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## Evaluation of quality potential of cucumber (*Cucumis sativus* L.) varieties under valley condition of Garhwal hills

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### Abstract

The present research was conducted on different Varieties of Cucumber to investigate the quality potential of these varieties under valley condition of Garhwal Hills The experiment was conducted in randomized block design and replicated 3 times with 22 treatments. The significant increase in TSS and ascorbic acid content were recorded with the variety Poinsett (T<sub>17</sub>). Whereas the minimum TSS (2.64 °Brix) was recorded under the variety Tapan (T<sub>20</sub>). On the other hands the minimum vitamin C (3.61 mg/100 g) was recorded under the variety J.K. Spl. (T<sub>6</sub>).

**Keywords:** Poinsett, randomized block design, TSS, vitamin C and Garhwal hills

### Introduction

In all cucurbits, cucumber is important vegetable crop from economic point of view. In Asia, it is the fourth most important vegetable crop after tomato, cabbage, and onion and second widely cultivated cucurbit after watermelon (Wehner, 2007) [7]. Cucumber is also known as Khira (in Hindi), Kandalu (in Sanskrit), Kiyar (in Urdu), Thabi (in Manipuri), and Dosa kaya (in Telegu). Cucumber is an annual monoecious vine plant, it is chosen as a cooked vegetable, pickled food, and an ingredient in salads during the summer. It is supposed to provide a cooling effect, prevent constipation, treat jaundice, ease indigestion, and have both cosmetic and therapeutic benefits. The existing study variable of horticulture traits in cucumber for identified and promoted a specific high yield potential and suitable variety for commercial cultivation in Garhwal hills. For this work estimate the growth and flowering parameters contributing to the performance of 22 different varieties.

### Materials and Methods

The current study, "Evaluation of growth and yield potential of cucumber (*Cucumis sativus* L.) varieties under valley condition of Garhwal hills," was carried out in 2015 during the zaid season at the Horticulture Research Center, Chauras Campus, Department of Horticulture, H.N.B. Garhwal University, Srinagar Garhwal, Uttarakhand, India. Srinagar (Garhwal) is located in the heart of Alaknanda valley (30°, 47' 30" E longitude and 30° 13' 0" N latitude and at an elevation of 540 m above MSL). The region exhibits a semi-arid, subtropical climate with dry summer and rigorous winter with occasional dense fog in morning from mid-December to mid February. The materials for the present investigation consist of 22 varieties viz., Dharwad Green, Green Long, Green Wonder, Hill Kakri, Inder Jeet, J.K. Spl, Kheti Bari, Local-1, Local-2, Local-3, Local-4, Local-5, Local-6, Local-7, Parsad Kheera-40, Parsad Kheera-100, Poinsett, Puna Kheera, Super Green, Tapan, Vinayak and White Cucumber collected from region of India. The experiment was laid out in accordance with Randomized Block Design comprising of 22 varieties and three replications. The experimental area was divided into three blocks of equal size and each block consist 22 plots of equal size.

The total soluble solid in cucumber was determined with the help of hand refractometer. A composite sample (10 g) from five selected fruits from each treatment was taken. The fruit juice was obtained by crushing the sample with mortar pestle at room temperature. A few drop of extract was taken on the prism of refractometer and covered by plate then the reading was recorded and mean was calculated.

Ascorbic acid is estimated by using 2,6-dichlorophenol indo phenol visual titration method Ranganna, (1986) [5]. The crushed fruits are diluted with 3% metaphosphoric acid upto 100 ml. 10 ml of aliquot is titrated against 2,6 dichlorophenol indo phenol dye solution till light pink colour appeared within 10 second of titration. A composite sample (10 g) from

randomly selected fruits under each treatment were taken and then the average ascorbic acid content for each treatment was worked out by the above procedure This is express in terms of mg/100 g by using the following formula:

**Ascorbic acid**

$$\frac{\text{Titrate} \times \text{Dyefactor} \times \text{Volume made up}}{\text{Aliquot of extract taken for estimation} \times \text{Wt. of volume of sample taken for estimation}} \times 100$$

**Result and Discussion**

A close review of data as shown in fig. 1 clearly indicates that the maximum TSS (3.67°Brix) was recorded in variety Poinsett (T<sub>17</sub>), which was found to be significantly variation among 22 varieties. On the other hands the minimum TSS (2.64 °Brix) was recorded under the variety Tapan (T<sub>20</sub>). The similar results were also aggred in agreement with these findings of Faustino *et al.* (2008) [1] and Kumar *et al.* (2013) [2] in cucumber. The data regarding vitamin C has been presented in fig. 2. The maximum vitamin C (5.98 mg/100 g) was recorded in varieties Poinsett (T<sub>17</sub>), which was found to

be significantly variation among 22 varieties. On the other hands the minimum vitamin C (3.61 mg/100 g) was recorded under the variety J.K. Spl. (T<sub>6</sub>). This findings was similar with Rahayu *et al.* (2011) [6] and Patel *et al.* (2013) [3] in cucumber. The statistical analysis for all the characters studied was done by method recommended by Panse and Sukhatme, (1961) for Randomized Block Design and for the statistical analysis of data. The CD (Critical Difference) at 5% and 1% level of significance for each character was worked out.

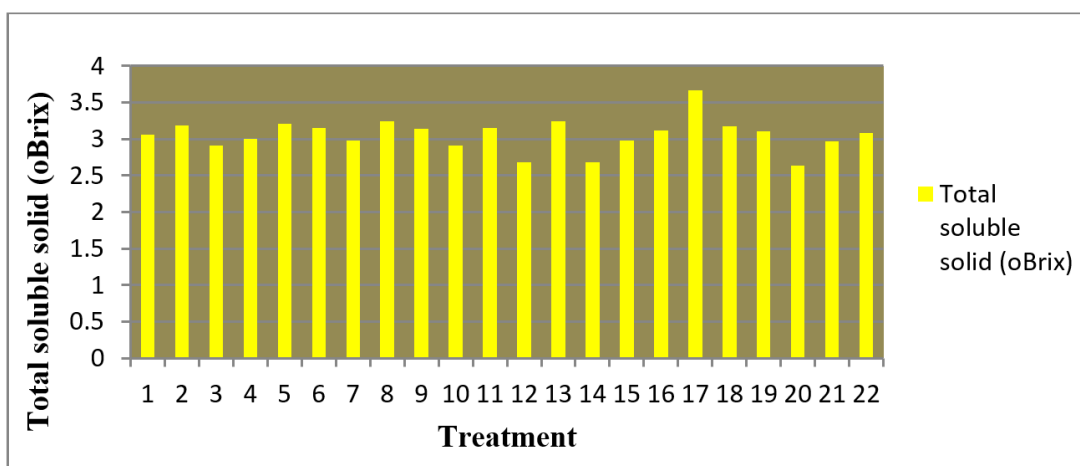


Fig 1: Mean performance of cucumber varieties for total soluble solid (°Brix)

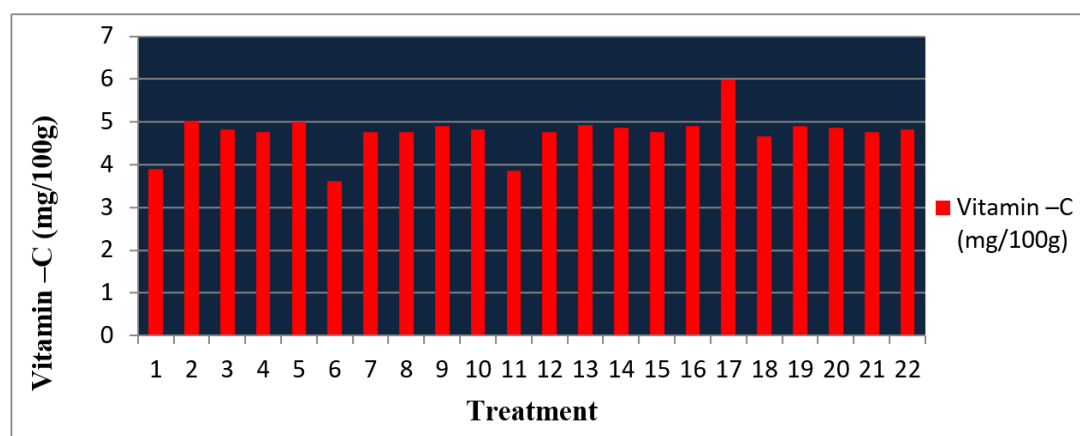


Fig 2: Mean performance of cucumber varieties for vitamin -C (mg/100 g)

## Performance of Cucumber Varieties for Quality Parameters

SI. No.	Varieties	Total soluble solid (%Brix)	Vitamin –C (mg/100 g)
1	Dharwad Green	3.06	3.90
2	Green Long	3.18	5.03
3	Green Wonder	2.91	4.83
4	Hill Kakri	3.00	4.76
5	Inder Jeet	3.21	5.01
6	J.K. Spl	3.15	3.61
7	Kheti Bari	2.98	4.76
8	Local-1	3.24	4.76
9	Local-2	3.14	4.90
10	Local-3	2.91	4.83
11	Local-4	3.15	3.85
12	Local-5	2.68	4.76
13	Local-6	3.24	4.93
14	Local-7	2.68	4.86
15	Parsad Kheera-40	2.98	4.76
16	Parsad Kheera-100	3.12	4.90
17	Poinsett	3.67	5.98
18	Puna Kheera	3.17	4.66
19	Super Green	3.11	4.90
20	Tapan	2.64	4.86
21	Vinayak	2.97	4.76
22	White Cucumber	3.08	4.83
	Mean	3.06	4.68
	S.Em±	0.06	0.21
	C.D at 5%	0.16	0.59
	CD at 1%	0.22	0.79

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### Conclusion

On the basis of results obtained from the present study, it may be concluded that Poinsett (T<sub>17</sub>) variety of cucumber was found superior for Garhwal hills on the basis of quality parameters followed by Green Long (T<sub>2</sub>). Hence, these varieties should be used to enhance the production of cucumber under Garhwal Hills.

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