

Research Paper :

## Rainfall analysis for drought occurrences in Chiplun tahsil (MS)

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### ABSTRACT

Rainfall distribution over India is highly erratic and uncertain both in time and space. Heavy rainfall for short period and some times continuous dry spell creates problems for crop growth. Therefore, it is necessary to study the rainfall analysis for developing farming system which may help to increase and stabilize agriculture production through better use of natural resources. The rainfall data of 15 years were collected from Minor Irrigation Department, Kapsal. Tal- Chiplun, dist. Ratnagiri. The study concluded as in seasonal week, a drought week which occurred as 29.43% followed by 48% week as abnormal week. The results of the monthly rainfall analysis showed that about 35.55% of total number of months was normal for 15 years period. This analysis will help for crop planning and for design of soil and water conservation structure for future need.

**Key words :** Abnormal rainfall, Crop planning, Drought, Rainfall analysis, Normal

Indian agriculture mainly depends on monsoon rain. Out of total cultivated area of our country, nearly 70 per cent of area is rain-fed which depends on characteristic of monsoon. Despite the progress, marginal and small farmers constituting 80% of agriculture income groups still depends on rain-fed farming (Das and Subhash, 2004). During rainy season about 70 % rainfall is received over Maharashtra state from south-west direction. During winter season, about 20% rain is received from north-east direction.

Konkan region is situated along Arabian sea shore on west-coast. It is divided into two parts *i.e.* southern Konkan and Northern Konkan. Chiplun region is placed in southern Konkan region. Average annual rainfall of konkan region is 3200 mm. Konkan tropical region with humidity varies from 50 to 80 % within the year. The important characteristics of rainfall influencing production of rain fed farming are number of rainy days, drought, normal and excessive rainfall for week, month and year. Meteorologically a day is considered dry when it receives rainfall less than 2.5 mm, while agriculturally a dry day receives rainfall less than 6.3 mm are of no use for plant growth, as they will not wet the soil enough to supply moisture around roots (Chowdhary, 1979).

Karate and Sena (2004) studied the application of rainfall analysis for planning soil and water conservation structures in semi-arid Gujarat. Researcher have made meteorological drought, agriculture drought based on rainfall data for different regions in India. Sharma *et al.* (1978) and Sharma and Verma (1983) analyzed the drought using the definition of drought month, drought

week and drought year for different regions as receiving actual rainfall equals to the 50% of the average rainfall.

### METHODOLOGY

The daily rainfall data of 15 years (1993-2007) was recorded on rain gauge station located at Fanaswadi dam, 5 km away from Chiplun by Minor Irrigation Department Kapsal, Tal- Chiplun, Dist.- Ratnagiri (Maharashtra). The Chiplun is located 250 m above mean sea level at latitude 17°31'N and longitude 73°31' E. It is located at West Maharashtra of Konkan region coastal zone Arabian ocean. Therefore, humidity is generally high during June to October. It is generally more than 80% and least during winter. The average annual rainfall of Chiplun region is 3804 mm. The average maximum temperature is about 32°C and the average minimum temperature is 26°C for this region. There is not more temperature variation during daytime.

### Analysis of rainfall data:

The weekly rainfall data were computed by adding daily rainfall data for each standard metrological week. Similarly, the daily rainfall in each month was added to compute the monthly rainfall in a particular year. Also the annual rainfall was computed by adding the monthly rainfall in that particular year.

The drought estimation was made by considering definition of different terms. Drought week/month was defined as receiving rainfall less than 50 % of the average weekly/monthly rainfall whereas normal week/month receiving rainfall in between 50 – 200% of average