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## Spatio-temporal rainfall analysis for crop planning in Barak Valley of north east of India

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The pattern and amount of rainfall are among the most important factors that affect agricultural systems. It governs the crop yields and determines the choice of the crops that can be grown. Therefore, a detailed knowledge of rainfall regime is an important prerequisite for agricultural planning. Agricultural production in Barak Valley (Cachar, Karimganj and Hailakandi) is mainly controlled by rainfall only. So, in the present study, spatial (station, districts and valley) and temporal (month, annual and seasonal) rainfall analysis, statistical and probability analysis has been carried out to presents the rainfall characteristics for crop planning in Barak Valley. The average annual rainfall of the Barak Valley was determined considering the ten year (2001 to 2010) observations from nine raingauge stations distributed in three districts of the valley. It was found that the mean annual rainfall in Barak valley is 2950 mm with a standard deviation of 475.74 mm and coefficient of variation of 16.13%. The average contribution of mean annual rainfall in summer (March to May), Kharif or monsoon season (June-September) and Rabi or winter (October to February) are found 28, 63, and 9%, respectively. The average annual rainfall received by the districts Cachar, Karimganj and Hailakandi are 2956, 3431 and 2454 mm with a coefficient of variation of 15.14, 6.34 and 3.46%, respectively. However, the average rainfall received by the districts Cachar, Karimganj and Hailakandi during the monsoon season is 1857.13, 2180.49 and 1515.65 mm, respectively. The expected occurrence of rainfall at different probability levels during each seasons of the three districts was estimated using the SMADA (Stormwater Management and Design Aid, version 6.0) and suggested that long duration flood resistance crops for the monsoon and short duration cropping pattern for the non-monsoon season for increasing the agricultural productivity in the Barak Valley. Since, the valley is under high rainfall zone, so a protected cultivation inside poly houses, green houses or shade-net houses could be planned by creating the rainwater harvesting structure.

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