

## Letters to the Editor

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### VARIATION OF WEEKLY RAINFALL PATTERN AT RAIPUR

1. In India agriculture is the mainstay of teeming population where crops are predominantly dependent on natural rainfall. The most spectacular climatic event of agricultural relevance is the occurrence of the commencement of the monsoon rains. The importance of weekly rainfall in governing and selecting crop varieties and calendar of agricultural operation has already been emphasized by Sarkar and Biswas (1980).

2. An analysis for agriculture should be based on rainfall of shorter periods of the crop growth (Da Mota 1978). The main aim of the present study was to describe the distribution of rainfall amount as well as probabilities of their occurrence during kharif season (23rd to 44th standard week) for Raipur district of Chhattisgarh region in Madhya Pradesh, where rice is grown under rainfed condition (method of cultivation is broadcast biasi) and farmers take tall and long-duration photosensitive varieties which flower in mid-October and mature by mid-November.

2.1. The Agrometeorological Observatory is located at Indira Gandhi Agricultural University, Raipur (M. P.) (lat.  $21^{\circ}16' N$ , long.  $81^{\circ}36' E$ , 289.6 msl). Statistical analysis of daily rainfall data collected at this observatory for a period of fifty years (1947-93) were carried out and rearranged by standard week-wise. The mean weekly values as obtained are shown in Fig. 1.

3. The main highlights as seen from Tables 1 & 2 are as follows :

(i) Mean weekly rainfall pattern shows that it has four peaks. The first peak appears during 27th week, the second during 33rd

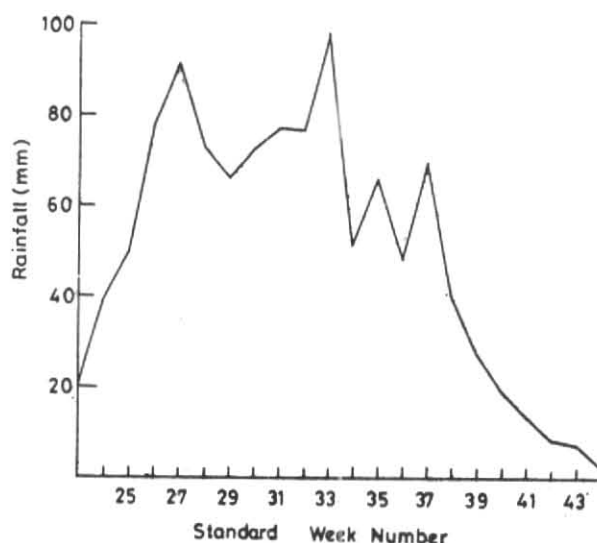


Fig. 1. Normal weekly rainfall during kharif season at Labhandi, Raipur (MP)

week, third during 35th and fourth during 37th standard week for the kharif growing season.

- (ii) There is a sudden increase in rainfall from 23rd to 27th week and again decreases in 29th and it remains steady for the next 3 to 4 weeks. It steeply declines after 37th week.
- (iii) The rainfall suddenly decreases from 37th week onwards, which means that the contribution by northeast monsoon rain is very low to the annual rainfall of Raipur.
- (iv) The probability of getting at least 25.0 mm of rainfall during kharif period during 26 to 37th weeks are higher, thereby indicating assured rice crop.
- (v) The highest average rainfall occurred during 33rd week to a value of 97.7 mm.

TABLE 1  
Rainfall statistics of Raipur.

Standard meteorological week	Mean (mm)	SD	CV (%)	Skewness	Kurtosis	Minimum (mm)	Maximum (mm)	Years of maximum R/F
23	19.3	33.1	171.5	3.10	13.4	0.0	174.5	1971
24	38.8	45.9	118.3	2.20	8.0	0.0	213.6	1970
25	49.7	54.5	110.0	2.90	14.6	0.0	322.9	1986
26	77.9	58.7	75.3	0.70	2.7	1.3	226.1	1955
27	91.5	74.6	81.5	0.90	2.7	0.0	264.4	1970
28	73.2	75.2	103.0	2.93	14.7	3.8	451.1	1958
29	66.3	43.4	65.5	1.00	4.1	10.2	208.9	1957
30	72.5	57.7	79.6	1.54	6.2	0.0	290.0	1947
31	76.9	56.0	72.8	1.30	5.2	6.1	284.2	1983
32	76.6	58.2	75.9	0.97	3.2	5.5	240.1	1982
33	97.7	74.8	76.6	1.35	5.2	6.5	355.6	1948
34	51.7	42.6	82.4	1.06	4.3	0.0	200.1	1961
35	66.0	73.7	111.6	2.51	10.9	0.3	400.6	1947
36	48.5	36.5	75.2	0.77	3.1	0.0	157.0	1952
37	69.5	71.0	102.1	1.96	7.6	0.0	359.0	1985
38	40.1	51.1	127.4	1.70	6.3	0.0	238.8	1980
39	27.5	29.9	108.7	0.97	3.1	0.0	114.8	1949
40	19.5	32.3	165.6	2.00	6.4	0.0	126.7	1958
41	13.8	18.5	134.0	1.44	4.5	0.0	75.3	1961
42	8.7	16.4	188.5	2.06	6.5	0.0	65.4	1980
43	7.6	16.4	215.7	2.78	11.4	0.0	83.2	1973
44	2.7	7.2	266.6	3.18	13.2	0.0	36.2	1975

TABLE 2  
Percentage probabilities of rainfall exceeding a selected level during each standard meteorological week at Raipur

Standard meteorological week	$\geq 10$ mm	$\geq 25$ mm	$\geq 50$ mm	$\geq 75$ mm	$\geq 100$ mm
23	46.8	23.8	8.5	6.3	2.0
24	76.6	53.2	21.8	40.6	8.5
25	76.6	62.2	34.0	21.0	11.0
26	94.0	83.0	64.0	45.0	32.0
27	94.0	80.0	64.0	38.0	36.0
28	87.0	72.0	55.0	34.0	19.0

TABLE 2—(Contd.)

Standard meteorological week	≥ 10 mm	≥ 25 mm	≥ 50 mm	≥ 75 mm	≥ 100 mm
29	98.0	79.0	57.0	36.0	21.0
30	89.0	79.0	64.0	40.0	22.0
31	96.0	87.0	60.0	45.0	25.0
32	98.0	81.0	55.0	38.0	30.0
33	94.0	81.0	68.0	53.0	38.0
34	85.0	81.0	40.0	38.0	13.0
35	87.0	68.0	40.0	32.0	19.0
36	87.0	72.0	42.0	23.0	8.0
37	89.0	66.0	51.0	32.0	25.0
38	51.0	47.0	32.0	21.0	11.0
39	60.0	43.0	23.0	8.0	2.0
40	34.0	23.0	15.0	6.0	4.0
41	36.0	23.0	8.0	2.0	0.0
42	23.0	13.0	4.0	0.0	0.0
43	15.0	11.0	2.0	0.0	0.0
44	13.0	4.0	0.0	0.0	0.0

(vi) Sowing date for rice in Raipur is near around 22nd June. (On probabilities rainfall basis as well as coefficient of variation).

(vii) Heavy record rainfall during 28th (during 1958) and 35th (during 1947) weeks are due to tropical depression or low pressure system formed in Bay of Bengal.

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S. K. RAI  
A. K. SRIVASTAVA

Indira Gandhi Agricultural University, Raipur  
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