A case study :

Rain : Its probability based forecast at Solapur, India

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ABSTRACT

Rainfall data for last 30 years (1974-2003) was collected at Dry Farming Research Station, Solapur is used for this study. Out of the total annual rainfall of 748.2 mm in 45 rainy days. 73.5 percent (550.5 mm) is received from South-West (June-September) monsoon period with 32 rainy days, 17.4 percent (130.9 mm) of rainfall with 7 rainy days from North-East (Oct. - Dec) monsoon period. Weekly rainfall studies shows that MW 24, 25 and 30 received 24.7, 19.1 and 36.9 mm rainfall with less variation 97.3, 97.3 and 100.1% in respect of total amount of rain indicating better chances of rainfall in these weeks for *kharif* season. However, looking to the *rabi* season MW 38, 39 and 40 received maximum amount of rainfall 38.4, 63.7 and 37.1 mm with less variation 114.9, 109 and 101.3 %. The initial wet probabilities data indicate that > 20 mm rainfall is received in MW 24 (11-17 June) with 57 percent assurance indicate start of rainy season for *kharif* crops. The sowing of *kharif* crops *viz.*, Pearlmillet, Sunflower, Pigeon pea are recommended during this period. The mid season correction crop like sunflower is as recommended as contingent crop under late onset of monsoon *i.e.* in the month of late July and early August. However, MW 39 (24-30 Sept) with 75 percent assurance indicates maximum assurance of rainfall in *rabi* season. The *rabi* crops like winter sorghum, safflower and gram are recommended during this period on residual soil moisture. This study is helpful to the farmer in planning of field crops according to the rainfall pattern in dryland areas.

Key words : Rain forcast, Solapur

INTRODUCTION

Solapur is one of the important centre located in scarcity zone of Maharashtra where rainfall is erratic and ill distributed. The potential evapotranspiration is far excesses of average rainfall. For identifying favourable periods for crop production in the dryland areas a complete analysis of rainfall is necessary. Analysis of weather data gives an idea about the crop water needs for a given location. Such studies have been reported by Siva Kumar *et al.* (1984). The rainfall probability helps in adoption of crop planning. Such rainfall analysis has been reported from various parts of the country (Sahoo *et al*., 1991, Prasad *et al*., 1995, Sharma *et al.,* 1996). So an attempt was made to analyze the rainfall data of Zonal Agricultural Research Station, Solapur (MS). In this preliminary analysis, rainfall data of Solapur was taken as the representative of the entire zone.

MATERIALS AND METHODS

The daily rainfall data for last 30 years (1974-2003) recorded at Dry Farming Research Station, Solapur (17^0 41$^'$ N latitude, 75^0 56$^'$ East longitude and 483 MSL) was used for the study. The rainfall probability and variability analysis was carried out by using Markov chain model However dryspell and wetspell was calculated by using

the formula given by Ramdas 1950. Data were analyzed for annual, seasonal, monthly and weekly rainfall variability. Initial weekly wet and dry spell probability receiving 20,30 and 40 mm rainfall per week was calculated as per the procedure described by Panse and Sukhatame (1985) whereas, The moisture adequate index (MAI) for 200 mm AWC of soil was worked out by using book keeping procedure of Thronthwavite (1955),

RESULTS AND DISCUSSION

Characterization of rainfall :

Rainfall data for last 30 years (1974-2003) is used for rainfall characterization of Dry Farming Research Station, Solapur. The studies included are annual, monthly, seasonal and weekly rainfall variability. Weekly initial and conditional dry spell and wet spell probability of receiving 10, 20, 30, 40 and 50 mm rainfall. Probability of actual amount of rainfall received from 90 to 10 per cent. The moisture adequacy index for 50 to 200 mm available water holding capacity of soil.

Annual rainfall :

The data from Table-1 shows that the mean annual rainfall and rainy days at Solapur are 748.2 mm and 45. The highest and lowest rains recorded was 1285 mm

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