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Effect of Spacing and Fertilizer Dose on Seed Yield and Economics of Coriander (*Coriandrum sativum* L.)

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ABSTRACT
The three years (2011, 2012 and 2013) pooled results of the experiment conducted at Horticulture Research and Extension Station, Devihosur, Haveri, Karnataka revealed Sowing of coriander in a row spacing (S2) 30 x 10 cm with fertilizer dose F2- 35:35:35 kg $NP_2O_5K_2O$/ha (RDF) recorded significantly higher seed yield of (20.7 q/ha), net income and benefit cost ratio in northern transitional zone of Karnataka under medium deep balck clay soil.
Key words : *Coriander seed, Row spacing, Fertilizer dose, Nutrient management, Economics*

INTRODUCTION

Coriander (*Coriandrum sativum* L.) is an important spice in Indian subcontinents. It is an annual herb of about half a meter in height, belonging to family Apiaceae. The average yield per unit area in India is low (10.27 q/ ha) as against world average of 23.78 q/ha [5]. Hence, there is a lot of scope for improving the cultivation practices to enhance the maximum potential seed yield in coriander. Among the production techniques the basic agronomic management practices like time of sowing, planting geometry, seed rate and nutrient management practices plays an important role in enhancing the productivity of the coriander [3]. Such practices also help to avoid or reduce the incidence of pest and diseases to a greater extent. The production potential of the crop varies with soil type and agro climatic zones. Hence, it needs the separate package of practices for the production in that region. Keeping this background in view the present investigation on effect of spacing and fertilizer dose on seed yield of coriander in northern transitional zone of Karnataka was under taken.

MATERIALS AND METHODS

The field research experiment was conducted at Horticulture Research and Extension Station, Devihosur, Haveri, Karnataka for three years (2011, 2012, and 2013) in medium deep black soil during *rabi* season. The coriander variety used was Ajjampur local. The experimental design was split plot design with three main and five sub treatments replicated thrice. The main treatments were spacing viz., S1 : 22.5 x 10 cm (9''), S2 : 30 x 10 cm (12''), S3 : 37.5 x 10 cm (15'') row spacing . Sub plot treatments were fertilizer doses viz., F1-25:35:35 kg $NP_2O_5K_2O$/ha, F2- 35:35:35 kg $NP_2O_5K_2O$/ha (RDF), F3-45:35:35 kg $NP_2O_5K_2O$/ha, F4-FYM @ 6.25 t/ha, F5- Vermi compost @ 3.5 t/ha. FYM and vermicompost are applied on nitrogen equivalent base. Full dose of phosporus, potash and half dose of nitrogen is applied at the time of sowing as basal dose and remaining 50 per cent of nitrogen applied after 30 days sowing. All other necessary crop husbandry practices were taken to raise the crop.

RESULT AND DUSCUSSION

The three years (2011, 2012 and 2013) pooled results of the experiment (Table 1) revealed that the seed yield of coriander differed significantly for row spacing. The row spacing of 30 x 10 cm recorded significantly higher seed yield of 18.8 q/ha compared to other row spacing. Among the fertilizer doses the

application of fertilizer (F2) 35:35:35 kg $NP_2O_5K_2O$/ha (RDF) recorded significantly highest seed yield of 18.5 q/ha. However, it is found on par with the fertilizer dose F3-45:35:35 kg $NP_2O_5K_2O$/ha. The interaction of row spacing and fertilizer dose also differed significantly for seed yield. The interaction of row spacing (S2) 30 x 10 cm with fertilizer dose F2- 35:35:35 kg $NP_2O_5K_2O$/ha (RDF) recorded significantly higher seed yield of 20.7 q/ha however, it was on par with the interaction of row spacing S2 : 30 x 10 cm with fertilizer dose F3-45:35:35 kg $NP_2O_5K_2O$/ha. These results are in conformity with the findings of Arora *et al.,* [1], Kurubetta *et al.* [3] and Malhotra *et al.* [4].

The gross income, net income and B:C ratio (Table 2) also differed significantly for the row spacing and fertilizer doses. Among the row spacing the 30 x 10 cm recorded the significantly highest gross and net income of Rs. 67,536/ha and Rs. 49,816/ha respectively compared to other row spacing. Among the fertilizer doses significantly highest gross income of Rs. 66,360/ha and net income of Rs.48,660/ha was recorded for the fertilizer dose F2- 35:35:35 kg NP2O5K2O/ha (RDF). The interaction of row spacing (S2) 30 x 10 cm with fertilizer dose F2- 35:35:35 kg NP2O5K2O/ha (RDF) recorded significantly highest gross and net income of Rs. 74,520/ha and Rs.56,820/ha respectively. However, it was found on par with the interaction of row spacing S2 : 30 x 10 cm with fertilizer dose F3-45:35:35 kg $NP_2O_5K_2O$/ha. The similar trend was also noticed with respect to B:C ratio also. Significantly highest B:C ratio of 4.2 was recorded for the interaction with row spacing (S2) 30 x 10 cm with fertilizer dose F2- 35:35:35 kg NP2O5K2O/ha (RDF). Similar findings were also noticed by Kurubetta *et al.* [2], and Yadav [6].

Table 1. Effect of row spacing and seed rate on seed yield and cost of cultivation of coriander

Pooled	Seed yield (q/ha)						Cost of Cultivation (Rs/ha)					
Row Spacing	Fertilizer Dose (kg/ha)											
	F 1	**F 2**	**F 3**	**F 4**	**F 5**	**Mean**	**F 1**	**F 2**	**F 3**	**F 4**	**F 5**	**Mean**
S1 : 22.5 x 10 cm	18.0	18.0	17.2	18.3	18.5	**18.0**	17200	17700	18900	17800	17000	**17720**
S2 : 30 x 10 cm	18.8	20.7	20.3	16.9	17.3	**18.8**	17200	17700	18900	17800	17000	**17720**
S3 : 37.5 x 10 cm	15.3	16.7	16.8	15.6	15.4	**16.0**	17200	17700	18900	17800	17000	**17720**
Mean	**17.4**	**18.5**	**18.1**	**16.9**	**17.1**	**17.6**	**17200**	**17700**	**18900**	**17800**	**17000**	**17720**
	S.Em+		**C.D @ 5 %**				**S.Em+**		**C.D @ 5 %**			
Row Spacing	0.27		0.70									
Fertilizer Dose	0.18		0.52									
Interaction (S X F)	0.63		1.36									

Where - F1-25:35:35 kg $NP_2O_5K_2O$/ha,   F2- 35:35:35 kg $NP_2O_5K_2O$/ha (RDF),   F3-45:35:35 kg $NP_2O_5K_2O$/ha, F4-FYM @ 6.25 t/ha, F5- Vermi compost @ 3.5 t/ha.

Table 2. Effect of row spacing and seed rate on gross income, net income and B:C ratio of the coriander

Pooled	Gross Income (Rs/ha)						Net Income (Rs/ha)						B:C ratio					
Row Spacing	Fertilizer Dose (kg/ha)																	
	F 1	**F 2**	**F 3**	**F 4**	**F 5**	**Mean**	**F 1**	**F 2**	**F 3**	**F 4**	**F 5**	**Mean**	**F 1**	**F 2**	**F 3**	**F 4**	**F 5**	**Mean**
S1 : 22.5 x 10 cm	61030	64620	61740	65700	66600	**63938**	43830	46920	42840	47900	49600	46218	3.6	3.7	3.3	3.7	3.9	**3.6**
S2 : 30 x 10 cm	67500	74520	72900	60660	62100	**67536**	50300	56820	54000	42860	45100	49816	3.9	4.2	3.9	3.4	3.7	**3.8**
S3 : 37.5 x 10 cm	55080	59940	60480	55980	55260	**57348**	37880	42240	41580	38180	38260	39628	3.2	3.4	3.2	3.1	3.3	**3.2**
Mean	61203	66360	65040	60780	61320	62941	44003	48660	46140	42980	44320	45221	3.6	3.8	3.4	3.4	3.6	**3.6**
	S.Em+		**C.D @ 5 %**				**S.Em+**		**C.D @ 5 %**				**S.Em+**		**C.D @ 5 %**			
Row Spacing	341.3		1024				581.09		1739				0.07		0.19			
Fertilizer Dose	218.2		642				371.51		1092				0.04		0.10			
Interaction (S X F)	783.3		1692				1333.64		2881				0.15		0.34			

Where - F1-25:35:35 kg $NP_2O_5K_2O$/ha,   F2- 35:35:35 kg $NP_2O_5K_2O$/ha (RDF),   F3-45:35:35 kg $NP_2O_5K_2O$/ha, F4-FYM @ 6.25 t/ha, F5- Vermi compost @ 3.5 t/ha.

CONCLUSION

Sowing of coriander in a row spacing (S2) 30 x 10 cm with fertilizer dose F2- 35:35:35 kg $NP_2O_5K_2O$/ha (RDF) recorded significantly higher seed yield of (20.7 q/ha), net income and benefit cost ratio in northern transitional zone of Karnataka under medium deep balck clay soil.

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