



Research Article

Mc-3, A new small cardamom variety for hill zone of Karnataka

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Abstract:

The Malabar variety of small cardamom Mc-3 was evaluated with checks: Mudigere-1 Mudigere-2 for yield and its attributing characters at Zonal Agricultural Research Station, Mudigere, Karnataka and different locations during 2003 to 2007. Mc-3 showed better performance in both ancillary and capsule characters (number of suckers per clump, number of productive suckers, number of panicles per clump, panicle length, capsules per panicle ,number of flowers per panicle, oval or oblong shape and bold type, capsule length and breadth , more number of seeds, light green, turning pale yellow on ripening). The mean dry capsule yield data for three years revealed that clone Mc-3 recorded maximum dry capsule yield (312.75 kg/ha) compared to M-1 (233.59 kg/ha) and M-2 (236.36 kg/ha). As revealed by the yield data from the trials conducted at different locations, Mc-3 recorded 25% higher dry capsule yield compared to check M-2. The genotype Mc-3 exhibited tolerance to diseases and pests. Therefore, it is found to be suitable promising variety under high elevation and high rainfall areas.

Keywords:

Cardomom, variety, yield

Introduction

Cardamom (*Elettaria cardamomum* Maton), a prominent spice crop, is a perennial herb growing under the shade trees which is known as the queen of spices and occupies a unique position in the National as well as International spice market. Cardamom is indigenous to India being cultivating in evergreen forest of Western Ghats in South India. In Karnataka, cardamom is being cultivated under varied elevations (900-950 msl) and rainfall (2500 to 3000m) situations of hill zone (zone-9) and covering an area of 32, 142 ha. with a production of 2893 t. and productivity of 90 kg/ha (Anon,1996). Small cardamom variety M-1 was released during1991 by Zonal Agricultural Research Station, Mudigere, UAS, Bangalore and became popular in view of its propagation through seeds and prostrate growth habit. Later in 1994 another variety namely M-2 was released having non pubescent type. Farmers of this region prefer better variety with high dry capsule yield and tolerance to pest and diseases. Thus, the present investigation was to identify and evaluate the promising small cardamom variety Mc-3 for hill zone of Karnataka.

Material and Methods

Mc-3 (Clone 692) was one of the 80 clones selected in different experimental and bulk cardamom plots of ZARS, Mudigere on the basis of yield and tested over the years for high performance during 1995 to 1998. Initial Evaluation Trials were conducted at ZARS, Mudigere during 1999 to 2007. The coordinated trails were conducted during 2003-2007at different stations (Mudigere, Pampadapara and Sakleshpura) with a spacing of 6' x 6'. Recommended dosage of chemical fertilizer viz., 75:75:150 NPK kg/ha was applied in two splits one in May and the other in September every year. Five plants were selected for recording the observations on pseudostem height, total suckers per clump, bearing suckers per clump, panicles per clump, panicle length, racemes per panicle, dry capsule yield and other related traits. The data collected were analyzed in RCBD design.

Result and Discussion:

The ancillary characters of new cardamom variety Mc-3 were compared with the check varieties namely M-1 and M-2 and the results are presented in Table 1. Mc-3 recorded higher values for total number of suckers, bearing suckers and panicles per clum, number of nodes per panicle, number of flowers per

node, panicle length and short nodal length. Based on the results obtained for ancillary traits, it is obvious that the performance of Mc-3 is better than M-1 and M-2 for most of the characters except pseudostem height. The capsule characters of Mc-3 in comparison with check varieties are presented in Table 2. The shape of dry capsule of Mc-3 is oval or oblong and bold. The capsule has average length of 1.70 cms and breadth of 0.87cm and it has more number of seeds/capsule. The colour of dry capsule is light green, turning pale yellow on ripening compared to the check varieties M1 & M2. Mc-3 recorded higher 100 green and dry capsule weight and high recovery percentage compared to check varieties. The capsule traits of Mc-3 exhibited better performance than the checks M-1 and M-2. Pattanshetti (1982) reported similar findings for yield contributing characters in cardamom. The results revealed that the total suckers, productive suckers and panicles per clump, panicle length and racemes per panicle are the salient attributes primarily responsible for higher yield of cardamom as reported by Gopal *et al.*, (1992).

The results of IET yield trials conducted (Table-3) during 2005-2007 revealed that Mc-3 recorded higher dry capsule yield (312.75kg/ha) compared to check varieties M-1 (233.59 kg/ha) and M-2 (236.36 kg/ha). By considering overall percent increase over check, Mc-3 recorded 34 per cent and 32 per cent higher dry capsule yield compares to M-1 and M-2 respectively. As revealed by the data from the trial at ZARS, Mudigere, Mc-3 recorded higher dry capsule yield than the other two checks. Similar observations were recorded by Dushyanth Kumar *et al.* 2007.

The performance of Mc-3 (Table-4) for dry capsule yield from different stations conducted revealed that it recorded high dry capsule yield at different locations (294.17 kg/ha at Mudigere, 250 kg/ha at Pampadapara and 238 kg/ha at Sakelshpura) compared to check variety M-2. By considering overall per cent increase over check, Mc-3 recorded

25% higher dry capsule yield compared to check M-2.

The variety was tested for disease and pest reaction at ZARS, Mudigere and at Pampadampura (Table-5 & 6) and there was no incidence of katte disease and less incidence occurred due to clump rot, leaf spot and leaf blotch compared to checks M-1 & M-2. There was also less damage caused by thrips (4.3 %) in Mc-3 and capsule borer (1.3%) compared to M1, M2 and Green gold.

From the afore mentioned result it is suggested that the variety Mc-3 is ideal for cultivation in the hill zone/region of Karnataka with high dry capsule yield, tolerance to pest and disease, more number of bearing suckers per clump, panicles per clump, nodes per panicle, flowers per node, better panicle length, less internodal length, capsule length and breadth, tolerance to pest and diseases compared to check varieties and hence, new small cardamom variety Mc-3 would be suitable under high elevation and high rain fall areas in the hill zone of Karnataka.

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Table 1 : Ancillary characters of M3 over check varieties

Clones	Peseudo -stem Height (cm)	Total suckers per clump	Bearing suckers per clump	No. of panicles per clump	Panicle length (cm)	Nodes per panicle	No. of flowers per node	Inter Nodal length (cm)
Mc-3	265.6	32.0	17.5	31.3	55.0	19.2	7.6	3.0
M1	235.3	24.8	14.0	20.7	50.3	16.8	5.5	3.4
M2	277.0	28.3	15.1	26.3	52.0	18.0	6.3	3.2

Table 2 : Capsule characters M3 and check varieties

Capsule characters	Mc-3	M1	M2
100 green capsule weight (g)	86.0	84.5	85.0
100 dry capsule weight (g)	21.0	20.0	21.0
Recovery percentage(%)	26	25	24.5
Capsule length (cm)	1.70	1.66	1.50
Capsule Breadth (cm)	0.87	0.70	0.76
No.of seeds per capsule	18.5	16.25	17.45
Capsule shape	Oval/oblong	Round/Oval	Round/Oval
Dry capsule size	Long	Small	Medium bold
Dry Capsule colour	Light green turning pale yellow on ripening	Pale green turning golden yellow on ripening	Pale green turning golden yellow on ripening

Table -3 : Performance of Mc-3 for Dry capsule yield over years (2005-2007) in IET at Mudigere

Clone	Year			Dry Capsule yield Kg/ha Average	% increase over check
	2005	2006	2007		
Mc-3	288.96	316.80	332.50	312.75	
M1	232.16	235.2	233.40	233.59	34
M2	219.09	244.8	245.20	236.36	32
Mean	216.18	289.9	270.37		

Table - 4: Performance of Mc-3 for dry capsule yield over years (2005-2007) in CVT at Mudigere and different locations

Clone	Year			Average	% increase over check
	2005	2006	2007		
Mc-3	354.50	262.60	274.40	294.17	25
M2	273.30	232.80	202.40	236.16	
Expt. Mean	313.90	247.70	238.40		
CD at 5%	45.34	25.73	36.70		
CV %	25.38	18.06	19.24		

Clone	Dry Capsule yield (Kg/ha)				% increase over check
	Mudigere	Pampadapara	Sakleshpura	Average	
Mc-3	294.17	250.00	238.00	260.7	25
M2	236.16	196.00	195.00	209.0	

Table -5 : Major Diseases under natural condition (2007-2008) at mudigere

Genotype	Clump Rot	Leaf Spot	Leaf Blotch	Katte Disease
M-1	10.5	3.55	4.80	0
M-2	3.27	5.00	2.50	0
Mc-3	2.33	2.35	1.50	0

Table - 6 : Pest reaction of Mc-3 (percentage damage)

Genotype	Pampadampara		Mudigere	
	Thrips	Capsule Borer	Thrips	Capsule Borer
Mc-3	4.30	1.30	4.300	0.370
Green gold	20.30	2.00	-	-
M2	-	-	6.568	0.700
M1	-	-	6.514	0.366
CD at 5%	0.53	0.23	1.241	0.412