PROBABILITIES OF FORTNIGHTLY RAINFALL DURING THE CROP GROWING SEASON IN RAICHUR REGION

In the field of agriculture, water is an indispensable factor. The source of water may be either rainfall or wells, tanks and canals. The climate in Raichur District is semi-arid and the agriculture here depends mostly on rainfall. The crops are more often subjected to too little moisture rather than excess of it.

In view of the importance of the rainfall in the agriculture of the region, precise knowledge of the amount of rainfall that can be expected and the limits within which this amount varies will go a long way in helping farmers to plan their agricultural operations. No doubt, the average rainfall in a region during crop growing season can be easily calculated, but it will not be of much help unless the probabilities of getting the minimum amounts of rainfall during different fortnights of the season can be predicted. This information will help the farmer to estimate the amount of water that he has to supplement from other sources.

The present investigation is taken up (*i*) to analyse the rainfall data for assessing the variability in rainfall over a period of years according to standard fortnights during the crop growing season and (*ii*) to estimate the probabilities of getting the selected amount of rainfall during the different crop growing fortnights.

2. The daily rainfall data of Raichur for a period of sixtyfive years (1901 to 1965) were collected from India Meteorological Department, Poona. The data were analysed statistically. First, the total rainfall according to standard and weeks then according to standard fortnights were found out. The fortnightly rainfall totals from May to November, which is the main crop growing season in the Raichur region were considered. The mean, standard deviation, coefficient of variation, measures of skewness and kurtosis were calculated for the above fortnightly periods.

Wherever the data were skew, the technique suggested by Manning (1950) was used to normalise the data.

3. The study of mean, minimum and maximum rainfall of the Raichur region during the different standard fortnights of the period 30 April to 25 November during 1901-1965 reveals that there is considerable variation in rainfall. The least coefficient of variability for the fortnight 11 to 24 June, 25 June to 8 July and 17 to 30 September shows less variability of rainfall compared to other fortnights. The highest coefficient of variability for the fortnight 29 October to 11 November shows that the occurrence of rainfall is least consistent. Hence the probabilities of rainfall for that period are not reliable.

The percentage probabilities of getting selected levels of rainfall (Table 1) during the standard fortnights of the crop growing season were calculated

TABLE 1

Percentage probabilities of getting atleast selected levels of rainfall during the crop growing season according to Standard fortnights

Selected level of rainfall (inch)	28 May to 10 Jun	11 Jun to 24 Jun	25 Jun to 8 Jul	9 Jul to 22 Jul	23 Jul to 5 Aug	6 Aug to 19 Aug	20 Aug to 2 Sep	3 Sep to 16 Sep	17 Sep to 30 Sep	1 Oct to 14 Oct
0·5	81·86	77·34	85·54	83·40	77·64	81·59	77·64	81·33	91·31	72·91
1	55·17	58·32	72·57	68·08	71·90	67·36	68·79	70·19	83·15	57·93
2	16·85	29·12	48·40	40·90	50·40	42·07	59·48	50·80	65·17	35·20
3	3·59	13·00	29·00	21·77	34·83	24·51	35·57	35·20	48·01	20·61
4	0·59	5·05	16·85	10·93	22·96	13·35	23·81	23·89	33·72	11·51
5	0·19	1·92	9·34	5·16	14·16	6·68	16·39	16·87	22·96	6·30
6					9·10	3·59	9·68	10·20	15·15	3·44
7					5·37	1·79	5·82	6·68	9·68	1·79
8					3·14	00·84	3·46	4·09	5·94	0·95
9					1·79	··	2·02	2·56	3·87	··
10					0·99	··	1·13	1·58	2·17	··
11					··	··	0·64	··	··	··

using normal probability table (Snedecor and Cochran 1968). The probabilities give guidance to farmers to plan their agricultural operations with confidence. It the water requirements of a crop during different stages of its growth are known, the knowledge of probabilities will help them to select the suitable planting period and also to supplement the shortage in water requirements for improved production.

The University of Agricultural Science,
Bangalore.
Agricultural Engineering Institute,
Raichur.
14 May 1975

H. M. THIMMARAYAPPA

B. N. KRISHNAIAH SETTY

REFERENCES

Manning, H. L.   1950   *J. Agric., Sci.,* **40**, pp. 169-176.

Snedecor, G. W. and Cochran, W. G.   1968   *Statistical Methods,* The Iowa State Univ. Press, 6th Ed. pp. 82-87, 548-551.