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Collection and Evaluation of Coriander Varieties for Growth and Seed Purpose

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A B S T R A C T

The present investigation entitled "Collection and evaluation of coriander genotypes for seed purpose" was carried out during rabi season of the year 2018 & 2019 at the College of Agriculture, Bheemarayanagudi. The study consisted of sixteen coriander varieties using randomized block design and each treatment was replicated thrice. The varieties viz., Suguna, Sindhu, Supha, AD-1, Sadana, Swathi, Susthira, GDLC 1, DWDC-1, Sudha, Co 1, Co 2, Gcr-1, Gcr-2, Rcr436, Chamnal Local were studied under investigation. The pooled results revealed that variety DWDC-1 was found significantly superior in seed yield (13.76 q/ha) and required least number of days for maturity (92.17 days). The yield contributing parameters seed yield per plant (6.41 g), Seed yield per plot (564.37 g) and 1000 seed weight (10.27 g) were observed significantly highest in DWDC-1. Hence, this variety can be included in further breeding programme for improving the seed yield.

Introduction

Coriander (*Coriandrum sativum* L.) is an important seed spice crop belongs to family Apiaceae (Umbelliferae) with a chromosome number of 2n=22. Mediterranean region is the centre of origin of this crop. Coriander is an annual herbaceous cross pollinated crop. Its name has been derived from Greek word "Koris" means bed-bug, because of unpleasant, fetid bug like odour of the green unripened fruits. Coriander ranks first among the seed spices with respect to export. It is the major ingredient of curry powder up to 40% by weight and also forms an important ingredient for several alcoholic beverages, particularly gin.

Seeds are also used as tonic, carminative, diuretic, stomachic and as an aphrodisiac. Oleoresin from coriander is used as a flavouring agent and as an ingredient in pharmaceutical formulation and in perfumery (Singh *et al.*, 2006). Coriander fruits are an important spice of many countries of Europe, Northern Africa, West, Central and South Asia. In the Mediterranean region, coriander cultivation dates back to ancient Egypt; in Europe, coriander is known since the middle ages (Anonymous, 2012).

Materials and Methods

The experimental material for the present study comprised of 16 coriander varieties obtained from different institutions and these were tested for growth and yield attributes during November, 2018 to February, 2019 & November, 2019 to February, 2020 at Horticulture Department, College of Agriculture Bheemarayanagudi, which is North-Eastern dry zone of Karnataka (Region II, Zone 2) located between 160 43 N and 760 51 E longitude at an elevation of 411.75 meters above MSL characterized by dry climate with an average annual rainfall of 774.1 mm.

The experiment was laid out by adopting Randomized Complete Block Design (RBD) with three replications and the treatments in each replication were allotted randomly. Farm Yard Manure at the rate of 20 tons per hectare along with full dose of phosphorus and potassium and half dose of nitrogen (60:40:20 kg NPK/ha) was applied and beds (2 m X 1.5 m) were leveled and shallow furrows were made.

The crop was sown at November, 2nd 2019 at a spacing of 20 × 15 cm (shallow depth of 1-1.5cm) and seeds germinated in 7-10 days. Thinning was done at 30 days after sowing to maintain a spacing of 10 cm with in a row. Five randomly selected plants in each treatment in each replication were tagged for recording observations on plant characters and the mean values were subjected to statistical analysis to get the pooled data for two year study.

The following observations were recorded on plant height (cm), number of primary and secondary branches per plant, days to fifty per cent flowering, number of umbels per plant, number of umbellets per umbel, number of seeds per umbellet, days to maturity and seed yield kg per plot and seed yield per hectare. The list of varieties is presented in Table 1.

Results and Discussion

Growth attributes

The pooled entries under evaluation varied significantly with respect to growth and yield traits are presented in Table 2. At 30th DAS, variety Sadhana recorded maximum plant height (10.77 cm), followed by Swathi (10.42 cm) At 60th DAS the variety Sindhu recorded maximum plant height (46.37 cm), and followed by Suguna (46.09 cm). At 90th DAS, the variety Gcr-2 recorded maximum plant height (54.45 cm), which was statistically at par with the variety Gcr-1 (52.43 cm).

These differences in plant height among the varieties might be due to the genetic makeup of the plant and its expression to the growing soil and environmental conditions. The variation in plant growth of different coriander varieties were also observed by Kalidasu *et al.,* (2008), Verma *et al.,* (2014) in coriander, Meena *et al.,* (2014) coriander, which confirms the results of present investigation.

The maximum (9.20) number of primary branches was recorded in variety Sudha, which was statistically at par with the variety Sindhu (8.96).There variety DWDC-1 recorded significantly highest (24.70) number of secondary branches.

The significant difference in early stages of growth was observed, as during germination and growth initiation process, the varieties might not have expressed their genetic potential. The findings of Agasimani (2014) in coriander, Verma *et al.,* (2014) in coriander, Meena *et al.,* (2014) in coriander, supports the results of present findings.

Table.1 List of coriander varieties evaluated in the study

Sl.No	Variety
1	Suguna
2	Sindhu
3	Supha
4	AD-1
5	Sadana
6	Swathi
7	Susthira
8	GDLC 1
9	DWD
10	Sudha
11	Co 1
12	Co 2
13	Gcr-1
14	Gcr-2
15	Rcr436
16	Local

Table.2 Performance of different coriander varieties in respect of growth attributes

	Plant Height (cm)				**Primary branches at harvest**	**Secondary branches per plant at harvest**
SI No.	Treatments	30 DAS	60 DAS	90 DAS		
1.	Suguna	10.30	46.09	48.73	8.20	19.22
2.	Sindhu	10.26	46.37	51.07	8.96	21.73
3.	Supha	9.36	44.70	48.61	8.33	18.62
4.	AD-1	8.29	42.73	47.95	6.67	15.94
5.	Sadana	10.77	45.83	48.90	8.34	18.54
6.	Swathi	10.42	42.88	50.14	7.80	21.32
7.	Susthira	9.13	43.07	47.05	6.62	19.31
8.	GDLC- 1	9.68	45.21	48.68	7.88	16.61
9.	DWDC-1	9.87	44.85	48.95	8.18	24.70
10.	Sudha	10.41	45.46	51.29	9.20	18.76
11.	Co 1	8.42	43.42	46.69	7.87	19.29
12.	Co 2	8.03	45.06	48.87	6.64	14.61
13.	Gcr-1	8.73	44.90	52.43	8.15	17.51
14.	Gcr-2	8.00	49.80	54.45	6.54	17.24
15.	Rcr436	7.97	47.03	52.29	8.45	19.21
16.	Local	8.02	46.85	50.22	8.79	17.26
	Sem ±	0.246	0.814	0.848	0.260	0.720
	CD (5%)	0.713	2.353	2.451	0.752	2.082

Table.3 Performance of different coriander varieties in flowering attributes

Sl.No	Treatments	No of days taken for flower initiation	Days to 50% flower initiation	Number of umbels per plant	Number of umbellets per umbel	Number of seeds per umbel	Days to maturity
1.	Suguna	41.77	52.54	45.71	3.95	29.89	94.00
2.	Sindhu	42.16	52.67	45.23	3.61	37.95	100.67
3.	Supha	41.54	55.51	44.65	3.40	35.78	104.17
4.	AD-1	40.94	49.57	39.43	3.15	33.19	94.50
5.	Sadana	49.52	58.43	42.21	2.15	34.13	104.67
6.	Swathi	40.21	51.63	50.54	4.31	38.38	96.33
7.	Susthira	40.06	50.91	45.38	2.66	35.69	95.67
8.	GDLC -1	39.92	52.88	41.86	3.58	34.80	93.83
9.	DWDC-1	39.12	48.07	46.87	7.34	37.89	92.17
10.	Sudha	46.45	56.81	53.37	4.78	38.31	103.00
11.	Co 1	48.65	60.07	44.95	4.50	35.04	106.33
12.	Co 2	50.49	60.03	45.02	3.48	35.33	109.00
13.	Gcr-1	49.89	59.91	35.36	4.38	28.34	105.83
14.	Gcr-2	49.95	59.96	34.77	4.98	29.67	109.50
15.	Rcr436	48.08	59.64	46.94	4.37	34.11	108.17
16.	Local	50.25	59.00	46.29	4.32	34.88	106.17
	Sem ±	0.618	0.622	1.150	0.133	1.091	0.409
	CD (5 %)	1.786	1.912	3.322	0.384	3.153	1.183

Table.4 Performance of different coriander varieties in seed yield attributes

Sl.No	Treatments	Seed yield per plant (g)	Seed yield per plot (g)	Seed yield (q/ha)	Test weight (g) 1000 seed
1.	Suguna	4.11	361.53	9.03	8.05
2.	Sindhu	3.57	314.16	7.56	9.06
3.	Supha	4.22	366.58	8.88	6.44
4.	AD-1	3.37	296.85	7.28	8.22
5.	Sadana	4.81	423.28	10.53	6.38
6.	Swathi	2.25	198.15	4.94	4.28
7.	Susthira	4.51	396.73	9.82	6.57
8.	GDLC- 1	4.46	392.19	9.76	5.43
9.	DWDC-1	6.41	564.37	13.76	10.27
10.	Sudha	5.51	486.59	11.99	8.77
11.	Co 1	4.48	388.77	9.49	5.67
12.	Co 2	4.36	377.10	9.37	6.24
13.	Gcr-1	3.93	335.55	8.39	5.71
14.	Gcr-2	4.08	358.60	8.97	6.35
15.	Rcr436	3.29	289.52	7.24	5.38
16.	Local	3.83	336.89	8.89	6.47
	SEm ±	0.136	11.487	0.306	0.117
	CD (5%)	0.394	33.177	0.884	0.339

Flowering attributes

The pooled data in respect of flowering attributes are presented in Table 3. Number of days required to flower initiation was least (39.12) in the variety DWDC-1 which was statistically at par with the variety GDLC-1 (39.92).

Number of days taken for 50 percent flowering was least least (48.07) in the variety DWDC-1 which was statistically at par with the variety AD-1 (49.57). Number of umbels per plant was recorded and the highest (53.37) was recorded in variety Sudha which was statistically at par with the variety Swathi (50.54). Number of umbellets per umbel was significantly highest (7.34) in the variety DWDC-1. Number of seeds per umbel was recorded highest in Swathi (38.38) which was statistically at par with the variety Sudha (38.31). Least number of DAYS to maturity was recorded in DWDC-1 (92.17).

The similar variations among different coriander varieties have reported by Kalidasu *et al.,* (2008) in sadhana varieties of coriander, Moniruzzaman *et al.,* (2013) in coriander and Velayudham *et al.,* (2006) supports the results of present findings.

Seed yield attributes

The pooled data in respect of days to seed harvesting in coriander were significantly influenced by different varieties and are presented in Table 4. Seed yield per plant (6.41 g), seed yield per plot (564.37 g), seed yield per hectare (13.76 q/ha) and the test weight (10.27 g) was found to be significantly highest in DWDC-1 which was followed by the variety Sudha.

The yield is the result of interaction of the variety to a given agro climatic and management factors. The variations in yield among the coriander varieties were also reported by several workers Malik and Tehlan (2013) in coriander, Garid *et al.,* (2015) in coriander and Meena *et al.,* (2014) in coriander.

In conclusion the evaluation of present study concludes that, the significant variations were observed in growth and yield parameters of different varieties of coriander. The variety DWDC-1 showed significantly superior performance in respect of seed yield. Thus, it was concluded that, DWDC-1 is well suited for UKP command area of North-Eastern dry zone of Karnataka (Region II, Zone 2).

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