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NURSERY MANAGEMENT PRACTICES FOR IMPROVING THE YIELD OF DRY CHILLI (*CAPSICUM ANNUUM* L.)

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Abstract

The experiment was conducted at Horticulture Research and Extension Station, Devihosur, Haveri, Karnataka (India) to study the effect of different methods of seed beds for raising seedlings and nipping practices followed at different intervals (before transplanting) on growth and dry yield of Bydagi Chilli (Dabbi). The pooled results of the experiment indicated that significantly higher dry Chilli yield (966 kg/ha) was obtained with raised bed + nipping of the seedlings 5 days before transplanting and this was followed by the flat bed + 5 days before transplanting (807 kg/ha). The incidence of leaf curl was also found least *i.e* the leaf curl index at 45 and 90 days after transplanting was found 0.60 and 0.56, respectively with the treatment raised bed + nipping 5 days before transplanting compare to other treatments.

Key words : Dry chilli, nipping, nursery management.

Introduction

Chilli is one of the most important commercial crops of India. It is grown almost throughout the country. Chilli occupies an important place in Indian diet. It is an indispensable item in the kitchen, as it is consumed daily as a condiment in one or the other form. Although, the crop has got greater export potentiality in spite of its huge domestic requirements, a number of factors have been seen to limit the crop productivity. Among them the damage caused by pests is significant. More than 293 insects pest are known to attack the crop. Among these thrips, mites and pod borer are the most serious pests. Though application of insecticides brought down the pest population they have led to the problem of pesticide residues in the fruits. The presence of residual pesticides has seriously affected the export of chillies. It is learnt that byadgi chilli lots were rejected at the international ports of the importing countries very often due to large pesticide residues. The indiscriminate use of chemicals has led to many undesirable problems like pest resurgence, destruction of natural enemies, environmental pollution etc. Hence, the present study initiated with ecofriendly approaches for raising healthy seedlings by adopting good nursery management practices.

Materials and Methods

A field experiment was conducted in *kharif* season during 2011, 2012 and 2013 on medium deep black soils at Horticultural Research and Extension Station, Devihosur, Haveri, which is located at latitude of 14.47^0N, longitude of 75.2^0E and with an altitude of 563.0 m above mean sea level (MSL). The experiment was laid out in randomized complete block design with three replications. The seeds of 'Byadagi Dabbi' cultivar were used for nursery preparation. Two types of seed beds were prepared, the flat beds with dimension of 7.5 m length and 1.0 m width and raised beds with dimension of 7.5 m length, 1.0 m width and 10 cm height on this seedlings were raised. The 35 days old seedlings were transplanted with the spacing of 60 cm × 60 cm. Before transplanting the nipping practice was followed on seed beds at different intervals. The treatments includes mainly $\mathbf{T_1}$ - Flat bed + Nipping 10 days before transplanting, $\mathbf{T_2}$ - Flat bed + Nipping 5 days before transplanting, $\mathbf{T_3}$ - Flat bed + Nipping on same day of transplanting, $\mathbf{T_4}$ - Flat bed + No Nipping, $\mathbf{T_5}$ - Raised bed + Nipping 10 days before transplanting, $\mathbf{T_6}$ - Raised bed + Nipping 5 days before transplanting, $\mathbf{T_7}$ - Raised bed + Nipping on same day of transplanting, $\mathbf{T_8}$ - Raised bed + No Nipping.

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Results and Discussion

The pooled results of the experiment revealed that raised bed + nipping of seedlings 5 days before transplanting has recorded significantly highest dry chilli yield (966 kg ha^{-1}) compare to rest of the treatments and this is followed by flat bed + 5 days before transplanting (807 kg ha^{-1}). The similar trend was observed during all the three years experimentation (2011 to 2013) (table 2). Similar result of increase in yield due to nipping practices was reported by Baloch and Zubair, 2010 and Traipathi and Rathi, 2000 also reported that nipping practices not only increase the yield but also reduces the fungal deceases in chickpea. Venkate Gowda *et al*. (2011) reported that nipping practice in castor made the crop free from Botrytis disease and increased yield over non nipping practice. The significant increase in dry fruit yield of chilli in treatment raised + nipping 5 days before transplanting is mainly due to higher yield parameters such as number of fruits per plant and fruit length and the growth parameters such as number of branches and number of leaves per plant (table 2). The increase in growth and yield parameters was mainly due to enhanced

Table 1 : Method of seed bed and nipping practices on growth and leaf curl index chilli (pooled of three years).

Treatments	Growth parameters 45 DAT			Leaf Curl Index	
	Plant height (cm)	No. of branches/plant	No. of leaves/plant	45 DAT	90 DAT
T_1 - Flat bed + Nipping 10 days before transplanting	37	4.0	128	1.38	1.83
T_2 - Flat bed + Nipping 5 days before transplanting	35	3.9	133	0.62	0.88
T_3 - Flat bed + Nipping on same day of transplanting	31	3.4	119	0.97	1.48
T_4 - Flat bed + No Nipping	41	2.9	112	1.50	1.67
T_5 - Raised bed+ Nipping 10 days before transplanting	36	4.3	134	1.05	1.76
T_6 - Raised bed + Nipping 5 days before transplanting	35	4.2	148	0.60	0.56
T_7 - Raised bed + Nipping on same day of transplanting	34	3.5	128	1.10	1.72
T_8 - Raised bed + No Nipping	40	3.2	118	1.25	1.59
S.Em±	**1.09**	**0.35**	**6.7**	**0.19**	**0.12**
C. D. @ 5%	**3.2**	**1.0**	**20.0**	**0.55**	**0.35**

Table 2 : Method of seed bed and nipping practices on growth and yield attributes of chilli (pooled of three years).

Treatments	Plant height (cm)	No. of branches $plant^{-1}$	No. of leaves $plant^{-1}$	No. of fruits $plant^{-1}$	Fruit length (cm)	Yield ha^{-1} (kg)
T_1 - Flat bed + Nipping 10 days before transplanting	62.5	5.5	367	30.9	8.8	685
T_2 - Flat bed + Nipping 5 days before transplanting	57.7	5.2	371	34.4	9.9	807
T_3 - Flat bed + Nipping on same day of transplanting	56.5	5.1	353	28.6	8.0	676
T_4 - Flat bed + No Nipping	57.0	4.6	343	26.1	8.1	699
T_5 - Raised bed+Nipping 10 days before transplanting	61.9	5.6	402	40.8	9.8	745
T_6 - Raised bed + Nipping 5 days before transplanting	57.5	6.5	458	49.8	11.2	966
T_7 - Raised bed + Nipping on same day of transplanting	60.1	5.1	382	37.8	9.5	727
T_8 - Raised bed + No Nipping	56.4	4.4	271	34.8	8.8	726
S.Em±	**3.49**	**0.16**	**10.8**	**1.76**	**0.38**	**36.1**
C. D @ 5%	**NS**	**0.50**	**35**	**5.4**	**1.1**	**109.5**

Table 3 : Economics of method of seed bed and nipping practices chilli (Pooled of three years).

Treatments	Yield ha^{-1} (kg)	Cost (Rs ha^{-1})	Gross returns (Rs ha^{-1})	Net returns (Rs ha^{-1})	B:C
T_1 - Flat bed + Nipping 10 days before transplanting	685	26800	65028	38228	2.43
T_2 - Flat bed + Nipping 5 days before transplanting	807	26800	76665	49865	2.86
T_3 - Flat bed + Nipping on same day of transplanting	676	26800	64173	37373	2.39
T_4 - Flat bed + No Nipping	699	26800	66405	39605	2.48
T_5 - Raised bed+ Nipping 10 days before transplanting	745	26800	70775	43975	2.64
T_6 - Raised bed + Nipping 5 days before transplanting	966	26800	91770	64970	3.42
T_7 - Raised bed + Nipping on same day of transplanting	727	26800	69065	42265	2.58
T_8 - Raised bed + No Nipping	726	26800	68970	42170	2.57
S.Em ±	**36.1**	-	**3972**	**3720**	**0.12**
C. D. @ 5%	**109.5**	-	**12400**	**10800**	**0.34**

photosynthetic activity resulting in production and accumulation of photosynthates in fruits. Trivedi (2006) also reported the similar results. The enhanced yield in treatment raised bed + nipping 5 days before transplanting is also due to significantly reduced leaf curl index (table 1) at 45 and 90 days after transplanting (0.60 and 0.56, respectively). The nipping of leaves 5 days before transplanting made the seedlings free from sucking pest (thrips). The similar results of reduced disease was also noticed by Venkate Gowda *et al*. (2011).

The economics of the experiment (table 3) revealed that significantly higher gross returns (Rs. 91,770/-), net returns (Rs. 64,970/-) and B : C ratio (3.42) per hector was recorded with raised bed + nipping 5 days before transplanting compare to rest of the treatments. The similar trend was also noticed with B:C ratio (3.42). These results are in conformity with Venkate Gowda *et al*. (2011).

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