

RESEARCH ARTICLE

Performance of capsicum hybrid mekong under different plant spacing and fertigation schedules

■ JASBIR SINGH SANDHU, AMARDEEP SINGH BRAR AND PRABHJOT SINGH

SUMMARY

A field experiment was conducted using treatments, viz., spacing ($S_1 = 60 \text{ cm} \times 30 \text{ cm}$, $S_2 = 45 \text{ cm} \times 30 \text{ cm}$) and fertigation ($F_1 =$ fertigation twice a week @ 2g NPK (19:19:19)/m² and $F_2 =$ fertigation thrice a week @ 2g NPK (19:19:19)/m²) in Factorial Randomized Block Design with three replications under polyhouse conditions. One month old seedlings of hybrid Mekong were transplanted at the above spacing and fertigation was applied three weeks after transplanting and was applied @ 2g/m² area twice and thrice a week NPK, respectively through water soluble fertilizer (19:19:19). Fertigation was stopped fifteen days prior to final harvesting of fruits. Treatment comprising spacing of 60 cm × 30 cm and fertilized thrice a week was significantly superior to other treatments with regard to plant height, average fruit weight, fruit length, yield per plant and yield per square meter.

Key Words : Capsicum, Hybrid Mekong, Fertigation schedules, NPK

How to cite this article : Sandhu, Jasbir Singh, Brar, Amardeep Singh and Singh, Prabhjot (2016). Performance of capsicum hybrid mekong under different plant spacing and fertigation schedules. *Internat. J. Plant Sci.*, **11** (2): 337-339, DOI: 10.15740/HAS/IJPS/11.2/337-339.

Article chronicle : Received : 17.04.2016; Revised : 27.05.2016; Accepted : 24.06.2016

Capsicum [*Capsicum annuum* (L.) var. *grossum* Sendt.] is a principle crop for polyhouse cultivation in Himachal Pradesh and being grown as an off season vegetable and exported to distant markets thereby bringing remunerative returns to the farmers. Inclement weather accompanied by fluctuating temperature, which is a common feature in hilly regions, affects the

productivity and quality of crop in open field cultivation and reduces the profit of the producers. In such conditions, polyhouse cultivation of capsicum can play an important role in generation of higher yield and better quality fruits than the open field cultivation. In green house production plant density is very important for optimization of plant spacing per unit area and optimum fertilizer dose for proper growth, high yield and long harvest duration. Hence, to optimize fertilizer dose and density of planting for getting highest productivity, the present study was undertaken to see effects of plant spacing and fertigation on performance of capsicum hybrid mekong.

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MATERIAL AND METHODS

A field experiment was conducted at Vegetable

Research Farm, Department of Vegetable Science and Floriculture, Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur, during the period 2012. It is at an elevation of 1,290.8 m above mean sea level with 32° 6' N latitude and 76° 3' E longitude which falls under mid hill zone of Himachal Pradesh. Healthy seedlings of hybrid mekong were transplanted in Factorial Randomized Block Design with three replications. The plot size was kept 1.9 m × 0.9 m, two plant spacing *i.e.* 60 × 30 cm (S₁) and 45 × 30 cm (S₂) and two fertigation levels *i.e.* (F₁) fertigation twice a week NPK @ 2g (19:19:19)/m² and (F₂) fertigation thrice a week @ 2g NPK (19:19:19)/m² were tried.

Observations were recorded on 5 randomly selected plants in each plot for plant height (cm), number of fruits per plant, days to 50 per cent flowering, number of days to first harvest, harvest duration, fruit weight (g), fruit length (cm), fruit breadth (cm), yield per plant (kg) and yield per square meter (kg).

RESULTS AND DISCUSSION

All the yield and yield contributing characters generally increased linearly in response to increasing plant spacing and fertigation level (Table 1). Among the various spacing and fertigation levels tried, performance of capsicum planted at a spacing of 60 cm × 30 cm and fertilized thrice a week was significantly superior to others with regard to average fruit weight (94.2 g) similar results also reported by Dobromilska (2000) and Jan et al. (2006), fruit breadth (7.5 cm) findings corrugated with results of Dobromilska (2000), yield/plant (1.7 kg) Mishrinky and Alphonse (1994) and Maya *et al.* (1997) also reported similar results and yield per meter square (12.1 kg) similar results was also reported by Gowde *et al.* (1990). This may be due to the fact that closely spaced plants had a less space for their lateral development as compared to the widely spaced plants which have more unit area per plant for its expansion and less competition among the plants and fertigation thrice a week provided availability of more nutrients leading to development and proper growth of plants. Spacing and fertigation levels had no significant effects on number of fruits per plant and fruit length.

Among the vegetative characters plant spacing and fertigation levels had no significant effects on days to first harvest and harvest duration, non-significant differences in days to first harvest and harvest duration may be due to fluctuation in temperature, which affected

Table 1 : Effect of plant spacing and fertigation levels on yield and yield contributing characters of capsicum under polyhouse conditions

Treatments	Number of fruits per plant		Average fruit weight (g)		Fruit breadth (cm)		Fruit length (cm)		Yield per plant (kg)		Yield per square meter (kg)	
	S ₁	S ₂	S ₁	S ₂	S ₁	S ₂	S ₁	S ₂	S ₁	S ₂	S ₁	S ₂
S×F	16.7	15.9	70.2	68.3	7.1	7.0	7.1	6.8	1.3	1.2	9.2	8.6
F ₁	19.8	18.8	94.2	87.3	7.5	7.2	7.5	7.2	1.7	1.5	12.1	10.8
C.D. (P=0.05)	NS	NS	1.80	0.10	NS	NS	NS	NS	0.06	0.06	0.19	0.19
NS= Non-significant												

Table 2: Effect of plant spacing and fertigation level on vegetative characters of capsicum under polyhouse conditions

Treatments	Plant height		Days to 50 % flowering		Days to first harvest		Harvest duration	
	S ₁	S ₂	S ₁	S ₂	S ₁	S ₂	S ₁	S ₂
S×F	146.8	141.0	40.8	40.7	73.6	72.6	151.6	152.4
F ₁	178.1	162.7	40.3	41.2	72.0	72.4	151.8	151.4
C.D. (P=0.05)	2.63	0.65	NS	NS	NS	NS	NS	NS
NS= Non-significant								

pollination and fruit development processes resulting into uniformity in first harvest and harvest duration, while plants spaced at S_1 spacing and fertigated thrice a week @ 2g NPK (19:19:19)/m² results into maximum plant height (178.1cm). It may be due to the fact that the plants at closer spacing received less space to expand and thereby leading to reduction in height and *vice-a-versa* in case of wider spacing and the fertilizers use to be the main driving force behind plant life processes which lead to enhanced vegetative growth. These results are in accordance with the findings of Aliyu and Yusuf (1991) and Shabnam *et al.* (2004). In case of days to 50 per cent flowering was significantly affected by plant spacing and fertigation levels (Table 2). Lowest days (40.3 days) to 50 per cent flowering were observed in treatment S_1F_2 . This finding is in line with the results of Metwally *et al.* (1982). Thus, it can be concluded that maintaining plant spacing 60 cm × 30 cm and providing fertigation thrice a week is ideal for getting higher fruit yield.

Conclusion :

From the present investigations following conclusions were drawn that plants spaced at 60 cm × 30 cm apart and received fertigation thrice a week @ 2g NPK (19:19:19)/ m² resulted into maximum plant height, higher number of fruits per plant, yield per plant and yield per square meter. Best results for plant height, fruit length, fruit breadth and average fruit weight was recorded in plants spaced at 60 cm × 30 cm apart and received fertigation thrice a week @ 2g NPK (19:19:19)/ m². There was non-significant effect of various factors and their interactions on days to first harvest and harvest duration.

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