Indian J. Met. Hydrol. Geophys. (1978), **29**, 3, 563–571

Letters to the Editor

551.577.3 : 551.573 : 519.24(541.2)

EFFECTIVE RAINFALL ANALYSIS AT PARBHANI

Information on effective rainfall alongwith consumptive use of crops help immensely to plan allocation of irrigation water in command areas. Earlier Kadam *et al.* (1978) computed consumptive use. However, there are no data available on effective rainfall in the Marathwada region. Hence, an attempt is made in the present investigation to compute effective rainfall taking into consideration the soil properties and reference crop evapotranspiration (ETo).

Thirtythree years (1944-1976) of daily rainfall data were collected from the records of Agricultural Meteorological Observatory of Marathwada Agricultural University, Parbhani and subjected to effective rainfall analysis. Based on local agronomic experience a criteria is drawn for each month of the kharif season June-October by taking maximum water holding capacity of soil as 250 mm, reference crop evapotranspiration as reported by Kadam *et al.* (1978) and infiltration rate as 2 cm/hour. As the rainfall received is meagre and of low intensity, whatever rainfall is received during the months November to May is taken as effective. The criteria adopted are as under :

Month	*Criteria*
June	(*a*) Less than 10 mm per day is disregarded.
	(*b*) Greater than 100 mm per day is disregarded.
	(*c*) Rainfall on consecutive days excess of (ETo + 100 mm) is disregarded.
July	(*a*) Less than 5 mm per day is disregarded.
	(*b*) Greater than 75 mm per day is disregarded.
	(*c*) Rainfall on consecutive days excess of (ETo + 75 mm) is disregarded.

TABLE 1

Year	Effective rainfall June to Oct total (mm)	Actual rainfall Jun to Oct total (mm)	Effective rainfall (Per cent)
1944	750·4	849·7	88
1945	500·3	566·6	88
1946	492·6	592·7	83
1947	643·6	739·4	87
1948	779·0	810·3	96
1949	933·7	937·8	99
1950	547·4	690·9	79
1951	588·2	626·9	93
1952	555·5	601·8	79
1953	759·6	934·3	81
1954	572·7	672·5	85
1955	972·4	1321·3	74
1956	827·4	876·9	94
1957	928·0	986·9	94
1958	748·2	957·0	87
1959	795·0	850·5	93
1960	642·2	724·3	89
1961	1107·2	1560·8	71
1962	644·0	815·7	79
1963	1055·8	1327·1	79
1964	560·4	751·4	74
1965	689·4	769·6	89
1966	507·7	608·4	83
1967	602·9	671·8	89
1968	530·1	689·2	76
1969	697·3	872·6	79
1970	868·7	938·3	92
1971	497·2	577·4	86
1972	428·9	463·9	92
1973	800·9	952·5	83
1974	562·6	618·6	90
1975	1021·9	1322·0	77
1976	512·0	775·6	65
Average	700·8	830·6	85

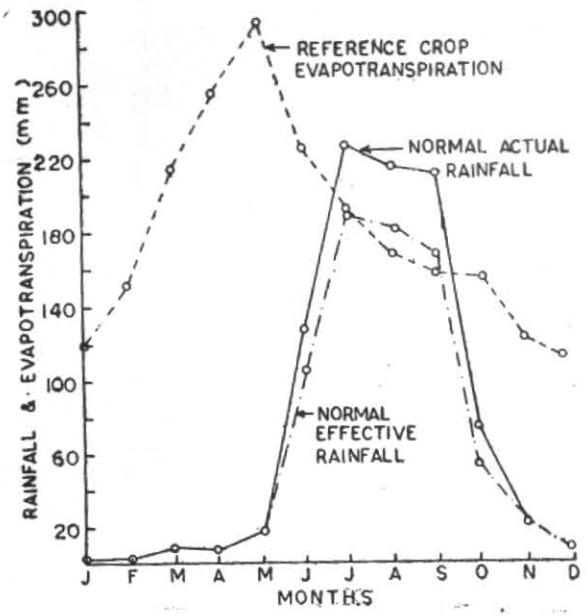

Fig. 1

August (*a*) Less than 2·5 mm per day is disregarded.

(*b*) Greater than 75 mm per day is disregarded.

August (*c*) Rainfall on consecutive days excess of (*ETo* + 75 mm) is disregarded.

September (*a*) Less than 2·5 mm per day is disregarded.

(*b*) Greater than 50 mm per day is disregarded.

(*c*) Rainfall on consecutive days in excess of (*ETo* + 50 mm) is disregarded.

The reference crop evapotranspiration, normal rainfall and effective normal rainfall is given in Fig. 1. The effective and actual rainfall totals of June to October alongwith effective rainfall percentage are presented in Table 1. It can be seen that in general 85 per cent of the actual rainfall is effective. The difference between the average effective and actual is 188 mm. Out of this 118 mm a greater part would go as percolation beyond root zone as the infiltration rate is 2 cm/hour and the rainfall is not of high intensity at this place.

The study further indicates that the potentialities of the region for protective irrigation through farm pounds during Kharif season are limited.

G. RAMAKRISHNA RAO
D. M. KADAM
J. S. SHINDE
S. B. VARADE

Marathwada Agricultural University, Parbhani

1 August 1977

REFERENCE

Kadam, D. M., Ramakrishna Rao, G. and Varade, S. B. 1978 On the prediction of Reference Crop Evapotranspiration and Consumptive use of different Crops, Annals of Aird Zone, Jodhpur. **17**, 1, pp. 99–111.