

Statistical Analysis of Weekly Rainfall of 25 years (1986-2010) using Markov Chain Probability Model for Agricultural Planning in Southern Telangana Zone of Andhra Pradesh

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ABSTRACT

For successful agricultural crop management and planning of soil and water conservation measures it is necessary to know the sequence of dry and wet periods along with onset and withdrawal of rainy season. In this study, markov chain model has been used to study wet and dry spell distribution in monsoon period, onset and withdrawal of monsoon and weekly analysis of rainfall for Ranga Reddy district of South Telangana zone. The average rainfall of this region is 835.5 mm. Coefficient of Variation (CV) of weekly rainfall of Rajendranagar was 23.52% showing slightly erratic distribution of rainfall. The data on onset and withdrawal of monsoon indicated that the monsoon starts effectively from 24th Standard Meteorological Week (SMW) (11-17th June) and remains active up to 43rd SMW (22nd -28th October). The probability of occurrence of dry week is maximum in 44th SMW (88%) followed by 22nd SMW (92%). The probability of occurrence of dry week ranged from 36-72% from 23rd – 39th SMW. The probability of occurrence of dry week after dry week is 100% in 23rd SMW followed by 77 percent in 30th SMW and 66 percent in 23 SMW. The probability of occurrence of wet week is more than 40% throughout crop growth period (22-44 SMW) except during 22nd SMW and 40th, 42nd & 44th SMW. The probability of occurrence of wet weeks is maximum in 30th, 32nd and 33rd (64%) SMW followed by 31st SMW (60%). The probability of wet week after wet week is highest in 30th (68%) followed by 34th (64%) SMW. The results through analysis have been used for agricultural planning at Rangareddy region.

Key words : Conditional probability, Length of crop growing season, Markov chain model, Wet and dry spell, Onset and Withdrawal of rainy season.