



Research Article

STATUS OF GROUNDNUT PRODUCTIVITY OVER TAMIL NADU

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Abstract: A study was carried out at the Tamil Nadu Agricultural University, Agro Climate Research Centre, Coimbatore during the period of 2019 to identify the productivity index for groundnut in Tamil Nadu. The secondary data on production, area and productivity on groundnut crop was collected from Department of Economics and Statistics, Chennai and Statistical Hand book of Tamil Nadu for 15 years for period from 2000 to 2015. In this paper Enyedi's method was used to calculate the productivity index. From the study it is found that in Tamil Nadu, seven districts were identified as low productivity index, sixteen district comes under moderate productivity index and nine district has high productivity index. The rainfall deviation on groundnut growth rate were correlated and the result shows there is liner influence of rainfall on groundnut growth rat.

Keywords: Enyedi's method, Productivity Index, Groundnut productivity over Tamil Nadu

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Introduction

Improvement Agricultural and allied Sector contributes 17.4% of the GVA (Gross Value Added) in 2014-2015 which plays important role in economy of country. Agriculture is not only meet food and nutrient requirements but also produce and supply raw materials for other industrial sectors which would provide directly and indirectly employment opportunities for the livelihood of people and also develop entrepreneurship hence it is said to be back bone of Indian economy. Groundnut (*Arachis hypogaea* L.) is commonly branded as poor man's nut also important food crop frequently used as edible oil and vegetable protein. It is 6th most important oilseed crop in the world. It is cultivated in 26.4 Mha with 37.1 million MT of total production throughout the world [1]. It is habituated in the tropical, sub-tropical and warm temperate regions [2] with average yield of 1520 kg/ha [3]. Groundnut crop can be cultivated in region where rainfall received from 500 to 1250 mm of rainfall [4]. It cannot withstand severe drought, water logging and frost. The major groundnut production states are Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu and Maharashtra. These five states contribute 86 percent of groundnut production in India [5]. Tamil Nadu, occupies 338300 hectares with a production of 783200 tonnes [6]. The major groundnut producing districts are Vellore, Cuddalore, Thiruvannamalai, Dharmapuri, Salem, Erode, Theni, Trichy, Madurai, Perambalur, Ariyalur, Pudukkottai and Kancheepuram district [7]. The main season for cultivation in January (Thaipattam). This study is conducted to identified the productivity index of groundnut over all districts of Tamil Nadu for period of 2000 to 2015.

Materials and Methods

Tamil Nadu, with an area of 1, 30,058 sq.km is situated in the Southern Eastern part of the Indian peninsula between North Latitudes 08°00' and 13°30'; East longitudes 76°15' and 80°18'. It is bounded in the east by the Bay of Bengal, in the south by Indian Ocean, in the west by the Kerala state and Arabian Sea while in

the north by Karnataka and Andhra Pradesh. The secondary crop data used in this study was collected from Department of Economics and Statistics, Chennai and Statistical Hand book of Tamil Nadu for 15 years for period from 2000-2015. In this paper Enyedi's method was used to calculate the productivity index

$$\text{Productivity Index} = \frac{Y}{Y_n} \div \frac{T}{T_n} \times 100$$

Where Y: Production of the crops in a unit area (entire district of Tamil Nadu)

Y_n: Total Production of the crops at the entire region (Tamil Nadu)

T: Area under crops in unit area,

T_n: Total cropped area in the entire region.

By using above method, the entire Tamil Nadu is classified into three regions viz., low productive regions, high productivity regions and moderate productivity regions and with a help of quartile method they are splitted into four equal groups based on their rank. Basically, they are three quantile the first quantile (25 percent) is a lower quantile, 50 percent is called second quantile or middle quantile and third quantile (75 percent) it also known as upper quantile.

Result

Groundnut production in India plays major role in edible oil economy of our country. Among nine oilseeds crops, groundnut contributes about 55 percent of total oil seed production. Though India leads both in area and production of groundnut in the world still it ranks eight in productivity. The study was carried out to analyse the productivity index of groundnut crop over Tamil Nadu for a period 15 years (2000-2014). Based on Enyedi's method the analyzed results are present in [Fig-1]. As indicated in [Fig-1], Ariyalur, Ramanathapuram, Salem, Tiruppur, Sivaganga, The Nilgiris and Virudhunagar have low productivity zone for most of the year Likewise Krishnagar, Coimbatore, Perambalur, Dharmapuri, Kanniyakumari, Madurai, Thoothukudi, Namakkal, Pudukkottai, salem, Erode,

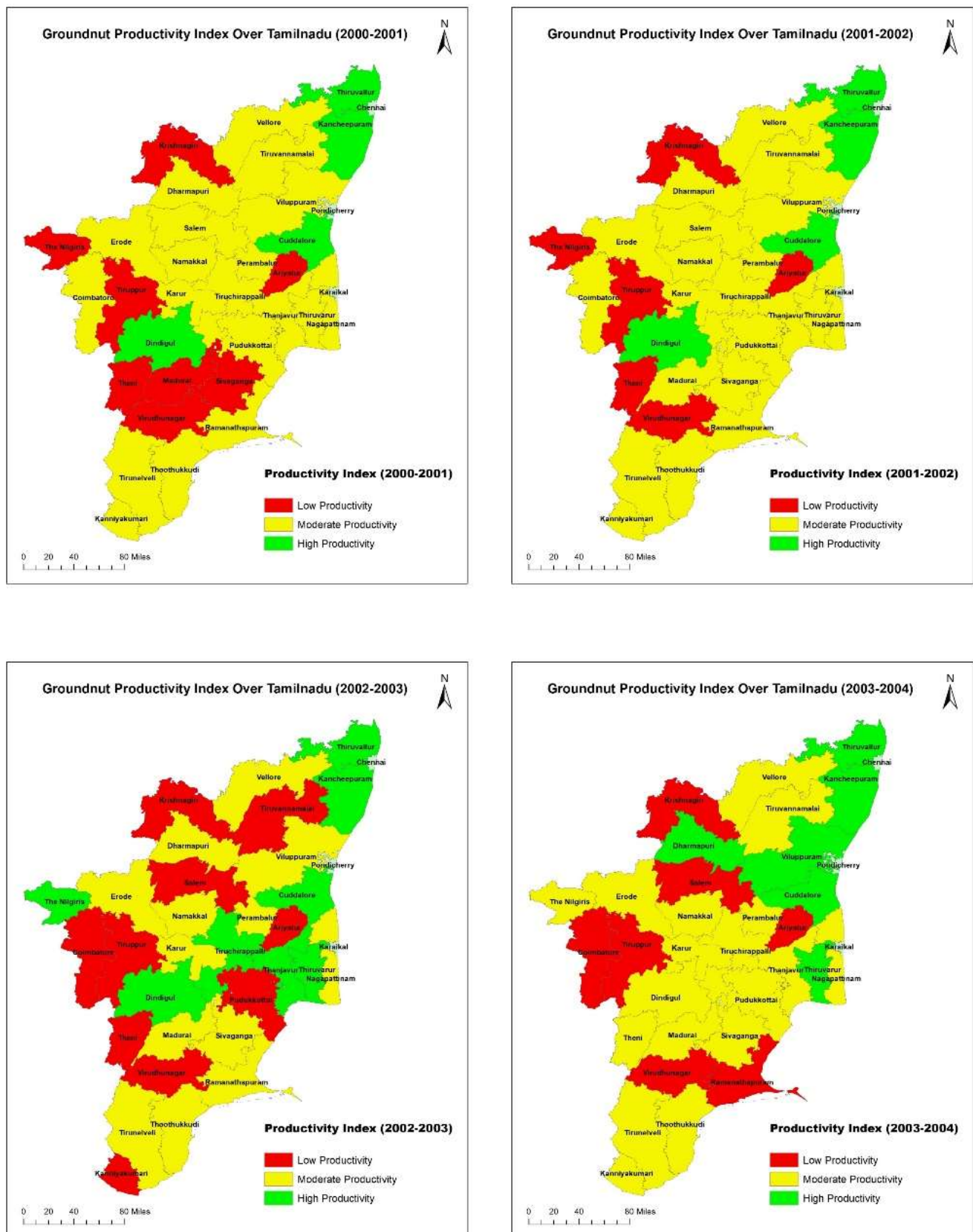


Fig-1 Spatial pattern of Groundnut productivity Over Tamil Nadu

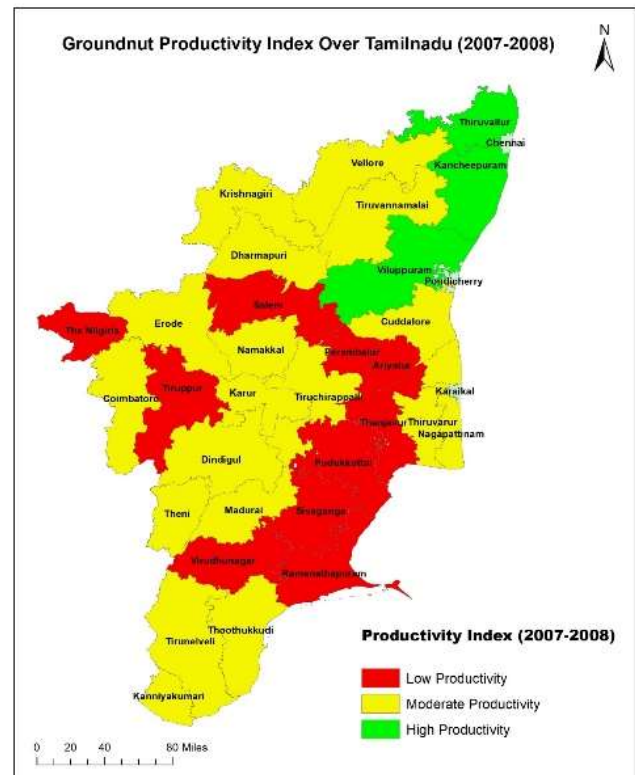
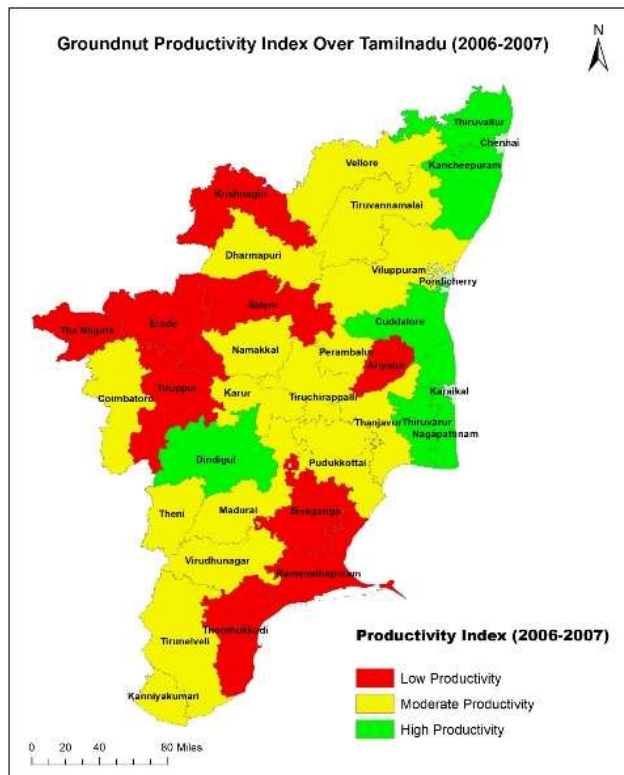
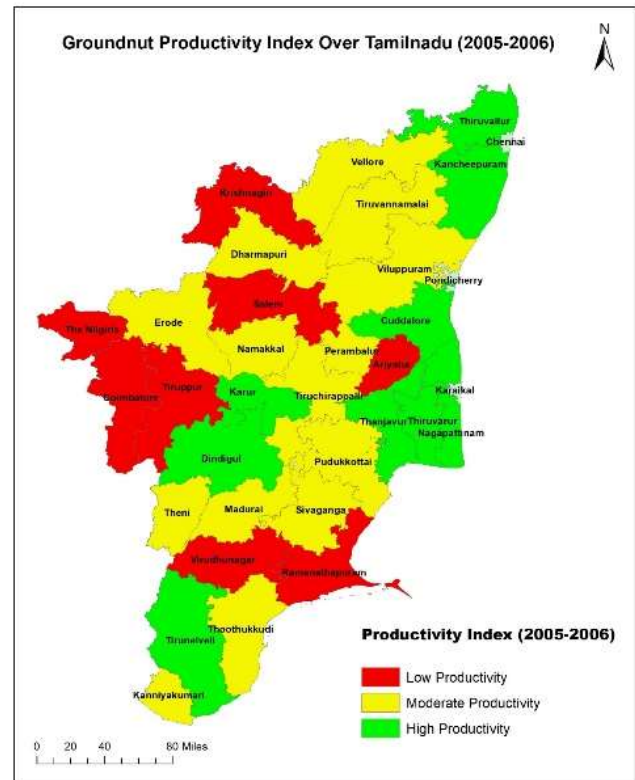
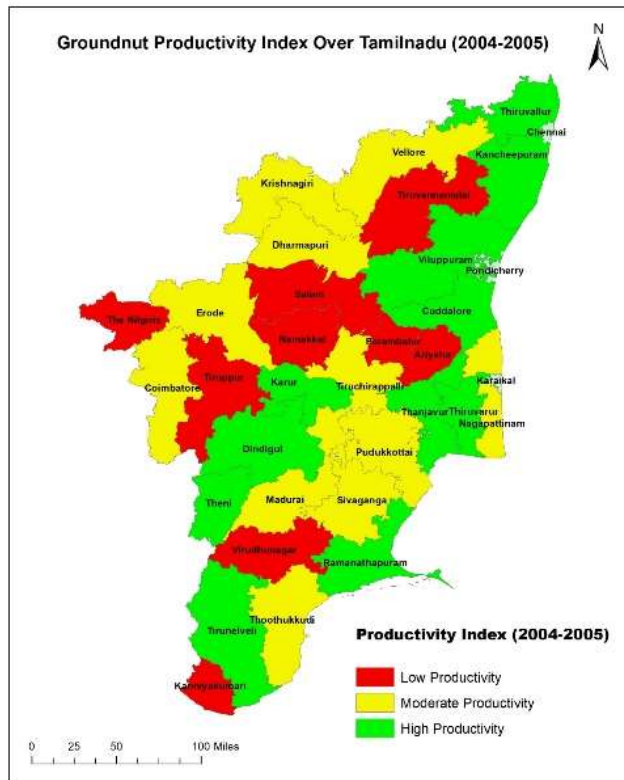


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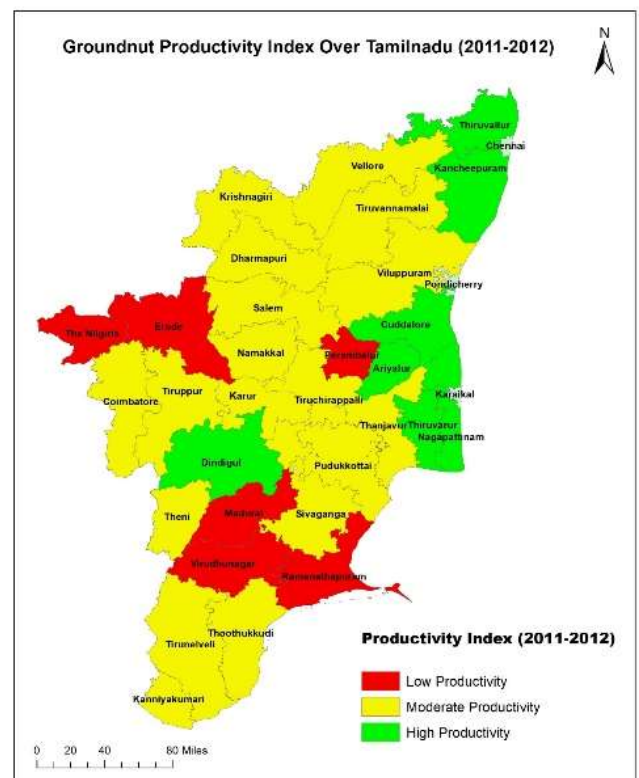
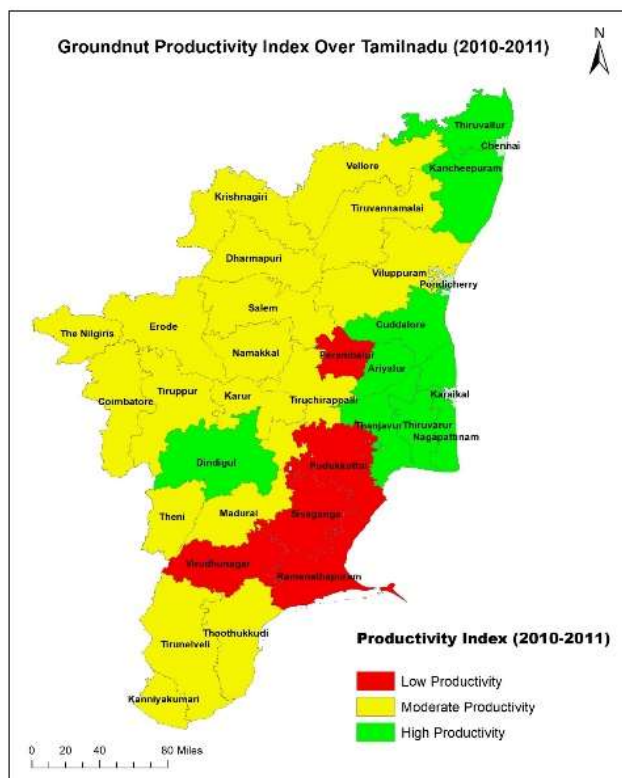
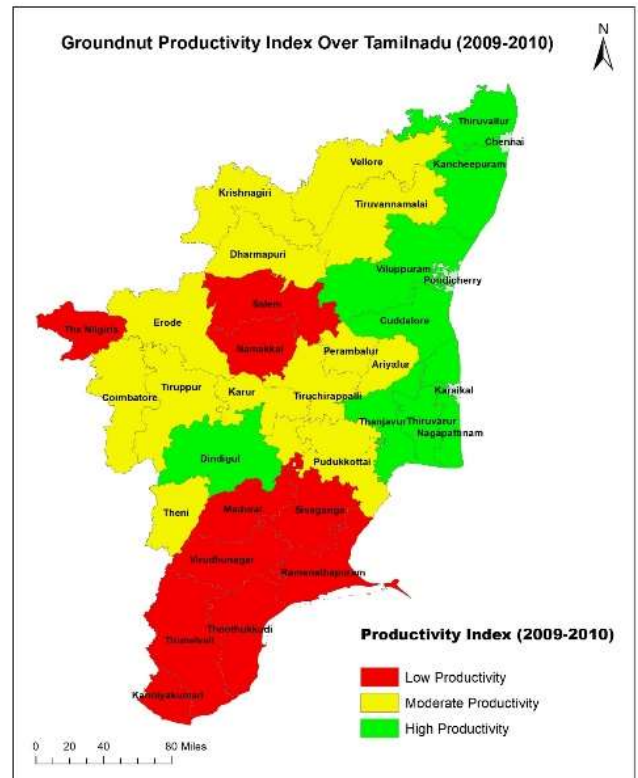
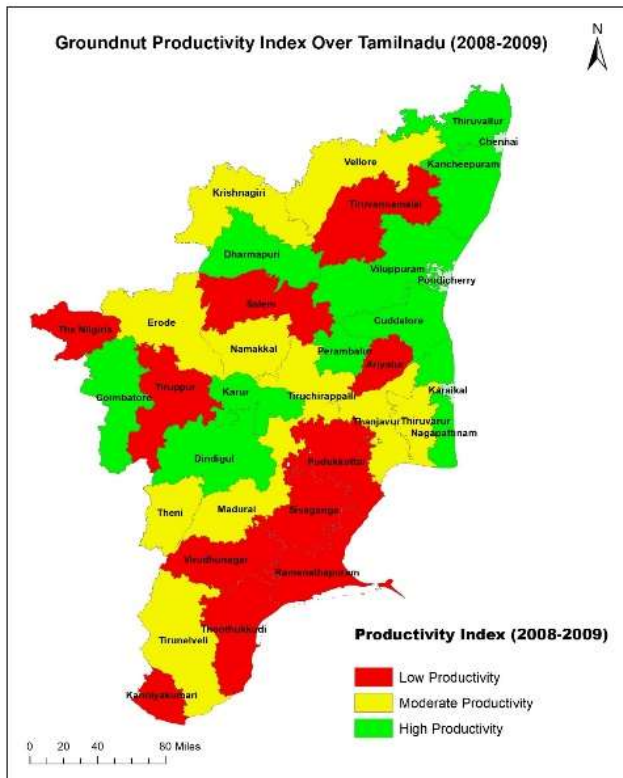


Fig-1 Spatial pattern of Groundnut productivity Over Tamil Nadu

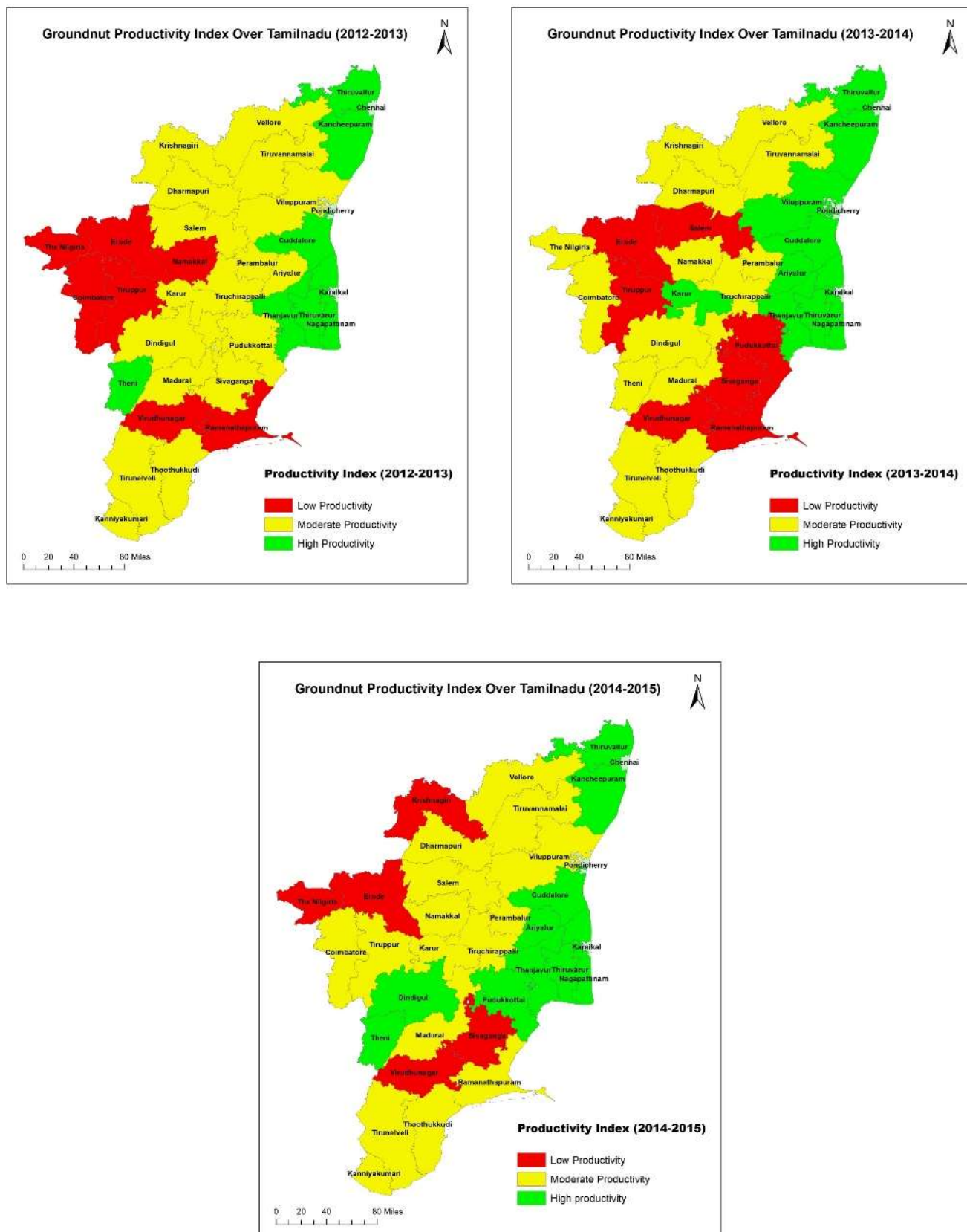


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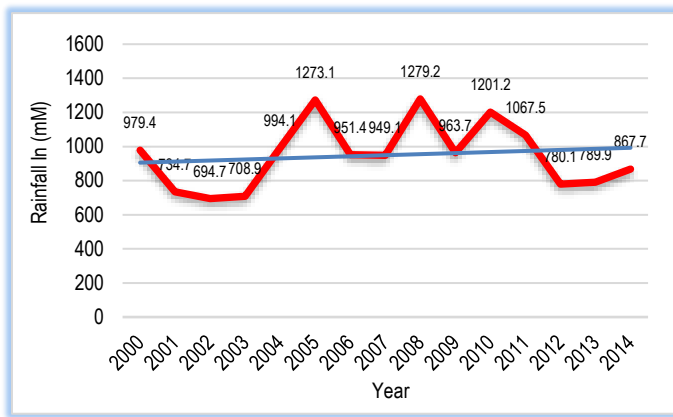


Fig-2 Annual rainfall Trend of Tamil Nadu (2000-2014)

Theni, Trichirappalli, Tirunelveli, Tiruvannamalai, Vellore, Villupuram and Karur are moderate productivity zone. Salem district have both low and moderate productivity index. Thiruvallur, Kancheepuram, Cuddalore, Dindigul, Karur, Villupuram, Thanjavur, Thiruvallur, Nagapattinam have been in High productivity region in most of the years of the study period. Karur and Villupuram District fall on both high and moderate productivity zone. Conversely, groundnut production faces several productions constraints including droughts and erratic rainfall patterns.

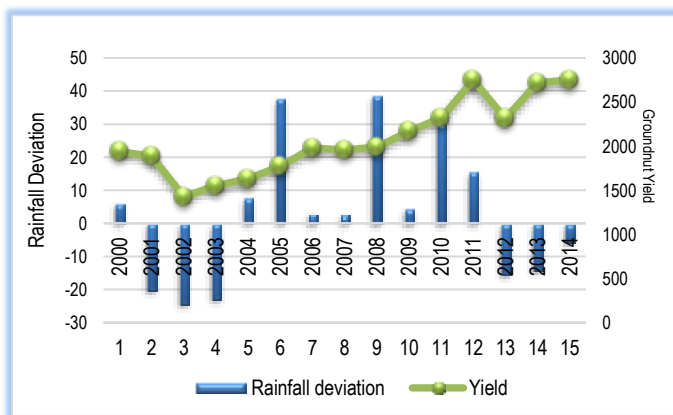


Fig-3 Relationship between rainfall deviation and growth rate of groundnut

Rainfall trend was analyzed for Tamil Nadu. It shows an increasing trend from 2000 to 2014 and depicted in [Fig-2]. The [Table-1] and [Fig-3] shows that where high and moderate rainfall occurs which influenced the groundnut productivity positively but in case of decreasing rainfall ranges, the productivity negatively affected. Hence, it was validated that Rainfall is also one of the factors which influences the groundnut productivity.

Table-1 Consequence of rainfall on yield of the groundnut in Tamil Nadu

Year	Rainfall (mm)	Rainfall Deviation (%)	Groundnut Yield (Kg/ha)
2000	979.4	6.2	1942
2001	734.7	-20.4	1885
2002	694.7	-24.7	1429
2003	708.9	-23.2	1552
2004	994.1	7.8	1632
2005	1273.1	38.0	1775
2006	951.4	3.1	1981
2007	949.1	2.9	1957
2008	1279.2	38.7	1990
2009	963.7	4.5	2169
2010	1201.2	30.2	2323
2011	1067.5	15.7	2751
2012	780.1	-15.4	2314
2013	789.9	-14.4	2721
2014	867.7	-6.0	2753

Conclusion

In this research paper analysis on groundnut crop productivity has been done to classify regions based on productivity index of Groundnut crop in Tamil Nadu between 2010 to 2015 period. Thiruvallur, Kancheepuram, Cuddalore, Dindigul, Karur, Villupuram, Thanjavur, Thiruvallur are in High productivity region in most of the years of the study period. Ariyalur, Ramanathapuram, Salem, Tiruppur, Sivaganga, The Nilgiris and Virudhunagar have low productivity zone for most of the year and Krishnagar, Coimbatore, Perambalur, Dharmapuri, Kanniyakumari, Madurai, Thoothukudi, Namakkal, Pudukkottai, Salem, Erode, Theni, Trichirappalli, Tirunelveli, Tiruvannamalai, Vellore, Villupuram and Karur are moderate productivity zone. The high productivity is attained due to natural of climatic factors, soil type, improved crop management, introducing of high yield varieties. There may be some fluctuation in some regions due to adaptations of poor technology, maintaining poor plant population, adapting to new crops, inadequate fertilization, socio-economic status of farmers and Monsoon variations which cause major fluctuations in groundnut production

Application of research: Study related to status of groundnut productivity over Tamil Nadu and Enyedi's method was used to calculate the productivity index

Research Category: Agricultural Production

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Author Contributions: All authors equally contributed

Author statement: All authors read, reviewed, agreed and approved the final manuscript. Note-All authors agreed that- Written informed consent was obtained from all participants prior to publish / enrolment

Study area / Sample Collection: Tamil Nadu

Cultivar / Variety name: Groundnut (*Arachis hypogaea* L.)

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Ethical Committee Approval Number: Nil

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