Int.J.Curr.Microbiol.App.Sci (2018) Special Issue-7: 773-776

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Special Issue-7 pp. 773-776**
Journal homepage: http://www.ijcmas.com

Original Research Article

Evaluation of Chilli (*Capsicum annuum* L.) Genotypes for Yield and Yield Attributes in Allahabad Agro-Climatic Conditions

R. Katheek Bharadwaza[1*], V. M. Prasad[1], M. Adinarayana[2] and G. Narayana Swamy[3]

[1]Department of Horticulture, Sam Higginbottom Institute of Agriculture, Technology & Sciences, (Formely Allahabad Agricultural Institute) Allahabad (U.P.), India
[2]IIHR, Bangalore, Karnataka, India
[3]Department of Horticulture, KVK, Nellore, ANGRAU (A.P.), India
**Corresponding author*

Keywords

Chilli, genotypes, evaluation, growth, yield, quality

A B S T R A C T

A field study was carried out at the Department of Horticulture, Sam Higginbottom Institute of Agriculture, Technology & Sciences, Allahabad (U.P.) in Rabi season during 2012-2013 to Evaluate the Chilli (*Capsicum annum* L.) genotypes in Allahabad agro-climatic conditions. The experiment was laid out in Randomized Block Design (RBD) with three replications, which included fifteen genotypes viz., 2012/CHIVAR-2, 2012/CHIVAR-3, 2012/CHIVAR-5, 2012/CHIVAR-8, 2011/CHIVAR-2, 2011/CHI VAR-4, 2011/CHIVAR-5, 2011/CHIVAR-6, 2011/CHIVAR-7, 2011/CHIVAR-8, 2011/CHIVAR-9, 2010 /CHIVAR-1, 2010/CHIVAR-4, 2010/CHIVAR-5, KASHI-ANMOL. The chilli genotypes were trans planted with care in the field during the month of December 2012 at the spacing of 60 cm x 45 cm. Significant differences were observed among the genotypes for growth and yield parameters. The genotype 2012/CHIVAR-2 was found significantly superior than all the genotypes under study, recorded the maximum number of branches (22.73), fruit length (10.21 cm), fruit girth (1.44 cm), fruit weight (6.54 g) and yield of green chilli (148.62 q ha^{-1}).

Introduction

Chilli or pepper (*Capsicum annuum* L.) belongs to family Solanaceae, which is emerging as one of the commercial vegetable crops at the global level, and is probably most important vegetable after Tomato. Chilli finds its place in spice as well as condiments. Chilli fruits are rich sources of vitamin C, vitamin A and E (Singh, 2004). Pungency of chilli is due to a crystalline acrid volatile alkaloid called capsaicin, present in the placenta of fruit. It is also a good source of chilli oleoresin, which is the total flavour extract of dried and ground chillies. The natural colour extracts of chilli are also finding their increased value in place of artificial colours in the food items.

India is a major producer, exporter and consumer of chilli. In India, it is grown throughout the country but principal chilli growing states are Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu, Orissa, Madhya Pradesh, Rajasthan, West Bengal and Uttar Pradesh. Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu

constitute 75% of the total area of its cultivation and production. In Uttar Pradesh chillies are mostly grown in eastern eastern districts viz., Ballia, Azamgarh, Mirzapur, Basti, & Faizabad.

Majority of farmers are still growing local cultivars. Besides soil and climatic factors the cultivar itself is very important in respect of its performance regarding earliness, disease resistance and yield. Many cultivars have been developed and recommended by various research institute and State Agricultural Universities but the adoptability and yielding capacity of the cultivars is not the same in all regions. So there is a pressing demand for a suitable variety in Allahabad climatic conditions. Hence, an experiment was conducted at Department of Horticulture, SHIATS, Allahabad, to evaluate chilli genotypes for growth, yield and quality attributes.

Materials and Methods

The experimental material i.e. seed packets of all the 15 Chilli genotypes received from the Project Coordinator, AICRP (Vegetable Crops), IIVR, Varanasi, Uttar Pradesh(India), were sown during Rabi season of 2012. After 45 days of sowing, seedlings were transplanted in the field during the month of December 2012 in randomized block design with three replicates, at the spacing of 60 x 45 cm. The experimental plot was irrigated at fortnightly interval with canal water and was kept weed free. The crop was raised as per the recommended packaging practices suggested by Chadha, K.L. 2002. For recording field observations on vegetative, yield and other yield attributing parameters, five randomly chosen plants were tagged from each genotype in each replication were used. Green fruit yield data were recorded picking wise and calculated on hector basis. Analysis of variance in respect of the various characters was done.

Results and Discussion

The analysis of variance was conducted to test significance different among genotype studied. The performance of various genotypes of chilli under Allahabad condition is presented in Table 1. The results revealed that differences due to various genotypes were highly significant for all the characters under study indicating considerable amount of variability among the genotypes tested.

Out of fifteen genotypes tested for days to flowering, 2012/CHIVAR-3 (36. 67 days) was found to be early flowering, whereas genotypes 2010/CHIVAR-4 (55.3 days) and 2011/CHIVAR-9 (54.20 days) were late to flower. Early days to flowering in 2012/CHIVAR-3 may be ascribed to less negative growth of the plant, which may be due to genotypic characteristics of the particular variety. The results are in close conformity with finding of Anu *et al.*, 2002.

For number of fruits per plant trait, significant variation observed. The highest (104.97) and lowest (58.43) value was observed for the genotypes 2012/CHIVAR-8 and 2010/CHIVAR-5, respectively. Large variation for number of fruits per plant has also been reported by Munsi *et al.*, 2000. Among the fifteen genotypes, plant height measured for the tallest genotype (2011/CHIVAR-4) was 61.17 cm, whereas for dwarfest genotype (KA-2) it was 41.65 cm. In spite of recording highest plant height (61.17 cm) by 2012/CHIVAR-5, highest number of primary branches and secondary branches (22.73) was recorded in genotype 2012/CHIVAR-2. The results are in agreement with the finding of Saravaiya *et al.*, 2011.

Table.1 Mean performance of different genotypes in Allahabad agro-climatic conditions

Genotypes	Plant-height (cm)	No. of branches	Days to flowering	No. of fruits per plant	Fruit width (cm)	Fruit length (cm)	Fruit weight (g)	Fruit yield (q ha^{-1})
2010/CHIVAR-1	52.72	16.47	48.13	87.50	0.87	9.36	4.54	122.62
2010/CHIVAR-4	49.03	14.47	55.33	70.43	0.69	5.59	3.37	66.75
2010/CHIVAR-5	43.68	13.87	39.93	58.43	0.65	6.23	3.62	61.87
2011/CHIVAR-2	61.17	20.33	46.53	72.20	0.95	8.44	5.01	115.62
2011/CHIVAR-4	51.77	16.60	51.00	73.97	1.17	5.43	4.76	109.87
2011/CHIVAR-5	52.87	16.93	38.47	82.73	1.11	3.72	2.68	58.50
2011/CHIVAR-6	52.34	18.60	45.00	94.77	0.76	8.11	3.72	103.50
2011/CHIVAR-7	48.80	15.87	52.93	67.97	0.92	8.87	4.00	83.12
2011/CHIVAR-8	53.80	18.27	40.07	75.97	1.20	7.05	5.50	133.75
2011/CHIVAR-9	46.47	15.53	54.20	80.97	0.81	7.26	3.23	73.75
2012/CHIVAR-2	57.89	22.73	37.87	68.63	1.44	10.21	6.54	148.62
2012/CHIVAR-3	56.60	20.07	36.67	74.40	1.26	9.59	5.80	141.62
2012/CHIVAR-5	53.91	17.47	37.13	92.10	0.57	6.19	2.41	51.62
2012/CHIVAR-8	54.57	18.87	41.87	104.97	0.49	7.71	3.10	94.62
KASI-ANMOL	41.65	14.93	50.00	65.63	1.05	6.69	4.42	89.12
S.E. (±)	0.531	0.370	1.435	0.971	0.011	0.107	0.059	2.651
C.D. (P=0.05)	1.540	0.764	4.157	2.812	0.032	0.311	0.172	7.679
C.V.	1.777	3.464	5.522	2.155	2.112	2.529	2.472	1.774

It is known that fruit weight in chilli is governed by fruit width and fruit length. In the present study genotype 2012/CHIVAR-2, recorded highest fruit weight (6.54 g), fruit width (1.44 cm) and fruit length (10.21cm). Whereas lowest fruit weight (2.41 g), fruit width (0.49 cm) and fruit length (3.72 cm) was observed for the genotypes 2012/CHIVAR-5, 2012/CH IVAR-8 and 2011/CHIVAR-5, respectively. The results are in agreement with the finding of Mantano *et al.*, 2002. Among the fifteen genotypes, the green fruit yield exhibited significant differences. Significantly the highest green fruit yield value was recorded for 2012/CHIVAR-2 (148.62 q ha^{-1}), while it was recorded minimum in 2012/CHIVAR-5 (51.62 q ha^{-1}). The maximum value associated with 2012/CHIVAR-2 may be due to higher individual fruit weight and genetical characters for yield. Similar findings were reported by Quadir, 1989. From the present study, it was concluded that the performance for yield and yield component characters like fruit length, fruit width and fruit weight of genotype 2012/CHIVAR-2 extremely good over others in Allahabad agro-climatic conditions.

Acknowledgement

We thank the Project Coordinator, AICRP (Vegetable Crops), IIVR, Varanasi, for providing the seed material of different chilli genotypes to the first author.

References

Anu, A., Babu, K.N and Peter, K.V. 2002. Evaluation of Paprika Genotypes in Kerala. Indian journal of Plant Genetic Resource, 15(2): 93-99

Chadha, K.L. 2002. Handbook of Horticulture, Indian Council of Agriculture Research, New Delhi, pp. 382-386.

Mantano Mata, Nelson and Cedeno, E. 2002. Agronomic evaluation of seven pepper (*Capsicum annuum L.*) cultivars. Revista Cientifica UDO Agricola, 2(1): 95-100

Munshi, A.D., Subodh Joshi and Gyanendra Singh, 2000. Evaluation of chilli germplasm under sub-tropical condition. Capsicum & Eggplant Newsletter, 19: 42-45

Neerraj Pratap Singh, 2004. Basic concepts of vegetable science, International Book Distributing Co., Lucknow (U.P.), India, pp. 152-158.

Quadir, M.A. 1989. Evaluation of twenty selected lines of chilli for fruit characteristics. Annual research review, Institute of Postgraduate Studies in Agriculture (IPSA), pp-19

Saravaiya, S.N., Koladiya, P.B., Patel, H.B., Patel, D.A., Parmar V.L. and Patel, J.B. 2011. Evaluation of different genotypes of chilli through IET under South Gujarat conditions. The Asian Journal of Horticulture, 6(1): 71-73.