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# EVALUATION OF CORIANDER VARIETIES FOR GROWTH, ECONOMICS AND YIELD

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Coriander (Coriandrum sativum L.) is an important spice crop grown throughout the country for the leaves as well as seeds. Seeds of the crop are used as spice, while its tender green leaves are used as culinary herb. As coriander is an important spice crop, it needs a great deal of critical evaluation of the available types for selection of the improved types with high yield potential. Selection of better plant type can be of immense value to the breeder for further improvement and development of the crop. Under prevailing agro-climatic conditions i.e. a creating situation of sudden rising in environmental temperature at later stages of the crop development, adoption of early maturing improved varieties have been performed better. Therefore, the present investigation was undertaken in order to evaluate the morphological traits of the collected coriander genotypes and to select the promising genotype (s) for higher seed yield.

A field experiment was conduct at Horticulture Research Farm, Department of Horticulture, R.A.K. College of Agriculture, Sehore, (M.P.) in randomized completely block design with three replications. The crop varieties were sown on 08 November, 2013. The fertilizer doses (20t FYM, 50:30:60 NPK kg $ha^{-1}$) were applied uniformly in the soil and recommended package of practices were adopted for optimum crop growth and development with proper plant protection. The significance of genotypic correlation coefficients was tested with the help of standard errors as suggested by Reeve and Rao (1981). The steps involved in the analysis of the randomized complete block design were as described by Panse and Sukhmate (1969).

The plant height and number of branches per plant differed significantly among varieties at all the growth stages and the maximum plant height was recorded in variety Pant haritma followed by Rcr 436, Acr 1, and Kumbhraj as compared to other varieties and minimum in variety Chhoti dhaniya (Table 1). At 30 DAS there was no branches in coriander plant. At 60, 90 days after sowing and maturity, significantly maximum branches per plant were recorded under Pant haritma and Rcr 436. However, number of branches was observed lowest in variety Chhoti dhaniya. Early days to first and 50% flowering was recorded in variety Chhotidhaniya as compared to other varieties. While, late 50% flowering was observed in varieties Pant haritma, and Rcr 436. The early days to first umbel initiation (71.07 and 71.96 days) were recorded in varieties Chhotidhaniya and Champion, respectively. While, late days to first umbel initiation (92.43 days) was observed in variety Pant haritma.

Variety Pant haritma gave maximum (19.25 q $ha^{-1}$) seed yield followed by Rcr 436 (18.41 q $ha^{-1}$), Acr 1 (18.03 q $ha^{-1}$) and Kumbhraj (17.09 q $ha^{-1}$) The lowest (12.36 q $ha^{-1}$) seed yield was noted in variety Chhoti dhaniya. Straw yield of Pant haritma was recorded maximum and lowest in variety Chhotidhaniya.Variety Chhotidhaniya observed significantly maximum harvest index (37.40%) followed by Pant haritma (33.2%), Rcr 436 (32.1%), Acr 1 (31.5%), and Kumbhraj (30.04%) and lowest (25.86%) in variety Halka Green. All the varieties exhibited pink colour of flowers. Colour of seeds was observed to be yellowish green in the varieties Kumbhraj and Rcr 436. Rest of the varieties exhibited light yellowish green colour seeds. Maximum seed yield of 19.25 q $ha^{-1}$ was obtained in coriander variety Pant haritma with net returns of ₹ 99276 ha-1 and cost benefit ratio 3.20.

Plant height had positive and significant association with days to 50% flowering. Number of branches per plant at maturity expressed a highly significant and positive association with size of fruit. Days to 50% flowering had positive and significant correlation with harvest index. Days to first umbel initiation had significant and positive correlation with seed yield, seed yield per plant, number of umbellate per plant, number of umbel per plant, straw yield and test weight. Number of umbels per plant was significantly and positively associated with number of umbellate per plant, test weight, seed yield, seed yield per plant and straw yield. Dalkani, (2011) reported similar relationship among these characters.

Table 1: Growth yield attributes and yield and economics of coriander genotypes

| Varieties | Plant height (cm) | Branches per plant | Days to first flowering | Days to 50% flowering | Days to first umbel initiation | Umbels per plant | Umbellate per plant | Size of fruit (mm) | Test weight (g) | Seed yield per plant (g) | Seed yield (q $ha^{-1}$) | Straw yield (q $ha^{-1}$) | Harvest index (%) | Net income (₹ $ha^{-1}$) | C:B ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pant haritma | 142.3 | 11.0 | 71.3 | 82.6 | 92.4 | 10.8 | 239.9 | 4.3 | 16.2 | 6.3 | 19.2 | 57.9 | 33.2 | 99276 | 3.20 |
| Corio – 49 | 114.8 | 8.0 | 61.1 | 71.4 | 82.3 | 7.4 | 159.6 | 3.5 | 11.9 | 4.8 | 15.1 | 54.7 | 27.6 | 67926 | 2.51 |
| Kumbhraj | 137.9 | 9.0 | 69.7 | 80.1 | 90.2 | 8.5 | 177.6 | 3.8 | 13.4 | 5.4 | 17.1 | 56.9 | 30.0 | 83076 | 2.84 |
| Halka Green | 82.2 | 7.7 | 60.0 | 70.4 | 81.2 | 7.2 | 155.6 | 3.4 | 11.6 | 4.4 | 13.5 | 52.3 | 25.9 | 56376 | 2.25 |
| Best egle | 135.6 | 8.7 | 69.0 | 79.1 | 90.1 | 7.6 | 171.1 | 3.6 | 12.1 | 4.9 | 16.2 | 55.7 | 29.2 | 76776 | 2.70 |
| Rcr 436 | 140.3 | 10.5 | 71.1 | 82.1 | 91.5 | 10.2 | 218.5 | 4.0 | 15.3 | 5.8 | 18.4 | 57.3 | 32.1 | 92976 | 3.06 |
| Acr 1 | 138.4 | 10.1 | 70.4 | 80.2 | 90.3 | 9.5 | 190.5 | 3.9 | 14.2 | 5.5 | 18.0 | 57.2 | 31.5 | 90126 | 3.00 |
| Chhotidhaniya | 68.4 | 5.3 | 51.2 | 61.1 | 71.1 | 5.2 | 110.3 | 3.2 | 10.7 | 3.8 | 12.4 | 33.0 | 37.4 | 47601 | 2.06 |
| Scooter | 79.3 | 7.4 | 58.1 | 67.5 | 77.6 | 7.0 | 142.6 | 3.4 | 11.4 | 4.1 | 13.5 | 49.8 | 27.1 | 56076 | 2.24 |
| Champion | 79.2 | 6.8 | 54.1 | 61.5 | 71.7 | 6.6 | 128.4 | 3.3 | 10.8 | 3.9 | 13.2 | 47.5 | 27.7 | 53676 | 2.19 |
| SEm± | 0.47 | 0.18 | 0.13 | 0.24 | 0.30 | 0.14 | 0.39 | 0.01 | 0.22 | 0.10 | 0.19 | 0.16 | 0.29 | | |
| C.D. (P=0.05) | 1.41 | 0.55 | 0.41 | 0.72 | 0.89 | 0.44 | 1.17 | 0.05 | 0.67 | 0.30 | 0.58 | 0.49 | 0.88 | | |

Table 2: Coefficient of correlation among various parameters of coriander genotypes

| Characters | Branches per plant | Days to 50% flowering | Days to first umbe initiation | Umbels per plan | Umbellate per plant | Size of fruit | Test weight | Seed yield per Plant | Straw yield | Harvest index | Seed yield |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant height | -0.224 | 0.956** | -0.079 | 0.254 | 0.217 | 0.212 | 0.334 | 0.208 | -0.189 | 0.590 | 0.224 |
| Branches per plant | | -0.168 | -0.101 | 0.001 | -0.007 | 0.384* | -0.067 | -0.013 | 0.111 | -0.313 | -0.062 |
| Days to 50% flowering | | | -0.126 | 0.270 | 0.219 | 0.182 | 0.347 | 0.174 | -0.211 | 0.538* | 0.174 |
| Days to first umbel initiation | | | | 0.874** | 0.902** | 0.129 | 0.838** | 0.906** | 0.857** | 0.055 | 0.929** |
| Umbels per plant | | | | | 0.974** | 0.218 | 0.952** | 0.940** | 0.811** | 0.116 | 0.948** |
| Umbellate per plant | | | | | | 0.259 | 0.959** | 0.959** | 0.801** | 0.141 | 0.948** |
| Size of fruit | | | | | | | 0.341 | 0.379* | 0.009 | 0.387* | 0.267 |
| Test weight | | | | | | | | 0.947** | 0.678** | 0.314 | 0.939** |
| Seed yield per Plant | | | | | | | | | 0.760** | 0.226 | 0.955** |
| Straw yield | | | | | | | | | | -0.400* | 0.787** |
| Harvest index | | | | | | | | | | | 0.245 |

**Significant at 5% level (0.361)*

*** Significant at 1% level (0.463)*

Number of umbellate per plant was significantly and positively associated with test weight, seed yield per plant, seed yield and straw yield. Size of fruit expressed a significant and positive associated with harvest index and seed yield per plant. A highly significant and positive correlation of test weight was recorded with seed yield per plant, seed yield and straw yield. Straw yield expressed a significant and positive association with seed yield. It was recorded significant and negatively correlated with harvest index Similarly seed yield noted a highly significant and positively correlated with seed yield per plant, number of umbel per plant, number of umbellate per plant, test weight, days to first umbel initiation and straw yield per ha. Ali *et al.* (2004), Rajput (2004) and Datta *et al.* (2006) reported similar resulted.

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