

## Influence of sowing methods on production of seedlings in cardamom (*Elettaria cardamomum* Maton)

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### Abstract

The effect of different methods of seed sowing in cardamom (*Elettaria cardamomum*) was studied in relation to germination and growth of seedlings in the nursery at Mudigere (Karnataka, India). Seed requirement was less and germination percentage was significantly higher in dibbling/hill method of sowing compared to drilling/line method. Height of seedlings, number of leaves, leaf area, number of tillers, fresh weight, dry weight per seedling and percentage of standard seedlings (4-5 tillers/seedling) obtained at transplantable age were also significantly higher in dibbling/hill sowing method.

**Key words:** cardamom, *Elettaria cardamomum*, propagation, seed sowing.

Cardamom (*Elettaria cardamomum* M.) is mainly perpetuated through seeds. Generally seeds are broadcasting or sown in lines (drilling) on raised beds. Often this leads to wastage of seeds and over crowding of seedlings. The quantity of seeds required for broadcasting method of sowing is around 25 g and for line sowing method around 10 g per bed of 6 m x 1 m size. The seedlings are retained for about 10 months in the primary nursery. Seedlings having four to five tillers are generally planted in the field as one unit (standard seedlings). In the absence of seedlings with four to five tillers, more than two seedlings are planted as one unit. Lower

production of tillers is often due to competition in the nursery beds. In many crops namely, tomato, chrysanthemum etc., spacing is reported to influence plant height, girth, tillers/suckers and biomass in the field (Ahmed & Mannan 1970; Channabasavanna 1985; Rao *et al.* 1992).

In traditional nurseries, seed germination is less than 40 per cent and growth of seedlings are not good due to improper spacing. The low germination percentage in the broadcasting/line sowing method necessitates sowing of higher quantity of seeds to produce sufficient seedlings. Hence an experiment was undertaken at Mudigere (Chikmagalore

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District, Karnataka) to study the effect of different methods of sowing on seed requirement, growth and development of cardamom seedlings in the nursery.

The experiments were conducted at the Departmental Nursery of Spices Board at Bettadamane, Mudigere during 1992-93. Fresh seeds were extracted from capsules harvested during September and were washed and dried in shade. The seeds were scarified with 25% nitric acid for 10 min and washed thoroughly in water to remove acid traces. The seeds were soaked in water for 24 h just before sowing. Seeds were dressed with carbendazem (Bavistin) to control damping off of seedlings. Raised beds of 30 cm height and 5 m x 1 m size were prepared and 5 cm of powdered jungle soil was evenly spread over the beds to facilitate better covering over seeds.

The treatments (methods of sowing) included a) Line sowing/drilling, where seeds were sown in lines (spacing not maintained) and b) Dibbling/hill sowing, where seeds were sown at a spacing 15 cm x 10 cm, and two seeds were sown per hill. The seeds were sown to a depth of 0.5 cm in both the treatments. The treatments were imposed during the second week of September 1992. Biometric characters namely, plant height, number of leaves, leaf area, number of tillers, fresh weight and dry weight of seedlings were recorded at monthly intervals. The percentage of standard seedlings obtained at transplantable age (10 months old) was also worked out. The two treatments were compared using 't' test.

The quantity of seeds required for dibbling/hill sowing method and line sowing/drilling method was 5 g and 10 g per bed of 5 m x 1 m size, respectively. Seeds started to germinate 25 days

**Table 1.** Influence of methods of sowing on seed germination and biometric characters of cardamom seedlings in the nursery

Method of sowing	Seed qty. /bed (g)	Seed germination					Biometric characters of seedlings (at 10 months of age)				Standard	
		Germi-nation (%)	Height (cm)	No. of leaves	Leaf area (sq cm)	No. of tillers	Fresh weight (g)	Dry weight (g)	seedlings (%)			
Line/Drill	10	50.1	77.3	16.1	2158.0	3.3	103.3	10.8	69.0			
Dibble/Hill	5	85.5	101.5	24.9	3952.5	4.9	255.7	30.6	96.9			
t' value	-	21.7	3.0	4.48	4.5	1.3	3.1	4.4	15.4			

onwards in both the treatments. Seed germination percentage was significantly more (85 per cent) and uniform in dibbling/hill sowing method compared to line sowing/drilling method (50 per cent). Plant height (101.5 cm), number of leaves (24.9), leaf area (3952.5 sq cm), number of tillers (4.9), fresh weight (255.7 g) and dry weight (30.6 g) of seedlings at transplantable age were significantly higher in seedlings raised from dibbling/hill method of sowing. Percentage of standard seedlings obtained was significantly higher (96.9) in the dibbling/hill method of sowing than line sowing/drilling method (69.0).

The quantity of seeds used for dibbling/hill sowing was 50 per cent less compared to line sowing/drilling and seed germination percentage was 35 per cent more in the former. Sowing of two seeds per hill in dibbling/hill method at a spacing 15 cm x 10 cm was advantageous. Wherever two seeds germinated per hill, only one seedling need be maintained and the other may be used for gap filling/ transplanting to another bed. The seedlings obtained from the dibbling/hill sowing method were also better in terms of height, number of leaves, leaf area, tillers, fresh weight and dry weight. This could be due to the wider spacing provided hill to hill which facilitates less competition between seedlings for moisture, nutrition and light. Similar results were also reported in tomato, chrysanthemum etc. (Channabasavanna 1985; Rao *et al.*

1992). Wider spacing of seedlings in the nursery also helps in reducing seedling rot (Spices Board 1993).

### Acknowledgement

The senior author expresses his sincere gratitude to Dr. V Krishnakumar, Senior Scientist (Agronomy), ICRI, Spices Board, Myladumpara for his valuable suggestions during preparation of the research article.

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