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Research Article

VEGETATIVE GROWTH AND YIELD PERFORMANCE OF CHILLI HYBRIDS (*Capsicum annuum* L.) ALL INDIA CO-ORDINATED VEGETABLE IMPROVEMENT PROJECT (AICVIP) HYBRID TRIALS (IET, AVT-I AND AVT-II)

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Abstract- A field experiment was carried out to study the vegetative growth and yield performance of Chilli Hybrids (*Capsicum annuum* L.)-All India Co- ordinated Vegetable Improvement Project (AICVIP) hybrid trials (IET, AVT-I AND AVT-II) from 2012 to 2014 at the Department of Vegetable Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore. The experiment was laid out in Randomized Block Design (RBD) with three replications, which included the seeds of the Chilli hybrids (IET, AVT-I and AVT-II) entries were chosen for this study. The chilli genotypes were transplanted with care in the field during the year 2012 to 2014 at the spacing of 60cm x 50cm. Significant differences were observed among the genotypes for growth and yield parameters. Among the entries tested (IET), the highest fruit yield (259.7 q/ha) was recorded in 2014/CHILHYB-2 followed by 2014/CHILHYB-4 (234.5 q/ha), the results revealed that (AVT-I) the highest fruit yield (243.1 q/ha) was recorded in 2013/CHILHYB-6 followed by 2013/CHILHYB-7 (238.6 q/ha). Among the entries tested (AVT-II), the highest fruit yield (251.9 q/ha) was recorded in 2012/CHILHYB-1 followed by 012/CHILHYB-3 (227.6 q/ha).

Keywords- *ICAR-AICVIP-VC, Chilli hybrid entries (IET, AVT-I and AVT-II), Vegetative growth, Yield*

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Introduction

Chilli (*Capsicum annum* L., 2n=24) is the most important warm season vegetable grown throughout the world. It belongs to the family Solanaceae and said to be the native of South America. Chilli was known to Indians about 400 years ago, when this crop was first introduced into India by Portuguese, towards the end of the 15th century. Its cultivation became popular in the 17th century. It is an important cash crop in India and is grown for its pungent fruits, which are used both green and ripe (the latter in the dried form) to impart pungency, spicy taste and colour to the food. The composition of green chilli per 100 g of edible portion is moisture (85.7g), protein (2.9g), fat (0.6g), minerals(1.0g), fiber (6.8g), carbohydrates (3.0g), calcium (30mg), magnesium (24mg), riboflavin (0.39mg), nicotinic acid (0.9mg), phosphorous (80mg), iron (1.2mg), sodium (6.5mg), potassium (217mg), Vitamin A (292 I.U.) and Vitamin C (111mg)[1]. It is also used medicinally, sauces, chutneys and pickles. The pungency is due to the oleoresin capsaicin (a condensation product of 3 hydoxy-4-methoxy benzylamine and decylenic acid). It is secreted by the outer walls of the fruit. At ripening stage, fruit become red in colour due to presence of capsanthin pigment. Chilli is extensively cultivated in Asia, Africa, Europe, and Central Northern part of America. In India, the major chillies growing states are Andhra Pradesh, Karnataka, Maharashtra, Orissa, Tamil Nadu, Madhya Pradesh, and Rajasthan. India occupies 0.794 million ha area and annual production 1.304 million tons, while in Madhya Pradesh it occupies 0.054 million ha area and produce 0.093 million tons [2]. Chilli is one of the most important vegetable cum spice crops in India. In spite of its high nutritive value, well acceptability among consumers and wide range of genetic variability, the optimum productivity in chilli still remain to be achieved. Efforts continue to be the major objective of chilli improvement programme. Fruit yield is a complex inherited character influenced by several attributes of the plant. A wide range of variability is available in chilli genotypes which provide great scope for improving fruit yield through systematic breeding.

Estimation of genetic variability present in the germplasm of a crop is a pre-requisite for designing effective breeding programme. However, utilization of this variability requires its systematic evaluation to understand and to estimate the genetic variability, heritability and genetic advance of various yield and physiochemical components [3]. The extent of genetic variation for major economic traits in a crop is pre- requisite for its improvement due to fact that the efficiency of selection depends mainly on it. Genetic improvement of traits depends upon nature and amount of genetic variability present in parents and their inheritance pattern are equally important for further upgrading yield level. A comprehensive knowledge of the available variability within the breeding material of a crop species for desired characters enables the breeders to identify most potential genotype. The phenotypic variation arises as a result of phenotypic, genotypic and interaction between genotypic and environmental variations, but for making effective selections, the heritable unit i.e., the genetic variation is most important. It is also suggested that genetic variability along with heritability should be considered for assessing the maximum and accurate effect of selection. Shift in the gene frequency towards desirable combinations under selection procedure is termed as genetic advance as percentage of mean. Correlation and path analysis have been successfully used for architectring ideotypes for improvement to enhance productivity [4]. However, under complex situation, correlations alone become insufficient to explain relationships among characters and thus path analysis of economic yield components with yield is most important the similar published information's is scanty in Chilli [5]. Keeping in view these points the present investigation was carried out "performance of growth, fruit yield & quality characters in hybrid chilli (*Capsicum annum* L.).

Materials and Methods

The experimental material i.e. seed packets of all the Chilli hybrids entries (IET, AVT-I and AVT-II) received from the Project Coordinator, AICRP (Vegetable

Crops), IIVR, Varanasi, Uttar Pradesh (India), were sown during the year 2012 to 2014. After 45 days of sowing, seedlings were transplanted in the main field in randomized block design with three replicates, at the spacing of 60 x 50 cm with the plot size of 4.2 x 3.5 m which included the Chilli hybrids entries *viz*., (IET, AVT-I and AVT-II) were taken for this study. The seeds of the Chilli hybrid IET entries *viz*. 2014/ CHIHYB-1, 2014/ CHIHYB-2, 2014/ CHIHYB-3, 2014/ CHIHYB-4, 2014/ CHIHYB-5, 2014/ CHIHYB-6, 2014/ CHIHYB-7, 2014/ CHIHYB-8, BSS-453 (C), ARCH-228(C) and Kashi Anmol (OPC), The seeds of the Chilli hybrid AVT-I entries *viz*. 2013/ CHIHYB-1, 2013/ CHIHYB-2, 2013/ CHIHYB-3, 2013/ CHIHYB-4, 2013/ CHIHYB-5, 2013/ CHIHYB-6, 2013/ CHIHYB-7, 2013/ CHIHYB-8, BSS-453 (C), ARCH-228(C) and Kashi Anmol (OPC) and The seeds of the Chilli hybrid AVT II entries *viz*. 2012/CHIHYB-1, 2012/CHIHYB-2, 2012/CHIHYB-4, 2012/CHIHYB-5, 2012/CHIHYB-6, 2012/CHIHYB-7, 2012/CHIHYB-8, 2012/CHIHYB-9, 2012/CHIHYB-10, 2012/CHIHYB-11, 2012/CHIHYB-12, 2012/CHIHYB-13, 2012/CHIHYB-15, BSS- 453 (C), ARCH-228(C) and Kashi Anmol (OPC). The experimental plot was irrigated at fortnightly interval with furrow irrigations and was kept weed free. The crop was raised as per the TNAU recommended packaging practices of apply FYM 25 t/ha, N 30 kg P 60 kg and K 30 kg/ha as basal and 30 kg N/ha each on 30, 60 and 90 days of planting. 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. Analysis of variance in respect of the various characters was done. The results of the Chilli hybrids entries (IET, AVT-I and AVT-II) were presented in the [Table-1, 2 and 3].

Results and Discussion

The analysis of variance was conducted to test significance different among genotype studied. The performance of various genotypes of chilli hybrids under Tamil Nadu Agricultural University, Coimbatore condition is presented in [Table-1, 2 and 3]. 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. The results revealed that (IET), the highest fruit yield (259.7 q/ha) was recorded in 2014/CHILHYB-2 followed by 2014/CHILHYB-4 (234.5 q/ha). Whereas the checks, ARCH-228, BSS-453 and KASHI ANMOL -2 recorded the yield of 159.6, 169.5, and 125.1 q/ha respectively. Days to 50% of flowering for Chilli hybrids IET entries showed significant variations. Early 50% of flowering was found from 2014/CILHYB-3 (68%). Which was followed by 2014/CIHYB-6, 7 and Kashi Anmol (OPC) (76.4%). Days to first harvesting of Chilli hybrids was found from 2014/CILHYB-3 (85.8%). Which was followed by BSS-453 (C) (89.3%). Marketable yield of Chilli hybrids entries shows significant variations. The maximum yield was found from 2014/ CHIHYB-2 (39.1 kg/plot). It was followed by 2014/ CHIHYB-4 (34.8 kg/plot). Plant height of Chilli hybrids entries showed significant variations. The tallest plant was found from by 2014/ CHIHYB-4 (109.0 cm) followed by BSS-453 (C) (99.0cm). Fruit length and girth showed significant variations among the cultivars. The maximum fruit length and girth was found from 2014/ CHIHYB-1 (12.0 cm), 2014/ CHIHYB-4 (5.5cm) respectively, while the minimum from 2014/ CHIHYB-3 (6.6cm), 2014/ CHIHYB-3 and2014/ CHIHYB-5 (3.5cm) respectively. Number of fruits per plant showed significant variations among the cultivars. The maximum number of fruit per plant was found from 2014/ CHIHYB-3 (198.0), which was followed by 2014/ CHIHYB-5 (188.7). Average fruit weight varies among the cultivars. However, maximum average fruit weight was found from 2014/ HIHYB-4 (9.4g), followed by 2014/ CHIHYB-8 (9.2g).Among the entries tested (AVT-I), the highest fruit yield (243.1 q/ha) was recorded in 2013/CHILHYB-6followed by 2013/CHILHYB-7 (238.6 q/ha).Whereas the checks, KASHI ANMOL -2, ARCH- 228 and BSS-453 recorded the yield of 114.9, 188.5 and 172.2 q/ha respectively. Days to 50% of flowering for Chilli hybrids AVT-I entries showed significant variations. Early 50% of flowering was found from 2013/CHIHYB-6 (68.8%). Which was followed by 2013/CIHYB-8 (69.3%). Days to first harvesting of Chilli hybrids was found from BSS-453(C) (88.3%). Which was followed by 2013/CHIHYB-4 (88.6%). Marketable yield of Chilli hybrids entries shows significant variations. The maximum yield was found from 2013/ CHIHYB-6 (35.3 kg/plot). It was followed by 2013/ CHIHYB-7 (34.5 kg/plot). Plant height of Chilli hybrids entries showed significant variations. The tallest plant was found from by 2013/ CHIHYB-5 (120.8 cm) followed by 2013/ CHIHYB-8 (119.8 cm). Fruit length and girth showed significant variations among the cultivars. The maximum fruit length and girth was found from 2013/ CHIHYB-3 (14.8 cm), 2013/ CHIHYB-3 (4.5cm) respectively, while the minimum from 2013/ CHIHYB-5 (7.6cm), 2013/ CHIHYB-5 (3.2cm) respectively. Number of fruit per plant showed significant variations among the cultivars. The maximum number of fruit per plant was found from 2013/ CHIHYB-6 (307.1), which was followed by 2013/ CHIHYB-7 (300.0). Average fruit weight varies among the cultivars. However, maximum average fruit weight was found from from2013/ CHIHYB-3 (13.4g), followed by 2013/ CHIHYB-4 (6.8g).Among the entries tested (AVT-II), the highest fruit yield (251.9 q/ha) was recorded in 2012/CHILHYB-1followed by 2012/CHILHYB-3 (227.6 q/ha). Whereas the checks, KASHI ANMOL -2, ARCH-228 and BSS-453 recorded the yield of 120.7, 183.3, and 171.7 q/ha respectively. Days to 50% of flowering for Chilli hybrids AVT-II entries showed significant variations. Early 50% of flowering was found from 2012/CHIHYB-2 and 2012/CHIHYB-11 (71.2%). Which was followed by 2012/CIHYB-3 and 2012/CIHYB-15(72.0%). Days to first harvesting of Chilli hybrids was found from BSS-453(C) (89.6%). Which was followed by 2012/CHIHYB-12 (92.6%). Marketable yield of Chilli hybrids entries shows significant variations. The maximum yield was found from 2012/ CHIHYB-1 (37.0 kg/plot). It was followed by 2012/ CHIHYB-3 (33.5 kg/plot). Plant height of Chilli hybrids entries showed significant variations. The tallest plant was found from by 2012/ CHIHYB-7 (113.5 cm) followed by 2012/ CHIHYB-3 and 2012/ CHIHYB-15(109.6 cm). Fruit length and girth showed significant variations among the cultivars. The maximum fruit length and girth was found from 2012/ CHIHYB-6 (13.7 cm), 2012/ CHIHYB-6 (4.9cm) respectively, while the minimum from Kashi Anmol (OPC) (7.3cm), 2012/ CHIHYB-15 (2.3cm) respectively. Number of fruits per plant showed significant variations among the cultivars. The maximum number of fruit per plant was found from 2012/ CHIHYB-15 (285.8), which was followed by 2012/ CHIHYB-1 (223.9). Average fruit weight varies among the cultivars. However, maximum average fruit weight was found from 2012/ CHIHYB-3 (12.1g), followed by 2012/ CHIHYB-6 (7.8g). The difference in plant height might be specific genetic makeup of plant of respective genotype and its interaction with the environment. The variation in plant height of different chilli genotypes were recorded [6, 7, 8, 9, 10, 11, 12 & 13]. Similar type of variations related to number of primary branches per plant chilli also reported [14, 7, 8, 3, 15 & 16]. Leaves play a vital role in the production of carbohydrates through process of photosynthesis and thus increase vigour of the plant, which ultimately influences the output in terms of fruits. Number of leaves produced by the plant is generally dependent on vigour of the plant and period taken by the plant for flowering. This variation was might be due to difference in genetic makeup. Similar type of variations related to number of primary branches per plant in chilli was also reported [17, 18]. Thus, it indicated the wide range of variation in relation to plant spread. The difference in plant spread might be due to specific genetic makeup of plant and its interaction with the environment. Plant spread is an important growth character in chilli and it helps to determine plant spacing and other parameters for crop management. Similar type of variations related to plant spread in chilliis also reported [19, 20, 21, 22, 16 & 23]. Days for initiation of flowering are an important factor in chilli, for categorization of the genotypes as early, mid late or late types. Early flowering leads to early fruit setting, which facilitate early harvesting of fruits and early season crop fetches better price in the market. The difference in the days for initiation of flowering might be due to specific genetical make up which decides the character. Above findings regarding the variation in days to initiation of flowering in different chilli genotypes are in conformity with in chilli [24, 20 & 7]. The difference in the days for 50 % flowering might be due to specific genetically make up which decides the character. Flowering is one of the most important characters in any commercially cultivated crop plant, which decides precocity in harvesting. Earliness in flowering is the desirable character for any crop especially in multiple harvest crops like vegetables to get early harvest and to fetch better price in the market. Days to initiation of flowering and 50 percent flowering is governed by the genotype of the plant. The genetical character in association with environment and management practices decides the magnitude of the characters [20, 25, 9, 26, 13, 27, 28 & 16].

Tables-1 *Performance of (IET) entries on growth and yield quality of Chilli hybrids*

Name of the entry	Days to 50 % flowering	Days to first harvest	Marketable Yield (kg/plot)	Unmarketable yield (kg/plot)	Yield (q/ha)
2014/CHIHYB-1	73.6	92.7	22.7	0.675	151.4
2014/CHIHYB-2	71.8	90.4	39.1	1.250	259.7
2014/CHIHYB-3	68.1	85.8	32.5	1.075	211.8
2014/CHIHYB-4	72.7	91.6	34.8	1.275	234.5
2014/CHIHYB-5	74.5	93.9	30.2	0.925	200.9
2014/CHIHYB-6	76.4	96.2	25.3	0.800	169.0
2014/CHIHYB-7	76.4	96.2	23.7	0.750	152.3
2014/CHIHYB-8	77.3	97.4	28.3	0.925	187.2
ARCH -228 (C)	74.5	93.9	23.6	0.550	159.6
BSS-453 (C)	70.8	89.3	24.4	0.725	169.5
KAKASHI ANMOL (C)	76.4	96.2	19.7	0.650	125.1
CD (p=0.05)	4.97	7.68	3.76	0.056	9.03
CV%	3.64	5.69	8.45	5.29	8.46

Name of the entry	Pungency	Plant height (cm)	Fruit length (cm)	Fruit girth (cm)	No. of fruits / plant	Average fruit weight (g)
2014/CHIHYB-1	Medium	83.5	12.0	4.0	51.5	8.5
2014/CHIHYB-2	High	81.0	9.0	4.5	143.1	5.5
2014/CHIHYB-3	Medium	76.0	6.6	3.5	198.0	3.4
2014/CHIHYB-4	Low	109.0	10.8	5.5	76.0	9.4
2014/CHIHYB-5	High	78.0	8.0	3.5	188.7	3.4
2014/CHIHYB-6	Medium	97.0	10.0	4.5	84.3	6.8
2014/CHIHYB-7	High	68.0	9.5	4.0	99.0	4.9
2014/CHIHYB-8	Low	89.0	10.0	5.0	137.0	9.2
ARCH -228 (C)	High	86.0	9.0	4.0	160.1	5.3
BSS-453 (C)	Medium	99.0	8.1	3.8	91.1	4.2
KASHI ANMOL (C)	High	52.0	7.1	3.6	168.4	3.8
CD (p=0.05)	-	8.17	1.83	1.65	8.19	1.57
CV%	-	5.74	7.69	8.96	7.76	9.23

Table-2 *Performance of (AVT-I) entries on growth and yield quality of Chilli hybrids*

Name of the entry	Days to 50 % flowering	Days to first harvest		Marketable Yield (kg/plot)	Un marketable yield (kg/plot)	Yield (q/ha)
2013/CHILHYB-1	74.4	94.6		30.5	0.386	210.0
2013/CHILHYB-2	73.0	92.6		29.0	0.382	208.0
2013/CHILHYB-3	77.0	95.6		25.9	0.420	178.7
2013/CHILHYB-4	72.0	88.6		27.9	0.632	194.0
2013/CHILHYB-5	74.4	96.9		31.8	0.235	217.6
2013/CHILHYB-6	68.8	89.6		35.3	0.412	243.1
2013/CHILHYB-7	72.6	89.3		34.5	0.356	238.6
2013/CHILHYB-8	69.3	91.0		32.3	0.563	223.6
ARCH -228 (C)	72.5	92.6		27.5	0.263	188.5
BSS-453 (C)	74.6	88.3		25.0	0.320	172.2
KASHI ANMOL (C)	76.8	97.0		16.3	0.564	114.9
CD (p=0.05)	5.36	4.69		3.65	0.0632	12.65
CV%	6.36	7.23		9.36	6.31	9.40
Name of the entry	Pungency	Plant height (cm)	Fruit length (cm)	Fruit girth (cm)	No. of fruits / plant	Average fruit weight (g)
2013/CHILHYB-1	Medium	114.5	12.6	3.3	144.4	5.0
2013/CHILHYB-2	Medium	109.3	10.6	3.9	125.9	4.9
2013/CHILHYB-3	Low	87.2	14.8	4.5	45.3	13.4
2013/CHILHYB-4	Low	84.0	11.1	4.2	96.9	6.8
2013/CHILHYB-5	Low	120.8	7.6	3.2	269.2	2.8
2013/CHILHYB-6	Medium	104.0	12.6	3.4	307.1	2.7
2013/CHILHYB-7	Medium	102.6	12.4	3.4	300.0	2.6
2013/CHILHYB-8	Medium	119.8	11.0	3.3	213.4	3.6
ARCH -228 (C)	High	90.3	9.5	4.2	168.1	5.6
BSS-453 (C)	Medium	104.0	8.5	4.0	95.7	4.4
KASHI ANMOL (C)	High	54.6	7.5	3.8	176.8	4.0
CD (p=0.05)	-	9.63	2.145	0.964	14.69	3.69
CV%	-	6.96	6.69	6.98	8.47	9.64

This variation might be due to difference in genetic makeup and their interaction to the environmental characters and management practices, which led to variation in the flowering phase and ultimately in crop duration. Such variation in chilli genotypes for crop duration was also noticed [10, &15]. Fruit length of any chilli genotype is governed by genetic character and hence it may vary as per the genotype. The variation in chilli in fruit length was also reported [6, 20, 29, 9, 10, 11, 26, 12, 2 & 16]. Wide range of variation in relation to fruit diameter was observed. Similar variation in diameter of chilli was also observed [20, 9, 26, 12, 30, 28 & 16]. In any crop improvement study, yield is the utmost important character. Breeders can improve any characters *viz*. quality attributes, morphological characters but cannot compromise with yield as such. Yield is a very complex character and number of other characters decides ultimate yield potential of plant. Among all the observations studied in investigation, the yield attributes are important to judge the better yield potential of chilli genotypes. Data in relation to the yield contributing characters namely days to first harvest, days to last harvest, harvesting duration (days), number of fruits per plant, average fruit weight (g), number of pickings per plant, number of pickings per plot, fruit yield per plant (kg), fruits yield per hectare (tones). Days to first harvest is an important yield attributing character in commercial cultivation point of view. Farmers start getting income as and when the harvesting is started.

Table-3 *Performance of (AVT- II) entries on growth and yield quality of Chilli hybrids*

Name of the entry	Days to 50 % flowering	Days to first harvest		Marketable Yield (kg/plot)	Un marketable yield (kg/plot)	Yield (q/ha)
2012/CHILHYB-1	72.8	96.3		37.0	0.635	251.9
2012/CHILHYB-2	71.2	94.6		31.4	0.345	213.8
2012/CHILHYB-3	72.0	97.2		33.5	0.963	227.6
2012/CHILHYB-4	72.8	94.6		31.9	0.245	216.8
2012/CHILHYB-6	76.3	99.3		28.7	0.574	195.2
2012/CHILHYB-7	73.0	100.3		29.5	0.628	200.4
2012/CHILHYB-8	74.6	102.6		30.3	0.564	205.8
2012/CHILHYB-9	76.3	106.3		26.6	0.682	181.0
2012/CHILHYB-10	74.4	98.6		27.4	0.369	186.2
2012/CHILHYB-11	71.2	95.3		28.0	0.546	190.6
2012/CHILHYB-12	72.8	92.6		24.4	0.682	166.1
2012/CHILHYB-13	72.8	94.3		26.4	0.613	179.8
2012/CHILHYB-15	72.0	96.2		27.5	0.538	186.7
ARCH -228 (C)	74.0	97.3		26.3	0.654	183.3
BSS-453 (C)	73.9	89.6		24.6	0.654	171.7
KASHI ANMOL (C)	78.0	98.6		17.3	0.456	120.7
CD (p=0.05)	6.46	7.86		2.96	0.314	15.23
CV%	9.36	7.96		7.13	8.21	7.63
Name of the entry	Pungency	Plant height (cm)	Fruit length (cm)	Fruit girth (cm)	No. of fruits / plant	Average fruit weight (g)
2012/CHILHYB-1	Medium	88.3	8.2	3.3	223.9	3.4
2012/CHILHYB-2	Low	107.7	12.8	4.4	112.0	5.7
2012/CHILHYB-3	Low	109.6	11.7	4.8	57.2	12.1
2012/CHILHYB-4	Low	104.8	11.6	4.0	86.6	7.5
2012/CHILHYB-6	Medium	79.5	13.7	4.9	75.4	7.8
2012/CHILHYB-7	Low	113.5	8.2	3.9	124.3	4.9
2012/CHILHYB-8	Low	85.4	13.1	3.0	111.6	5.5
2012/CHILHYB-9	Low	90.2	12.8	2.7	118.8	4.6
2012/CHILHYB-10	Low	105.7	8.6	3.7	156.8	3.6
2012/CHILHYB-11	Low	62.1	10.8	3.9	136.3	4.2
2012/CHILHYB-12	Low	90.2	10.7	4.8	91.9	5.5
2012/CHILHYB-13	Low	93.1	10.9	3.6	116.6	4.7
2012/CHILHYB-15	Low	109.6	7.7	2.3	285.8	2.0
ARCH -228 (C)	High	87.6	9.2	4.1	163.1	5.4
BSS-453 (C)	Medium	100.9	8.2	3.9	92.8	4.3
KASHI ANMOL (C)	High	53.0	7.3	3.7	171.5	3.9
CD (p=0.05)	-	9.63	3.36	1.75	18.63	2.69
CV%	-	9.36	7.45	8.96	9.61	8.64

Therefore, early harvesting is beneficial to the farmers as it gives early returns. The variation in chilli genotypes for days to first harvest was noticed in their study on chilli genotypes [31, 32, 33, 1 & 34]. Harvesting duration is also important character and decides yield potential as well as intensity and period of availability of fruits for marketing. Number of pickings is an important yield attributing character and it also decides period of availability of fruits in the market. Similarly, in multiple harvest crops like chilli more number of pickings are beneficial for induction of new flowers. Variation in number of pickings in various chilli genotypes might be due to differences in number of days required for initiation of flowering, days to first harvest and last harvest as well as harvesting span, which might be resulted from variation in genetic makeup and its interaction with the environmental factors. The variation in chilli genotypes for number of pickings per plant and plot was studied in chilli genotypes [35, 33, 24, &36]. Fruits per plant are the most important yield attributing character as it directly influences the yield of the crop. Such variation in chilli genotypes for number of fruits per plant was also noticed [6, 20, 8, 9, 37, 10, 37 & 26]. The increase in the fruit weight in the present findings was attributed to higher fruit length and fruit diameter. Maximum fruit weight is one of the main yields contributing character in chilli. Individual fruit weight along with number of fruits per plant decides the yield potential of chilli genotype. The variation in weight of the chilli fruits was also recorded by many scientists working *viz*. in chilli genotype [6, 9, 11, 26, 3, 28 & 16]. Yield is a very complex character and number of other characters play a role in expression of yield. The yield per plant is dependent upon the specific genes and its ability to perform in specific growing condition. Variation observed might be due to difference in genetic makeup of specific genotype and its ability to perform in specific environment, which had influenced flowering, fruit set, fruit weight, number of fruits and ultimately the yield. The variation in chilli genotypes for yield per plant was also noticed [6, 20, 7, 9, 11, 33, 26, 28, 39 & 40]. The variation in fruit yield per hactor of chilli genotypes was also noticed [20, 9, 41, 12, 16 & 3].

Conclusion

From the above study, it could be concluded, among the entries tested (IET), the highest fruit yield (259.7 q/ha) was recorded in 2014/CHILHYB-2 followed by 2014/CHILHYB-4 (234.5 q/ha).Whereas the checks, ARCH- 228, BSS-453 and KASHI ANMOL -2 recorded the yield of 159.6, 169.5, and 125.1 q/ha respectively. Among the entries tested (AVT-I), the highest fruit yield (243.1 q/ha) was recorded in 2013/CHILHYB-6 followed by 2013/CHILHYB-7 (238.6 q/ha). Whereas the checks, KASHI ANMOL -2, ARCH- 228 and BSS-453 recorded the yield of 114.9, 188.5 and 172.2 q/ha respectively. Among the entries tested (AVT-II), the highest fruit yield (251.9 q/ha) was recorded in 2012/CHILHYB-1followed by 2012/CHILHYB-3(227.6 q/ha). Whereas the checks, KASHI ANMOL -2, ARCH-228 and BSS-453 recorded the yield of 120.7, 183.3, and 171.7 q/ha respectively.

Application of Research: The seeds of the Chilli hybrid IET entries viz. 2014/ CHIHYB-1, 2014/ CHIHYB-2, 2014/ CHIHYB-3, 2014/ CHIHYB-4, 2014/ CHIHYB-5, 2014/ CHIHYB-6, 2014/ CHIHYB-7, 2014/ CHIHYB-8, BSS-453 (C), ARCH-228(C) and Kashi Anmol (OPC), The seeds of the Chilli hybrid AVT-I entries viz. 2013/ CHIHYB-1, 2013/ CHIHYB-2, 2013/ CHIHYB-3, 2013/ CHIHYB-4, 2013/ CHIHYB-5, 2013/ CHIHYB-6, 2013/ CHIHYB-7, 2013/ CHIHYB-8, BSS-453 (C), ARCH-228(C) and Kashi Anmol (OPC) and The seeds of the Chilli hybrid AVT II entries viz. 2012/CHIHYB-1, 2012/CHIHYB-2, 2012/CHIHYB-4, 2012/CHIHYB-5, 2012/CHIHYB-6, 2012/CHIHYB-7, 2012/CHIHYB-8, 2012/CHIHYB-9, 2012/CHIHYB-10, 2012/CHIHYB-11, 2012/CHIHYB-12, 2012/CHIHYB-13, 2012/CHIHYB-15, BSS- 453 (C), ARCH-228(C) and Kashi Anmol (OPC) were chosen for this study. Among the Eleven entries tested (IET), the highest fruit yield (259.7 q/ha) was recorded in 2014/CHILHYB-2. Among the Eleven entries tested (AVT-I), the highest fruit yield (243.1 q/ha) was recorded in 2013/CHILHYB-6. Among the fifteen entries tested (AVT-II), the highest fruit yield (251.9 q/ha) was recorded in 2012/CHILHYB- 1.

Research Category: Vegetable Crops Science

Abbreviations:
IET- Initial Evaluated Trial
AVT- Advanced Varietal trial
CHIHYB- Chilli Hybrid
NPK- Nitrogen, Phosphorus and Potash
OPC-Open pollinated crops
C- Check (Variety)
MG-Milli Grams
TNAU- Tamil Nadu Agricultural University
FYM- Farm Yard Manure
q /ha- Quintal Per Hectare

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Study area / Sample Collection: Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore, 641003, Tamil Nadu

Cultivar / Variety name: *Capsicum annuum* L.

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

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