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Evaluation of F_1 progenies of chilli (*Capsicum annum* L.) under Konkan agro climatic condition

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Abstract

Field experiment was conducted to evaluate the F_1 progenies of chilli under Konkan agro-climatic conditions at the Vegetable Improvement Scheme, Central Experiment Station, Wakawali, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri, (M.S.) during the *Rabi season* of 2014-15. A randomized block design was used with two replications, which included fifteen progenies of chilli. The chilli progenies were transplanted with care in the field during the month of December 2014 at the spacing of 60 cm x 45 cm. Significant differences were observed among the progenies for growth and yield parameters. The progeny DPL CH-F₁-13 was found significantly superior than all the progenies under study, recorded the green fruit yield of 23.38 t/ha. The next best progenies were DPL CH-F₁-10, DPL CH-F₁-9, DPL CH-F₁-5, DPL CH-F₁-1 and DPL CH-F₁-8.

Keywords: Green chilli, F_1 progenies, growth performance

Introduction

Chilli or Hot Pepper (*Capsicum annum var. annum* L.) is emerging as one of the most important economical and popular vegetable crop grown for its green fruits as vegetable and red form as spice. In India, the area under chilli cultivation is 7.75 lakh ha with annual production of 14.92 million tones. In Maharashtra it is one of the important vegetable crops under cultivation, which covers an area of 99.58 thousand ha with annual production is about 45.60 MT (Anonymous, 2014a) [1]. India is the largest Producer and consumer of chilli in the world and almost in all the states of country. It has greater potential to increase the chilli production in order to promote exports, which may help in price stabilization of the commodity within the country, particularly during the peak period of production. In Konkan region diverse types of chilli are found with varying characters. The large variability in respect of fruit size, shape and growth habits. Hence there is need to evaluate chilli types under Konkan condition for excellent quality, yield and growth performance, and resistant to biotic and abiotic stress. In view of this, present investigation was undertaken in chilli

Materials and Methods

The studies were carried out at Vegetable Improvement Scheme, Central Experiment Station, Wakawali, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri, (M.S.). The basic material for the study involved fifteen progenies were grown in a randomized block design with two replications during rabbi 2014-2015. Each experimental plot comprised of single row of ten plants. From each plot five plants were randomly selected for recording observations on plant height (cm), primary branches per plant, days to first flowering, percent fruit set, number of fruits per plant, fruit length(cm), fruit girth(cm), green fruit yield per plant, total green chilli yield per plant.

Result and Discussion

The performance of various progenies of chilli under konkan agro climatic condition is presented in table 1 and 2 the results revealed that differences due to various progenies were highly significant for all the characters under study.

Among the different progenies, plant height measured at last harvest in the progeny DPL CH-F₁-10 (97.37 cm) and the minimum height of plant in the variety Konkan Kirti (55.55 cm). The maximum numbers of primary branches per plant produced at last harvest stage were observed in the progeny DPL CH-F₁-14 (7.75), while the minimum number of branches per plant were Produced in the DPL CH-F₁-9 (4.50).

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It was observed that the minimum (36.50) days for initiation of flowering in the progeny DPL CH-F₁-13 while the maximum (46.50) days were recorded by the variety Konkani Kirti. The minimum (48.50) days for 50 % flowering were recorded by the progeny DPL CH-F₁-4 and DPL CH-F₁-13 while the maximum (56.50) days were observed in the progeny DPL CH-F₁-2. For fruit length and diameter of the fruit character showed significant differences among the progenies. The maximum length of fruit was recorded in the progeny DPL CH-F₁-12 (11.26 cm), while the minimum length of fruit was found in the progeny DPL CH-F₁-4 (7.24

cm). It was recorded maximum diameter of fruit in the variety Konkani Kirti (0.90 cm), while the minimum was recorded in the progeny DPL CH-F₁-13 (0.74 cm).

The highest number of fruits per plant were recorded in the progeny DPL CH-F₁-13 (219.20), while minimum number of fruits per plant were recorded in the progeny DPL CH-F₁-12 (123.40). Among the different progenies, it was recorded that the maximum spread of plant at the last harvest stage in the progeny DPL CH-F₁-5 (67.10 cm), while the minimum spread of plant recorded by the variety Konkani Kirti (42.60 cm).

Table 1: Evaluation of F₁ progenies of chilli (*Capsicum annum* L.) under konkan agro climatic condition. (Rabbi 2014)

Sr. No	Genotypes evaluated	Plant height (cm)	No. of primary branches	Days to first flowering	Days to 50% flowering	Fruit length (cm)	Fruit diameter (cm)	Number of fruits per plant
1	DPL CH-F ₁ -1	91.10	6.10	41.50	51.50	9.28	0.78	144.10
2	DPL CH-F ₁ -2	95.10	4.70	44.50	56.50	8.52	0.85	136.80
3	DPL CH-F ₁ -3	94.00	6.90	43.00	54.50	9.42	0.84	135.70
4	DPL CH-F ₁ -4	87.60	5.70	38.50	48.50	7.24	0.81	133.20
5	DPL CH-F ₁ -5	83.80	6.05	39.00	50.00	9.75	0.76	205.85
6	DPL CH-F ₁ -6	90.35	6.55	40.50	51.50	9.09	0.77	149.50
7	DPL CH-F ₁ -7	94.30	5.05	37.50	49.50	9.04	0.77	158.60
8	DPL CH-F ₁ -8	83.25	5.50	40.50	52.50	10.14	0.75	159.35
9	DPL CH-F ₁ -9	83.70	4.50	42.50	50.50	10.77	0.77	180.70
10	DPL CH-F ₁ -10	97.37	6.60	41.50	51.00	10.17	0.76	217.30
11	DPL CH-F ₁ -11	81.75	4.90	42.50	54.50	8.34	0.80	133.55
12	DPL CH-F ₁ -12	89.90	6.10	39.00	50.00	11.26	0.79	123.40
13	DPL CH-F ₁ -13	83.85	6.65	36.50	48.50	9.38	0.74	219.20
14	DPL CH-F ₁ -14	89.90	7.75	42.50	53.50	8.01	0.85	129.10
15	Konkan Kirti	55.55	5.90	46.50	54.50	7.57	0.90	173.20
Mean		86.77	5.93	41.07	51.80	9.20	0.80	159.97
S.E.M _±		2.403	0.492	0.640	0.640	0.583	0.15	3.600
C.D(0.05)		7.289	1.491	1.941	1.941	1.768	0.045	10.920

Table 2: Performance of F₁ progenies of chilli (*Capsicum annum* L.) under konkan agro climatic condition. (Rabbi 2014)

Sr. No	Genotypes evaluated	Plant spread (cm)	Plant growth habit	Flowering habit	Position of fruit	Fruit shape	Fruit colour	Number of seeds per fruit
1	DPL CH-F ₁ -1	52.25	Intermediate	Solitary	Pendent	Long	Green	42.40
2	DPL CH-F ₁ -2	63.15	Intermediate	Solitary	Pendent	Long	Green	45.20
3	DPL CH-F ₁ -3	55.85	Intermediate	Solitary	Pendent	Long	Green	41.10
4	DPL CH-F ₁ -4	59.05	Intermediate	Solitary	Pendent	Long	Green	42.60
5	DPL CH-F ₁ -5	67.10	Intermediate	Solitary	Pendent	Long	Green	36.20
6	DPL CH-F ₁ -6	61.90	Intermediate	Solitary	Pendent	Long	Green	46.70
7	DPL CH-F ₁ -7	52.30	Intermediate	Solitary	Pendent	Long	Green	47.20
8	DPL CH-F ₁ -8	62.48	Intermediate	Solitary	Pendent	Long	Green	47.50
9	DPL CH-F ₁ -9	63.60	Erect	Solitary	Pendent	Very long	Light Green	36.40
10	DPL CH-F ₁ -10	54.40	Intermediate	Solitary	Pendent	Long	Green	47.20
11	DPL CH-F ₁ -11	53.30	Erect	Solitary	Pendent	Long	Green	34.60
12	DPL CH-F ₁ -12	54.70	Erect	Solitary	Pendent	Very long	Green	57.00
13	DPL CH-F ₁ -13	66.60	Intermediate	Solitary	Pendent	Long	Green	49.00
14	DPL CH-F ₁ -14	47.15	Intermediate	Solitary	Pendent	Long	Green	50.90
15	Konkan Kirti	42.60	Intermediate	Solitary	Pendent	Long	Dark Green	79.20
Mean		57.10						46.88
S.E.M _±		2.570						2.962
C.D(0.05)		7.796						8.984

It was noticed that the all progenies are of intermediate growth habit except progenies DPL CH-F₁-9, DPL CH-F₁-11, DPL CH-F₁-12 and progenies DPL CH-F₁-9, DPL CH-F₁-11, DPL CH-F₁-12 showed erect growth habit. All the progenies showed 'Solitary' flowering behavior and 'Pendent' fruit position habit. It was found that long fruits were observed in all progenies except DPL CH-F₁-9 and DPL CH-F₁-12. While, Very long fruits were observed in the progeny DPL CH-F₁-9 and DPL CH-F₁-12.

It was noticed that the all progenies are green colour except progeny DPL CH-F₁-9 and variety Konkani Kirti, where progeny DPL CH-F₁-9 was found with Light green colour and variety Konkani Kirti was found with dark green colour. Among the various progenies, the number of seeds exhibited significant differences. It was observed that the highest number of seeds per fruit was in the variety Konkani Kirti (79.20) while, lowest number of seeds per fruit was in the progeny DPL CH-F₁-11(34.60).

Conclusion

Considering the growth with high performance following progenies DPL CH-F₁-1, DPL CH-F₁-5, DPL CH-F₁-8, DPL CH-F₁-9, DPL CH-F₁-10, DPL CH-F₁-13 may be selected for further study in F₂ generation.

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