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# EVALUATION OF CORIANDER (*Coriandrum sativum* L.) GENOTYPES FOR SEED YIELD AND YIELD CONTRIBUTING CHARACTERS

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## Abstract

Fourteen genotypes of coriander (*Coriandrum sativum* L.) from diversed sources were evaluated at Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur during the *rabi* season of 2007 to 2008 to select the promising genotype (s) for higher seed yield. The genotype CS005 took the minimum days for bolting (38.00), while CS003 took the maximum (60.00 days) which developed 50% most early flowers (134.3 days) and the tallest plant (116.10 cm). The maximum number of primary and secondary branches were obtained from CS004 (8.70/plant) and CS001 (15.41/plant), respectively. Umbels/plant ranged from 12.70 (CS010) to 33.37 (CS003), while umbellates/ umbel ranged from 4.75 (CS003) to 6.67 (CS010). The maximum number of seeds were obtained from CS011 (35.63/umbel and 684.3/plant) and the lowest per umbel from CS005 (15.00) and per plant from CS010 (163.3). The highest fruit set was obtained from CS011 (48.20%) followed by that of CS007 (46.30%). The genotype CS002 had the maximum 1000-seed weight (12.00 g) and CS004 the minimum (1.65 g). The genotypes CS011 and CS007 gave the highest seed yield per plant (5.79 and 5.57g) as well as per hectare (1.34 and 1.05 t). The highest germination of seed was recorded in CS003 (84.4%) and the lowest in CS004 (67.96%). The genotypes CS004, CS005, CS010, CS013, and CS014 were attacked with stem gall disease. It might be concluded from the study that the genotypes differed significantly in most of the parameters and offer a good scope of selection of better genotypes for desired traits.

Keywords: Coriander, genotypes, *Coriandrum sativum* L., seed yield, selection, BSMRAU.

## Introduction

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. It has found to be a remunerative crop in *rabi* season. Area and production of coriander seeds are increasing every year in Bangladesh (Anon., 2010) (Fig. 1).

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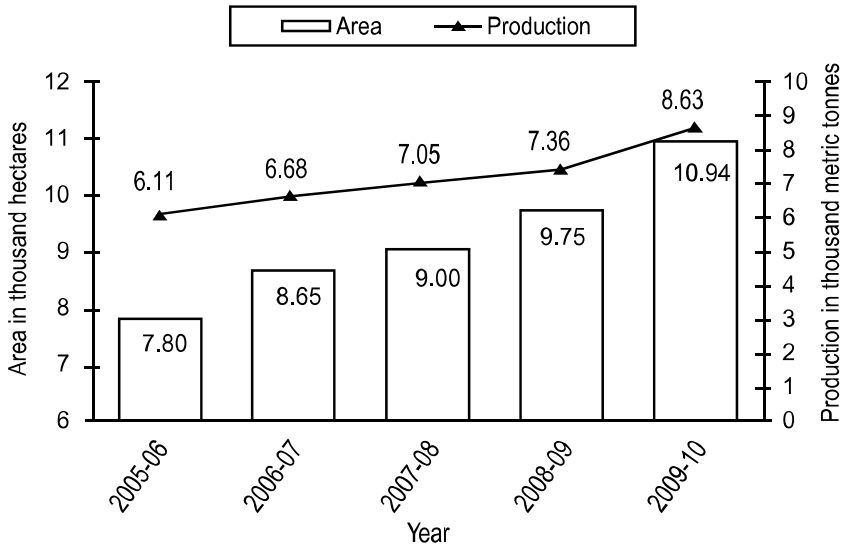


Fig. 1. Area and production of coriander seeds during 2005-06 to 2009-10.

Although coriander is one of the most important spice crops, very less importance has been given for its improvement. There is no recognized commercial variety except BARI Dhonia-1 in Bangladesh. It is necessary to develop more suitable varieties for seed production to fulfill the increasing demand of this spice crop.

A germplasm collection with good variability for the desirable characters is the basic requirement of any crop improvement programme (Singhania *et al*., 2006). In addition, crop improvement is primarily based on extensive evaluation of germplasm (Ghafoor *et al*., 2001). 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. Very few studies have been done regarding evaluation of coriander genotypes pertaining to its seed yield performance in Bangladesh (Islam *et al*., 2004; Anon., 1989). Selection of better plant type can be of immense value to the breeder for further improvement and development of the crop. 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.

## Materials and Method

The experiment was conducted at the Horticulture Field Laboratory of Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU), Gazipur during December 2007 to April 2008. The experimental field belongs the 'Shallow red brown terrace' soil of Salna series under Madhupur tract (AEZ

28) and the soil was Piedmont plain having medium loamy to moderately fine texture (sandy clay loam) (Brammer, 1971; Shaheed, 1984). The pH value of the experimental soil was 5.9. Fourteen genotypes of coriander were included in this study. All of these genotypes were collected from different parts of Bangladesh and some reputed seed stores of the country. The places of seed collections are presented in the Table 1. The experiment was laid out in a randomized complete block (RCB) design with three replications. The land was ploughed well and plots were prepared as 15 cm raised seedbed. Fertilizers were applied @ 80 kg N, 35 kg P, 60 kg K, and 20 kg S and 10 tons cowdung (Anon., 2001). The entire amount of cowdung, phosphorus from TSP, and potassium from MP, Sulphur from Gypsum with one-half of nitrogen and applied during final land preparation. The rest of the nitrogen was top dressed at equal installment at 30 and 60 days after sowing.

**Table 1. Sources and location of collected coriander genotypes.**

| Serial no. | Acc. No. | Location of seed collection |
|---|---|---|
| 1 | CS001 | Samrat Seed Vander, Siddik Bazzar, Dhaka |
| 2 | CS002 | Manik Seed Com., Siddik Bazzar, Dhaka |
| 3 | CS003 | Manik Seed Com., Siddik Bazzar, Dhaka |
| 4 | CS004 | Jessore |
| 5 | CS005 | Magura |
| 6 | CS006 | Faridpur |
| 7 | CS007 | Hathazari, Chittagong |
| 8 | CS008 | Tangail |
| 9 | CS009 | Gazipur Seed Vander, Gazipur |
| 10 | CS010 | Alamdanga, Chuadanga |
| 11 | CS011 | Sarajganj, Chuadanga |
| 12 | CS012 | Raikhali, Rangamati |
| 13 | CS013 | Faridpur |
| 14 | CS014 | BARI, Gazipur (BARI Dhonia-1) |

Acc. no. = Accession number.

The seeds (fruits) were rubbed for separating the two mericarps (seeds) and were soaked in water for 24 hours to enhance germination. Seeds were also treated with Bavistin at 2 g per kg of seeds before sowing. The seeds were sown in rows 20 cm apart continuously by hand @ 30 kg/ha. To allow uniform sowing in rows, seeds were mixed with some loose soil (about four to five times of weight of seeds). The seeds were covered with good pulverized soil just after sowing and gently pressed by hands. The sowing was done on 5 December 2007

with slight watering just to supply sufficient moisture needed for quick germination. For good germination, water was given to the plots every three days by water can with fine mashed nozzle till germination. Then three irrigations were given at 30, 60, and 80 days after sowing. No fungicide was sprayed to control the disease. But the infected plants were uprooted as soon as noticed in field and the uprooted plants were burried in the soil. Seeds were harvested when half of the green seeds on the plant changed from green to brown colour as suggested by Singhania *et al*. (2006). To avoid shattering of fruits, harvesting of seed plant was cut to the base by sickles in the early morning. Then the stalks with seeds were dried in the sun. Seeds (grains) were separated by beating with sticks and cleaned by winnowing and dried properly (10% moisture of seed).

Data were collected from the inner rows of each plot to avoid the border effect. In each unit plot, 10 plants were selected randomly for recording data on different morphological and yield contributing characters for seed. The data were recorded on different growth and yield contributing characters. At first, the plot yield was recorded and then this yield was converted to hectare yield (t/ha). All the data were compiled properly and analyzed statistically by MSTATC programme. The mean comparison was done following the Duncan's Multiple Range Test (DMRT).

## Results and Discussion

Results pertaining to different traits under study can be furnished below:

### Days to bolting stage

The days required to reach bolting stage of different genotypes ranged from 38.00 to 60.00 days and differed significantly (Table 2). The genotype CS005 took the minimum time for bolting (38.00 days) closely followed by CS004, CS009, CS010, CS012, CS013, and CS014. Bolting was very late in genotype CS003 (60.00 days), which was significantly different from the rest of the genotypes. When the genotype CS003 was in vegetative stage, other genotypes were in flowering stage. Islam *et al.* (2004) stated the character, days to flower stalk emergence instead of bolting and they reported that flower stalk emergence ranged from 43.00 to 52.55 days. Except CS003, the results obtained by them were higher than the results of present investigation.

### Days to 1$^{st}$ umbel unfolding

The days required for 1$^{st}$ umbel unfolding (from the date of sowing) in different genotypes differed significantly, which ranged from 46.33 to 112.3 days (Table 2). The genotype CS003 took maximum number of days (112.3 days) to reach 1$^{st}$ umbel unfolding stage followed by CS002 (65.00 days) and CS001 (63.00 days) and no significant difference was found between CS001 and CS002. The rest of

the genotypes took 57.33 days to 61.33 days for 1st umbel unfolding. Loyal and Sharma (1983) reported that that first umbel unfolded after 66-76 days from the date of sowing. The results of the present study were lower than the results reported by Loyal and Sharma (1983) except the genotype CS003.

**Table 2. Days to bolting, first umbel unfolding and 50% flowering of 14 coriander genotypes.**

| Genotypes | Days to | | |
|---|---|---|---|
| | bolting stage | 1st umbel unfolding | 50% flowering |
| CS 001 | 49.67b | 63.00b | 73.67b |
| CS 002 | 50.33b | 65.00b | 75.00b |
| CS 003 | 60.00a | 112.3a | 134.3a |
| CS 004 | 38.33gh | 49.33cd | 57.67c |
| CS 005 | 38.00h | 47.67cd | 58.00c |
| CS 006 | 41.00cde | 47.67cd | 60.33c |
| CS 007 | 40.33cdef | 50.33c | 59.00c |
| CS 008 | 42.00c | 50.33c | 58.33c |
| CS 009 | 38.67fgh | 49.00cd | 58.67c |
| CS 010 | 38.33gh | 46.33d | 58.33c |
| CS 011 | 41.67cd | 48.67cd | 61.33c |
| CS 012 | 39.67e-h | 50.00c | 60.67c |
| CS 013 | 40.00d-g | 48.67cd | 60.00c |
| CS 014 | 39.67e-h | 48.33cd | 57.33c |
| CV (%) | 3.80 | 2.19 | 2.35 |

Means showing different letters in a column differed significantly by DMRT at 5% level.

### Days to 50% flowering

The genotypes differed significantly for days to 50% flowering (Table 2). The genotype CS003 took the maximum days (134.3 days) to reach 50% flowering stage followed by CS002 (75.00 days) and CS001 (73.67 days) with no significant difference between CS001 and CS002. It was observed that earliest flowering was recorded in the genotype CS014 (57.33 days), which was statistically similar to all the genotypes except CS001, CS002 and CS003. This result is in close conformity to that of Islam *et al*. (2004) except CS001, CS002 and CS003 which took more time than the genotypes described by them.

### Plant height

The plant height of different genotypes at seed harvest differed significantly (Table 3a). The genotype CS003 produced the tallest plant (116.10 cm) followed by CS001 (100.40 cm) and CS002 (96.50 cm). There exists significant difference

among CS001 and CS002. The lowest plant height was found in CS005 (60.40m), which was identical with CS004 (60.50 cm). The genotypes CS008, CS009, CS010 and CS014 gave the plant heights in the range of 68.63 cm to 67.63 with no significant difference among them. The results regarding plant height at different stages are more or less in consonance with the results of Rahman (2000).

**Table 3a. Vegetative and fruiting characteristics of 14 coriander genotypes.**

| Genotypes | Plant height (cm) | Primary branches/plant (no.) | Secondary branches/plant (no.) | Umbels/plant (no.) | Umbel diameter (cm) |
|---|---|---|---|---|---|
| CS 001 | 100.40b | 7.37abc | 15.41a | 29.43ab | 4.06cd |
| CS 002 | 96.50c | 6.6bc | 10.20 b | 27.40bc | 4.36a |
| CS 003 | 116.1a | 8.49a | 10.88b | 33.37a | 4.25ab |
| CS 004 | 60.50i | 8.7a | 11.00b | 29.63ab | 3.76e |
| CS 005 | 60.40i | 7.3abc | 12.40b | 22.40d | 3.78e |
| CS 006 | 71.77ef | 7.17abc | 12.20b | 24.07cd | 3.79e |
| CS 007 | 71.30efg | 7.83abc | 12.40b | 26.87bc | 3.93de |
| CS 008 | 67.63gh | 8.10ab | 12.10b | 19.60dr | 3.92de |
| CS 009 | 64.77h | 7.83abc | 11.10b | 23.20cd | 3.78e |
| CS 010 | 68.00gh | 7.40abc | 7.40c | 12.70f | 3.88de |
| CS 011 | 74.67e | 7.37abc | 13.30ab | 26.97bc | 4.12bc |
| CS 012 | 72.30ef | 7.77abc | 12.40b | 23.67cd | 3.87de |
| CS 013 | 78.38d | 6.36c | 10.36b | 15.67ef | 3.88de |
| CS 014 | 68.63fg | 7.5abc | 11.20b | 20.60d | 3.90de |
| CV (%) | 3.24 | 8.36 | 10.38 | 7.49 | 2.16 |

Means showing different letters in a column differed significantly by DMRT at 5% level.

### Primary branches per plant

Primary branches per plant slightly differed significantly among the genotypes (Table 3a). The maximum primary branches per plant were obtained from CS004 (8.70/plant) which was closely followed by CS003, CS008, CS009 and CS007 and the lowest in CS013 (6.3/plant). Datta and Choudhuri (2006) obtained primary branches per plant in the range of 5.37-8.23 among 17 genotypes. Bhandari and Gupta (1993) reported that the primary branches per plant ranged from 1.4 to 8.6 among 200 genotypes. Rahman (2000) got primary branches per plant ranging from 6.10 to 8.02.

**Secondary branches per plant**

Significant variation was observed among different coriander genotypes in secondary branches per plant ranging from 7.40 to 15.41 (Table 3a). The genotype CS001 produced the maximum secondary branches (15.41/plant) which was comparable to CS011 (13.30/plant) and the lowest as in CS010 (7.40/plant). The other genotypes except CS001, CS011, and CS010 produced secondary branches per plant ranged from 10.36 to 12.40 and no significant difference was observed between those genotypes. Rahman (2000) obtained secondary branches per plant ranged from 15.85 to 25.50 which was higher than the present investigation due to the fact that he used plant spacing of 30 x 10 cm. Datta and Choudhuri (2006) obtained secondary branches per plant in the range of 10.10-16.75 which was more or less closer to the present study.

**Umbels per plant**

Marked variation was observed among the genotypes in respect of number of umbels per plant (Table 3a). It ranged from 12.70 (CS010) to 33.37 (CS003), which was closely followed by CS001 (29.43) and CS 004 (29.63). The lowest was found in CS010, which was statistically similar to CS013. Islam *et al.* (2004) recorded 26.15 - 52.33 umbels per plant. It was 24.10 -33.70 at Magura and 62.13-69.93 at Gazipur (Anon., 2002a). Maurya (1989) got umbels per plant in the range of 17.00-41.67, while Datta and Choudhuri (2006) obtained from 20.83 to 34.67. Bhandari and Gupta (1993) reported 3.2-39.3. The results of the present study are very close to the results of most of the reports. But the findings about umbels per plant reported by Islam *et al*. (2004) and Anon., (2002b) were higher than the findings of the present study.

**Umbel diameter**

The umbel diameter of different genotypes differed significantly and ranged from 3.76 to 4.36 cm (Table 3a). The genotype CS002 (4.36 cm) gave the maximum umbel diameter closely followed by CS003 (4.25 cm). The lowest was noticed in CS004 (3.76 cm) which was at par with CS005, CS006, CS007, CS008, CS009, CS010, CS012, CS013 and CS014.

**Umbellates per umbel**

Significant variation among the genotypes was observed for this trait (Table 3b). The genotype CS010 (6.67) produced the maximum umbellates per umbel closely followed by CS006, CS007, and CS011. The lowest was found in CS003 (4.75), which was identical with CS002. Islam *et al.* (2004) did not find significant variation among genotypes used for the number of umbellate per

umbel. It was 7.43-7.80 at Gazipur (Anon., 2002a). Maurya (1989) obtained the number of umbellates per umbel in the range of 4.0-9.40. The result of this investigation corroborates the results of Maurya (1989).

**Table 3b. Fruiting characteristics of fourteen coriander genotypes.**

| Genotypes | Umbellates /umbel (no.) | Seeds /umbel (no.) | Seeds /umbellate (no.) | Seeds /plant (no.) | Fruit set /umbel (%) |
|---|---|---|---|---|---|
| CS 001 | 5.81cd | 22.68b | 4.88bc | 533.3bc | 33.30g |
| CS 002 | 5.18e | 16.80bc | 4.05cde | 370.0def | 28.43h |
| CS 003 | 4.75e | 20.80bc | 5.48ab | 409.0cde | 27.27i |
| CS 004 | 6.07bcd | 16.33bc | 3.37de | 184.0 g | 24.63j |
| CS 005 | 5.73d | 15.00c | 3.27de | 267.7efg | 34.43f |
| CS 006 | 6.27a-d | 21.33bc | 4.25b-d | 410.4cde | 35.27de |
| CS 007 | 6.34abc | 32.67a | 6.42a | 594.7ab | 46.30b |
| CS 008 | 3.03cd | 22.00bc | 4.56bcd | 345.3def | 35.80cd |
| CS 009 | 5.80cd | 20.17bc | 4.27b-e | 374.3def | 36.23c |
| CS 010 | 6.67a | 16.07bc | 3.02e | 163.3g | 24.30j |
| CS 011 | 6.60ab | 35.63a | 6.74a | 684.3a | 48.20a |
| CS 012 | 5.90cd | 21.95bc | 4.65bcd | 423.3cd | 35.40de |
| CS 013 | 5.73d | 19.07bc | 4.16b-e | 239.0 cd | 34.27f |
| CS 014 | 6.10bcd | 20.00bc | 3.82cde | 329.7def | 34.99ef |
| CV (%) | 3.74 | 12.76 | 12.12 | 10.88 | 3.93 |

Means showing different letters in a column differed significantly by DMRT at 5% level.

### Seeds per umbel

The genotypes differed significantly in this trait (Table 3b). The maximum seeds per umbel were obtained from CS011 (35.63), which was at par with CS007 (32.67). The lowest was found in CS005. Maurya (1989) recorded 28.00-46.00 seeds per umbel. Datta and Choudhuri (2006) got the seeds per umbel in the range of 33.47-35.57. The result under study is in partial fulfillment of Maurya (1989) and Datta and Choudhuri (2006).

### Seeds per umbellate

The genotypes varied significantly in this parameter (Table 3b). The highest number of seeds per umbellate was in CS011 (6.74) closely followed by that of CS007 (6.42) and CS003 (5.48). The lowest was in CS010 (3.020), which was at par with CS004, CS005, Cs013, and CS014. Bhandari and Gupta (1993) reported

the seeds per umbellate in the range of 1.7-11.8. The result of the present investigation regarding seeds per umbellate is in agreement with Bhandari and Gupta (1993).

**Seeds per plant**

The maximum number of seeds per plant was obtained from CS011 (684.3), which were identical with CS007 (594.7). The lowest was in CS010 (163.3) closely followed by CS014 (184.3) (Table 3b). The poor performance of these two genotypes was due to the fact that they were severely infested by stem gall disease.

**Fruit set percent per umbel**

The highest percentage of fruit set per umbel was obtained from CS011 (48.20%) followed by CS007 (46.30%), while the lowest was in CS010 (24.30%) closely followed by CS004 (24.63%) (Table 3b). Romanenko *et al*. (1992) reported 3.8 to 53% fruit set and the highest ones were due to inter-varietal cross pollination. Islam *et al*. (2004) reported 28.85 to 47.96% fruit set.

**Seed yield per plant**

The maximum seed yield was in CS011 (5.79 g/plant) closely followed by that of CS007 (5.57 g/plant), CS009 (5.27 g/plant), CS006 (5.25 g/plant), and CS008 (4.96 g/plant) and the lowest was in CS004 (1.65 g/plant), which was at par with CS010 (1.83 g/plant) and CS002 (2.37 g/plant) (Table 4). Islam *et al*. (2004) obtained seed yield/plant in the range of 7.30 to 11.30 g, which was higher than the result of the present study. They obtained higher result because of using wider spacing (30 x 15 cm) compared to the present study (20 x 10 cm). It was in the range of 6.36-8.54 g at Magura (Anon., 2002b). Maurya (1989) got seed yield per plant ranging from 7.93 to 15.08 g while Bhandari and Gupta (1993) obtained seed yield/plant in the range of 0.2-7.8 g. The present findings support the result of Bhandari and Gupta (1993). The difference in seed yield per plant might be due to the genotypic difference and ecological variation.

**Thousand-seed weight**

The maximum 1000-seed weight was recorded from CS002 (12.00 g) followed by CS001 (11.00 g) and CS003 (11.00 g) and no significant difference was observed between CS001 and CS003. The lowest was in 6 genotypes (CS005, CS006, CS009, CS010, CS012, and CS014) which all had around 8.00 g 1000-seed weight (Table 4). Islam *et al*. (2004) obtained 1000-seed weight in the range of 10.25 to 11.73 g and Arganosa *et al*. (1998) in the range of 9.2-9.9 g. Maurya (1989) got 1000-fruit weight from 8.82-18.52 g while Datta and Choudhuri (2006) from 9.33-13.82 g. The result regarding 1000-seed weight of the present

study was in the range of all authors except Arganosa *et al*. (1998) and 6 genotypes produced lower 1000-seed weight (8.00-8.67 g) than the genotypes evaluated by different authors. This variation might be due to genotypic variation.

**Table 4. Yield contributing characters and maturity duration of fourteen coriander genotypes.**

| Genotypes | Seed yield /plant (g) | 1000-seed wt (g) | Seed yield (g/plot) | Seed yield (t/ha) | Stover yield (t/ha) | Maturity Duration (days) |
|---|---|---|---|---|---|---|
| CS 001 | 3.35ef | 11.00b | 243.2ef | 0.81de | 2.21a | 119.7b |
| CS 002 | 2.37ghi | 12.00a | 125.9h | 0.42g | 1.95ab | 117.0b |
| CS 003 | 2.57fgh | 11.0b | 225.1f | 0.75ef | 1.97ab | 152.3a |
| CS 004 | 1.65i | 10.00c | 102.8h | 0.34gh | 1.41c | 104.3fg |
| CS 005 | 3.19efg | 8.00d | 213.4g | 0.71ef | 1.53c | 105.0efg |
| CS 006 | 5.25ab | 8.00d | 270.3cd | 0.90cd | 1.71bc | 104.0fg |
| CS 007 | 5.57ab | 10.00c | 315.4b | 1.05b | 1.81b | 106.0d-g |
| CS 008 | 4.96abc | 10.00c | 291.5bc | 0.97bc | 1.60bc | 113.3c |
| CS 009 | 5.27ab | 8.00d | 264.6de | 0.88cd | 1.69bc | 103.3g |
| CS 010 | 1.83hi | 8.00d | 78.7i | 0.26h | 1.02c | 104.0fg |
| CS 011 | 5.79ab | 10.00c | 402.4a | 1.34a | 1.98ab | 107.0def |
| CS 012 | 4.78bcd | 8.67d | 264.7d | 0.88cd | 1.72bc | 107.7de |
| CS 013 | 4.34cd | 9.67c | 201.5g | 0.67f | 1.46c | 105.0efg |
| CS 014 | 4.013de | 8.33d | 222.4gf | 0.74ef | 1.50c | 109.0d |
| CV (%) | 9.09 | 2.89 | 9.20 | 9.12 | 4.87 | 3.13 |

Means showing different letters in a column differed significantly by DMRT at 5% level. Plot area: 3 m x 1 m (3 $m^2$)

### Seed yield per plot (3 $m^2$)

The coriander genotypes exhibited a significant variation in respect of seed yield per plot (Table 4). The plot yield ranged from 78.7 to 402.4 g seed. The genotype CS011 gave maximum seed yield per plot (402.4g). The second maximum seed yield per plot was obtained from CS007 (315.4g) closely followed by CS008 (291.5g). The lowest seed yield was found in CS010 (78.7 g). The genotypes CS006, CS012, CS009 and CS001 produced moderate seed yield per plot.

### Seed yield per hectare

Genotypes of coriander under investigation showed a wide range of variability among themselves in respect of seed yield per hectare (Table 4). It ranged from

0.34 to 1.34 t/ha. The maximum seed yield was obtained from CS011 (1.34 t/ha) followed by CS007 (1.05 t/ha) and CS008 (0.97 t/ha). The lowest seed yield was found in CS010. The moderate seed yield was produced by CS006 (0.90 t/ha), CS012 (0.88 t/ha), CS009 (0.88 t/ha), and CS001 (0.81 t/ha). The genotypes CS003 (0.75 t/ha), CS014 (0.74 t/ha), and CS005 (0.71 t/ha) gave reasonable seed yield. Anon. (2002b) reported that four lines of coriander produced seed yield in the range of 0.98 -1.24 t/ha in Gazipur. Rajagopalan *et al*. (1996) obtained seed yield of 13 coriander cultivars/accessions in the range of 0.36-0.68 t/ha at the Tamil Nadu Agricultural University, Coimbatore, India. Carubba *et al*. **(**2002) got seed yield in the range of 0.58–0.97 t/ha. Datta and Choudhuri (2006) reported that seed yields of 17 germplasm lines were in the range of 0.69 -1.51 t /ha. Singh *et al.* (1995) reported that Plant Haritma produced the highest seed yield of 1.45 and 1.24 t/ha in 1989 and 1990, respectively in two-year trials conducted in Uttar Pradesh. Those reports are very close to the present investigation.

**Stover yield**

The maximum stover yield was obtained from CS001 (2.21 t/ha) closely followed by CS002 (1.95 t/ha), CS003 (1.97 t/ha) and CS011 (1.98 t/ha) (Table 4). The genotype CS007 produced moderate stover yield (1.81 t/ha) closely followed by CS006 (1.71 t/ha), CS008 (1.60 t/ha), CS009 (1.69 t/ha), CS012 (1.72 t/ha) and no significant difference was found among those genotypes. The lowest stover yield was in CS010 (1.02 t/ha).

**Maturity duration**

The genotypes varied significantly in this trait (Table 4). The genotypes took 103.3 to 152.3 days for harvesting seed. It was observed that 10 genotypes (CS009, CS006, CS010 CS004,CS005, CS013, CS007, CS011, CS012, CS014) performed as early (103.3 -109.0 days), CS001 and CS002 as medium (117.0-119.7 days), CS008 as medium late (113.3 days), and CS0003 (152.3 days) as late genotypes. Maurya (1989) recorded 91.00-117.67 days to maturity of 10 genotypes and Mohideen *et al.* (1984) recorded 90 to 100 days. Islam *et al.* (2004) harvested seeds of 14 genotypes within 97.25-111 days. In the present study one genotype (CS003) had long maturity duration (152.3 days). It was evident that most of the early genotypes except CS004, CS010, Cs013 and Cs014 gave better seed yield. The genotypes (CS004, CS010, CS013 and CS014) were attacked with stem gall disease (Fig. 1) because of which they produced lower yield.

**Seed germination percentage**

The highest germination percentage was recorded in CS003 (84.4%) followed by that in CS001 (81.63) and CS010 (81.60) with no significant difference between

CS001 and CS010 (Fig. 2). The lowest germination percentage was in CS004, which was at par with CS009. Islam *et al.* (2004) obtained germination (%) in 14 genotypes in the range of 68.25 to 78.25% which was very close to the most of the genotypes except CS003, CS001, and CS010 genotypes of the present investigation.

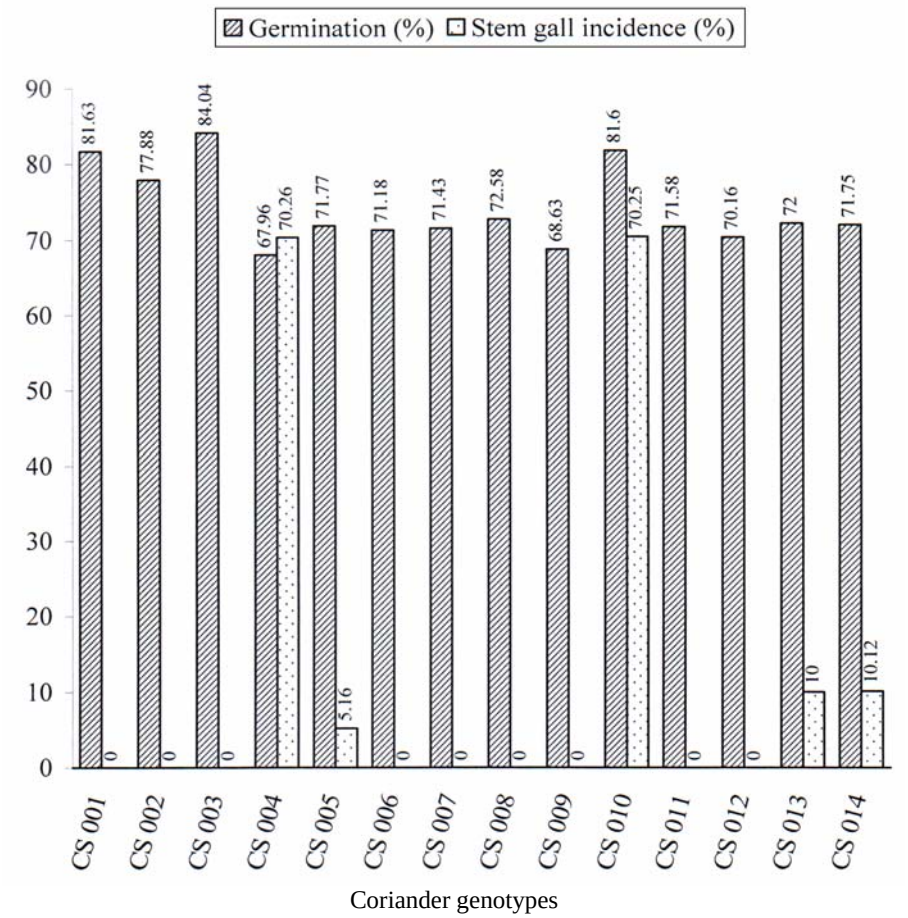


Fig.2. Germinatition (%) and stem gall incidence (%) in fourteen coriander genotypes.

**Percentage of stem gall incidence**

Among 14 genotypes, CS004, CS005, CS010, CS013, and CS014 were attacked with stem gall disease (Fig. 2**).** The severity of the disease was higher in CS004 (70.26%) followed by that in CS010 (70.25%) (Fig. 1). The incidence of the disease was low in CS005 (5.16%) followed by that in CS013 (10%) and CS014 (10.12%). This is a seed and soil-borne disease caused by a fungus (*Prtomyces*

*macrosporus*). The rest of the genotypes were disease free. Datta and Choudhuri (2006) also reported that 9 of 17 germplasm lines were attacked by stem gall disease.

Based on seed yield and other related characters, it can be concluded that the genotypes CS007, CS008, and CS011 might be suitable for coriander seed production.

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