



P-ISSN: 2349-8528  
 E-ISSN: 2321-4902  
 IJCS 2019; 7(5): 3408-3411  
 © 2019 IJCS  
 Received: 10-07-2019  
 Accepted: 12-08-2019

**C Rajamanickam**  
 Department of Horticulture  
 Agricultural College and  
 Research Institute, Madurai,  
 Tamil Nadu, India

## Collection and evaluation of leafy coriander genotypes for higher productivity

**C Rajamanickam**

### Abstract

The present experiment on “Collection and evaluation of leafy coriander genotypes for higher productivity” was carried out at Horticultural College and Research Institute, Periyakulam to identify the promising leafy coriander genotypes suitable for off season leaf production was aimed at. Totally seventeen leafy coriander genotypes were used for this study and were evaluated during the months of April to June (summer) and it was laid out in randomized block design (RBD) and replicated thrice. The split seeds were sown soaked in water for eight hours and sown at a spacing of 20 x 15 cm in flat beds. The bed size was 4 x 2.4 m. Data on growth and yield parameters such as plant height (cm), number of days taken for germination, number of leaves per plant, no. of primary branches, number of secondary branches, plant weight (g), yield per plot (kg/ 10m<sup>2</sup>), estimated yield (t/ha), net profit (Rs.) and B:C ratio were recorded and analysed statistically. The results revealed that among the twenty two leafy coriander genotypes evaluated Acr-1 recorded the highest values of growth, yield parameters and economic values. Acr-1 recorded the highest values of characters viz., plant height (31.77 days), number of leaves per plant (6.40), number of primary branches (6.40), number of secondary branches (16.47), plant weight (7.50g), yield per plot (3.87 kg/10m<sup>2</sup>) and estimated yield (3.83 t/ha), followed by CS – 38 and LCC-232 recorded the higher values than rest of the genotypes. Acr -1 recorded the lowest days taken for germination (6.00 days) when compared with other genotypes studied. In the case of cost economics, Acr-1 recorded the highest benefit cost ratio of 4.04 with net profit of Rs. 1,41,000. However, genotype LCC 244 recorded the lowest values in all the growth, yield and economic characters. Among the leafy coriander genotypes, Acr -1 performed better and recorded the highest yield with benefit cost ratio as well as other growth characters and hence highly suitable for Periyakulam condition during summer months.

**Keywords:** Coriander, leaf production, genotypes, yield, plant height

### Introduction

Coriander botanically called as *Coriandrum sativum* L. and belongs to the family Apiaceae. Coriander is used as both spices and condiment for its medicinal properties as well as culinary purposes. Besides seeds, green leaves of coriander are also extensively used for culinary purposes. It is an annual spice and condiments herb that is mostly used for pleasant aromatic odour. The aroma and taste in coriander are due to the presence of essential oil, which is used for flavoring liquors, cocoa preparations in confectionary and the mask offensive odours in pharmaceutical preparations (Farooqi, 2005) [2]. In India coriander is cultivated Gujarat, Rajasthan, Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra, Odisha in larger areas. Among the states of India, Rajasthan is a major coriander producer. India is rank first in terms of area and production in the world (Datta *et al*, 2006) [1]. The productivity of coriander is very low in Tamil Nadu when compared with Rajasthan and Gujarat. In Tamil Nadu, coriander is extensively cultivated in almost all the districts and getting very low productivity. In general, leafy coriander cultivation quite difficult during summer months due to prevailing of hot weather conditions. Hence, during summer months considered as off season production. During this period coriander leaf fetches higher price in the market. By cultivating genotypes of leafy coriander during summer months the farmers could get higher profit. Keeping above facts into consideration, it was felt necessary to consider this aspect for research on “Collection and evaluation of leafy coriander genotypes for higher productivity” with the objective to identifying high yielding leafy coriander genotype for green leaf purpose suitable for off season cultivation under shade net condition.

**Corresponding Author:**  
**C Rajamanickam**  
 Department of Horticulture  
 Agricultural College and  
 Research Institute, Madurai,  
 Tamil Nadu, India

## Materials and methods

The present field experiment was conducted at Horticultural College and Research Institute, Periyakulam during the months of April to June (summer months). The objective of the present study is evaluation of suitable off season coriander genotypes for higher productivity during summer months under shade net condition. There were fifteen leafy coriander genotypes and two checks (CO-4 and Sadhana -1) were used for this study. The trial was laid out in randomized block design (RBD) with replicated thrice. The split seeds of the coriander were sown at a spacing of 20 x 15 cm. The bed size is 4x2.4 m. Source of collection of seventeen leafy coriander genotypes are given in Table 1. Land was ploughed thoroughly and 25 t/ha well rotten farm yard manure was applied during last ploughing. Neem cake @ 2t/ha was incorporated in the soil during the last ploughing as a preventive measure against termites and other soil insects. 2.5 kg of *Pseudomonas fluorescens* were applied and incorporated into the soil. The half of N&K applied as basal and another half was applied 20 days after sowing. P applied as basal application. Five randomly selected plants in each genotype in each replication were tagged for recording observations on growth, yield and quality characters. The growth and yield parameters on days taken for germination (days), number of leaves per plant, plant height (cm), plant weight (g), number of primary branches, number of secondary branches, yield per plot (g/10m<sup>2</sup>), estimated yield (t/ha) and B:C ratio were recorded and mean values were subjected to statistical analysis as per the method was suggested by Panse and Sukhatme (1978).

## Results and discussion

The results of the morphological traits of seventeen leafy coriander genotypes are presented in Table 2. There was

significant difference among leafy coriander genotypes in growth and yield characters. The results revealed that days taken for germination varied from 6.00 to 7.67. Genotype Acr-1 recorded the least number of days (6.00 days) taken for germination followed by CS- II and CS-38 (6.33 days). The longest days taken for germination were observed in the genotype LCC 244 (7.67 days). This might be due to genetic makeup of the genotypes.

## Growth characters

The results revealed that among the coriander genotypes, Acr-1 recorded the highest values of the growth characters like number of leaves per plant (6.80 days), number of primary branches (6.40) and number of secondary branches (16.47) was recorded followed by CS-38 (6.50, 6.22; 15.49). The lowest values were observed in the genotype LCC 244 (5.97; 4.85; 8.3). The variations in primary and secondary branches could be due to genetic character of genotype and environmental influence. The variations in primary and secondary branches were occurred in coriander was reported by Selvarajan *et al.*, (2002) and Saxena *et al.*, (2005). In the case of plant height the same trend was observed. The tallest plant (23.33 cm) was noticed in Acr-1 followed by CO38 (22.63 cm) where as the lowest plant height was observed in LCC 244 (16.63 cm). Regarding plant weight character, Acr-1 recorded the highest weight of 7.50 g followed by CO-38 (7.27 g) and the lowest plant weight was found in LCC 244 (5.93 g). 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, season and environmental conditions. The variation in plant growth characters of different coriander varieties were also observed by Kalidasu *et al* (2008) [4], Verma *et al* (2014) [11] and Meena *et al* (2014) [7] in coriander.

**Table 1:** Source of collection of twenty two leafy coriander genotypes

Sl. No.	Genotypes	Source of collection of genotypes
1.	CS-1	HC&RI, TNAU, Coimbatore
2.	CS- 2	HC&RI, TNAU, Coimbatore
3.	CS-38	HC&RI, TNAU, Coimbatore
4.	LCC-210	Lam, Guntur
5.	LCC-212	Lam, Guntur
6.	LCC-219	Lam, Guntur
7.	LCC-224	Lam, Guntur
8.	LCC-225	Lam, Guntur
9.	LCC-226	Lam, Guntur
10.	LCC-227	Lam, Guntur
11.	LCC-229	Lam, Guntur
12.	LCC-234	Lam, Guntur
13.	LCC-242	Lam, Guntur
14.	LCC-244	Lam, Guntur
15.	Acr-1	NRCSS, ICAR, Ajmeer
16.	CO-4	HC&RI, TNAU, Coimbatore
17.	Sadhana 1	Lam, Guntur

**Table 2:** Evaluation of off season leafy coriander genotypes for growth characters.

Genotypes	Days taken for germination (days)	Number of leaves per plant	No. of primary branches	No. of secondary branches	Plant height (cm)	Plant weight (g)
CS - 1	6.00	6.20	5.90	14.98	18.50	6.20
CS - 2	6.33	6.33	6.10	15.04	20.67	6.56
CS - 38	6.33	6.50	6.20	15.49	22.60	7.27
LCC-210	6.57	6.17	5.20	9.85	19.37	5.97
LCC-212	7.00	6.20	5.25	13.48	18.73	6.13
LCC-219	6.57	6.17	5.30	14.05	18.27	5.93
LCC-224	7.00	6.50	5.30	11.47	22.63	6.70
LCC-225	7.57	6.07	4.80	12.07	17.40	5.60

LCC-226	7.57	6.10	4.90	12.28	18.77	6.17
LCC-227	6.57	6.07	5.38	14.08	18.53	5.77
LCC-229	7.57	6.03	5.74	13.25	19.03	5.83
LCC-234	6.57	6.40	6.10	12.58	18.90	6.83
LCC-242	6.57	6.43	4.89	15.25	20.47	7.13
LCC-244	7.67	5.97	4.85	8.3	16.63	5.93
Acr-1	6.00	6.80	6.40	16.47	23.33	7.50
CO-4	6.57	6.20	6.00	13.25	21.57	6.10
Sadhana-1	7.57	6.37	6.10	14.80	20.57	7.03
SEd	0.44	0.560	0.32	0.28	1.091	0.403
CD (0.05%)	0.81	0.106	0.69	0.61	2.199	0.812

**Table 3:** Evaluation of off season leafy coriander genotypes for yield and economic characters.

Genotypes	Leaf yield per plot (kg/plot) (10m <sup>2</sup> )	Estimated yield (t/ha)	Net Profit (Rs.)	B:C Ratio
CS - 1	2.93	2.93	1,20,000	3.19
CS - 2	3.33	3.33	1,32,500	3.44
CS - 38	3.67	3.67	1,37,000	3.97
LCC-210	3.17	3.17	98,500	3.41
LCC-212	3.33	3.33	94,500	3.58
LCC-219	3.13	3.13	1,02,000	3.33
LCC-224	3.57	3.57	1,12,000	4.01
LCC-225	2.83	2.83	94,800	3.04
LCC-226	3.20	3.20	1,11,000	3.39
LCC-227	2.83	2.83	1,08,500	3.03
LCC-229	3.17	3.17	95,100	3.19
LCC-234	2.83	2.83	1,40,000	3.12
LCC-242	3.57	3.57	1,35,000	3.94
LCC-244	2.77	2.77	94,500	3.03
Acr-1	3.87	3.87	1,42,000	4.04
CO-4	2.93	2.93	1,30,000	3.74
Sadhana-1	3.67	3.67	1,30,000	3.94
SEd	2.739			
CD (0.05%)	5.519			

### Yield characters

The results of the yield and economical characters of seventeen leafy coriander genotypes are presented in Table 3. The results revealed that the highest leaf yield per plot was recorded in Acr -1 (3.87 kg/10m<sup>2</sup>) genotype which was higher than among the seventeen leafy coriander genotypes were studied. The next higher yield was obtained from CO-38 (3.67 kg/10m<sup>2</sup>). The lowest leaf yield per plot was found in genotype LCC 244 (2.77 kg/10m<sup>2</sup>). The same trend was noticed in estimated yield character also. Yield per ha was ranged from 3.87 t/ha to 2.77 t/ha. Acr -1 recorded the highest yield per ha of 3.87 t/ha followed by CO-38 and Sadhana-1 (3.67 t/ha). The lowest yield found in LCC 244 (2.77 t/ha). This is to confirm that Ajmer Coriander was recorded the highest yield under Rajasthan condition (Lal *et al.*, 2014) [6]. Irenevedamani *et al.* 2014 reported that coriander variety CO-4 recorded the highest yield under insect proof net house. Kalidasu *et al.* (2008) [4] reported that highest leaf yield was recorded in the genotype Acr-1 under Andhra Pradesh condition.

### Economics

In the case of benefit cost ratio, Acr-1 recorded the highest ratio of 4.04 with net profit of Rs. 1,42,000 followed by CS 38 (3.97; Rs. 1,37,000) whereas the lowest B:C ratio (3.03) with net profit (Rs. 94,500) was observed in LCC 244.

### Conclusion

From the conclusion of the present study revealed that, the significant variations were observed in growth and yield parameters of different genotypes of leafy coriander. Among the promising leafy coriander genotypes Acr -1 recorded the highest leaf yield of 3.87 t/ha with net profit of Rs. 1,42,000

and B:C ratio of 4.04 followed by CS – 38 and LCC 242 were also recorded the higher leaf yield under shade net condition (off season) during summer months. These three genotypes like Acr-1, CS – 38 and LCC 242 also required further evaluation for ensuing season.

### References

- Datta S, Chatterjee R. Satya Correlation and path analysis studies on Coriander (*Coriandrum sativum* L.). Hort J 2006; 19:65-67.
- Farooqi AA, Sreeramu PV, Srinivasappa. Cultivation of Spice Crops. University Press, 2005.
- Irene Vethamoni, Shanmugasundaram P, Ramakrishanan R, Anbalagan R. Study of comparative performance of systems of cultivation of tomato and coriander for high yield and quality. Research abstract presented in 6<sup>th</sup> Indian Horticulture Congress – 2014: Horticulture for Inclusive Growth Organized by TNAU, Coimbatore and Horticulture Society of India held at TNAU, Coimbatore on 6-9, December, 2014, 208.
- Kalidasu G, Sarada C, Reddy TY. Efficacy of biofertilizers on the performance of rainfed coriander (*Coriandrum sativum* L.) in vertisols. J Spices and Aromatic Crops 2008; 17(2):98-102.
- Karetha KM, Ladumor AR, Girirajjat. Effect of different date of sowing and growing conditions on coriander (*Coriandrum sativum* L.) cv. Gujarat Coriander-2. Research abstract presented in 6<sup>th</sup> Indian Horticulture Congress – 2014: Horticulture for Inclusive Growth Organized by TNAU, Coimbatore and Horticulture Society of India held at TNAU, Coimbatore on 6-9, December, 2014, 254.

6. Lal G, Balrajsingh RS, Mehta R, Singh RK, Kakani SS, Rathore NK, Meena, Maheria SP. Screening of leafy varieties for off season cultivation of coriander under protected environment. Research abstract presented in 6<sup>th</sup> Indian Horticulture Congress – 2014: Horticulture for Inclusive Growth Organized by TNAU, Coimbatore and Horticulture Society of India held at TNAU, Coimbatore on 6-9, December 2014, 209.
7. Meena YK, Jadhao BJ, Kale VS. Genetic analysis of agronomic traits in coriander. SABRAO. J Br and Genet 2014; 46(2):265-273.
8. Panse V, Sukhatme PV. Statistical Methods for Agricultural Workers. ICAR, New Delhi, 1985.
9. Selvarajan M, Chezhiyan N, Muthulakshmi P, Ramar A. Evaluation of coriander genotypes for growth and yield. South Indian Hort. 2002; 50(4-6):458-462.
10. Saxena RP, Pandey VP, Datta J, Gupta RK. Performance of coriander entries at Kumarganj, Faizabad. Nat. Symp. Cur. Trends in Onion, Garlic, Chillies and Seed Spices – Production and Utilization, SYMSAC-II, 25-27 November, NRCOG, Rajgurunagar, 2005, 55-56.
11. Verma P, Doshi V, Solanki RK. Genetic variability assessed in Coriander (*Coriandrum sativum* L.) over years under environmental conditions of South Eastern Rajasthan (Hadoti Region) Int J Seed Spices. 2014; 4(2):94-95.