

# Analysis of Rainfall Data for Drought Investigation at Sangli District (MS)

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**Abstract**— Rainfall data of Sangli District were analyzed for drought investigation, which may be used for long term planning of irrigation system in the area. During 34 years period, three times drought was experienced which occurred in 1972, 2005 and 2015. Rainfall data is of great importance of any agricultural and non-agricultural programme. If proper and comprehensive study of various rainfall data was analyzed, the severity and reoccurrence of drought can be predicted and various measures can be taken to cope up with the problems arising due to drought.

**Key words:** Drought, Rainfall, Sangli District

## I. INTRODUCTION

The Irrigation Commission 1972, has identified 67 drought prone districts comprising of 326 talukas located in 8 states. Commission on Agriculture, 1976, identified a few more drought prone areas with slightly different criteria. The Drought Area Study and Investigation Organization of C.W.C. set up in 1978 started with 99 districts after considering the list of districts identified by the Irrigation Commission and also by the National Commission on Agriculture for carrying out further studies. For the studies, C.W.C. adopted the same criteria as followed by the Irrigation commission 1972. The drought is occurring in an area: 1) when the annual rainfall is less than 75% of the normal in 20% of the years examined. 2) Less than 30% of the cultivated area is irrigated. CWC adopted a smaller unit viz. Talukas for drought identification studies instead of districts and therefore, number of drought affected Talukas were identified as 315 out of a total of 725 Talukas in 99 districts. Accordingly out of 108 M. ha. area of 99 districts, only 51.12 M.ha. spread over 74 districts have been considered as drought districts. Thus, in comparison to total geographical area of the country (329 M.ha) about 1/6th area is drought prone. Irrigation is the most effective drought proofing mechanism. The total geographical area of the drought districts is 108 M.ha, out of which 81 M.ha. is culturable (75%), gross sown area is 61.9 M.ha. (57.4%) and the gross irrigated area is 4.3 M.ha. About 23.23% of the total cropped area is irrigated in the drought districts as against in all India average of 30.15%.

Rainfall is the most important natural hydrologic event and is a unique phenomenon varying both in space

and time. The rainfall distribution is very uneven and it not only varied considerably from place to place but also fluctuates from year to year. The rainfall play vital role in planning and operation strategies of any agricultural programme for any area. Indian subcontinent gets around 75% of the annual rainfall during monsoon period, which lasts from June to September i.e. four months. The major water requirement of the country is fulfilled by rainfall, which occurs in the monsoon period. There is large variation in distribution of rainfall from year to year. In present study, the rainfall data since 1983 is used to investigate drought prone talukas of Sangli district.

## II. METHODOLOGY

The drought cannot be defined specifically due to varieties of needs of water changing from place to place. The irrigation project fulfills the need of water if there is no rainfall. The main cause of drought experienced in all places is the insufficient non-linear rainfall. It is not possible to estimate the worst possible drought condition which might develop in an area because of low groundwater recharge. Keeping the points in view the rainfall data for a period of 34 years has been analyzed in the presented paper so as to study the magnitude and drought frequency in terms of rainfall deficiency for Sangli district of Maharashtra state. The rainfall data for period of 34 years of Sangli district were collected from Irrigation Department. In this study the yearly rainfall data were analyzed. Depending upon the rainfall data since 1983, various drought prone talukas were anticipated in the study area.

## III. RESULT AND DISCUSSION

The rainfall is the main constituents responsible for the drought conditions. For those constraints we analyze rainfall data of Sangli district since 1983 (Table No. 1 (a), (b) and (c)). The average rainfall data for last 10 year indicates the Palus (293mm), Atpadi (432mm), Kavte Mahankal (436mm), Kadegaon (482mm), Tasgaon (490mm), Jat (518mm), Sangli city (533mm), Vita – Khanapur (574mm), Islampur (615mm), Miraj (657mm) and Shirala (930mm). Based upon last 10 year average rainfall, Palus taluka has lowest rainfall and Shirala Taluka has highest rainfall.