

Area, Production of Jasmine and Rainfall of Madurai District in Tamil Nadu, South India

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Abstract: *Jasmine is native to tropical and warm temperate regions and cultivated in France, Italy, China, Japan, India, Morocco and Egypt. This sector is generating higher income and employment opportunities especially for women. Women have the contribution of 46 percent of the agriculture. The researcher has found the area, production of Jasmine and actual rainfall of Madurai district in Tamil Nadu. The correlation result of this particular study production is depends upon the area with high positive and statistically significance at 1 per cent level.*

Keywords: Jasmine flower; rainfall; area; production; correlation analysis.

1. Introduction

India has made noticeable advance in the production of flowers, particularly cut flowers, which have a good potential for export. During 2011-12, floriculture covered an area of 0.32 million hectare with a production of 2.1 million tones of loose flowers and 7507 million numbers of cut flowers. This sector is generating higher income and employment opportunities especially for women. While India has been known for growing traditional flowers such as Jasmine, Marigold, Chrysanthemum, Tuberose and Aster, the commercial cultivation of cut flowers like Roses, Orchids, Gladiolus, Carnation, Gerbera, Anthurium and Lilium has become popular in recent times. The important flower growing states are Tamil Nadu, West Bengal, Karnataka, Maharashtra, Andhra Pradesh, Odisha, Uttar Pradesh, Jammu & Kashmir, North East states, etc. Major area is devoted to production of Marigold, Jasmine, Roses, Chrysanthemum, Tuberose, etc. the area under cut flowers having stems has increased manifold. Orchids, Anthurium, Lilium, Gerbera and seasonal bulbous flowers are increasingly being grown both for domestic and export markets (State of Indian Agriculture 2012-13).

India has ancient heritage when it comes to floriculture it is named high in its level in benefiter profits. Commercial floriculture is however is of recent origin. The planting material has a vital role in floriculture in producing healthy and quality produce which in turn affects our exports (Mayuri K 2013).

1.1 India's distinctive advantages for development of the floriculture sector

India has relatively better opportunities for development of the floriculture sector for the following reasons:

1. Diverse agro-climatic conditions and geographical locations suited for growing various types of flowers.
2. Skilled manpower to absorb the technology and implement the same at a relatively low cost.

3. Soil and water supply at most locations.
4. Good radiation of sunlight leading to healthier plant growth and better quality flowers.
5. Light rains and salubrious climate during winter, the prime export season, leading to sustained high yields.
6. Good period of sunlight even during the heavy rains leading to continued plant growth and proper yield.
7. India is located centrally for catering to European and Far Eastern markets, as well as being close to the South East Asian and Middle East Asian markets that have high consumption requirement of flowers (Prakash and Muniyandi, 2014).

In India, among 70 percent of the total working population, 84 percent of all economically active women are involved in agriculture and related enterprises. Women make up 46 percent of the agriculture work force. Various studies revealed that women folk participate in the floriculture trade. But 90 percent of them are unskilled and 88 percent are illiterate which makes them vulnerable to exploit (Minakshi Kundu and Sudarshan Mehta 2008).

Though the annual domestic demand for flowers is growing at a rate of over 25 percent and international demand at around Rs. 90, 000 crores, India's share in international market of flowers is negligible. India has a blooming future as far as floriculture is concerned. (Thilagaraj 2009) Increase export potential and foreign exchange earnings by quality enhancement (Avinash Tripathi 2012).

Tamil Nadu is the leading producer of Jasmine in the country with an annual production of 1,20,750 tons from a cultivated area of 15581 hectares in 2011-12. The flowers harvested in the state are exported to neighboring countries like Sri Lanka, Singapore, Malaysia and the Middle East. The major Jasmine cultivating districts of Tamil Nadu are Madurai, Dindigul, Salem, Tirunelveli, Virudhunagar and Trichy. Jasmine flowers are native to India, China and Iran (Ambika 2012).

1.2 Climate and soil

Jasmine can be grown in a variety of climate and soils. Generally, it prefers mild tropical climate for proper growth and flowering. Mild winter, warm summer, moderate rainfall and sunny days are ideal climatic requirement. Loamy garden soils are best-suited for cultivation of all species and varieties. With liberal application of manure and assured water supply, Jasmines can also be grown suitably soils. In clayey soil, flower production is hampered to great extent. This type of soil can be improved by adding lime and applying organic manures (Ajay Kr. Gupta 2004).

Climate change is not a new phenomenon in the world. The rise in temperature of the earth surface and in atmosphere, fluctuation in rainfall, declining ground water, flooding due to high rainfall, drought, soil erosion, heavy wind, rising sea level due to melting of glacier, cyclone, wind speed, hail storm, fog, earthquake and landslide etc., are all the clear evidence of climate change phenomenon. Though, it is a natural process but in some cases human activities are also responsible for this. There are many examples across countries where increase in the possibilities of climate change due to growing population, rapid urbanization, higher industrialization, use of modern technology, innovation, higher economic development, transport, building construction, reduction in forest area etc. (Ajay Kumar and Pritee Sharma 2013).

1.3 Study Area

Madurai is the oldest inhabited city in the Indian peninsula. It is referred to with names like Koodal Maanagar, Thoongaa Nagar (Sleepless City), *Malligai Maanagar (City of Jasmine)* and *Athens of the East*. It is the cultural capital of Tamil Nadu. It is a city in the Indian the banks of the River Vaigai in Madurai district. Show location on an interactive map 9°56'N 78°07'E / 9.93°N 78.12°E / 9.93; 78.12. It has an average elevation of 101 meters above mean sea level. The climate is dry and hot, with rains during October-December. Temperatures during summer reach a maximum of 40 and a minimum of 26.3 degrees Celsius. Winter temperatures range between 29.6 and 18 degrees Celsius. (Alaguraja 2010).

2. Objectives of the study

To find out the area, production of Jasmine and actual rainfall of Madurai district in Tamil Nadu.

3. Scope of the study

The result which relates to analysis of domestic consumption will be useful to the policy makers to streamline the consumption pattern within the country so that additional quantity of Jasmine is available for export to earn foreign exchange. The analysis on export will also be useful to improve the volume of Jasmine export vis a vis foreign exchange earnings.

4. Materials and Methods

The correlation can be calculated as follows:

n = the number of data points

x = values for the x-axis

$\bar{x}$ = mean of x

y = values for the y-axis

$\bar{y}$ = mean of y

$$r = \frac{\Sigma xy - (\Sigma x)(\Sigma y)/n}{\sqrt{(\Sigma x^2 - (\Sigma x)^2/n)(\Sigma y^2 - (\Sigma y)^2/n)}} \quad (1)$$

4.1 Data

Area, Production of Jasmine and Actual Rainfall of Madurai District in Tamil Nadu were collected from various publications, Government of Tamil Nadu Department of Economics and Statistics, Statistical Hand Book, District Horticulture Office Madurai.

5. Results and Discussion

The result of the study deals with Area, Production of Jasmine and Actual Rainfall of Madurai District in Tamil Nadu.

5.1 Model Estimation

The estimation of model parameters were estimated using SPSS.20 version was used to estimate the results and presented in Table.1

6. Tables and Figures

6.1 Tables

Table.1 Tamil Nadu State Descriptive Statistics

Factors	Mean	Std. Deviation	N
Production	85045.0000	18652.46171	12
Area	10487.0833	2933.45875	12
All Monsoon Actual Rainfall	984.5250	176.03536	12

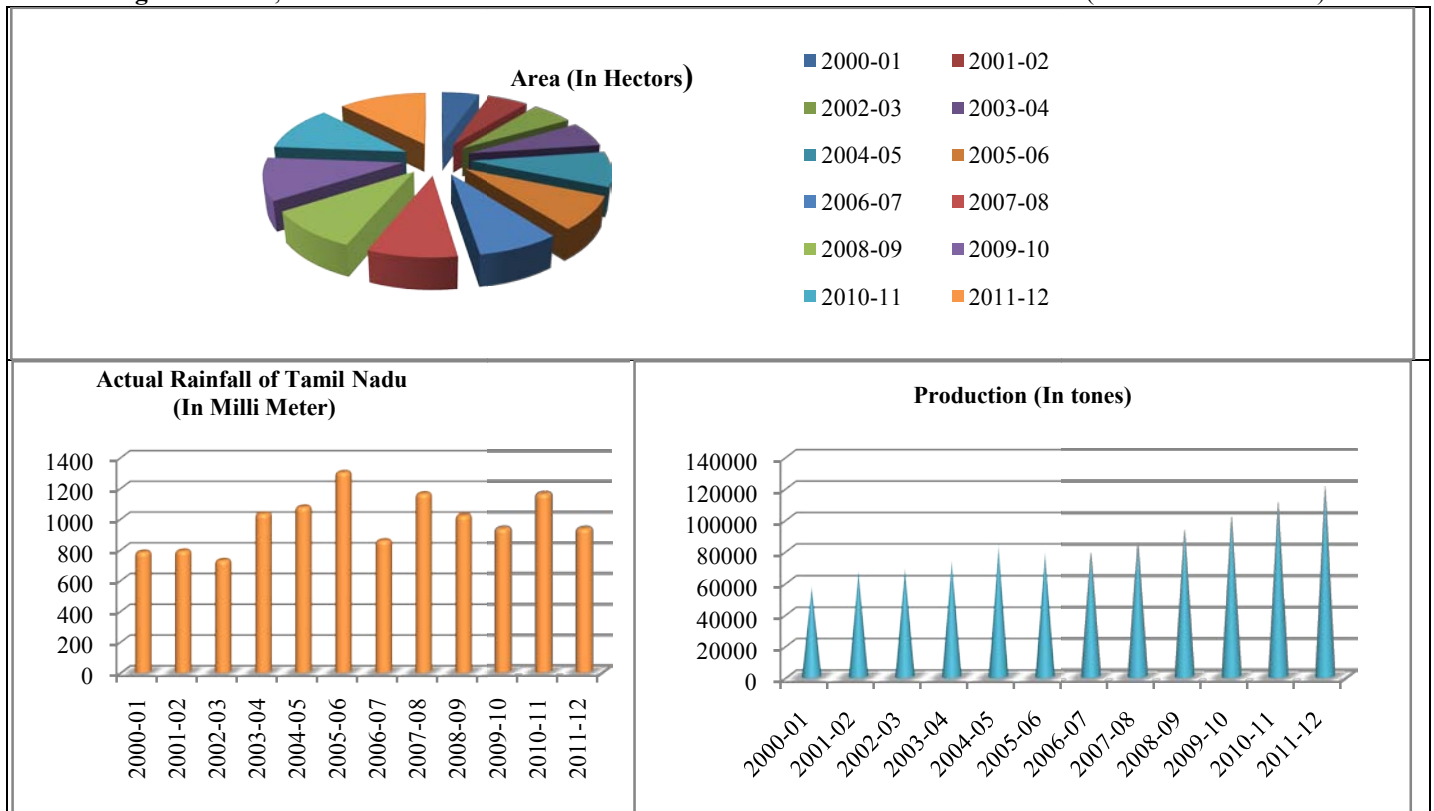
Table.1 (a) Area, Actual Rainfall and Production level Correlation estimated in Tamil Nadu (2000 –01 to 2011-12)

		Production	Area	All Monsoon Actual Rainfall
Production	Pearson Correlation	1	.980**	.381
	Sig. (2-tailed)		.000	.221
	N	12	12	12
Area	Pearson Correlation	.980**	1	.452
	Sig. (2-tailed)	.000		.140

** . Correlation is significant at the 0.01 level (2-tailed).

6.2 Figures

The charts of more than one decade area, production and actual rainfall in the study site were shown in Fig. 1, and Fig. 2. By these charts, the following features were recognized.

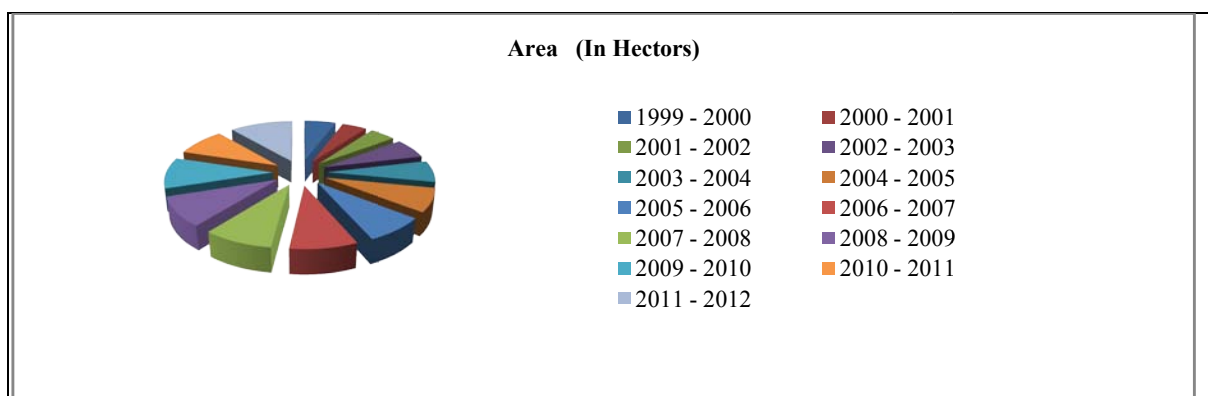
Figure: 1 Area, Actual Rainfall and Production level Correlation estimated in Tamil Nadu (2000 –01 to 2011-12)

Table.2 Madurai District Descriptive Statistics

Factors	Mean	Std. Deviation	N
Production	7642.6923	2394.47421	13
Area	952.0769	249.82176	13
All Monsoon Actual Rainfall	846.3000	212.39999	13

Table.2 (a) Area, Actual Rainfall and Production level Correlation estimated in Madurai District (1999 –00 to 2011-12)

		Production	Area	All Monsoon Actual Rainfall
Production	Pearson Correlation	1	.976**	.535
	Sig. (2-tailed)		.000	.060
	N	13	13	13
Area	Pearson Correlation	.976**	1	.504
	Sig. (2-tailed)	.000		.079

** . Correlation is significant at the 0.01 level (2-tailed).



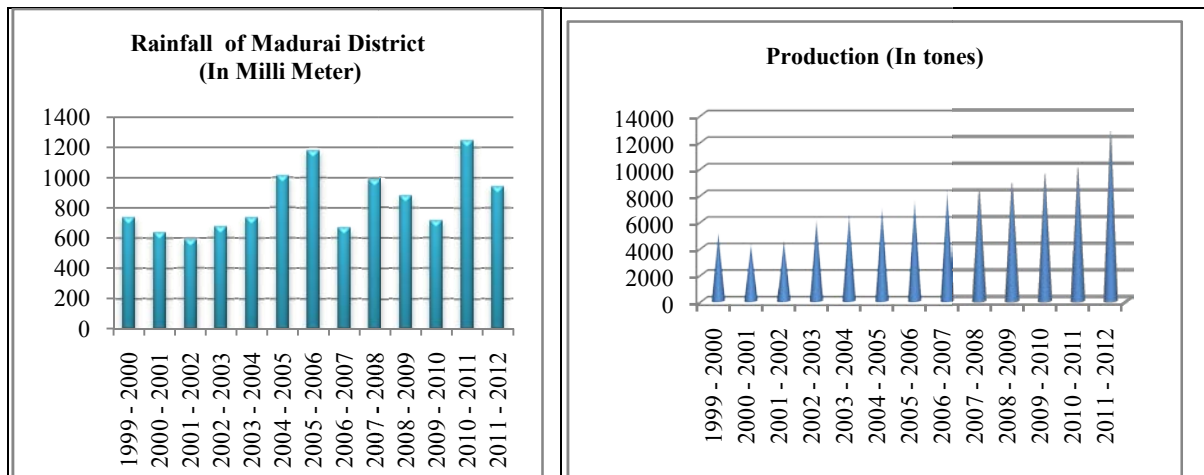


Figure: 2 Area, Actual Rainfall and Production level Correlation estimated in Madurai District (1999 –00 to 2011-12)

The table 1(a) and 2 (a) this table portrays the correlation between the production, area and all actual monsoon of Madurai and Tamil Nadu. Here production depends upon the area cultivated at the same time it also depends on the monsoon level. Whereas, area is an independent variable, hence the relationship between the variables area tested in order to find out the significance. The results in the table shows that production is significantly depend upon the area cultivated. Thus, it conveys, higher the area cultivated higher will be the production. The correlation result show, that production is depend upon the area with high positive significance at 1 percent level.

7. Conclusion

This paper concludes that the area of Jasmine cultivation as well as improved farming technology has increased and also production has increased more than one decade in Madurai district and Tamil Nadu. Singaravelu and Rajasekaran (2013) study has supported about Jasmine production and this study find out that the irrigation charges of cultivation is about 6 per cent only. The rainfall does not influence to increase the production of Jasmine because Jasmine is native to tropical and warm temperate regions and cultivated in France, Italy, China, Japan, India, Morocco and Egypt. (Sandeep and Padmaa M Paarakh 2009), even though Irrigation should be given at an interval of 3-4 days till the establishment of sampling if no rains in rainy season. Afterwards, the Jasmines may be irrigated at the interval of 15 days (www.agriinfo.in). Irrigation should be given immediately after planting followed by weekly irrigation depending upon weather conditions. (www.agritech.tnau.ac.in). Moreover, the correlation results of this particular study also support the same and to conclude, higher the farming area higher will be the production.

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