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## Genetic variability in coriander (*Coriandrum sativum* L.)

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### Abstract

A research experiment was carried out at Department Of Horticulture, Naini Agricultural Institute, SHUATS, Prayagraj during the year 2020-2021. The experiment was laid out in Randomized Block Design comprising of 14 treatments viz., T<sub>1</sub>: CIMPO S-33, T<sub>2</sub>: Imp KCOH-0801, T<sub>3</sub>: Pant Haritma, T<sub>4</sub>: GDLC-1, T<sub>5</sub>: Kashmiri, T<sub>6</sub>: Green Valley, T<sub>7</sub>: LS-800, T<sub>8</sub>: K.S Deshi, T<sub>9</sub>: Saurabh, T<sub>10</sub>: Heena (Bold), T<sub>11</sub>: Japany-47, T<sub>12</sub>: Cross (91), T<sub>13</sub>: Green King, T<sub>14</sub>: Local Ajmer, with three replications. The observations were recorded as per the growth and yield parameters. The results reveal that the treatment T<sub>6</sub> (Green valley) was found to be the most suitable over all the other treatments in relation to growth and yield of Coriander.

**Keywords:** Coriander, plant height, number of primary branches, seed yield

### Introduction

Coriander (*Coriandrum sativum* L.) is an important seed spice crop and belongs to family Apiaceae (Umbelliferae) with a chromosome number of  $2n=22$ . It is mainly used as condiment in the preparation of curry powder, pickles, sausages as seasonings. Seeds are also used in the preparation of confectionaries and liquors, due to its pleasant aroma, tender shoots and leaves are used in culinary preparation like chutney and soups. Coriander also has medicinal values where seeds can be used as tonic, diuretic, stomachic, carminative 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) [17]. Uttar Pradesh is a suitable climate for cultivation of coriander which shows a great scope for increasing its productivity through nutrition management practices. In Allahabad coriander is mainly grown under rainfed conditions either in kharif or Rabi season. The average yield of coriander in India is low. One of the reasons quoted for low yield is the lack of potential varieties suited to that particular region. Apart from selection of suitable varieties optimum planting season, nutritional requirement and resistance to biotic stress (pest and diseases) are important considerations for accomplishing the higher yield in coriander. No scientific information is available on Genetic variability in coriander in Allahabad though farmers are using their own local genotypes for cultivation. The season of sowing is an important factor in coriander cultivation (Sharma and Prasad, 1993). Hence, the present investigation was carried out to study the performance of coriander genotypes for growth and yield parameters.

### Materials and Methods

The research experiment was laid out in Randomized Block Design comprising of 14 genotypes with 3 replications. Seeds were sown at a spacing of 25 cm x 5 cm spacing and 1 m x 1 m plot size. 5 plants were randomly selected from each genotype from each replication and the observations were recorded as per the growth and yield parameters and the mean values of data recorded were analyzed statistically by adopting the method suggested by (Panse and Sukhatame, 1985) [13]. The data was collected on Days to germination, Plant height (cm), Number of primary and secondary branches, Number of umbels per plant, Number of umbellets per umbel, Umbel diameter (cm), Number of seeds per umbel, Days to maturity, Leaf yield per plant (g), Leaf yield per plot (g), Leaf yield per ha (q), Seed yield per plant (g), Seed yield per plot (g), Seed yield per ha (q), Test weight (g).

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## Results and Discussion

The data pertaining to the growth parameters like days to germination, plant height, primary branches and secondary branches of different genotypes differed significantly at various growth stages are presented in (Table 1). The least number of days to germination was observed in Green King (6 days) followed by CIMPO S-33 and Local Ajmer (6.67 days respectively), whereas the variety Cross (91) took more days (15 days) for germination. The maximum plant height was recorded in K.S Deshi (132.77 cm) followed by LS- 800 (110.10 cm) and Pant Haritma (101.45 cm) while the lowest

plant height was found in Green king (29.03 cm). The maximum number of primary branches per plant was recorded in Imp KCOH- 0801 and Green Valley (8.40 respectively) followed by Heena (Bold) (7.67). The minimum number of primary branches was recorded in Pant Haritma and LS-800 (6.20 respectively). The maximum number of secondary branches per plant was recorded in Green valley (22.20) followed by Imp KCOH-0801 (20.80) and Heena (Bold) (19.13). The minimum number of secondary branches was recorded in Green King (12.74).

**Table 1:** Growth parameters of Coriander (*Coriandrum sativum* L.)

Genotypes	Days to germination	Plant height (cm)	Number of primary branches per plant	Number of secondary branches per plant
T <sub>1</sub> – CIMPO S-33	6.67	95.75	6.60	14.93
T <sub>2</sub> - Imp KCOH-0801	11.33	93.93	8.40	20.80
T <sub>3</sub> - Pant Haritma	9.33	101.45	6.20	14.67
T <sub>4</sub> - GDLC-1	8.67	86.46	6.87	17.13
T <sub>5</sub> - Kashmiri	7.33	53.37	6.73	14.01
T <sub>6</sub> -Green Valley	14.00	37.90	8.40	22.20
T <sub>7</sub> -LS-800	9.00	110.10	6.20	12.93
T <sub>8</sub> -KS Deshi	7.00	132.77	7.60	17.93
T <sub>9</sub> -Saurabh	8.00	79.24	6.80	13.61
T <sub>10</sub> -Heena (Bold)	8.67	37.78	7.67	19.13
T <sub>11</sub> -Japany-47	9.33	95.24	6.27	16.33
T <sub>12</sub> -Cross (91)	15.00	75.01	7.60	17.33
T <sub>13</sub> -Green King	6.00	29.03	7.42	12.74
T <sub>14</sub> -Local Ajmer	6.67	51.07	7.07	17.67
CD at 5%	2.026	27.997	0.529	2.643
S.Ed(±)	0.986	13.620	0.257	1.28

The data pertaining to yield parameters of different genotypes differed significantly at various growth stages are presented in (Table 2). The highest number of umbel per plant was recorded in K.S Deshi (25.40) followed by Green valley (21.00) and CIMPO S-33 (17.40), whereas the lowest number of umbels was recorded in Kashmiri (9.67). Results related to fresh weight of Coriander found to be close agreement with that of Agrawal *et al.* (2003) [2], Dhokle *et al.* (2010) [6], Akshata *et al.* (2018) [3]. The highest number of umbellets per umbel was recorded in Kashmiri (26.13) followed by K.S Deshi (25.67) and Japany-47 (24.74), whereas the lowest number of umbellets per umbel was recorded in Green king (16.00). The maximum diameter of Umbel was recorded in Japany-47 followed by LS-800 and Kashmiri (5.05 respectively), whereas the minimum diameter was recorded in Green Valley (3.22). The highest number of seeds per umbel was recorded in Kashmiri (57.73) followed by Cross (91) (42.73) and Japany-47 (37.67), whereas the lowest number of seeds per umbel was recorded in GDLC-1 (15.67). The maximum number of days taken for maturity was recorded in Green king (156.00) followed by Green Valley (153.33) and Heena (Bold) (149.33), whereas the minimum number of days taken for maturity was recorded in GDLC-1 (123.33). These findings are come in conformity with the findings of Hariprasadrao *et al.* (2001) [8], Kalidasu *et al.* (2008) [9], Palanikumar and Rajamani (2012) [14], Kumar *et al.* (2018) [10]. The maximum Leaf yield per plant was obtained in Green valley (17.48 g) followed by Pant Haritma (17.38 g) and Imp KCOH-0801 (15.40 g). The minimum Leaf yield per plot was

recorded in Heena (Bold) (12.84 g). The maximum Leaf yield per plot was obtained in Green valley (419.52 g) followed by Pant Haritma (417.20 g) and Imp KCOH-0801 (369.52 g). The minimum Leaf yield per plot was recorded in Heena (Bold) (308.08 g). The maximum Leaf yield per ha was obtained in Green Valley (38.84 q) followed by Pant Haritma (38.63 q) and Imp KCOH-0801 (34.21 q). The minimum Leaf yield per ha was recorded in Heena (Bold) (28.53 q). The results of present study are almost match with the findings of Selvarajan *et al.* (2002) [15], Subramanian *et al.* (2005) [18], Bhattacharya *et al.* (2006) [4], Chaulagain *et al.* (2011) [5], Verma *et al.* (2014) [19]. The highest seed yield per plant was recorded in LS-800 (7.59 g) followed by Green Valley (7.32 g) and Green King (6.88 g). The lowest yield per plant was recorded in GDLC-1 (4.95 g). The highest seed yield per plot was recorded in LS-800 (182.16 g) followed by Green Valley (175.60 g) and Green King (165.20 g). The lowest seed yield per plot was recorded in GDLC-1 (118.88 g). The highest seed yield per ha was recorded in LS-800 (16.87 q) followed by Green Valley (16.26 q) and Green King (15.30). The lowest seed yield per ha was recorded in GDLC-1 (11.01 q). These results closely match with the findings of Singh *et al.* (2002) [16], Dhuhan *et al.* (2005) [7], Moniruzzaman *et al.* (2013) [2], Agasimani. (2014) [1] Lal *et al.* (2017). The maximum Test weight was recorded in CIMPO S-33 (17.18 g) followed by Kashmiri (16.19 g), K.S Deshi and Saurabh (15.35 g respectively), whereas the minimum Test weight was recorded in GDLC-1 (10.45 g).

**Table 2:** Yield parameters of *Coriandrum sativum* L.)

Genotypes	Number of umbels per plant	Number of umbellets per umbel	Umbel diameter (cm)	Number of seeds per umbel	Days to maturity	Leaf yield per plant (g)	Leaf yield per plot (g)	Leaf yield per ha (q)	Seed yield per plant (g)	Seed yield per plot (g)	Seed yield per ha (q)	Test weight (g)
T <sub>1</sub> – CIMPO S-33	17.40	22.00	4.68	26.33	123.67	13.20	316.72	29.33	6.16	147.84	13.69	17.18
T <sub>2</sub> - Imp KCOH-0801	14.80	16.13	3.63	19.33	148.33	15.40	369.52	34.21	6.37	152.80	14.15	12.23
T <sub>3</sub> - Pant Harima	10.13	21.53	4.58	37.27	133.33	17.38	417.20	38.63	6.15	147.68	13.67	14.86
T <sub>4</sub> - GDLC-1	10.87	19.47	4.36	15.67	123.33	14.53	348.72	32.29	4.95	118.88	11.01	10.45
T <sub>5</sub> -Kashmiri	9.67	26.13	5.05	57.73	139.67	13.95	334.80	32.00	6.30	151.20	14.00	16.19
T <sub>6</sub> - Green Valley	21.00	17.00	3.22	16.47	153.33	17.48	419.52	38.84	7.32	175.60	16.26	13.31
T <sub>7</sub> - LS-800	12.67	24.20	5.05	31.53	131.00	13.52	324.48	30.04	7.59	182.16	16.87	13.18
T <sub>8</sub> - KS Deshi	25.40	25.67	4.59	25.67	132.33	14.81	355.36	32.90	6.05	145.20	13.44	15.35
T <sub>9</sub> - Saurabh	14.47	22.93	4.74	33.13	127.00	14.00	335.92	31.10	6.41	153.92	14.25	15.35
T <sub>10</sub> - Heena (Bold)	16.67	20.27	3.46	17.40	149.33	12.84	308.08	28.53	6.45	154.80	14.33	14.40
T <sub>11</sub> -Japany-47	15.60	24.74	5.40	37.67	124.33	13.73	329.44	30.50	6.15	147.52	13.66	12.20
T <sub>12</sub> -Cross (91)	17.13	24.13	4.78	42.73	129.33	12.93	310.32	28.73	5.82	139.68	12.93	14.31
T <sub>13</sub> -Green King	12.27	16.00	3.99	20.86	156.00	13.62	326.96	30.27	6.88	165.20	15.30	13.28
T <sub>14</sub> -Local Ajmer	11.47	18.49	4.61	32.40	140.00	13.09	314.08	29.08	6.13	147.20	13.63	11.19
CD at 5%	7.475	3.009	0.580	4.809	4.251	2.089	50.130	4.642	0.913	21.919	2.030	0.325
S.Ed(±)	3.637	1.464	0.282	2.340	2.068	1.016	24.338	2.258	0.444	10.663	0.987	0.158

### Conclusion

On the basis of present investigation, it is concluded that the treatment T<sub>6</sub> (Green valley) was found to be the most suitable over all the other treatments in relation to growth and yield of Coriander.

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