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Studies on multiple branching panicles in cardamom (*Elettaria cardamomum* Maton)

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Abstract

Field investigations were carried out at Kodagu (Karnataka, India) to study the nature of branching of panicles in 49 entries of cardamom (*Elettaria cardamomum*) of Malabar type (Cl-37, prostrate type). Considerable variations in the nature of branching and basal branching, terminal branching and uniform branching throughout the length of the main axis of the panicle were observed. The pattern of branching was secondary and tertiary in nature. The 49 entries were also assessed for growth and panicle characters and considerable variations were observed for number of tillers, number of bearing tillers, number of panicles per plant and number of branches per panicle. The number of panicles per plant ranged from 12-148 and number of branches ranged from 17-31 per panicle.

Key words : cardamom, *Elettaria cardamomum*, panicles, variation.

Considerable variations exist in cardamom (*Elettaria cardamomum* Maton) with reference to morphological traits (Abraham & Tulasidas 1958). Some of the pronounced variants have characteristics such as compound panicles of various types and terminal panicles (Sudarshan *et al.* 1988). The important characters directly contributing to yield in cardamom are number of tillers per plant, number of panicles per tiller, number of racemes per panicle and number of capsules per raceme. Hence these segregants need attention in crop improvement programmes (Korikanthimath *et al.* 1997). A field investigation was carried out to study the nature of variants to assess the variability in morphological traits of multiple (compound) branching panicles in Malabar (prostrate) type of cardamom.

Forty nine multiple branching plants were identified in a large scale research cum demonstration trial in area of 10 ha at M/s Ashok Plantations at Ibbanavalvadi village (Kodagu District, Karnataka, India) raised with Cl-37

Table 1. Variation in multiple branching types of cardamom

Parameter	Range	Mean	SD	SE
Number of tillers/plant	8-97	42.31	20.04	2.86
Number of bearing tillers/plant	3-38	19.71	8.49	1.21
Number of panicles/plant	12-148	48.89	32.26	4.61
Number of branches/panicle	17-31	22.63	3.60	0.51

n=49

seedlings supplied from Indian Institute of Spices Research, Cardamom Resarch Centre, Appangala. The seedlings were raised during 1988-89 and planted in the field at a high density of 1.8 m x 1.2 m (4545 plants/ha) beneath evergreen forest shade trees during 1989 by using seedlings each with at least 3-4 tillers. The high production technology package of practices as suggested by Korikanthimath & Venugopal (1989) was followed for raising the plants.

Observations were recorded on number of tillers per plant, number of bearing tillers per plant, number of panicles per plant and number of branches per panicle. The entries were grouped into four categories such as, very low, low, medium and high, based on frequency distribution of number of branches per panicle. The multiple branching types were classified based on the type of branching.

Generally 2 to 3 panicles were produced in each tiller. Considerable variations were observed in the nature of branching of compound panicles. In some entries the branching was basal and was of primary branching type. In the second type, branching took place only at the tip of the panicle and the pattern of branching was secondary and tertiary in nature. In the third type, the branching was uniform throughout and the flowers were produced on tertiary branches (Fig 1).

The entries also recorded significant variations for number of tillers per plant, number of bearing tillers per plant, number of panicles per plant and number of branches per panicle (Table-1).

The number of branches per panicle is the primary important character in the multiple branching type of cardamom. Among the 49 entries, 17 entries showed very less number of branches per panicle and 17 entries showed 21.0-24.9 branches per panicle with a mean of 22.64. These two group constituted 69.4 % of entries. Twelve entries recorded 25.0-28.9 branches per panicle with a mean of 6.25 and three entries recorded more than 29 branches per panicle (Table 2). The data indicated the large variation available among the 49 multibranch types seggregated from Cl-37 seedlings of cardamom.

Table 2. Classification of multiple branching cardamom types based on number of branches per panicle

Group	Class interval	Mean	No. of entries	SD	SE
Very low	17.0-20.9	18.82	17	1.73	0.27
Low	21.0-24.9	22.65	17	1.27	0.31
Medium	25.0-28.9	26.25	12	1.42	0.41
High	29.0-32.9	29.67	3	1.15	0.67

n=49

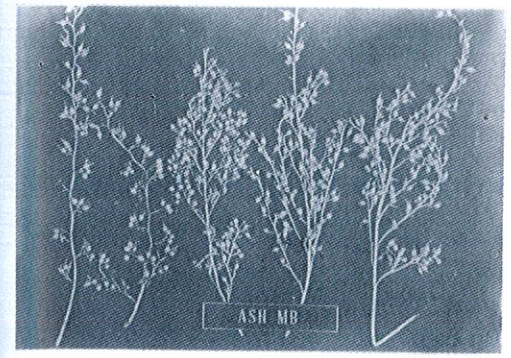

Fig. 1. Multibranch types in cardamom

Types of panicles (l to r) 1-Unbranched 2-Basal branching 3-Multi branched (uniform branching) 4-Multi branched (middle branching) 5-Multi branched (treminal branching)

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