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Dry spells during summer monsoon in south -western Haryana

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ABSTRACT

Daily rainfall data for a period of 50 years (1946-95) were analyzed to work out dry spells during summer monsoon for south-western Haryana, selecting three locations viz: Hisar, Bhiwani and Sirsa. The first mean dry spell occur around mid July with a duration of 17 to 20 days at these locations and second mean dry spell of 15 to 17 days duration occurs around mid August. The longest dry spell of 54 days was observed at Sirsa and the shortest of 7 day duration at Hisar and Sirsa.

Key words : Monsoon, dry spell, Haryana

The success or failure of agricultural crops particularly under rain fed conditions is closely linked with the temporal and spatial distribution of rainfall. It is also important to know the sequence of dry and wet periods with their lengths, because the crop production is mostly influenced by rainfall distribution (Stern *et al*., 1982 a). This information can be very useful to the agronomist in planning of various crop operations. Week is a practical time step for scheduling different agricultural operations (Rao, 1992). Thus, with a knowledge of dry spell occurrence a farmer can adjust sowing time in such a way that moisture sensitive stages do not fall during expected dry spells (Ramdas, 1966). The present investigation was undertaken to work out the dry spell in south- western Haryana.

MATERIALS AND METHODS

The south- western Haryana is mainly an arid region and three locations viz. Hisar (29° 102 N, 76° 482 E), Bhiwani (28° 482 N, 76° 482 E) and Sirsa (29° 322 N, 75° 022 E) were selected to work out weekly dry spells during summer monsoon season. The daily rainfall data for a period of 50 years (1946-95) were obtained from "Sadar Kanungo" of each district and Department of agricultural Meteorology, Choudhary Charan Singh Haryana Agricultural University, Hisar. The year wise dry spells at these locations have been worked out following Raman (1974) that the dry spells are the interval between two wet spells of seven days magnitude with at least 25 mm of rain. Five of these seven days are having rainfall of more than 1 mm or the next realization of rainfall of 25 mm or more. Drought criteria are follows as the year, which received rainfall less than 75% of the normal during monsoon season. The year in which the area exceeds 20% is termed as

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Table 1: Dates and duration (days) of dry spells during summer monsoon in south-west Haryana (1946-1995)

Years	First dry spell			Second dry spell		
	Hisar	Bhiwani	Sirsa	Hisar	Bhiwani	Sirsa
1. Total No. of dry spell	47	44	44	31	31	25
2. No. of no dry spell	2	3	3	18	16	22
3. Earliest dry spell						
a. date	June 21	June 20	June 20	July 15	July 20	July 16
b. duration	21	20	20	19	18	9
c. year	1982	1976	1976	1953	1947	1982
4. Largest dry spell						
a. date	June 15	June 22	June 24	Aug 4	Aug 9	Aug 5
b. duration	36	48	54	43	35	36
c. year	1989	1954	1954	1986	1974	1981
5. Mean date	July 17	July 18	July 20	Aug 18	Aug 17	Aug 16
Mean duration	17	17	20	17	17	15
6 SD ± (for dates)	8	7	9	10	5	8
SD ± (for duration	5	9	8	6	8	7

drought year as per India Meteorological Department. After determining the year wise dry spells, the values of mean and standard deviation were calculated. The probabilities of occurrence of different lengths of dry spells have also been worked out.

RESULTS AND DISCUSSION

Hisar

The mean dates of occurrence of first and second dry spells at Hisar were calculated to be July 17 ± 8 days and August 18 ± 10 days (Table 1) respectively. The duration of first and second spell was 17 ± 5 days and 17 ± 6 days, respectively. The dates of two earliest dry spells at this station were observed as June 21, 1953 (with 16 days) and June 21, 1982 (with 21 days). The longest dry spell was observed to start on July 15, 1989 with 36 days length. There were only two years (1948 and 1974) during which not even a single dry spell was observed during the study period. The total number of first and second dry spells were 47 and 31, respectively.

Bhiwani

The mean date and duration of first dry spell at Bhiwani station was July 18 and 17 days with standard deviation of 7 and 9 days, respectively and second mean dry spell commences on August 18 with

Table 2: Probability of occurrence (per cent) for different lengths of dry spells during summer monsoon (1946-1995)

Locations	< 15 days	15-30 days	>30 days
Hisar	56	37	7
Bhiwani	49	42	9
Sirsa	51	34	15

duration of 17 day. The longest dry spells was observed to start on July 22, 1954 with duration of 48 days. At this station during the years, 1952, 1956 and 1994, no dry spell was observed.

Sirsa

The mean date and duration of first dry spell at Sirsa station was observed to be July 20 and 20 days with a standard deviation of 9 and 8 days, respectively and the second mean dry spell commences on August 16 and lasts for 15 days with a standard deviation of 8 and 7 days. The earliest date of dry spell was observed as 20th June, 1976 with 20 days length. Similar results were reported by Ashok (1979) for Delhi station. The longest dry spell was observed on July 24, 1954 with 54 days length.

The first and second mean dry spell at Hisar and Bhiwani station were found to be of equal length, but at Sirsa the first mean dry spell was longer than the second mean dry spell by five days. During study period, the total number of first and second dry spell observed were 44 and 25, respectively.

Probability of occurrence of different dry spells

The probabilities of occurrence of different length of dry spells at different locations have been given in Table 2. The probability of dry spell (<15 days) was highest (60 per cent) at Hisar followed by Sirsa (51 per cent) and Bhiwani (49 per cent). The probabilities of occurrence of dry spell of more than 30 days length were the lowest at Hisar station as compared to Bhiwani and Sirsa.

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