and productivity of grape in Tamil Nadu reflected a mixed response and in compound growth rate in respect of area was 1649600 percent per annum and productivity at 5.14 percent per annum.

Keywords: Grape Production, Trend, Linear Regression, Co-efficient of Variation.

Introduction

Grape is important fruit in India. The Grape (*Vitis vinifera*) is basically a sub-tropical crop but in India, grapes are cultivated for their excellence also under tropical conditions. Grape cultivation is one of the most remunerative farming enterprises in India. Famous Indian medicine scholars, Sasruta and Charaka in their medical treatises entitled 'Sasruta Samhita' and 'Charaka Samhita', respectively, written during 1356-1220 BC, mentioned the medicinal properties of grapes. Indigenous varieties known as 'Rangspay', 'Shonltu White' and 'Shonltu Red' are grown in Himachal Pradesh even today. Grape was also introduced in the south into Salem and Madurai districts of Tamil Nadu by the Christian missionaries around 1832 AD. Grape is cultivated over an area of 34,000 hectares with an annual production of 1,000,000 tonnes. Although, the returns per unit area of land are very high with grape cultivation, the area under grapes is not expanding fast owing to the high initial cost of establishing the vineyards and high recurring cost of production. Although, the returns per unit area of land are very high with grape cultivation, the area under grapes is not expanding fast owing to the high initial cost of establishing the vineyards and high recurring cost of production.

Statement of Problem

Grape is grown under a variety of soil and climatic conditions in three distinct agro-climatic zones, namely, sub-tropical, hot tropical and mild tropical climatic regions in India. There are different varieties cultivated throughout India. Approximately 85 percent of the total production, irrespective of the variety, is consumed fresh. About 120,000 tonnes of Thompson Seedless and its mutants, namely, Tas-A-Ganesh, Sonaka and Manik Chaman are dried for raisins. Some 20,000 tonnes of Bangalore Blue are crushed to make juice, and 10,000 tonnes of Bangalore Blue, Cabernet Sauvignon, Chenin Blanc, Chardonnay, Merlot, Pinot Noir and Uni Blanc are crushed to process into wine. There is a need to diversify the uses of grapes. Currently more than 80 percent of the produce is used for table purposes. The major bulk of the produce is harvested in March-April, but as cold storage facilities are currently inadequate there are frequent market gluts. Diversification of uses as wine/juice and export of table grapes can ease the marketing problems. Maintenance of quality of table grapes by crop regulation is the priority consideration to increase exports. For the survival of the grape industry in India, the produce should be quality and cost competitive. An attempt was made to analyse the performance of grape production in top countries in the world, India and Tamil Nadu.

Objectives

The main objective of this paper is to study trend, Growth and Magnitude of Variability of Grapes for ten years from 2005 to 2015 in World, India and Tamil Nadu level.

Methodology

The present study is based entirely on secondary sources. The secondary data regarding production of 2005 to 2015 were collected from the Horticulture Department of State. The study entails a temporal as well as spatial analysis of the growth of production of Grapes grown in Tamil Nadu. In the present study, an attempt has been made to compare the difference in growth of production Grapes. The time series data on area, production and productivity of Grapes were obtained from various publications of Government of Tamil Nadu. Data were collected from various journals, books, news papers, Spices Statistics published by the Spices Board Cochin, Statistical Year Book, the report of Directorate of Economics and Statistics, Ministry of Agriculture and Websites.

Analytical Tools

Trend Analysis: Trend in production of broiler was estimated using the simple regression equation of the following form. $Y=a+bt$ where, Y =Production in year 't'; a =Constant; b =Regression co-efficient; t =Time in years

Growth Performance and Magnitude of Variability

The compound growth rate with regard to production of broiler meat has been estimated on the basis of the semi-log or exponential function. $y=a+bt$; where, y =Production; t =Time Periods
'a' and 'b' are the parameters to be estimated.

$$\text{Compound Growth Rate}=(\text{antilog } b - 1) \times 100$$

To measure the magnitude of variability in the production, Co-efficient of Variation (C.V.) = (Standard Deviation X Mean) / 100 was used.

Results and Discussion

In this paper an attempt is made to study the growing pattern of grapes in terms of area under cultivation, production in tones and productivity in tones per hectares in important grapes producing countries of the world, especially in India and Tamil Nadu.

World Scenario – Grapes Production

The most vibrant grape cultivation countries are Italy, United States, Spain, France, Turkey, Chile, Argentina, India and Iran. World Production of grape is 679 billion tones from an area of 742 million hectares. Major players are Italy, USA, Spain, France Contribute more than 50 per cent of the world production. The growth rate recorded in the area under grape during the last decade was 2.05 per cent, while the registered in production was 4.79 per cent.

Table 1: Area, Production and Productivity of Grapes Producing Countries during 2015

S. No	Country	Production		Area		Productivity (tones)
		(tones)	Percentage	(tones)	Percentage	
1.	Italy	8242.5	11.89%	827.0	11.12%	9.97
2.	Iran	2255.67	3.25%	286.0	3.85%	7.89
3.	Spain	5573.4	8.05%	1175	15.80%	4.70
4.	Argentina	2181.57	3.15%	208.0	2.80%	10.48
5.	United States	6629.16	9.57%	415.0	5.58%	15.97
6.	France	6104.34	8.81%	864.0	11.62%	7.06
7.	India	1878.00	2.71%	106.4	1.43%	17.65
8.	Chile	2500.00	3.61%	184.0	2.47%	13.58
9.	Turkey	4264.72	6.15%	812.0	10.92%	5.25
10.	World Total	69267.18	7435.72	7435.72	100.00%	9.32

Source: www.Faco.com

Table 1 presents the area production, productivity of grape producing countries in the world. Among these countries, Italy occupies first place with production of 82425 thousand tons per annum followed by United States with 6629 thousand tones. France occupies third position with 6104 thousand tones. Spain is fourth with 5573 thousand tones and Turkey is fifth with 4264 thousand tones grapes per annum. India contributed 2.71 per cent of shares in the total quantity of grapes produced in the world. The contribution by Spain was 8.05 per cent, France 8.81 per cent, Italy was 1.89 per cent, Turkey was 6.16 per cent and United States was 9.15 per cent during the year.

Grape Production in India

Grapes are one of the oldest utilized fruit crop in India. It seems to have been introduced into India by the invaders from Iran and Afghanistan about 1300 AD. In India among growing commercial fruit crops grape is the most important fruit crop. It occupies 1.14 per cent of total area of fruit cultivation with 2.56 per cent of total production of fruits. India's share in global production of grape is 2.8 per cent. During pre-partition period India had most of the grapes growing area North-west India. After the partition these areas went to Pakistan, the production of grape in northern states namely Punjab, Haryana, Uttarpradesh, Himachalpradesh and Madhyapradesh is not sufficient to meet domestic demand, as outcome of this situation grape prices rose very high. After taking positive initiative by the government and other stake holders grape cultivation has spread to numbers of states now. At present grapes cultivation is commercially taken up under wide range of soil and climate conditions, through there are three distinct region, viz, Sub-tropical, hot tropical and mild tropical. Basically Indian viticulture differs from American and Europe countries in respect of cultivation practices.

Table 2: Area, Production and Productivity of Grapes in India during 2005-06 to 2014-15

Year	Area (in ha)	Production (tones)	Productivity (Tones/Ha)
2005-06	66000	1649600	25.0
2006-07	65000	1685000	25.9
2007-08	68000	1735000	25.5
2008-09	80000	1878000	23.5
2009-10	106400	880700	8.3
2010-11	111000	1235000	11.1
2011-12	116000	2220900	19.1
2012-13	117600	2483100	21.1
2013-14	118700	2585300	21.8
2014-15	119500	2693200	22.0

Source: Indian Horticulture database 2015

It could be perceived that the area under grape cultivation in India was highest during 2014-15. The area under grape cultivation went up from 66000 hectares in 2004-05 to 116000 hectares in 2014-15. It is also perceived from above Table that area under grape cultivation made a remarkable increase from 80000 hectares in 2008-09 to 1,06,400 hectares in 2009-10 thus marking 33 per cent increase over the previous year. The area under grape which stood at 68000 hectares in 2009-2010, to hectares in 2009-2010, making 17.65 per cent increase over the previous year. They also made 2013-14 to hectares in 118700, 0.9 per cent decrease.

The production of grapes in India observed from table 2 that ranged from a minimum of tones in 2585300 2013-14 to a maximum of 2220900 tons in 2012-14. The production increased from 2483100 tones in 2005-06 to 1646000 tones 2006-07 resulting in 2.15 per cent increase over the previous year. It is also observed that the production declined substantially from 1878000 tons in 2008-09 to 880700 tonnes in 2009-10, making a 53.10 per cent fall over 2008-2009. The decrease in production in the above mentioned years was mainly due to unfavorable climate conditions and the trouble caused by pests and diseases.

Table 2 shows that the productivity of grapes per hectare has registered a fluctuating trend during the study period. The year to year change recorded an increase over the previous year during the study period except in 2011-12, 2012-13 and 2013-14. However the percentage increase was the highest in 2015.

In order to find out the trend in the growth of area under grapes cultivation to trend equation was fitted. To ascertain the growth rate, compound growth rate was calculated. The results are given in below table 3.

Table 3 Trend and Growth Rate of Area, Production and Productivity under Grape Cultivation in India during 2005-06 to 2014-15

Particulars	Semi-log		R ² (%)	CGR (percent/Annum)	CV (percent)
	Constant	Regression Co-efficient			
Area under Grape cultivation in India	4.778 (0.032)	0.035** (0.005)	0.855	8.393%	24.734%
Grape Production in India	6.246 (0.182)	0.020 ^{NS} (0.026)	0.071	4.71	81.483
Productivity of Grape in India	1.337 (0.119)	-0.010 ^{NS} (0.019)	0.030	-2.329	29.630

Source: computed from Table 2; Figures in parenthesis are standard error; **Significant at one per cent level; CGR - Compound Growth Rate

It is observed from Table 3 that the trend in area under grape cultivation in India is positive and significant at one per cent level. It reveals that the area under grape cultivation in India witnessed a significant growth during the period under study. The area under grape cultivation in India had increased at the rate of 8.393 per cent during study period. The magnitude of variability of area under grape cultivation is 24.734 per cent annum during the period under study.

The result of the analysis in Table 3 reveals that trend in grape production in India is negative and non significant. It is also inferred from the Table that the grape production in India had decreased, at the rate of 4.71 per cent per annum. The analysis also reveals that there is 81.483 per cent variation the production of grape in India during the study period.

It is inferred from Table 3 that the productivity of grape in India is negative and statistically significant at five percent level. It indicates that there is a significant decrease in the productivity in India. It is also inferred from the Table that productivity of grape in India had decreased at the rate of -2.329 per cent per annum. The coefficient of variation is 29.630 per cent per annum during the period under study.

Grapes Production in Tamil Nadu

Grapes were introduced in Tamil Nadu in 1832. But only in recent years it has come to be recognized as a very rewarding crop. Certain special features lend distinctiveness to Tamil Nadu in many aspects of grape culture. The climate condition renders the harvest of three crops possible in a year or five crops in two years. Thus the crop is available in the market almost throughout the year.

In Tamil Nadu Pachadraksha (Thomson seedless) is the earliest variety to be grown and occupied the leading position due to its unfailing yields season after season, adaptability to the region and easy marketability. However, it has been gradually yielding place to the coloured varieties principally (Muscat Humbert).

Production of grapes in Tamil Nadu during the period from 2005-06 to 2014-15, their percentage increase or decrease over the previous year are presented in Table 4.

Table 4: Area, Production and Productivity of Grape in Tamil Nadu from 2005 - 06 to 2014 - 15

Year	Area (in ha)	Production (in tones)	Productivity in tones / Ha
2005-06	2830	84800	29.95
2006-07	2630	91600	34.85
2007-08	2950	83500	28.27
2008-09	3100	91000	29.8
2009-10	2600	44100	16.8
2010-11	2700	5300	19.3
2011-12	2800	75000	21.6
2012-13	2900	6500	24.4
2013-14	2590	60000	32.2
2014-15	3000	7000	27.9

Source: Seasonal and crop report in Tamil Nadu 2016.

It is estimated from Table 4 that the area under grape cultivation in Tamil Nadu which stood at 2630 hectares in 2006-07 increased to 2950 hectares in 2007-08. The area increased from 2600 hectares in 2009-10 to 2830 hectares 2005-06 making, - 27.62 per cent increase over the previous years.

From Table 4, it is observed that the production of grapes in Tamil Nadu ranged from a minimum 83500 tons in 2007-08 to a maximum of 74000 tons in 2011-12. The production increased from 44100 tonnes in 2009-10 to 53000 tons in 2010-2011, bringing 20.18 per cent increase over the previous year.

The grape production increased substantially in 2008-2009, registering per cent 8.98 increase over the previous year. It is also revealed that the production increased from 91000 tonnes in 2008-09 to 2009-210, making-51.54 per cent increase over 2009-11. This is mainly due to favorable climate conditions.

From the Table 3.9 it is also observed that production declined subsequently from 7000 tonnes in 2014-15 2013-14 to 60,000 tonnes in, making a 8.23 per cent short fall over. This slump in production was caused by the incidence of pest and diseases. In 2009-10 also production declined sharply by 91000 tonnes over the previous year 2008-09 making 51.54 per cent reduction in production. The decrease in production in the above mentioned years was mainly due to unfavorable climatic conditions and the losses caused by pests and diseases.

It is inferred from the Table 3.13 that yield of grape per hectares in Tamil Nadu experienced fluctuating trend during the period under study. The productivity of grape per hectare increased from tonnes 29.95 into tonnes in 2005-2006 achieving 16.36 per cent increase in annual growth rate.

The productivity of grape per hectare decreased from 28.27 tonnes in tonnes in 2007-08, making -18.88 per cent decreasing growth rate over the previous year. The Table also reveals that the productivity of grape per hectare decreased from 29.8 tonnes in 2008-09 to 16.8 tonnes in 2009-10 indicating a negative annual growth rate of 43.68 per cent over the previous year. The less intensive method of cultivation due to poor market price for grape and also the nuisance of diseases were the main reason for such a negative annual growth.

Trend co-efficient and growth rate of grapes and magnitude of variability cultivating area are computed and the results are presented in Table 5.

Table 5: Trend and Growth Rate of grape cultivation Area, Production and Productivity in Tamil Nadu during 2005-06 to 2014-15

Particulars	Semi-log		R ² (%)	CGR (Percent /Annum)	CV (percent)
	Constant	Regression Co-efficient			
Area under Grape Cultivation in Tamilnadu	3.447 (0.020)	0 (0.003)	0.00	0.00	6.337
Production of Grape in Tamil Nadu	5.137 (0.301)	-0.108 ^{NS} (0.048)	0.381	-28.233	66.552
Grape Productivity in Tamil Nadu	1.453 (0.072)	-0.007 ^{NS} (0.012)	0.046	-1.625%	21.942

Source: Computed from Table 4

Figures in parenthesis are standard error

*Significant at Five percent level

CGR-Compound Growth Rate

The result of analysis in Table 5 reveals that trend grape cultivation areas in Tamil Nadu are positive and significant at five per cent level. The analysis also reveals that grape cultivation area in Tamil Nadu witnessed a significant increase during the study period. It is also inferred from the Table grape cultivation area Tamil Nadu had decreased at the rate of no amount, the co-efficient of variation of area under grape cultivation is 6.337 per cent per annum during the period under study.

The result of the analysis in Table 5 shows that the trend grape production in Tamil Nadu is positive and non-significant. It is also observed that grape production in Tamil Nadu increased at the rate-28.233 of per cent annum. The analysis also reveals that there is 66.552 per cent variation in the production of grape in Tamil Nadu during the period under study.

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Conclusion

Grape is important fruit in India. The Grape (*Vitis vinifera*) is basically a sub-tropical crop but in India, grapes are cultivated for their excellence also under tropical conditions. Grape production at the world level, Europe the more grape cultivated area than the rest of the continents and it produces more amount of grape. The productivity of grape was the highest in India. The total area under grape cultivation in India increased significantly during the study period 24.734 per cent. The area under grape cultivation in India at rate of 8.393 per cent per annum where as the production decreased at 4.71 percent per annum where as the production increased at 81.483 percent per annum and productivity at -2.329 percent per annum. The area, Production and productivity of grape in Tamil Nadu reflected a mixed response and in compound growth rate in respect of area was 1649600 percent per annum and productivity at 5.14 percent per annum.

References

1. Nilakantha Rath, "A Note on Agricultural Production in India during 1955-78", Study of Growth Rates in Series XIV, **Indian Society of Agricultural Economics**, Bombay.
2. Latha Bastine, C. and K.PALANICAMY, "An Analysis of Growth Trends of Principal Crops in Kerala", **Agricultural Situation in India**, March 1994.
3. Dr.KARANDE, A.S.(2015) "Bio-dynamic Technology in Organic Farming" Published in **Research Front** (pg. no.92-97 vol.no.01)
4. Shinde, P.V.(2016) "An Economical Study of Strawberry Horticulture Nursery" Published in **Global Research Thoughts**.
5. Ravindra R.(2013), Innovative policies of APEDA for Exports of Agriculture Products
6. Shinde, P.V Shinde (2016), "An Economics of Grapes under Horticulture in India" Volume III, Issue II, February 2016, **rsisinternational**, pp. 69-71.
7. <http://agriexchange.apeda.gov.in/>
8. www.fao.org/docrep/003/x6897e/x6897e06.htm