

A Short Note on Rainfall at Pattambi

By

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Pattambi is a place situated in South Malabar. There is an Agricultural Research Station at this place for the past twenty-three years. Data of the daily rainfall for twenty-three years are available at the station. These data were taken up for statistical analysis with the object of gaining an insight into the distribution of the rainfall during the monsoons at Pattambi.

Though only 16% of the total precipitation is received in the North-East Monsoon period as against 71% in the South-West Monsoon period, in view of the agricultural importance of both the monsoons, the rainfall in each of them was considered separately. Further, since Pattambi is a heavy rainfall tract with an annual precipitation of 101.43 inches a day of 10 cents and above has been considered as a rainy day.

(ii) The total monthly and annual rainfall are given in Table I. The total annual precipitation ranges from 69.41" to 139.75" with a mean of 101.43". The variability from year to year is high, particularly during the months of April and May. Further, it will be seen that the rainfall is practically nothing in the first three months in the year. In April and May it gains some importance. June and July are the rainiest months of the year. The subsequent three months are fairly rainy. In November the intensity decreases and it is again rainless in December.

(iii) The distribution of rain in the year is as follows:—

South-West Monsoon (June to September)	71%
North-East Monsoon (October to January)	16%
Summer Showers	13%

The rainfall during the North-East Monsoon is important, since the success of the second crop of paddy depends mainly on this monsoon.

Details about the seasonal showers, their range of variation, coefficient of variability and number of rainy days are given in Table II.

(iii) The two tables (I and II) indicate that rain-water run-off occurs in the months of June and July and is likely to continue in August as well.

(iv) Table III gives the number of days per month in which a rainfall of 10 cents and above was recorded, for all the twelve months, with its range of variation and coefficient of variability. The range of variation is highest in May since the South-West Monsoon breaks at times in the second half of this month. The fact that the South-West Monsoon is more regular in June and July is indicated by the narrow range of variation and low coefficient of variability. August and September are the crucial months and the wide variation in rainfall during these months is one of the reasons why Malabar suffers even in the midst of plenty. The rain in the remaining three months, on which the second crop of paddy depends for its success shows a wide range of variation.

(v) Sixty-six inter-monthly correlations were worked out. Out of them only two, namely, May and September and August and October were found to be significant. Even in these, that of August and October was found to be negative.

The maximum vigour of the South-West Monsoon is in June and July. The 'break' of this monsoon is very punctual and it invariably occurs between 1st and 4th of June. Its normal duration is twelve weeks and it recedes generally by the end of August. If the South-West Monsoon breaks in May, its distribution is slightly irregular and it extends at times even upto September, which accounts for the existence of the significant positive correlation between the rains of May and September.

If showers in August are very heavy, it may be taken that in that year the South-West Monsoon may be above normal, which, in turn, connotes that the North-East Monsoon in that year would be below normal. This is further substantiated by the almost significant but negative correlation existing between the rains in August and the total rainfall during the North-East Monsoon period. Further, October is the heaviest rainfall month of the North-East Monsoon period and this partly accounts for the existence of the significant negative correlation between the showers in August and October.

Since the South-West Monsoon is the major monsoon at Pattambi, the monthly rainfall during this period (June to September) was considered separately in relation to the total annual precipitation with the object of predicting the nature of that year's showers from the rains received in these four months. Though all the four correlations were found to be positive, only one namely, that of [June rainfall to the annual rainfall was found to be significant. The South-West Monsoon

commences by the end of June. If the start as well as the development of this monsoon are normal and satisfactory in June, it may be said that in that year the rainfall will either be normal or above normal. This inference is supported by the highly significant and positive correlation existing between the South-West Monsoon rainfall and the total annual rainfall. The showers received in the other two periods, namely, October to January of next year and February to May, have positive significant relationship with the total annual precipitation, but that of the South-West Monsoon showers is very high showing thereby that if the South-West Monsoon showers are normal, the rain in that year will be normal or near about normal.

Further, since the North-East Monsoon is also important agriculturally, four correlations were worked out to study the relationship between the rains received in the South-West Monsoon and the North-East Monsoon periods and also rains received in the months of June, July and August and total precipitation in the North-East Monsoon period. All of them were found to be significant. The July and August rains were found to have a negative correlation with the total rainfall received in the North-East Monsoon period.

Summary: (i) The total annual rainfall at Pattambi is 101.43". The record fall received so far is 12.87" on 28—5—1941 and the next record fall was 11.99" on 10—6—1941. It is to be noted that both the record falls were received in one and the same year, namely, 1941. Even then, in that year the total annual rainfall was only 128.6" whereas the maximum fall was 139.8". This indicates that sporadic high falls do not increase the annual total rainfall.

(ii) Nearly three-fourths of total annual rainfall is received in the South-West Monsoon period of four months commencing from June. It is in this period that most of the agricultural operations are attended to.

(iii) The steadiness of the South-West Monsoon is indicated by the low coefficient of variability in the number of rainy days during the period June to August.

(iv) If the rainfall in June is normal, it may be inferred that in that year the total annual rainfall will be normal or near about normal.

(v) The two principal monsoons have no relationship existing between them. But, if the rains in August are above normal, it may be taken that the North-East Monsoon in that year will be below normal.

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TABLE I
Characteristics of the Monthly Precipitations
1927 to 1949. (23 years' data)

S. No.	Month	Mean in inches	Range in inches	Coefficient of Variability
1.	January	0.24	0 to 2.21	254.2
2.	February	0.29	0 to 2.34	206.9
3.	March	0.89	0 to 4.55	134.8
4.	April	3.42	0.10 to 7.18	56.4
5.	May	8.29	0.41 to 26.75	102.1
6.	June	25.21	10.61 to 39.37	33.3
7.	July	25.70	11.22 to 40.21	28.8
8.	August	14.40	3.76 to 46.86	65.6
9.	September	6.56	0.56 to 16.21	23.2
10.	October	10.68	4.11 to 19.48	45.3
11.	November	4.53	0 to 11.51	64.9
12.	December	1.22	0 to 7.94	155.7
	Year	101.43	69.41 to 139.75	17.90

TABLE II
Particulars regarding seasonal Rainfall
(23 years' data)

S. No.	Name of season	Rainfall in inches	Range of variation of total precipitation in inches	Coefficient of variability %	No. of rainy days	Remarks.
1.	Summer	12.89	3.11 to 21.37	64.10	15	Day on which precipitation is 10 cents and above is taken as a rainy day.
2.	South-West Monsoon	71.87	45.68 to 98.71	18.61	75	
3.	North-East Monsoon	16.97	6.75 to 31.14	36.95	20	

TABLE III
Average number of rainy days per month

S. No.	Month	Mean No. of days	Range in days	Coefficient of variability percent	Remarks
1.	January	0.43	0 to 3	220.9	Day on which precipitation is ten cents and above is taken as a rainy day.
2.	February	0.61	0 to 6	214.8	
3.	March	1.35	0 to 4	105.9	
4.	April	4.61	1 to 10	54.7	
5.	May	8.00	1 to 18	63.0	
6.	June	22.52	18 to 26	9.3	
7.	July	24.61	17 to 31	15.2	
8.	August	17.30	7 to 31	35.4	
9.	September	10.61	4 to 21	49.1	
10.	October	12.17	5 to 20	34.5	
11.	November	6.43	0 to 11	43.7	
12.	December	1.39	0 to 7	138.1	