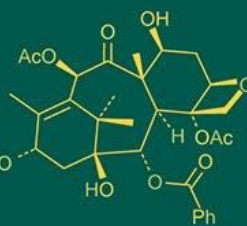
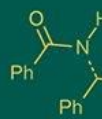
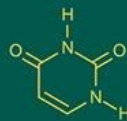
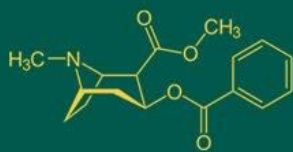


International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
ISSN Online: 2617-4707
NAAS Rating (2025): 5.29
IJABR 2025; SP-9(9): 1090-1095
www.biochemjournal.com
Received: 08-07-2025
Accepted: 12-08-2025

Lekha Sahu

M.Sc. (Hort.), Department of Vegetable Science, Faculty of Horticulture, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, Chhattisgarh, India

Jitendra Trivedi

Principal Scientist, Department of Vegetable Science, Faculty of Horticulture, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, Chhattisgarh, India

Dhananjay Sharma

Principal Scientist, Department of Vegetable Science, Faculty of Horticulture, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, Chhattisgarh, India

Shaurya Parganiha

PhD. (Hort.), Department of Vegetable Science, Faculty of Horticulture, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, Chhattisgarh, India

Manisha Sidar

M.Sc. (Hort.), Department of Vegetable Science, Faculty of Horticulture, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, Chhattisgarh, India

Corresponding Author:**Lekha Sahu**

M.Sc. (Hort.), Department of Vegetable Science, Faculty of Horticulture, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, Chhattisgarh, India

Assessment of genetic variability in chilli (*Capsicum annuum* L.) for yield and its attributing traits under Chhattisgarh plains

Lekha Sahu, Jitendra Trivedi, Dhananjay Sharma, Shaurya Parganiha and Manisha Sidar

DOI: <https://www.doi.org/10.33545/26174693.2025.v9.i9Sn.5650>

Abstract

The present study evaluated the performance of 31 chilli genotypes at the Horticultural Research cum Instructional Farm, Department of Vegetable Science, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during *Rabi* season 2024 to estimate the genetic variability. The experiment was laid out in Randomized Block Design (RBD) with three replications. Plots of size 3.6m x 3m were maintained with a spacing of 45 cm x 60 cm. Observations were recorded on growth and yield traits from five randomly selected plants in each plot. The genotype 2023/CHIVAR-4 demonstrated superior performance in traits such as total number of pickings, fruit weight (g), Fruit weight per plant (g), Number of fruits per plant, Fruit yield per plot (kg) and Total fruit yield per hectare (q), making it the top-performing genotype overall. However, for early flowering traits like days to first flowering and 50% flowering, genotypes 2024/CHIVAR-8 and 2024/CHIVAR-2 exhibited earlier flowering.

Keywords: Chilli, genetic variability, genotypes, growth and yield

Introduction

Chilli (*Capsicum annuum* L.) is an important tropical and subtropical spice crop and one of the most popular vegetables in India (Bahurupe *et al.*, 2013) [4]. Originating from the tropical and humid zones of Central and South America, it belongs to the family Solanaceae with a diploid chromosome number $2n=2x=24$. It is a branched, herbaceous plant, grown as an annual or perennial, and is predominantly cross-pollinated, attaining a height of 0.5–1.5 m. The flowers are mostly solitary and off-white, while the fruits are berries that turn green, yellow, orange or red upon ripening. Chilli, also called hot pepper, was introduced into India from Brazil by the Portuguese in the 16th century. The genus *Capsicum* comprises five domesticated species (*C. annuum*, *C. frutescens*, *C. chinense*, *C. pubescens*, and *C. baccatum*), of which *C. annuum* is the most widely cultivated worldwide. More than 400 varieties of chillies are reported globally, with “Naga Jolokia/Bhoot Jolokia,” the world’s hottest chilli, cultivated in Tezpur, Assam. Chillies are consumed as vegetables, spices, condiments, sauces, and pickles and are valued for their nutritional and medicinal properties. They are rich in vitamins A, C, and E and contain carotenoids, volatile oils, fatty oils, rutin, and the pungent alkaloid capsaicin, which is concentrated in the placenta of fruits and has therapeutic applications in allopathic and Ayurvedic medicine (Rohini and Lakshmanan, 2017) [14]. Capsanthin imparts the bright red colour, while oleoresins are widely used in food and pharmaceutical industries (Maurya *et al.*, 2017) [10]. Per 100 g of chilli fruit, the nutritional profile includes moisture (87.7 g), protein (2.9 g), riboflavin (0.39 g), vitamin C (143.7 µg), ascorbic acid (111.07 g), vitamin A (292.04 mg), vitamin K (14 µg), vitamin E (0.69 mg), oxalic acid (967 mg), along with vitamin P (rutin), which reduces platelet aggregation and improves blood circulation. Globally, chilli production is 41.57 lakh tonnes, with India leading as the top producer and exporter, followed by China, Thailand, Ethiopia, and Indonesia. In India, chilli is cultivated mainly in Andhra Pradesh, Telangana, Karnataka, Maharashtra, Tamil Nadu, and Madhya Pradesh, covering 4,12,970 ha with a production of 44,95,730 tonnes and productivity of 10.89 t/ha (Anon., 2023) [2]. In Chhattisgarh, chilli

occupies 33,788 ha with production of 2,38,581 tonnes and productivity of 8.42 t/ha, mainly in Korba, Bilaspur, Raipur, Bastar, Kabirdham, and Durg districts. Yield is a complex trait influenced by genetic and environmental interactions, necessitating studies on genetic variability, heritability, and path coefficient analysis to identify high-yielding genotypes. Variability forms the basis for selection, heritability estimates help determine the proportion of genetic influence, and path analysis partitions correlation into direct and indirect effects (Dewey and Lu, 1959) ^[6], thereby guiding breeders in improving yield and quality in chilli.

Materials and Methods

The Experiment was conducted at the Horticultural Research cum instructional Farm, Department of Vegetable Science, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) During *Rabi* Season 2024.

The experiment was laid out in Randomized Block Design (RBD) with three replications. Thirty -one genotypes of chilli below were used as experimental material crop was grown in randomized block design with three replications. The plot size of each plot was 3.6 m x 3.0 m. The distance between two block and plot were 1m and 0.5 m respectively. Five competitive plants were selected randomly from each plot to recorded observation on various characters. The average value of each character was calculated on the basis of five plants for each genotype in every replication. The parameters considered for the plant height (cm), number of primary branches, days to first flowering, days to 50% flowering, Days to first picking, Total no. of picking, Days to last picking, fruit length (cm), fruit girth (cm), Fresh weight of fruit (g), Number of fruits per plant, Fruit weight per plant (g), Fruit yield per plot (kg) and Fruit yield per ha (q/ha).

Table 1: Treatment details

T ₁	2023/CHIVAR-1
T ₂	2023/CHIVAR-2
T ₃	2023/CHIVAR-3
T ₄	2023/CHIVAR-4
T ₅	2023/CHIVAR-5
T ₆	2023/CHIVAR-6
T ₇	2023/CHIVAR-7
T ₈	2023/CHIVAR-8
T ₉	2023/CHIVAR-9
T ₁₀	2023/CHIVAR-10
T ₁₁	2023/CHIVAR-11
T ₁₂	2022/CHIVAR-1
T ₁₃	2022/CHIVAR-2
T ₁₄	2022/CHIVAR-3
T ₁₅	2022/CHIVAR-4
T ₁₆	2022/CHIVAR-5
T ₁₇	2022/CHIVAR-6
T ₁₈	2022/CHIVAR-7
T ₁₉	2022/CHIVAR-8
T ₂₀	2022/CHIVAR-9
T ₂₁	2022/CHIVAR-10
T ₂₂	2022/CHIVAR-11
T ₂₃	2021/CHIVAR-1
T ₂₄	2021/CHIVAR-2
T ₂₅	2021/CHIVAR-3
T ₂₆	2021/CHIVAR-4
T ₂₇	2021/CHIVAR-5
T ₂₈	2021/CHIVAR-6
T ₂₉	2021/CHIVAR-7
T ₃₀	2021/CHIVAR-8
T ₃₁	2021/CHIVAR-9

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Statistical Analysis

Analysis of variance was carried out as per the procedure given by Panse and Sukhatme (1985) ^[12]. The genotypic and phenotypic coefficient of variation were computed as per Burton and Devane (1953) ^[5] and categorized as per while the heritability in broad sense and genetic advance was calculated as per Allard (1960) ^[1] and categorized as per Johnson *et al.* (1955) ^[7].

Results and Discussion

The result of analysis of variance for all the characters under study is presented in Table 2. Analysis of variance permits estimation of phenotypic, genotypic and environmental variation for various quantitative traits. Provide the information on variance for fruit yield and its contributing traits in hot pepper. Analysis of variance revealed that mean

sum of squares due to genotypes was found to be highly significant for all characters i.e., plant height (58.45), number of primary branches (1.75), days to first flowering (6.960), days to 50% flowering (25.280), number of picking (1.7), days to first picking (45.88), days to last picking (126.730), fruit length (14), fruit girth (0.98), fruit weight (6.1), fruit weight per plant (2212.1), number of fruits per plant (5287.05), fruit yield per plot (3.31) and fruit yield per ha (283.63). This is an indication for existence of considerable amount of variability present in the genotype. The present finding on variance for fruit yield and its components indicate the existence of substantial amount of variability for most of the characters in experimental material studied. These findings are concurrence with the finding of Sharma *et al.* (2010) ^[17], Singh *et al.* (2017) ^[18], Negi and Sharma (2019) ^[11].

Table 2: Analysis of variance for fruit yield and its attributing traits in Chilli

S.No.	Character	Mean Squares		
		Replication df (2)	Treatments df (30)	Error df (60)
1	Plant height (cm)	17.950	58.45**	23.009
2	No. of primary branches	0.050	1.75**	0.120
3	Days to first flowering	0.480	6.960*	3.726
4	Days to 50% flowering	21.530	25.280*	13.949
5	Total no. of pickings	11.01	1.7**	0.250
6	Days to first picking	11.400	45.88*	27.067
7	Days to last picking	84.250	126.730*	76.458
8	Fruit length (cm)	0.350	14**	0.165
9	Fruit Girth (cm)	0.280	0.98**	0.190
10	Fruit weight (g)	0.010	6.1**	0.053
11	Fruit weight per plant (g)	20.920	2212.1**	303.200
12	No. of fruits per plant	26.800	5287.05**	63.911
13	Fruit yield per plot (kg)	0.080	3.31**	0.532
14	Total fruit yield per hectare (q)	6.890	283.63**	45.629

Mean performance of genotypes for different traits

The observation was taken from uniform size randomly tagged five plants from each genotype in all the three replications for fruit yield and its contributing characters which were used for calculating the mean performance. Data from randomly selected five plants were averaged for each genotype. Data on mean performance of fruit yield and its contributing characters are presented in Table 3.

Plant height (cm)

Significantly wide variation was observed for plant height. Plant height varied from 43.45 cm (2024/CHIVAR-5) to 65.73 cm (2023/CHIVAR-2). The genotype 2023/CHIVAR-2 recorded the maximum plant height (65.73 cm) followed by 2023/CHIVAR-9 (60.03 cm) and 2023/CHIVAR-4 (58.42 cm), whereas the minimum plant height was recorded in 2024/CHIVAR-5 (43.45 cm) followed by 2024/CHIVAR-6 (45.51 cm).

Number of primary branches per plant

The number of primary branches per plant ranged from 5.44 (2022/CHIVAR-7) to 8.35 (2022/CHIVAR-4). Genotypes 2022/CHIVAR-4 was recorded maximum number of primary branches (8.35) which was at par with 2023/CHIVAR-11 (8.25), 2023/CHIVAR-4 (8.05) and 2023/CHIVAR-7 (8.03). whereas minimum number of primary branches was found in 2022/CHIVAR-7 (5.44).

Days to first flowering

The results on days to first flowering revealed presence of significant variation among the tested genotypes. Days to first flowering ranged from 35.87 days (2024/CHIVAR-8) to 40.67 days (2022/CHIVAR-9). Early flowering was observed in genotype 2024/CHIVAR-8 (35.87 days) which at par with 2024/CHIVAR-1 (36.84 days), 2024/CHIVAR-2 (36.07 days), 2024/CHIVAR-3 (36.40 days), 2024/CHIVAR-4 (36.73 days), 2024/CHIVAR-5 (36.8 days), 2024/CHIVAR-6 (36.20 days), 2024/CHIVAR-7 (36.80 days), 2024/CHIVAR-9 (35.99 days), 2023/CHIVAR-1 (37.53 days), 2023/CHIVAR-7 (38.47 days), 2023/CHIVAR-9 (38.93 days), 2023/CHIVAR-10 (38.87 days), 2023/CHIVAR-11 (38.87 days) and 2022/CHIVAR-3 (38.87 days). The genotype 2022/CHIVAR-9 (40.67 days) to shows delayed flowering among with 2022/CHIVAR-5 (40.21 days) and 2022/CHIVAR-2 (40.00 days).

Days to 50% flowering

Significant variation was observed in genotypes for days to 50% flowering. Days to 50% flowering varied from 47.73 days (2024/CHIVAR-2) to 57.37 days (2022/CHIVAR-6) with an overall mean of 53.20 days. The genotype 2024/CHIVAR-2 (47.73) was found to be earliest in days to 50% flowering which at par with 2024/CHIVAR-1 (49.50), 2024/CHIVAR-3 (49.10), 2024/CHIVAR-4 (49.28), 2024/CHIVAR-5 (49.02), 2024/CHIVAR-6 (48.65), 2024/CHIVAR-7 (49.47), 2024/CHIVAR-8 (48.87), 2024/CHIVAR-9 (51.07), 2023/CHIVAR-1 (53.37) and 2022/CHIVAR-2 (51.60) while, the genotype 2022/CHIVAR-6 (57.37) shows delayed flowering.

Total number of pickings

The total number of pickings ranged from 5.33 to 7.33 with an overall mean of 6.79. Genotype 2023/CHIVAR-4 (7.35) was recorded for maximum total number of pickings which at par with 2024/CHIVAR-1 (7.00), 2024/CHIVAR-2 (6.67), 2024/CHIVAR-3 (7.33), 2024/CHIVAR-4 (7.33), 2024/CHIVAR-5 (7.33), 2024/CHIVAR-6 (7.33), 2024/CHIVAR-7 (7.33), 2024/CHIVAR-8 (7.33), 2024/CHIVAR-9 (7.33), 2023/CHIVAR-1 (7.33), 2023/CHIVAR-2 (7.33), 2023/CHIVAR-4 (7.33), 2023/CHIVAR-5 (7.33), 2023/CHIVAR-6 (7.33), 2023/CHIVAR-7 (7.33), 2023/CHIVAR-8 (7.33), 2023/CHIVAR-9 (7.33), 2023/CHIVAR-10 (7.33), 2023/CHIVAR-11 (7.33), 2022/CHIVAR-1 (7.00), 2022/CHIVAR-11 (7.00) while the minimum number of total fruit picking was recorded in 2022/CHIVAR-8 (5.33).

Days to first Picking

The days to first picking of chilli ranged from **95.00 days** (2024/CHIVAR-2) to **107.37 days** (2022/CHIVAR-6). The minimum days to first picking was recorded in genotype 2024/CHIVAR-2 (95.00 days), which was statistically at par with 2024/CHIVAR-9 (96.40 days), 2024/CHIVAR-4 (96.68 days), 2024/CHIVAR-7 (96.73 days), 2024/CHIVAR-6 (96.87 days), 2024/CHIVAR-1 (96.97 days), 2024/CHIVAR-8 (97.17 days), 2024/CHIVAR-5 (97.60 days), 2024/CHIVAR-3 (97.67 days), 2022/CHIVAR-7 (101.17 days), 2022/CHIVAR-2 (101.60 days) and 2023/CHIVAR-1 (102.23 days) while the maximum days to first picking was recorded in 2022/CHIVAR-6 (107.37 days).

Days to last picking

The days to last picking of chilli ranged from 160.07 days (2024/CHIVAR-1) to 177.52 days (2022/CHIVAR-10). The maximum days to last picking was recorded in genotype 2022/CHIVAR-10 (177.52 days) which was statistically at par with 2022/CHIVAR-6 (177.37 days), 2022/CHIVAR-11 (177.02 days) and 2022/CHIVAR-8 (177.13 days) while the minimum days to last picking was recorded in genotype 2024/CHIVAR-1 (160.07 days).

Fruit length (cm)

The fruit length of chilli ranged from 2.74 cm (2022/CHIVAR-7) to 11.09 cm (2024/CHIVAR-7). The maximum fruit length was recorded in genotype 2024/CHIVAR-7 (11.09 cm), which is statistically at par with 2022/CHIVAR-4 (10.53 cm) and 2023/CHIVAR-4 (10.20 cm) while the minimum fruit length was recorded in genotype 2022/CHIVAR-7 (2.74 cm).

Fruit girth (cm)

The fruit girth of chilli ranged from 3.10 cm (2023/CHIVAR-7) to 5.07 cm (2024/CHIVAR-8). The maximum fruit girth was recorded in genotype 2024/CHIVAR-8 (5.07 cm) which is statistically at par with 2024/CHIVAR-5 (4.87 cm), 2024/CHIVAR-7 (4.73 cm), 2024/CHIVAR-6 (4.60 cm) and 2023/CHIVAR-2 (4.80 cm) while the minimum fruit girth was recorded in genotype 2023/CHIVAR-7 (3.10 cm).

Fruit weight (g)

The fruit weight of chilli ranged from 2.22 g (2022/CHIVAR-7) to 8.10 g (2023/CHIVAR-4). The maximum fruit weight was recorded in genotype 2023/CHIVAR-4 (8.10 g) which is statistically at par with 2024/CHIVAR-7 (8.04 g) and 2023/CHIVAR-7 (7.32 g) while the minimum fruit weight was recorded in genotype 2022/CHIVAR-7 (2.22 g).

Fruit weight per plant (g)

The fruit weight per plant of chilli ranged from 162.68 g (2022/CHIVAR-7) to 270.93 g (2023/CHIVAR-4). The maximum fruit weight per plant was recorded in genotype 2023/CHIVAR-4 (270.93 g) which is statistically at par with 2024/CHIVAR-7 (252.24 g), 2023/CHIVAR-7 (246.20 g), 2022/CHIVAR-4 (242.21 g), 2024/CHIVAR-5 (241.26 g) and 2023/CHIVAR-11 (237.11 g) while the minimum fruit weight per plant was recorded in genotype 2022/CHIVAR-7 (162.68 g).

Number of fruits per plant (g)

The number of fruits per plant of chilli ranged from 100.37 (2024/CHIVAR-1) to 266.93 (2023/CHIVAR-4). The maximum number of fruits per plant was recorded in genotype 2023/CHIVAR-4 (266.93) which is statistically at par with 2024/CHIVAR-7 (228.55 g), 2023/CHIVAR-7 (233.67 g) and 2022/CHIVAR-4 (218.70 g) while the minimum number of fruits per plant was recorded in genotype 2024/CHIVAR-1 (100.37).

Fruit yield per plot (kg)

The fruit yield per plot of chilli ranged from 6.51 kg (2022/CHIVAR-7) to 10.30 kg (2023/CHIVAR-4). The maximum fruit yield per plot was recorded in genotype 2023/CHIVAR-4 (10.30 kg) which is statistically at par with 2024/CHIVAR-7 (10.09 kg), 2023/CHIVAR-7 (9.85 kg), 2022/CHIVAR-4 (9.69 kg), 2024/CHIVAR-5 (9.65 kg), 2023/CHIVAR-11 (9.48 kg), 2023/CHIVAR-2 (9.35 kg), 2024/CHIVAR-8 (9.25 kg) and 2022/CHIVAR-11 (9.20 kg) while the minimum fruit yield per plot was recorded in genotype 2022/CHIVAR-7 (6.51 kg).

Total fruit yield per hectare (q/ha)

The total fruit yield per hectare of chilli ranged from 60.25 q/ha (2022/CHIVAR-7) to 95.40 q/ha (2023/CHIVAR-4). The maximum total fruit yield per hectare was recorded in genotype 2023/CHIVAR-4 (95.40 q) which is statistically at par with 2024/CHIVAR-7 (93.42 q), 2023/CHIVAR-7 (91.19 q), 2022/CHIVAR-4 (89.71 q), 2024/CHIVAR-5 (89.36 q), 2023/CHIVAR-11 (87.82 q), 2023/CHIVAR-2 (86.62 q), 2024/CHIVAR-8 (85.69 q) and 2022/CHIVAR-11 (85.19 q) while the minimum total fruit yield per hectare was recorded in genotype 2022/CHIVAR-7 (60.25 q).

A wide range of genetic variation was reported for number of fruits per plant, fruit yield per plot (kg), fruit yield per hectare (q), fresh weight of fruits (g), dry weight of fruits (g) and fruit length (cm) which indicated that there are abundant scopes for selection for the improvement of these characters. These findings are in close proximity with the results of Sandeep *et al.* (2008) ^[16] for plant height, Ukkund *et al.* (2007) ^[19] for number of primary branches, Patel *et al.* (2014) ^[13] for number of fruits per plant, Mamath *et al.* (2016) ^[9] for fruit length, Sahu *et al.* (2016) ^[15], days to first flowering, Yatagiri *et al.* (2017) ^[20] for total number of picking, days to first fruit harvesting and fresh weight of fruit, Kumari *et al.* (2017) ^[8] for fruit yield per plot and fruit yield per hectare.

Table 3: Mean performance of fruit yield and yield attributing traits in hot pepper

Characters															
	GENOTYPES	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2024/CHIVAR-1	53.93	6.32	36.84	49.50	7.00	96.97	160.07	5.47	3.17	3.22	193.46	100.37	7.74	71.65
2	2024/CHIVAR-2	50.70	6.20	36.07	47.73	6.67	95.00	161.60	5.92	3.80	4.12	196.62	115.93	7.86	72.82
3	2024/CHIVAR-3	54.58	6.00	36.40	49.10	7.33	97.67	161.05	5.26	3.43	3.46	184.31	113.37	7.39	68.39
4	2024/CHIVAR-4	47.32	6.62	36.73	49.28	7.33	96.68	162.69	6.27	3.58	4.53	204.17	124.00	8.17	75.62
5	2024/CHIVAR-5	43.45	7.49	36.80	49.02	7.33	97.60	162.98	8.39	4.87	4.87	241.26	195.67	9.65	89.36
6	2024/CHIVAR-6	45.51	6.80	36.20	48.65	7.33	96.87	162.87	6.33	4.60	4.71	220.19	143.61	8.81	81.55
7	2024/CHIVAR-7	46.47	7.82	36.80	49.47	7.33	96.73	161.92	11.09	4.73	8.04	252.24	228.55	10.09	93.42
8	2024/CHIVAR-8	46.90	6.92	35.87	48.87	7.33	97.17	163.22	7.01	5.07	4.73	231.37	161.94	9.25	85.69
9	2024/CHIVAR-9	50.80	6.50	35.99	51.07	7.33	96.40	162.90	7.20	4.53	5.30	223.61	151.13	8.94	82.82
10	2023/CHIVAR-1	52.35	6.52	37.53	53.37	7.33	102.23	161.90	5.17	4.30	4.23	194.63	118.05	7.79	72.09
11	2023/CHIVAR-2	65.73	7.51	39.47	54.66	7.33	103.96	171.70	6.15	4.80	4.29	233.87	179.30	9.35	86.62
12	2023/CHIVAR-3	51.30	6.75	40.00	54.39	7.33	104.02	173.88	6.05	4.17	4.82	216.45	149.77	8.66	80.17
13	2023/CHIVAR-4	58.42	8.05	40.00	55.37	7.33	105.40	175.40	10.20	3.90	8.10	270.93	266.93	10.30	95.40

14	2023/CHIVAR-5	52.13	6.27	39.13	55.25	7.33	105.25	175.25	6.38	3.57	4.33	208.07	134.95	8.32	77.06
15	2023/CHIVAR-6	57.77	6.33	39.55	54.70	7.33	104.70	174.70	6.37	3.63	4.35	210.15	136.45	8.41	77.83
16	2023/CHIVAR-7	52.93	8.03	38.47	55.42	7.33	105.42	176.13	6.27	3.10	7.32	246.20	233.67	9.85	91.19
17	2023/CHIVAR-8	54.70	6.53	39.27	55.95	7.33	104.22	175.22	4.65	3.50	5.46	225.36	163.03	9.01	83.47
18	2023/CHIVAR-9	60.03	5.52	38.93	55.33	7.33	105.33	175.33	3.63	3.33	3.18	175.64	114.73	7.03	65.05
19	2023/CHIVAR-10	56.80	6.05	38.87	55.37	7.33	105.37	176.11	8.15	4.47	3.50	185.85	124.83	7.43	68.83
20	2023/CHIVAR-11	51.60	8.25	38.87	54.71	7.33	104.71	174.86	7.05	4.10	5.58	237.11	201.92	9.48	87.82
21	2022/CHIVAR-1	49.87	6.52	39.66	55.10	7.00	105.10	175.10	4.83	3.18	3.15	180.26	119.72	7.21	66.76
22	2022/CHIVAR-2	54.90	6.20	40.00	51.60	5.67	101.60	176.47	5.92	3.65	4.16	202.01	130.27	8.08	74.82
23	2022/CHIVAR-3	53.35	6.00	38.87	55.30	6.00	105.30	175.30	4.14	3.57	2.64	164.23	114.30	6.57	60.83
24	2022/CHIVAR-4	51.70	8.35	39.40	55.06	5.67	105.06	175.06	10.53	3.13	6.50	242.21	218.70	9.69	89.71
25	2022/CHIVAR-5	54.87	6.60	40.21	54.27	5.67	104.27	176.03	6.13	3.90	4.16	215.21	143.29	8.61	79.71
26	2022/CHIVAR-6	51.93	6.30	39.43	57.37	5.67	107.37	177.37	6.05	3.17	3.62	188.33	130.97	7.53	69.75
27	2022/CHIVAR-7	53.93	5.44	39.65	50.93	5.67	101.17	175.58	2.74	3.69	2.22	162.68	105.93	6.51	60.25
28	2022/CHIVAR-8	50.97	6.05	40.17	55.88	5.33	107.13	177.13	4.62	3.37	2.94	170.60	118.43	6.82	63.18
29	2022/CHIVAR-9	51.79	6.45	40.67	54.98	5.67	104.93	175.75	5.48	4.00	4.83	218.41	155.97	8.74	80.89
30	2022/CHIVAR-10	53.03	6.54	40.13	55.07	5.67	106.05	177.52	6.68	3.46	5.01	217.25	159.10	8.69	80.46
31	2022/CHIVAR-11	53.97	6.53	39.20	56.57	7.00	105.95	177.02	7.85	4.17	5.38	230.00	172.64	9.20	85.19
	S Em	2.77	0.20	1.11	2.16	0.29	3.00	5.05	0.23	0.25	0.13	10.05	8.09	0.42	3.90
	CD	7.83	0.56	3.15	6.10	0.82	8.50	14.28	0.66	0.71	0.38	28.44	22.89	1.19	11.03
	CV	9.10	5.17	5.01	7.02	7.35	5.08	5.11	5.97	11.26	5.02	8.25	9.14	8.66	8.66

1. Plant height (cm)	5. Total no. of pickings	9. Fruit Girth (cm)	13. Fruit yield per plot (kg)
2. No. of primary branches	6. Days to first picking	10. Fruit weight (g)	14. Total fruit yield per hectare (q)
3. Days to first flowering	7. Days to last picking	11. Fruit weight per plant (g)	
4. Days to 50% flowering	8. Fruit length (cm)	12. No. of fruits per plant	

Conclusion

The mean sum of square due to treatment was shown to be significant for all the characters using analysis of variance which indicating that the presence of sufficient variability in the population. The mean performance for fruit yield per hectare (q) genotype 2023/CHIVAR-4 was superior among all the genotypes.

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