



Research Article

EFFECT OF RAINFALL ON POD YIELD OF RAINFED GROUNDNUT IN VISAKHAPATNAM DISTRICT OF ANDHRA PRADESH

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Abstract: The study was planned to assess the rainfall variation and its correlation with productivity of Kharif Groundnut for Visakhapatnam district of Andhra Pradesh. In order to study inter-relationship between rainfall and groundnut yield, correlation analysis technique was employed. The analysis was done for seasonal as well as monthly rainfall. The results indicated that, correlation coefficient between seasonal rainfall and groundnut yield was found to be 0.40. The correlation of June rainfall was highest with coefficient of 0.596 and lowest with August rainfall (0.004). Groundnut yield was negatively correlated with July rainfall with coefficient of -0.085.

Keywords: Correlation, Rainfall, Groundnut yield

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Introduction

Agriculture is the main stay of nearly 70% of the households. Though Visakhapatnam city is industrially developing, the rural areas continued to depend on agriculture. Groundnut is one of the important cash crops. Since there is no Major Irrigation system, only about 36% of the cropped area is irrigated under the Ayacut of the Medium Irrigation System and Minor Irrigation Tanks. The remaining cultivated area is under rainfed situation which will be subjected to vagaries of monsoon. Though the average annual rainfall of Visakhapatnam district is 1100 mm groundnut productivity is less low due to weather aberrations. Excess rainfall during vegetative period will lead to a real peg. Whereas, deficit rainfall during pegging will lead to reduction in yield [1]. Groundnut requires on an average 400-500 mm of water but it varies with soil type, agro-climates and genotype. Total rainfall to a tune of 400- 600 mm, well-distributed over the entire growth period during Kharif results in good yield. Among the various constraints for low yield, the principal one is erratic, insufficient and unevenly distributed rainfall during Kharif [2 &3]. But in North Coastal districts of Andhra Pradesh excessive vegetative growth during kharif is one of the constraints for lower yields as these districts experience high rainfall in south west monsoon period. Correlation studies are useful in crop management, contingent planning and other crucial decision making. Hence the present study is taken up.

Materials and Methods

In the study area usually, monsoon commences in the month of June and gets withdrawn by the end of September. Therefore, rainfall of these four months was considered for the analysis for data of 20 years from 1997 to 2016. The rainfall data was collected from India Meteorological Department website and groundnut yields from Directorate of Economics and Statistics website. The average annual rainfall of Visakhapatnam is 1100 mm. Kharif Groundnut is sown in the beginning of monsoon depending on the commencement of rainfall. The crop period of Groundnut is 115 to 120 days. The analysis of rainfall variability for the present study was done for seasonal rainfall as well as for monthly rainfall.

Results and discussion

The seasonal rainfall and yield of groundnut of twenty years is shown in [Fig-1]. Highest yield for study period was 1395 kg/ha in 2015 while lowest yield was recorded as 718 kg/ha in 1997, the average yield of these twenty years was 191 kg/ha. For the seasonal rainfall, the highest rainfall was observed in 2003 (973 mm) and lowest rainfall of 476 mm in 2013, the arithmetic mean of seasonal rainfall was found as 724 mm. The correlation coefficient between seasonal rainfall and yield was found to be 0.401. The correlation analysis between monthly rainfall and yield indicates that rainfall of June, August and September months was positively correlated with groundnut yield, whereas groundnut yield was negatively correlated with July rainfall [Fig-2].

Conclusion

The correlation of June was highest with correlation coefficient as 0.596 followed by 0.157 in September. Correlation coefficient between rainfall of August and groundnut yield was lowest (0.004) and negatively correlated with July rainfall (-0.085).

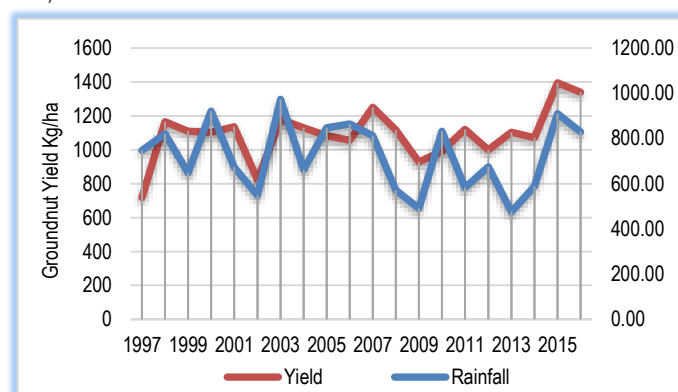


Fig-1 Seasonal rainfall (June to September) of and Groundnut yield for Visakhapatnam district

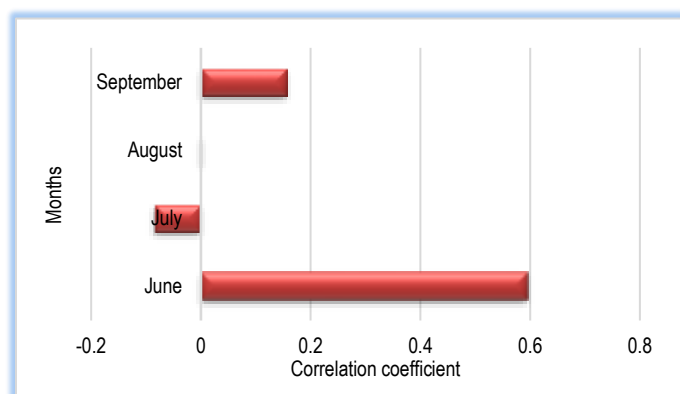


Fig-2 Correlation between monthly rainfall and yield

Application of research: Rainfall analysis will be useful for crop planning.

Research Category: Rainfall and crop productivity

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Study area / Sample Collection: Visakhapatnam district of Andhra Pradesh

Cultivar / Variety / Breed name: Groundnut

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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