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### The Influence of Rainfall on the Yield of Cardamom (*Elettaria Cardamom* Maton) in Coorg District

Most of the cardamom growing areas are rainfed and the information on the influence of distribution and intensity of rainfall on the crop yield is lacking. To study this aspect, 13 cardamom estates were selected, wherein data on yield and rainfall are available for more than a decade. In all these estates recommended doses of manures and fertilisers, proper plant protection measures and cultural practices were undertaken regularly.

Several attempts have been made to utilise the correlation and regression methods to study the effect of climatic parameters on crop yield in cereals (Fisher, 1924; Stacy et al., 1957; Dayal Ram, 1965; Runge, 1968).

Annual rainfall, number of rainy days and yield/ha. were collected from two estates in Mercara taluq; four estates in Somwarpet taluq and seven estates in Virajpet taluq for a period of ten years. Multiple regression analysis utilising: (1) total rainfall during the year, (2) the number of rainy days and (3) the coefficient of variation in the monthly rainfall at each of the locations, as

auxillary variants, was attempted to study the relationship between rainfall attributes and cardamom yields.

The range and mean of annual rainfall, the number of rainy days and yields are presented in Table I. The following regression equation was obtained, when the effects of total rainfall ( $X_1$ ), number of rainy days ( $X_2$ ) and coefficient of variation for the rainfall received in different months ( $X_3$ ) on the yield of cardamom was studied.

$$Y = 59.689 + 0.00095 X_1 - 0.173 X_2 + 0.764 X_3 \quad (R^2 = 0.03)$$

(0.017) (0.524)  
(0.439)

The contribution of the variation in the monthly rainfall ( $X_3$ ) to the variation in the yield of cardamom is higher than that of total rainfall ( $X_1$ ) and the number of rainy days ( $X_2$ ). In other words, the analysis suggests that yield of cardamom is influenced more by the distribution of monthly rainfall rather than the total rainfall and the number of rainy days. Showers during April could not give any clue for predicting yield nor the

Table I. *Rainfall fluctuation and cardamom yields in Coorg district for 10 years*

Rainfall in mm		No. of rainy days		Yield/ha in kgs	
Range	Mean	Range	Mean	Range	Mean
1620-3200	2536	98-150	123	59-237	140
1270-2358	1853	111-140	125	62-519	253
1085-3338	1828	114-158	137	39-104	58
1255-3626	1823	93-154	119	36-203	91
1254-2173	1805	109-157	125	34-110	70
995-4410	1769	79-156	117	33-344	110
1283-1952	1685	108-144	127	93-371	183
784-3144	1684	100-159	125	52-162	88
1363-2074	1609	99-143	121	35-189	73
1029-1717	1499	115-147	127	36- 61	45
920-2119	1442	92-146	122	36-361	104
1011-1815	1386	81-127	103	57-188	94
1043-1563	1361	106-131	113	67-292	118

preceding year's rainfall on the succeeding year's crop. In 10 out of 13 estates, maximum yield was recorded when the annual rainfall was less than 2000 mm. More over, in 42 out of 57 cases more than 100 kg/ha was obtained when the annual rainfall was less than 2000 mm. This clearly explains that the total annual rainfall is not the criteria and further suggests that an annual

rainfall of 2000 mm may be optimum for cardamom cultivation.

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