The Pharma Innovation Journal 2022; 11(9): 2756-2760

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(9): 2756-2760

www.thepharmajournal.com
Received: 01-07-2022
Accepted: 16-08-2022

Rohit Kumar
M.Sc. Research Scholar, Department of Horticulture, Naini Agricultural Institute, SHUATS, Prayagraj, Uttar Pradesh, India

Deepanshu
Assistant Professor, Department of Horticulture, Naini Agricultural Institute, SHUATS, Prayagraj, Uttar Pradesh, India

Devi Singh
Associate Professor, Department of Horticulture, Naini Agricultural Institute, SHUATS, Prayagraj, Uttar Pradesh, India

Corresponding Author:
Rohit Kumar
M.Sc. Research Scholar, Department of Horticulture, Naini Agricultural Institute, SHUATS, Prayagraj, Uttar Pradesh, India

Evaluation trial on hybrid chilli genotype under Prayagraj agro-climatic conditions (*Capsicum annuum* L.)

Rohit Kumar, Deepanshu and Devi Singh

Abstract
A field experiment entitled "Evaluation trial on hybrid chilli genotype under Prayagraj agro-climatic conditions (*Capsicum annuum* L.)" was conducted during 2018-2019 at central research farm, department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj. The soil of the experimental field was sandy loam in texture. Randomized block design followed here with 20 treatment combinations replicated 3 times. Recommended dose of FYM @ 25 tonnes/ha and fertilizers *i.e*., Nitrogen @ 100 kg/ha, Phosphorus @ 50 kg/ha and Potassium @ 50 kg/ha were applied. The present investigation on 20 chilli genotypes concluded based on plant growth parameters, yield parameters and quality parameters. The chilli hybrid genotype IET-CHIHYB-3 showed the best response in terms of growth and yield parameters among all chilli hybrids under Prayagraj agro-climatic conditions, IET-CHIHYB-6 recorded best in terms of TSS 2.56 ºBrix and ascorbic acid of 153.33 mg/100g under Prayagraj agro-climatic conditions.

Keywords: Evaluation trial, chilli, genotype

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. Its fruits are rich in vitamins, calcium, potassium and other mineral matters. The main functional properties of chilli are pungency, antioxidant activity, vitamin C and natural pigments (Dhal *et al.,* 2021) [7]. Green chili is enriched in vitamin A and vitamin C and in 'rutin' which is of a huge pharmaceutical need. It is also a good source of chilli oleoresin, which is the total flavour extract of dried and ground chillies. The quality of dried chilli is assessed by a number of different parameters such as colour, hotness, ascorbic acid content and volatile flavour compounds (Ruth *et al.,* 2003) [29]. India is a major producer, exporter and consumer of chilli. In India, it is grown throughout the country. 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 districts *viz*., Ballia, Azamgarh, Mirzapur, Basti, & Faizabad (Katheek *et al.,* 2018) [10]. Chilli production and productivity is seriously affected by the use of low yielding local varieties, optimal plant density, heavy attack of insect pests, diseases and weeds etc. Higher production of this crop is possible by the cultivation of varieties which show remarkable enhanced returns, compared to other cultivars grown at same climatic conditions and inputs applied. However, productivity could be improved through careful evaluation and selection of proper chilli varieties based on location and environmental condition (Sha and Madhavan, 2016) [23]. Considering these points, the present investigation was undertaken to evaluate the bets hybrid genotypes of chilli suitable for Prayagraj agroclimatic conditions.

Materials and Methods
The field experiment was carried out at the Central Research Farm, Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj (U.P.) during 2018-19. The experiment consisted of 20 hybrid genotypes *viz.* T_1-IET-CHIHYB-3, T_2-IET-CHIHYB-4, T_3-IET-CHIHYB-6, T_4-AVT-CHIHYB-7, T_5-IET-CHIHYB-8, T_6-S-7, T_7-S-5,T_8-AVT- CHIHYB-4, T_9-AVT- CHIHYB-3, T_{10}- AVT- CHIHYB-8, T_{11}- AVT- CHIHYB-6, T_{12}- AVT- CHIHYB-2, T_{13}-AVT- CHIHYB-1, T_{14}- IET-CHIHYB-5 T15- IET-CHIHYB-10, T16- IET-CHIHYB-9, T17- G-4, T18- IET-CHIHYB-1, T19- IET-CHIHYB-2, T20- REKHA, in Randomized Block Design (RBD) with three replications.

Urea (46% N), DAP (46% P2O5) and muriate of potash (60% K2O) were used as a source of NPK. The RDF (recommended dose of fertilizer) was 100:50:50 kg NPK ha-1. As a basal dose, half dose of nitrogen was applied at time of transplanting along with full dose of phosphorus and potassium. The remaining nitrogen was applied in three splits at 20, 40 and 60 DAT. Other cultural practices were followed according to the crop requirement. Thirty days old healthy seedlings of chilli having 4-5 leaves with a height of 15-18 cm were selected and transplanted at the experimental plot and given light irrigation. At each observation, five plants from each plot were randomly selected. The fruits were picked after maturity at a frequent interval. The observations were recorded from these plants. The data were subjected to analysis of variance and mean separation was assessed by critical difference (CD) at 5% probability. Data were analysed using OPSTAT web application.

Results and Discussion

Growth parameters

Plant height

The data pertaining to plant height influenced due to different genotypes are presented in Table-1. Plant height was in the range of 26.33 cm to 65.66 cm. The highest plant height (65.66 cm) was recorded in T1 (IET-CHIHYB-3) which was significantly superior over all the genotypes and which was followed by (65.33 cm) in T2 (IET-CHIHYB-4), while the genotype T20 (REKHA) recorded the lowest (26.33 cm) plant height. Similar growth trend was observed during the experiment in the varietal trial of chilli. Proper recommended dose of NPK might have helped the plant to have a good plant growth and might be due to existing environmental conditions. So, ultimately it resulted in good vegetative flush. High variation in height of the chilli plants on its final performance was found by Chaudhary and Samadia (2004) [5] and Kerketta *et al*., (2018) [11].

Plant spread

The data pertaining to plant spread influenced due to different genotypes are presented in Table-1. The plant spread was in the range of 20.33 cm to 48.66 cm. The highest plant spread (48.66 cm) was observed in the genotype T1 (IET-CHIHYB-3) and was significantly superior over all the genotypes. It was followed by (46.33 cm) in T2 (IET-CHIHYB-4) while the lowest plant spread (20.33 cm) was recorded in the genotype T20 (REKHA). Similar type of variations related to plant spread in chilli also reported by Nehru *et al*., (2003) [18], Smitha and Basavaraja (2006) [27], Payakhapaab (2012) [19] and Sharma *et al*., (2015) [24].

Number of Branches plant-1

The data pertaining to number of branches influenced due to different genotypes are presented in Table-1. It was in range of 4.10-11.94. The maximum number of branches (11.94) was observed in the genotype T_1 (IET-CHIHYB-3) and was significantly superior over all the genotypes. It was followed by (11.76) in T_2 (IET-CHIHYB-4) while the lowest plant spread (4.10) was recorded in the genotype T_{20} (REKHA). Similar growth trend was observed during the experiment in the varietal performance of chilli. Proper recommended dose of NPK might have helped the plant to have a good vegetative growth of plant and might be due to existing environmental conditions. So, ultimately it resulted in good vegetative flush. High variation in branches of the chilli plants on its final performance was founded by Shirshat *et al.,* (2006) [25], Krishna *et al*., (2007) [13] and Munshi *et al.,* (2010) [16].

Yield Parameters

Number of fruits plant-1

Data on number of fruits per plant presented in Table-2 revealed that number of fruits per plant influenced significantly due to different genotypes. The highest number of fruits per plant (98.33) was observed in the genotype T_1 (IET-CHIHYB-3) and was superior over rest of the genotypes, followed by (96) in T_2 (IET-CHIHYB-4), while the lowest number of fruits per plant (44.66) was observed in genotype T_{20} (REKHA). Phosphorus, potassium, nitrogen along with the secondary nutrients and micronutrients and the environmental factors might have helped for growth and development of fruits. Such variation in chilli varieties for number of fruits per plant was reported by Khokhar *et al.,* (2001) [12] and Shirshat *et al.,* (2006) [25].

Length of fruit

Data on length of fruit presented in Table-2 revealed that length of fruit influenced significantly due to different genotypes. The fruit length was in the range of 5.90 cm to 12.90 cm. The highest length of fruit (12.90 cm) was observed in T_3 (IET-CHIHYB-6) and was significantly superior over rest of the genotypes, followed by (12 cm) in T_1 (IET-CHIHYB-3) whereas the lowest fruit length (5.90 cm) was observed in the genotype T_{16} (IET-CHIHYB-9). The variation in chilli in fruit length was also reported by Sreelathakumary and Rajamony *et al.,* (2002) [17], Smitha and Basavaraja *et al.,* (2006) [27], Dahal *et al.,* (2008) [31], Tembhurne *et al.,* (2008) [28], Pramila *et al.,* (2009) [20], Cheema *et al.,* (2010) [4], Chattopadhyay *et al.,* (2011) [3], Saravaiya *et al.,* (2011) [22], Shiva *et al.,* (2013) [26], Dhaliwal *et al.,* (2014) [8], Rohini and Lakshmanan (2014) [21].

Diameter of fruit

Data on diameter of fruit presented in Table-2 revealed that diameter of fruit influenced significantly due to different genotypes. Diameter of fruit was in the range of 0.17 to 1.09 cm. The highest fruit diameter (1.09 cm) was observed in genotype T_1 (IET-CHIHYB-3), followed by (1.01 cm) in genotype T_2 (IET-CHIHYB-4), whereas the lowest diameter of fruit (0.17 cm) was observed in genotype T_{20} (REKHA). Similar variation in diameter of chilli was also observed by Smitha and Basavaraja *et al.,* (2006) [27], Tembhurne *et al.,* (2008) [28], Chattopadhyay *et al.,* (2011) [3], Saravaiya *et al.,* (2011) [22], Dhaliwal *et al.,* (2014) [8], Rohini and Lakshmanan (2014) [21].

Average weight of fruit

Data on average weight of fruit presented in Table-2 revealed that average weight of fruit influenced significantly due to different genotypes. The fruit weight of chilli genotypes was in the range of 1.25g to 3.21g. The highest fruit weight (3.21 g) was observed in genotype T_1 (IET-CHIHYB-3), followed by (3.06 g) in genotype T_2 (IET-CHIHYB-4) while the lowest fruit weight (1.25 g) was observed in genotype T_{20} (REKHA). The variation in chilli in weight of fruit was also reported by Anu *et al.,* (2002) [1], Shirshat *et al.,* (2006) [25], Sha and Madhavan *et al.,* (2016) and Kerketta *et al.,* (2018) [11]

Fruit yield per plot

Data on fruit yield per plot presented in Table-2 revealed that fruit yield per plot influenced significantly due to different genotypes. Fruit yield per plot was in the range of 0.33 to 1.60 kg. The highest fruit yield per plot (1.60 kg) was observed in the genotype T_1 (IET-CHIHYB-3) and T_2 (IET-CHIHYB-4) and was superior over all genotype, followed by (1.59 kg) in genotype T_3 (IET-CHIHYB-6) while the lowest yield per plot (0.33 kg) was observed in genotype T_{20} (REKHA).

Fruit yield per hectare

Data on fruit yield per hectare presented in Table-2 revealed that fruit yield per hectare influenced significantly due to different genotypes. Fruit yield per hectare was in the range of 1.16 tonnes to 12.40 tonnes. The highest fruit yield per hectare (12.40 tonnes) was observed in the genotype T_1 (IET-CHIHYB-3) and was superior over all genotypes followed by (11.60 tonnes) in genotype T_2 (IET-CHIHYB-4) while the lowest yield per hectare (1.16 tonnes) was observed in genotype T_{20} (REKHA). N, P, K along with the secondary nutrients and micronutrients and the environmental factors, are might have helped for growth and development fruit. Variation in chilli for fruit yield among the varieties also found by Anu *et al.,* (2002) [1], Kameshwari *et al.,* (2006) [9], Shirshat *et al.,* (2006) [25], Datta and Jana (2012) [30] and Sha and Madhavan *et al.,* (2016) [23].

Number of seeds per fruit

Data on number of seeds per fruit presented in Table-2 revealed that number of seeds per fruit influenced significantly due to different genotypes. The number of seeds per fruit was in the range of 45.00 to 83.66. The highest number of seeds per fruit (87.92) was observed in the genotype T_1 (IET-CHIHYB-3), followed by (81.33) in genotype T_2 (IET-CHIHYB-4) whereas, the lowest number of seeds per fruit (45.00) was observed in genotype T_{20} (REKHA). The variation in number of seeds per fruit of chilli was also noticed by Manju and Sreelathakumary *et al.,* (2002) [17], Smitha and Basavaraja *et al.,* (2006) [27], Chattopadhyay *et al*., (2011) [3] and Dhaliwal *et al*., (2014) [8].

Quality Parameters

TSS

Data on TSS presented in Table-2 revealed that TSS influenced significantly due to different genotypes. TSS was in range of 1.43 to 2.56. The maximum TSS (2.56) was found in genotype T_3 (IET-CHIHYB-6) followed by (2.54) in genotype T_2 (IET-CHIHYB-4) whereas the minimum TSS (1.43) was found in T_6 (S-7).

Ascorbic acid

Data on ascorbic acid presented in Table-2 revealed that ascorbic acid influenced significantly due to different genotypes. Ascorbic acid content was in range of 116.33 mg to 157.00 mg per 100 g. The maximum ascorbic acid (157.00 mg/100 g) was found in genotype T_1 (IET-CHIHYB-3) followed by (153.33 mg/100 g) in genotype T_3 (IET-CHIHYB-6) whereas the minimum ascorbic acid (116.33 mg/100 g) was found in T_{20} (REKHA). The variation in Ascorbic acid (mg /100 g) content in chilli was also noticed by Kumar and Tata (2009) [14], Bhaskar and Pradhan (2014) [2] and Kumar *et al*., (2015) [24].

Table 1: Growth parameters of chilli genotypes under Prayagraj agro-climatic conditions

Treatments	Plant height			Plant spread			Number of branches		
	30 DAT	60 DAT	90 DAT	30 DAT	60 DAT	90 DAT	30 DAT	60 DAT	90 DAT
T_1	41.33	56.66	65.66	20.66	35.33	48.66	9	11.43	11.94
T_2	39.66	54.33	65.33	20.33	34.66	46.33	8.66	11.10	11.76
T_3	37.33	51.33	62.66	19.33	32	44.33	8.10	10.86	10.74
T_4	34	49.33	60.66	17.66	30.66	44.33	7.60	10.75	10.17
T_5	26.33	42.66	53.66	16.33	28.66	40.66	6.55	9.15	9.15
T_6	14.66	33.	43.33	14.66	23.33	35.33	3.66	6.50	5.43
T_7	23.66	29.33	41.66	12.33	19	34.66	4.3	7.84	8.53
T_8	18.33	26.33	44.66	13.66	18.66	27.66	5.56	4.57	4.87
T_9	9.66	39.66	30.33	16.33	24.66	37.66	4.20	8.05	5.12
T_{10}	12.33	23.66	26.66	10.66	17.66	22.66	3.36	4.36	4.65
T_{11}	16.66	32.33	41.33	12.33	18.66	24.66	6.50	7.65	8.30
T_{12}	12.66	35.66	37.66	12.66	24	32	3.60	7.20	5.94
T_{13}	20.66	27.33	45.33	15.33	25.33	22.66	4.10	8.76	8.70
T_{14}	22.33	33.66	32.66	13.66	22.33	23.66	5.60	6.10	8.15
T_{15}	10.66	23.33	28.33	10.66	16.33	19.33	3.23	4.40	4.50
T_{16}	14.33	26.33	40.66	11.66	25.33	22.66	4.63	8.35	7.49
T_{17}	25.33	41.66	52.33	15.33	21.66	24.33	5.13	5.56	6.81
T_{18}	31.33	45.66	58.66	17.33	29.33	42.33	7.16	5.96	9.79
T_{19}	27.66	44.33	56.33	15.66	27.66	40.33	6.99	9.66	9.62
T_{20}	8.66	21.33	26.33	7.66	14.66	20.33	2.83	4.13	4.10
S.Ed(±)	2.47	2.61	2.63	2.82	1.51	1.29	0.39	0.07	0.17
CV	13.53	8.68	7.05	23.47	7.55	4.83	8.96	1.14	2.69
$CD_{0.05}$	5.01	5.29	5.33	5.71	3.06	2.61	0.80	0.14	0.35

T_1-IET-CHIHYB-3, T_2-IET-CHIHYB-4, T_3-IET-CHIHYB-6, T_4-AVT-CHIHYB-7, T_5-IET-CHIHYB-8, T_6-S-7, T_7-S-5, T_8-AVT- CHIHYB-4, T_9-AVT- CHIHYB-3, T_{10}- AVT- CHIHYB-8, T_{11}- AVT- CHIHYB-6, T_{12}- AVT- CHIHYB-2, T_{13}-AVT- CHIHYB-1, T_{14}- IET-CHIHYB-5, T_{15}-IET-CHIHYB-10, T_{16}- IET-CHIHYB-9, T_{17}- G-4, T_{18}- IET-CHIHYB-1, T_{19}- IET-CHIHYB-2, T_{20}- REKHA

Table 2: Yield and quality parameters of chilli genotypes under Prayagraj agro-climatic conditions

Treatments	Number of fruits plant^{-1}	Length of fruit (cm)	Diameter of fruit (cm)	Average weight of fruit (g)	Fruit yield per plot (kg)	Fruit yield per hectare (t)	Number of seeds per fruit	TSS (°Brix)	Ascorbic acid (mg/100g)
T_1	98.33	12	1.09	3.21	1.60	12.40	83.66	2.53	157
T_2	96	11.56	1.01	3.06	1.60	11.60	81.33	2.54	153
T_3	93	12.90	0.94	2.90	1.59	11.15	79	2.56	153.33
T_4	90	9.40	0.94	2.50	1.55	10.91	77	2.53	148
T_5	79.33	9	0.84	2.21	0.83	8.73	72.66	2.45	146.33
T_6	64.66	6.53	0.70	1.89	1.23	6.06	67.33	1.43	142
T_7	60.66	8.86	0.55	1.93	0.8	3.70	53.66	2.34	129
T_8	55	6.46	0.21	1.37	0.45	2.16	47.66	1.54	127
T_9	78.66	8	0.63	1.58	1.46	4.49	48.66	1.86	143.33
T_{10}	52.66	10.88	0.21	1.31	0.42	1.89	46.33	1.45	128
T_{11}	56	6.46	0.66	2.11	1.13	6.71	67.33	1.65	131
T_{12}	74.66	6.96	0.62	1.96	1.4	5.70	64.66	2.34	136
T_{13}	69.33	7.46	0.77	1.51	1.15	6.83	54.66	1.93	127
T_{14}	66.66	8.50	0.79	1.92	1.31	4.66	68	2.15	128
T_{15}	50.66	8.90	0.18	1.27	0.39	1.45	61	1.46	119
T_{16}	68.33	5.90	0.66	1.62	0.65	3.80	47.33	1.72	116.66
T_{17}	71.33	6.23	0.73	1.65	1.35	7.66	58.66	1.93	136
T_{18}	86	9.97	0.88	2.51	1.55	10.05	75.33	2.49	148.33
T_{19}	82	8.93	0.83	5.40	1.53	9.65	73	2.46	144
T_{20}	44.66	6.33	0.17	1.25	0.33	1.16	45	1.45	116.33
S.Ed(±)	2.29	0.25	0.03	0.06	0.03	0.10	2.02	0.04	2.82
CV	3.90	3.52	5.20	3.50	3.76	1.95	3.89	2.12	2.53
CD $_{0.05}$	4.63	0.50	0.06	0.12	0.07	0.21	4.09	0.07	5.70

T_1-IET-CHIHYB-3, T_2-IET-CHIHYB-4, T_3-IET-CHIHYB-6, T_4-AVT-CHIHYB-7, T_5-IET-CHIHYB-8, T_6-S-7, T_7-S-5, T_8-AVT- CHIHYB-4, T_9-AVT- CHIHYB-3, T_{10}- AVT- CHIHYB-8, T_{11}- AVT- CHIHYB-6, T_{12}- AVT- CHIHYB-2, T_{13}-AVT- CHIHYB-1, T_{14}- IET-CHIHYB-5, T_{15}-IET-CHIHYB-10, T_{16}- IET-CHIHYB-9, T_{17}- G-4, T_{18}- IET-CHIHYB-1, T_{19}- IET-CHIHYB-2, T_{20}- REKHA

Conclusion

Based on the present investigation on 20 chilli genotypes it is concluded that the chilli hybrid genotype IET-CHIHYB-3 (T_1) showed the best response in terms of growth, yield and quality parameters among all other chilli hybrid genotypes under Prayagraj agro-climatic conditions, while IET-CHIHYB-6 (T_3) recorded best in terms of length of fruit and TSS. From above all results it is concluded that chilli genotype IET-CHIHYB-3 is best suited for Prayagraj agro-climatic conditions over all other chilli hybrid genotypes.

References

1. Anu A, Babu KN, Peter KV. Evaluation of Paprika Genotypes in Kerala. Indian Journal of Plant Genetic Resources. 2002;15(2):93-99.
2. Bhaskar MA, Pradhan N. Study on functional properties of selected chilli varieties grown in Kathmandu, Nepal. J microbialbiotech food sci. 2014;3(6):488-490.
3. Chattopadhyay AA, Sharangi AA, Dai N, Dutta S. Diversity in genetic resources and genetic association analyses of green and dry chillies of Eastern India. Chilean J Agri. Res. 2011;71(3):350.
4. Cheema DS, Jindal SK, Dhaliwal MS. Evaluation of chilli hybrids developed by using genetic male sterility. Haryana J Horticulture Sci. 2010;39(3-4):321-325.
5. Choudhary BS, Samadia DK, Variability and character association in chilli landraces and genotypes under arid environment. Indian Journal of Horticulture. 2004;61(2):132-136.
6. Dahal KC, Sharma MD, Dhakal D, Shakya SM. Evaluation of heat tolerant chilli (*Capsicum annum* L.) genotypes in Western terai of Nepal. J Int. Agric. Anim. Sci. 2006;27:59-64.
7. Dhal N, Prasad VM, Topno SE, Bahadur V, Marker S. Varietal trails of chilli (*Capsicum* spp.) varieties on the basis of growth and yield in Prayagraj Agroclimatic conditions. The Pharma Innovation Journal. 2021;10(10): 424-426.
8. Dhaliwal MS, Garg N, Jindal SK, Cheema DS. Heterosis in chilli (*Capsicum annuum* L.) using genetic male sterility. Res Punjab Agric Univ. 2014;51(3-4):255-261.
9. Kameshwari PL, Padma SSV, Venkataramana KT. Evaluation of chilli (*Capsicum annum* L.) varieties in high altitude and tribal zone of Andhra Pradesh. Orissa Journal of Horticulture. 2006;34(2):103-105.
10. Katheek Bharadwaza R, Prasad VM, Adinarayana M, Narayana GS. Evaluation of Chilli (*Capsicum annuum* L.) Genotypes for Yield and Yield Attributes in Allahabad Agro-Climatic Conditions. International Journal of Current Microbiology and Applied Sciences. 2018;7:773-776.
11. Kerketta A, Collis JP, Tirkey M, Lal R, Singh, NV. Evaluation of Chilli (*Capsicum annuum* L.) Genotypes for Growth, Yield and Quality Characters under Allahabad Agro Climatic Conditions. International Journal of Pure & Applied Biosciences. 2018;6(4):451-455.
12. Khokhar KM, Hussain SI, Mahmood T, Hidayatullah and Farooq M. Studies on the performance and growth of chilli cultivars for fresh green fruit yield. Sarhad Journal of Agriculture. 2001;17(4):541-544.
13. Krishna CU, Madalageri MB, Patil MP, Mulgae R, Kotikal YK. Variability Studies in Green Chilli (*Capsicum annuum* L.). Karnataka Journal of Agriculture Sciences. 2007;20(1):102-104.
14. Kumar OA, Tata SS. Ascorbic acid contents in chilli peppers *Capsicum annum* L.). Not. Sci. Biol. 2009;1(1):50-52.

15. Kuma S, Karthik SK, Basamma KA. Study of Different Physico-Chemical Properties of Byadagi chilli powder. International J of tropical agriculture. 2015;33(2):0254-8755.
16. Munshi AD, Kumar BK, Sureja AK, Joshi S. Genetic variability, heritability and genetic advance for growth, yield and quality traits in chilli. Indian J Hort. 2010;67(1):114-116.
17. Manju PR, Sreelathakumary I. Genetic variability, heritability and genetic advance in hot chilli (*Capsicum chinese* L.). J Tropical Agric. 2002;40:4-6.
18. Nehru SD, Manjunath A, Rangaiah S. Genetic Variability and stability for fruit yield and other metrical characters in Chilli (*Capsicum annuum* L.). Karnataka J Agri. Sci. 2003;16(1):44-47.
19. Payakhapaab S, Boonyakiat D, Nikornpun M. Evaluation of heterosis and combining ability of yield components in chillies. J Agri. Sci. 2012 Nov 1;4(11):154.
20. Pramila Singh DK, Jain SK. Evaluation of exotic and indigenous genotypes of chilli (*Capsicum annum* L.) under foot hills of Himalayas during summer season. Pantnagar J of Res. 2009;7(1).77-80.
21. Rohini N, Lakshmanan V. Evaluation of chilli hybrids for yield and related traits. Trends in Biosciences. 2014;7(22):3635-3638.
22. Saravaiya SN, Koladiya PB, Patel HB, Patel DA, Parmar VL, Patel JB. Evaluation of different genotypes of chilli through IET under South Gujarat conditions. The Asian J of Horti. 2011;6(1):71-73.
23. Sha K, Madhavan S. Evaluation of Growth and Yield of Chilli (*Capsicum annuum* L.) for the Coastal Region of Cuddalore District. International Journal of Applied and Advanced Scientific Research. 2016;1(1):252-253.
24. Sharma VK, Chandel C, Parkash C, Kumar C, Meena D. Effect of planting time and variety on growth and yield characters in sweet pepper. J Hill Agri. 2015;6(1):35-39.
25. Shirshat SS, Giritammannavar VA, Patil SJ. Analysis of Genetic Variability for Quantitative Traits in Chilli. Karnataka J Agric. Sci. 2006;20(1):29-32.
26. Shiva KN, Zachariah TJ, Leela NK, Mathew PA. Performance of paprika and paprika alike chillies (*Capsicum annum* L.). J Spices and Aromatic Crops. 2013;22(2):222-227.
27. Smitha RP, Basavaraja. Variability and Correlation Studies in Chilli (*Capsicum annum* L.). Karnataka J Agri. Sci. 2006;19(4): pp. 888-891.
28. Tembhurne BV, Revenappa Kuchanur PH. Varietal performance genetic variability and correlation studies in chilli (*Capsicum annum* L.). Karnataka J Agri. Sci. 2008;21(4): pp. 541-543.
29. Wang YX, Lee CH, Tiep S, Ruth TY, Ham J, Kang H, Evans RM. Peroxisome-proliferator-activated receptor δ activates fat metabolism to prevent obesity. Cell. 2003 Apr 18;113(2):159-70.
30. Jana S, Sinhamahapatra B, Dey S, Chatterjee S, Das A, Datta B, *et al*. Single Layer Monopole Hexagonal Microstrip Patch Antenna for Microwave Communication. International Refereed Journal of Engineering and Science (IRJES), ISSN (Online), 2012 Dec, 2319-1821.
31. Dahal RK, Hasegawa S, Nonomura A, Yamanaka M, Dhakal S, Paudyal P. Predictive modelling of rainfall-induced landslide hazard in the Lesser Himalaya of Nepal based on weights-of-evidence. Geomorphology. 2008 Dec 15;102(3-4):496-510.