



Impact Of Climate Change On The Economic Growth Of An Agrarian Economy With Special Refrence To Thiruvallur District

Dr.L.Subburaj/Professor & Head , Ms. Sweetlin Jenisha.E / AP , Ms. Karthika . M

Department of Management Studies Jaya Engineering College, Prakash Nagar,
Thiruninravur-602024-Chennai

Dr R.Loganathan Professor, Department of Textile Technology Jaya Engineering
College, Prakash Nagar,Thiruninravur-602024-Chennai

Abstract

The study illustrates the Agriculture has an important role to play in the economic growth of an agrarian economy like that of India. We can say that it is the backbone of our economy. In a nut shell, its position is an all embracing one so that the very existence of economic activities of the people is bound up with the state and health of agriculture sector. Thus, it is obvious that Agriculture occupies an important position in the "Indian economy" and the development and growth of this economy, highly depends upon "Agriculture Growth". Agriculture is most dominant and important sector of Indian Economy that plays a vital role in the overall economic development of the country. This sector is heavily weather dependent world over, more in the tropical monsoon type of climate. Agricultural crops are extremely susceptible to fluctuations in climatic factors such as rainfall and temperature conditions, specially their seasonality and unpredictability

Keyword. Weather vs Climate, Global warming vs climate change, Fossil Fuels.

INTRODUCTION

India is a home in the third of the world's poor, and the climate change is also hit in society as the hardest. Happen to be the most populous nation in the world by 2045, the economic, social and ecological price of climate change will be massive. The climate change is likely to alter the dynamics of extreme events such as tropical cyclones, associated storm surges and the extreme rainfall events; possibly to increase their frequency and intensity. Agriculture is likely to get significantly impacted due to the climate change. The severe impacts could be on agricultural land use and production due to less availability of ground water for irrigation, higher frequency and intensity of inter and intra-seasonal droughts and floods, low soil organic matter, soil erosion, less availability of energy, coastal flooding etc.

PROFILE OF THE STUDY AREA

Tiruvallur district, also spelled as Thiruvallur district, is one of the 38 districts (an administrative district) in the Indian state of Tamil Nadu. The fast developing city of Tiruvallur is the district headquarters. The district has a mixture of urban and rural characteristics. The eastern part of Tiruvallur district is dominated by urban characteristics while the Northern part of the district has influence of Andhra culture due to its position. In 2011, the district had a population of 3,728,104 with a sex-ratio of 987 females for every 1,000 males.

The district has been divided into three revenue divisions viz, Thiruvallur, Tiruttani and Ponneri. There are four taluks under Thiruvallur division, two under Tiruttani divisions and two under Ponneri division. There are 46 firkas and 820 revenue villages. Likewise there are 12 blocks, five municipalities and ten town panchayats which implement rural development activities.

Thiruvallur was originally known as Thiruvallur, which specifies the sleeping position of the Vishnu or "Perumal", in the Veeraragava temple of Thiruvallur. Later people began to refer it by names such as Trivellore and Thiruvallur. Today Thiruvallur is well known, one of the reason being the Veeraragava Temple, where Amavasya (the commencement of dark moon prior to the new moon) is considered an auspicious day for the lord and so for the people of the town.^[3]

The district of Thiruvallur has been carved out by bifurcating erstwhile Chengalpattu district (which was renamed as Chengalpattu-MGR/Kancheepuram at the time of 1991 Census). According to the said bifurcation Thiruvallur revenue division which included Thiruvallur, Tiruttani taluks and Uthukkottai and Pallipattu sub-taluks separated from Chengalpattu district along with Ponneri and Gummindipoondi taluks of Saidapet revenue division and formed this new district. At present this district comprises 9 taluks, namely Avadi, RK

Pet, Ponneri, Gummidipoondi, Uthukottai, Tiruvallur, Poonamallee, Tiruttani, and Pallipattu.

It is bounded on the north by Tirupati and Chittoor districts of Andhra Pradesh state, on the east by the Bay of Bengal, on the southeast by Chennai district, on the south by Kanchipuram and Chengalpattu districts.

The northern taluks of the district like Ponneri, Uttukkottai, Gummidipundi etc. do not have much to offer from the scenic point of view. In the Tiruttani taluk, a number of hillocks are found scattered. The soil of the district is mostly sandy, mixed with soda or other alkali or stony. Rocks found in and near the surface are in detached masses. Hence, the soil can't be termed as very fertile. The soil found nearer the sea coast is of the inferior erinaceous type which is most suited for raising casuarinas plants. No mineral of any importance is available in the district. There are not many hills of any considerable height in this district. A few conical hills or ridges of small elevation exist like the St. Thomas Mount. Certain hillocks are found in Tiruttani. Most of the hills and hillocks are rocky and

no verdant vegetation is seen in the slopes of these hills. The area under forests in this district is quite major.

At present this District is comprised of taluks namely Ambattur, Gummindipoondi, Ponneri, Uthukkottai, Tiruvallur, Poonamallee, Tiruttani, Pallipattu, Madhavaram, Maduravoyal, Thiruvottiyur and Avadi and four Revenue Divisions namely Ambattur, Ponneri, Tiruvallur and Tiruttani.

REVIEW OF LITERATURE

This chapter reviews the earlier studies and research contributions in relation to temperature and rainfall. The contributions are presented in a chronological order which is collected from various journals and research works. The collected reviews which indicates the inter linkages of climate and its changing scenario in India as well as the global level. Hence, the reviews highlights the correlation of climate especially Temperature and Rainfall with Human health, Food security, Agricultural activities, availability of portable water, Income and poverty etc. The scholarly reviews have been collected and presented from 1986 to 2017.

Jifin D. Tsojon, (2017)⁵⁰ the purpose of the study was to determine the impact of climate change on agricultural production by farmers in Taraba State, Nigeria. A survey research design was adopted for the study. Five research questions guided the study. The study was conducted in Taraba State, Nigeria. The population of the study was all farmers in Taraba State. The sample for the study was 290 farmers who were drawn by multi-stage sampling technique. The instrument for data collection was a structured questionnaire tagged “climate change and agriculture production questionnaire”

Research Methodology

The present study depends on secondary data and theoretical literature records available on climate change. The secondary data used for the study is mainly drawn from Metrological department, statistical handbook of Theni district. Climate change vulnerability assessments and adaptation strategies are in the associated ecosystem. The nature of the impact among climate, water, agriculture, and human health can be complex. Climate change in increasing climatic variability are likely to aggravate the problem of future food security by exerting pressure on agriculture and affect by the human health.

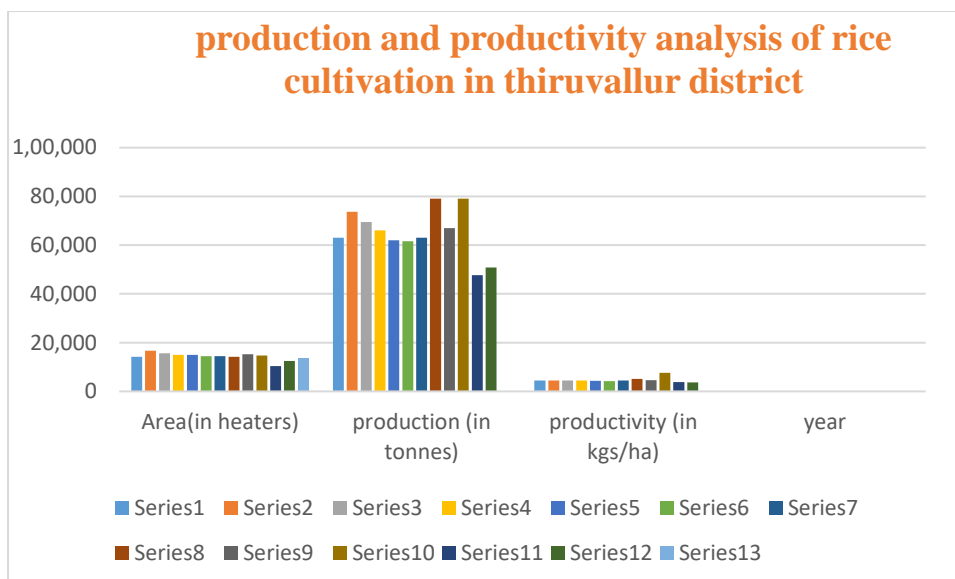
Data Collection the secondary data have been taken from the department of metrology, statistical hand book, India development report, NSS and other, Journals and magazines. The collected data have been used for analysis and interpretation.

Tools of Analysis The research work employs both traditional and modern statistical techniques for the scientific analysis of the data. The framework of analysis consists of mean, median, standard divistion, regression, Kurtosis model, Skewness model. In addition to, the following scientific tools are also employed to make the analysis scientific and systematic

TEMPERATURE IN THE AREA OF PRODUCTION AND PRODUCTIVITY ANALYSIS OF RICE CULTIVATION IN THIRUVALLUR DISTRICT

Year	Mean Maximum Temperature	Variation	Rice cultivations					
			Area (In Heaters)	Variation	Production (In Tonnes)	Variation	Productivity (in kg/ha)	Variation
2009-10	35.1	-	14,228	-	63044	-	4431	-
2010-11	34.4	-0.7	16,635	2407	73709	10665	4431	0
2011-12	36.1	1.8	15,694	-941	69540	-4169	4431	0
2012-13	35.9	-0.3	14,910	-779	66093	-3447	4431	0
2013-14	35.5	-0.4	14,400	-515	61992	-4101	4305	-126
2014-15	36.2	0.7	14,410	0	61662	-330	4282	-23
2015-16	35.3	-0.9	14,228	-172	63044	1382	4521	239
2016-17	36.1	0.8	15,334	1106	79134	16090	5154	633
2017-18	36.2	0.1	14,735	599	67029	-12105	4549	-605
2018-19	34.1	-2.0	10,321	-4414	79132	12103	7666	3117
2019-20	36.2	2.0	12,499	2178	47635	-31497	3811	-7662
2020-21	35.9	-0.3	13,830	1341	50813	3178	3670	-0.14
Average total	35.6	0.06	14269.1	-32.3	65235.6	-1019.2	4640.2	-368.9

Table 1 highlights the maximum temperature recorded is 36.2. C during 2018-19, and 2019-20, whereas the lowest maximum temperature recorded was 34.2.c .During the highest mean temperature ,Area of cultivation, production, productivity, have been varied , but not varied in the same ratio. The areas of cultivation have fluctuated between 2009-10 and 2020-21.Hence the production and productivity have a considerable fluctuations. The highest production is 79134mt whereas the lowest is 47635mt. In case of productivity the highest was 7666kg and the lowest was 3670 and so the variations took place in production and productivity due to temperature which is the major factor into determining the fluctuations. Though the temperature is the main reason to determine the fluctuation, even than the arrival of modern techniques in cultivation process (Row & column cultivation, water management, proper weeding effective control of pesticides) would help to experience the slight higher production and productivity



RESULTS OF THE DESCRIPTIVE STATISTICS IN TEMPERATURE RAINFALL AND PRODUCTION ANALYSIS OF RICE CULTIVATION IN THIRUVALLUR DISTRICT

Indicator	Maximum Temperature	Rain Fall	Production(In Tonnes)
Mean	35.6	72.12	65235.58
Median	35.4	70.65	64568.5
Standard deviation	0.71477904	18.05405	9682.428
Kurtosis	-0.059350397	-0.3232	-0.09497
Skewness	-1.070036758	-0.44794	-0.2993
Minimum	34.2	37.4	47635
maximum	36.2	97.9	79134

It is deduced from table 5.3 that the mean values of maximum temperature, rainfall and rice production are 35.6, 72.12 and 65235.58 respectively. It is to highlight that the value of mean maximum temperature ranged between 34.2 and 36.2, In case of the value of rainfall ranged between 37.4 and 97.9, whereas the value of the rice production is variable ranges from 47635 to 79134. It is deduced from the analysis. That the standard deviation values in respect of mean maximum temperature, rainfall and rice production account for 0.71477905, 18.05405 and 9682.428

Findings

The findings of the study are presented chapter wise Chapter IV Antecedents of climate change in the study area. → Average mean, maximum temperature during the period of analysis was at 35.60celsius. The maximum temperature is fluctuated over the period of analysis and the maximum temperature recorded 39.2 Celsius in 2005-06, 2008-09, 2011-12 and 2013-14. Among the twelve years of analysis in Theni district the average variation was at 0.06 Celsius, the maximum variation was recorded 2.0 Celsius level in 2019-20. It highlights that in the year of 2009-10 and 2019-20 was recorded the highest

degree of variation at 1.8 Celsius and 2.0 Celsius respectively. → Mean minimum temperature was 18.9 Celsius registered during 2009- 10 and 2010-11 and the variations were -5.1 c and -0.3 c respective years. Hence, the average mean minimum temperature was 21.2 c and variation

CONCLUSION

Climate Change is already harming much in food production and these impacts are projected to increase over years, with potentially devastating effects. Higher temperatures for example, could place further stress on water scarce regions and make it harder to rear animals and grow food crops. Thus, Climate Change plays a vital role to create a wide range of economic impacts with reference to all sectors of the economy. The overall development of an economy depends mainly on agriculture sector in India.

agriculture being witnessed not only in the study area but also in the world. The study area is more vulnerable in view of the huge population dependency on agriculture. Monsoon area changing more frequently, climate change is one of the biggest threats to food production in the study area. Therefore an urgent necessity for the economy to speed up efforts to evolve climate resilient crop varieties, cropping pattern and management practices for ensuring the desirable production and productivity in the agricultural sector

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