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# Evaluation of Different Varieties of Coriander (*Coriandrum sativum* L.)

**J. Joble [aω*], V. M. Prasad [b#] and Vijay Bahadur [c†]**

*[a] Department of Horticulture Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Science, Prayagraj-211007, U.P., India.*

***Authors' contributions***

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

A research experiment was carried out at department of Horticulture, Naini Agricultural Institute, Sam Higginbottom university of agriculture, Technology and science, Prayagraj during the rabi season of year 2021-2022. The experiment were laid out in Randomized Block Design comprising of eight Varieties viz., Kashmiri, Japani 57, Panth Haritha; Green King, Sughanda, Simco 55, Simco s 33, Simco with three replications. Based on the present investigation, it is concluded that the treatment Japani 57was found to be superior all-over other treatments with respect to Plant height at 90 DAS (100.11 cm), Number of leaves per plant at 90 DAS (62.67 cm), number of primary branches (10.58 ), number of secondary branches (18.95), no of flower per umbellet (8.43), no of umbellets per plant (239.63), days of 50% flowering (44.93), no .of seeds per umbel (28), seed yield per plant(g) (6.03), seed yield per plot (kg) (478.67),seed yield per ha (q) (22.03)ascorbic acid (mg/100 gm) (160.50)content and TSS (5.98°Brix) of coriander under agro-climatic condition of Prayagraj. Among all other treatments, Japani 57 has obtained Highest Gross return, Net return, and Benefit Cost ratio (1:1.68) which states that it is economically profitable compared to all other treatments.

*Keywords: Coriander; growth; yield and quality; varieties.*

*[ω] M.Sc. Scholar;*
*[#] Professor;*
*[†] Associate Professor;*
**Corresponding author: E-mail: joblej08@gmail.com;*

## 1. INTRODUCTION

Coriander (*Coriandrum sativum* L) is an annual spice herb belongs to the family apiaceae with chromosome number 2n=22. The plant is indigenous to southern Europe and Mediterranean region. It is one of the oldest consumed spices in India. India is known as "Home of spices" from ancient times. India is major producer, consumer and exporter of coriander seeds [1-5]. Coriander belonging to family apiaceae. It is highly cross pollinated crop being grown as irrigated as well as unirrigated. Practically all parts of coriander have their own particular appeal in foods, through tender stem, leaves, flowers and fruits are in greater demand [6-12]. Coriander leaves contain special type of flavour and people use it in the preparation of vegetable and "chatni" [13-17]. Coriander seeds are used as an ingredient in 'curry powder' and 'spice powder' [18-22]. Its seeds also contain proteins and sugars. The coriander oil is used for preparation of 'chocolate' and sweets, coriander oil is also used in flavouring beverage, whisky, gin and other liquors [23-26]. Coriander is mainly a crop of tropics and subtropics, mainly cultivated in Morocco, Romania, France, Spain, Italy, Holland, Russia, Burma, Pakistan, Turkey, India, Mexico, and Argentina and to some extend in England and U.S.A [27-32]. In India it is mainly grown in Rajasthan, Madhya Pradesh, Assam, Gujarat, Orissa, Andhra Pradesh, Tamilnadu and Karnataka [33-39]. Uttar Pradesh is 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 and rabi season [40-43]. According to (Peter et al. 2000) "annual production is estimated to be 308000 tonnes. In India coriander occupied an area of 46800 ha with production of 56700 tonnes during 2018-2019 (NHB). In Uttar Pradesh spices are grown in an area of about 88204 ha, production 274681 metric ton, productivity 3.114 tonnes per ha". Coriander is not commonly grown under Prayagraj agro-climatic conditions, hence different variety of coriander were collected from local, public and private sectors to find out the most suitable coriander variety for growth and yield attributes in Prayagraj agro-climatic conditions [44-46].

## 2. MATERIALS AND METHODS

This experiment was carried out at the Horticulture Research Farm, Department of Horticulture, Naini Agricultural Institute, SHUATS, Prayagraj U.P., which is located at 25º24'46.14" N latitude, 81º50'49.95" E longitude and 98 m above the mean sea level during Rabi season (December, 2021–May, 2022).The minimum temperature during crop season was 21.38°C and the maximum was 37.82°C. The experiment was laid out in a Randomized Block Design comprising of eight varieties of coriander with three replications.

The following biometrical observations were recorded for the randomly selected plants. Plant height, number of primary branches per plant, number of secondary branches per plant, and number of leaves per plant were recorded at 30, 60 and 90 DAS. Days of 50% flowering, number of flowers per umbellets, number of umbellets per plant, number of seeds per umbel, seed yield per plant (g), seed yield per plot (g), seed yield per ha (q), TSS, ascorbic acid, etc.

## 3. RESULTS AND DISCUSSION

The investigation entitled "evaluation of different varieties of coriander". *(Corianderum sativum L.)*. were conducted at the Sam Higginbottom University of Agriculture, Technology, and Sciences in Prayagraj's Department of Horticulture (U.P.).in the year 2021-2022. The results of the investigation, regarding the Lettuce on growth, yield and quality have been presented in table. The result of the experiment has been presented under the following heading.

## 4. GROWTH PARAMETERS

At 30 DAS, the maximum number of leaves was recorded in Japani 57 (23.28), whereas the minimum Number of leaves (20.00) was found to be in Pant Haritha.

At 60 DAS, the maximum number of leaves was recorded in Japani 57(38.33), whereas the minimum number of leaves (30.11) was found to be in Pant Haritha.

At 90 DAS, the maximum Number of leaves (62.66) was recorded in Japani 57, whereas the minimum Number of leaves (48.17) was found to be in Pant Haritha.

The data related to Number of primary branches per plant are presented in Table 1. The maximum number of primary branches per plant

**Table 1. Evaluation of different varieties of coriander in plant height, No. of leaves per plant, No. of primary branches, No. of secondary branches, days to 50% flowering, No. of flowering per umbellet and No. of umbellets per plant**

| Notation | Varieties | Plant height (cm) | | | No. of leaves per plant | | | No. of primary branches | No. of secondary branches | Days to 50% flowering | No. of flowering per umbellet | No. of umbellets per plant |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 30 DAS | 60 DAS | 90 DAS | 30 DAS | 60 DAS | 90 DAS | | | | | |
| V1 | Kashmiri | 17.56 | 52.58 | 86.5 | 21.30 | 33.79 | 52.31 | 8.50 | 15.30 | 49.00 | 7.56 | 172.03 |
| V2 | Japani-57 | 21.16 | 68.5 | 100.11 | 23.28 | 38.33 | 62.67 | 10.58 | 18.95 | 44.93 | 8.43 | 239.63 |
| V3 | Panth Haritha | 14.26 | 48.5 | 76.06 | 20.00 | 30.11 | 48.17 | 7.80 | 10.73 | 57.27 | 6.83 | 141.23 |
| V4 | Green King | 14.51 | 48.7 | 77.63 | 20.27 | 31.01 | 49.13 | 7.87 | 14.47 | 46.09 | 7.5 | 156.16 |
| V5 | Sughanda | 16.33 | 50.66 | 81.8 | 21.26 | 33.06 | 49.17 | 8013 | 15.00 | 47.97 | 7.53 | 160.26 |
| V6 | Simco 55 | 20.83 | 57.7 | 99.56 | 23.26 | 37.31 | 59.163 | 8.97 | 18.93 | 53.93 | 8.33 | 218.70 |
| V7 | Simpco s 33 | 17.86 | 52.6 | 88.48 | 23.10 | 35.58 | 55.93 | 8.53 | 15.90 | 49.50 | 7.9 | 178.20 |
| V8 | Simco | 20.16 | 52.86 | 89.7 | 23.15 | 35.97 | 57.83 | 8.63 | 16.67 | 51.10 | 8.0 | 191.16 |
| | **SE(d±)** | 0.54 | 0.45 | 0.48 | 0.33 | 0.34 | 0.31 | 0.21 | 0.38 | 0.48 | 0.20 | 0.43 |
| | **C.D at 5%** | 1.12 | 0.93 | 1.00 | 0.70 | 0.71 | 0.64 | 0.45 | 0.79 | 1.00 | 0.42 | 0.90 |
| | **CV (%)** | 5.59 | 1.53 | 1.01 | 2.82 | 1.85 | 1.05 | 4.66 | 4.45 | 1.77 | 4.83 | 0.44 |

**Table 2. Evaluation of different varieties of coriander in No. of seed per umbel, Seed yield per plant (g), seed yield per plot (Kg), seed yield per ha (q)**

| Notation | Varieties | No. of seed per umbel | Seed yield per plant (g) | Seed yield per plot (Kg) | Seed yield per ha (q) |
|---|---|---|---|---|---|
| V1 | Kashmiri | 23.5 | 4.56 | 244.67 | 18.40 |
| V2 | Japani-57 | 28 | 6.03 | 478.67 | 22.03 |
| V3 | Panth Haritha | 21.9 | 3 | 101.13 | 16.03 |
| V4 | Green King | 22.43 | 3.51 | 154.33 | 16.80 |
| V5 | Sughanda | 22.76 | 3.8 | 207.67 | 17.53 |
| V6 | Simco 55 | 27.4 | 4.86 | 372.00 | 21.03 |
| V7 | Simpco s 33 | 24.5 | 4.60 | 252.00 | 19.23 |
| V8 | Simco | 26.16 | 4.7 | 316.33 | 20.30 |
| | F- Test | S | S | S | S |
| | S.Em± | 0.20 | 0.08 | 1.70 | 0.17 |
| | SE(d±) | 0.28 | 0.11 | 2.40 | 0.24 |
| | CV (%) | 0.58 | 0.24 | 4.98 | 0.50 |
| | | 2.09 | 4.98 | 1.66 | 2.35 |

**Table 3. Evaluation of different varieties of coriander based on quality parameters TSS°Brix and ascorbic acid (mg/100 gm)**

| Notation | Varieties | TSS °Brix | Ascorbic acid (mg/100gm) |
|---|---|---|---|
| V1 | Kashmiri | 5.36 | 141.00 |
| V2 | Japani-57 | 5.98 | 160.50 |
| V3 | Panth Haritha | 4.83 | 127.33 |
| V4 | Green King | 4.84 | 131.00 |
| V5 | Sughanda | 5.26 | 137.00 |
| V6 | Simco 55 | 5.96 | 157.67 |
| V7 | Simpco s 33 | 5.66 | 146.67 |
| V8 | Simco | 5.76 | 154.83 |
| | **F- Test** | S | S |
| | **S.Em±** | 0.09 | 0.67 |
| | **SE(d±)** | 0.14 | 0.94 |
| | **CV (%)** | 0.29 | 1.96 |

Japani 57 (10.58), whereas minimum number of leaves was found in Pant Haritma (7.80).

The data related to Number of secondary branches per plant are presented in Table 1.The maximum number of secondary branches per plant Japani 57 (18.95) whereas the minimum number of secondary branches per plant was found to be in Pant Haritma (10.73).

The data related to the coriander in days 50% flowering are presented in Table 1. The minimum number of days for the Japani 57 plant to reach 50% flowering was (57.27), while the maximum number of days for Pant Haritma to reach 50% flowering was (44.93), respectively.

The data related to the coriander in number of flowering per umbellet are presented in Table 1.The minimum Number of days taken for flowering per umbellet Japani 57 (8.3) whereas, maximum number of days to taken was found in (Pant Haritma) (6.83).

The data related to number of umbellets per plant are presented in Table 1 .The highest number of umbellets per plant was recorded in Japani 57 (239.63), whereas the minimum number of umbellets per plant was found to be in Pant Haritma (141.23).

## 5. YIELD PARAMETRES

The data related to number of seeds per umbel are presented in Table 1 it shows that there were significant differences among the varieties during the growth stages of the crop.

The highest number of seeds per umbel (57.73) was recorded in Japani 57 (28) whereas the lowest number of seeds per umbel was recorded in Pant Haritma (21.9).

The data related to seed yield per plant are presented in Table 1 .The highest seed yield per plant was recorded in Japani 57 (6.03) whereas the lowest seed per umbel was recorded in Pant Haritma (3).

The data related to seed yield per plot are presented in Table 2 and it shows that there were significant differences among the varieties during the stages of the crop growth.

The highest seed yield per plot was recorded in Japani 57 (478.67). Whereas the lowest seed yield per plant was recorded in Pant Haritma (101.13).

The data related to seed yield per plot are presented in Table 2. It shows that there were significant differences among the varieties during the stages of the crop growth.

The highest seed yield per plot was recorded in Japani 57 (22.03), Whereas the lowest seed yield per plant was recorded in Pant Haritma (16.03).

## 6. QUALITY PARAMETERS

The data related to $TSS^0$ Brix are presented in Table 3.The highest $TSS^0$ Brix was recorded in Japani 57 (5.98) whereas the lowest was recorded in Pant Haritma(4.83) respectively.

The data related to Ascorbic acid are presented in Table 3.The highest Ascorbic acid was recorded in Japani 57 (160.50) and the lowest Ascorbic acid content was found in variety Pant Haritma (127.33) respectively.

## 7. CONCLUSION

From the present investigation, the coriander variety Japani 57 was found to be superior all-over other varities with respect to plant height, number of primary branches per plant, number of secondary branches per plant, number of leaves per plant, days of 50% of flowering, number of flowers per umbellet, number of umbels per plant, number of seeds per plant (g), seed yield per plot (g), seed yield per ha (q), ascorbic acid content and TSS of coriander under the agro-climatic condition of Prayagraj. The result of the experiment indicate that the highest growth, yield and quality of coriander was obtained and Studies revealed that the treatment japani 57 was the best for maximizing the production of coriander which was also economically profitable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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