

Performance of coriander (*Coriandrum sativum* L.) varieties for growth and seed yield

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Abstract

Thirteen coriander cultivars/accessions were evaluated for various growth parameters, seed yield and essential oil content during 2009-2010 to 2011-2012 at the CCS Haryana Agricultural University, Hisar, India. The significant differences were obtained for all the parameters. Plant height ranged from 96.7 to 121.6, number of branches 6.1 to 10.3, umbels per plant 51.4 to 65.9, umbellate per umbel 3.8 to 6.0 and seeds per umbel 27.6 to 36.1. On the basis of mean seed yield of three years (2009-10 to 2011-2012) at Hisar, the maximum seed yield was recorded as 2104 kg/ha in DH-233 followed by DH-220 (2053 kg/ha) showing an increase of 19.68 & 16.78 % higher seed yield over Hisar Anand (check), respectively. Although no significant differences in essential content were observed between the cultivars; DH-220 produced the highest essential oil content (0.39%).

Key words : Coriander, essential oil, growth parameters, seed yield

Introduction

Coriander (*Coriandrum sativum* L.) is an important seed spice, cultivated in almost all the states of India and gaining export importance. The stems, leaves and seeds of coriander are used in number of culinary preparations. However, dry seeds are extensively used in form of powder, but flavour of fresh leaves is highly liked by consumers in curries, sauces, soups and different preparations. An infusion of coriander seed is useful in flatulence, indigestion, vomiting and other intestinal disorders. It occupies an area of about 4.40 lakh hectares with a production of 3.23 lakh tones (Anonymous, 1). The aromatic odour in coriander is due to the presence of essential oil, which has been reported to range from 0.1 to 1.0 per cent in dry seed of varieties of different origin. Coriander oil is the value added product used in flavoring food, pharmaceuticals and perfumery. In spite of its wide cultivation in India, the average seed yield of coriander is rather low because lack of attention given to this crop. Use of improved varieties/cultivars is one of the strategies for increasing the production and productivity of the crop. Therefore, in the present study, thirteen varieties received from various parts of the country under All India Co-ordinated Research Project on Spices were evaluated for growth and yield parameters to select the best suited variety for Haryana conditions.

Thirteen varieties viz., LCC-236 and LCC-237 from Guntur; DH-220 and DH-233 from Hisar, RKD-13 and RKD-18 from Udaipur, UD-475 and UD-801 from Jobner, NDCor-49 from Kumarganj and Acor-1 from NRC Ajmer were tested along

with Hisar Anand and RCr-728 (Checks) during the years 2009-2011 to 2011-12 at the Vegetable Research Farm, Haryana Agricultural University, Hisar. The trial was laid out in randomized block design with three replications. The plot size was 4.0 x 2.4 m accommodating 8 rows of 4 meter length spaced 30 cm apart. The plant to plant distance was maintained at 20 cm by thinning out the extra plants. Recommended package of practices were followed to get the good crop. Data were recorded on plant height, number of branches, umbels per plant, umbellets per umbel, seeds per umbel, seed yield and essential oil content. The data were pooled for all the three years and statistically analyzed for different characters as suggested by Panse and Sukhatme (3).

The pooled data on growth characters of the different cultivars are presented in Table -1. The significant differences were obtained for all the parameters. The plant height among different cultivars was recorded from 96.7 to 121.6 cm with maximum for DH-233 which significantly excelled all the other cultivars except UD-475 (115.8 cm) and ACor-1 (113.5 cm). The number of branches per plant ranged from 6.1 to 10.3 being maximum in DH-233. The significant variation among the varieties might be due to genetic characters. In respect of umbels per plant, the variety DH-233 was significantly superior to all the other varieties except UD-475 and ACor-1. The maximum number seeds per umbellets and seeds per umbel were recorded for the variety DH-233 followed by DH-220 and UD-801.

Table 1. Growth and yield characters of coriander cultivars during 2009-2010 to 2011-12

S. No.	Entry	Plant height (cm)	Branches per plant	Umbels per plant	Umbellets Per umbel	Seeds Per umbellet	Seeds Per umbel	Seed yield (kg/ha)	Essential oil content (%)
1	RKD-13	96.7	6.1	51.4	4.8	5.8	27.6	1342	0.30
2	RKD-18	97.4	6.2	51.8	4.8	5.9	28.1	1362	0.28
3	UD-475	115.8	8.6	62.2	6.0	5.8	33.1	1932	0.37
4	UD-801	107.0	7.3	57.2	5.7	5.5	34.9	1751	0.33
5	LCC-236	108.3	6.5	57.4	5.0	5.2	30.2	1590	0.38
6	LCC-237	105.4	7.2	56.3	4.7	5.0	26.7	1503	0.33
7	DH-220	106.1	9.8	58.0	6.0	5.9	35.7	2053	0.39
8	DH-233	121.6	10.3	65.9	5.8	6.3	36.1	2104	0.33
9	NDCor-30	108.2	8.1	58.2	5.7	5.8	34.3	1799	0.34
10	NDCor-49	109.6	9.1	59.4	6.0	5.6	34.7	1801	0.39
11	Acor-1	113.5	7.6	60.5	5.1	5.5	32.3	1601	0.27
12	Hisar Anand	110.7	8.6	59.6	5.7	5.8	33.2	1758	0.25
13	Rcr-728	99.6	8.1	53.8	3.8	5.2	31.4	1639	0.35
	C D at 5 %	10.2	0.8	5.5	0.6	0.5	4.9	68	NS

On the basis of mean seed yield over three years the maximum seed yield was recorded in DH-233(2104 kg/ha) which statistically out yielded all other cultivars followed by DH-220 (2053 kg/ha) and UD-475 (1932 kg/ha) (Table-1). The seed yield mainly depends on number of umbels per plant and seeds per umbel. In variety DH-233 and DH-220, these yield attributing characters were superior to others. These results are in conformity with the findings of (Rajagopalan *et al.*, 4). As regards essential oil content the var. DH-220 gave the highest value of 0.39%. In general, seed weight is an important factor affecting the essential oil content. Cultivars like DH-220, the number of seeds per umbel is more because of low seed weight and had more essential oil content. Aggarwal *et al.*, (2) reported that essential oil content was negatively correlated with seed weight. Higher seed weight could be attributed to higher starch content. Starch, being a primary metabolites may affect the accumulation of the secondary metabolites like essential oil. On the basis of these results

variety DH-220 has been identified for National release during XXIII National Workshop of All India Co-ordinated Research Project on Spices held at Calicut.

References

1. Anonymous, 2009. *Annual Functional Plan 2009-10*. Directorate of Horticulture, Haryana, 158-161.
2. Aggarwal, S., B.K. Sharma and B.N. Bhatt (1990). Quality evaluation in coriander. *Indian Cocoa, Arecanut and Spices J.* 13:137-138.
3. Panse, V.C. and P.V. Sukhatme, 1961. *Statistical methods for Agricultural research Worker*. 2nd Ed. ICAR, New Delhi.
4. Rajagopalan, A.; R.S. Azhakiya and, M.D Abdul Khader. 1996. Evaluation of coriander cultivars for yield and quality. *Indian Cocoa, Arecanut and Spices J.* 20: 13-14.

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