**Bulletin of Environment, Pharmacology and Life Sciences** 

Bull. Env. Pharmacol. Life Sci., Vol 7 [4] April 2018 : 11-13 ©2018 Academy for Environment and Life Sciences, India Online ISSN 2277-1808 Journal's URL:http://www.bepls.com CODEN: BEPLAD Global Impact Factor 0.876 Universal Impact Factor 0.9804 NAAS Rating 4.95

**ORIGINAL ARTICLE** 



**OPEN ACCESS** 

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

Krishna D. Kurubetta \*, R. K. Mesta, T. B. Allolli, M. H. Tatagar, M. Abdul Kareem and K. Sweta

\* Assistant Professor of Agronomy, Horticulture Research and Extension Station, Devihosur-581110, Haveri, Karnataka. e-mail: krishna.kurubetta@uhsbagalkot.edu.in

## 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

Received 22.02.2018

Revised 02.03.2018

Accepted 16.04.2018

## **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<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha, F2- 35:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha (RDF), F3-45:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/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 vield 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 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/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<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha. The interaction of row spacing and fertilizer dose also differed significantly for seed yield. The interaction of row spacing (S2)  $30 \times 10$  cm with fertilizer dose F2- 35:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha (RDF) recorded significantly higher seed yield of 20.7 q/ha however, it was on par with the interaction of row spacing S2 :  $30 \times 10$  cm with fertilizer dose F3-45:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/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 NP205K20/ha (RDF). The interaction of row spacing (S2) 30 x 10 cm with fertilizer dose F2- 35:35:35 kg NP205K20/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<sub>2</sub>0<sub>5</sub>K<sub>2</sub>O/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 NP205K2O/ha (RDF). Similar findings were also noticed by Kurubetta *et al.* [2], and Yadav [6].

Pooled		Se	eed y	ield (	(q/ha	ı)	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 <u>+</u>			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													

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

Where - F1-25:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha, F2- 35:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha (RDF), F3-45:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/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

Gross Income (Rs/ha)							Net Income (Rs/ha)							B:C ratio					
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		
1030	64620	61740	65700	66600	63938	43830	46920	42840	47900	49600	46218	3.6	3.7	3.3	3.7	3.9	3.6		
7500	74520	72900	60660	62100	67536	50300	56820	54000	42860	45100	49816	3.9	4.2	3.9	3.4	3.7	3.8		
5080	59940	60480	55980	55260	57348	37880	42240	41580	38180	38260	39628	3.2	3.4	3.2	3.1	3.3	3.2		
1203	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 <u>+</u>			C.D @ 5 %			S.Em <u>+</u>			C.D @ 5 %			S.Em±		C.D @ 5 %					
341.3			1024			581.09			1739			0.07		0.19					
218.2			642			371.51			1092			0.04		0.10					
783.3			1692			1333.64			2881			(	0.15		0.34				
	<b>F 1</b> 1030 7500 5080 1203	F 1         F 2           1030         64620           7500         74520           5080         59940           1203         66360           S.Em±         341.3           218.2         783.3	F 1         F 2         F 3           1030         64620         61740           7500         74520         72900           5080         59940         60480           1203         66360         65040           S.Em±         341.3         218.2           783.3         783.3         783.3	F1         F2         F3         F4           1030         64620         61740         65700           7500         74520         72900         60660           5080         59940         60480         55980           1203         66360         65040         60780           S.Em±         0         341.3         218.2           783.3         2         783.3         1	F1         F2         F3         F4         F5           1030         64620         61740         65700         66600           7500         74520         72900         60660         62100           5080         59940         60480         55980         55260           1203         66360         65040         60780         61320           S.Em±         C.D @ 5         341.3         1024           218.2         6422         783.3         1692	F1         F2         F3         F4         F5         Mean           1030         64620         61740         65700         66600         63938           7500         74520         72900         60660         62100         67536           5080         59940         60480         55980         55260         57348           1203         66360         65040         60780         61320         62941           S.Em±         C.D@5 %         341.3         1024         218.2         642           783.3         1692         5506         5060         5060         5060         5060         507348         5060         507348         5060         507348         5060         507348         507348         50740         50	F1         F2         F3         F4         F5         Mean         F1           1030         64620         61740         65700         66600         63938         43830           7500         74520         72900         60660         62100         67536         50300           5080         59940         60480         55980         55260         57348         37880           1203         66360         65040         60780         61320         62941         44003           S.Em±         C.D @ 5 %         341.3         1024         218.2         642         783.3         1692         1	F1         F2         F3         F4         F5         Mean         F1         F2           1030         64620         61740         65700         66600         63938         43830         46920           7500         74520         72900         60660         62100         67536         50300         56820           5080         59940         60480         55980         55260         57348         37880         42240           1203         66360         65040         60780         61320         62941         44003         48660           S.Em±         C.D @ 5 %         S.Em±         341.3         1024         581.09         218.2         642         371.51           783.3         1692         1333.64         1033.64         1033.64         1033.64         1033.64	F1         F2         F3         F4         F5         Mean         F1         F2         F3           1030         64620         61740         65700         66600         63938         43830         46920         42840           7500         74520         72900         60660         62100         67536         50300         56820         54000           5080         59940         60480         55980         55260         57348         37880         42240         41580           1203         66360         65040         60780         61320         62941         44003         48660         46140           S.Em±         C.D @ 5 %         S.Em±         341.3         1024         581.09         218.2         642         371.51         783.3         1692         1333.64	F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4         1030       64620       61740       65700       66600       63938       43830       46920       42840       47900         7500       74520       72900       60660       62100       67536       50300       56820       54000       42860         5080       59940       60480       55980       55260       57348       37880       42240       41580       38180         1203       66360       65040       60780       61320       62941       44003       48660       46140       42980         S.Em±       C.D @ 5 %       S.Em±       0       341.3       1024       581.09       218.2       642       371.51       783.3       1692       1333.64       109       10	F1         F2         F3         F4         F5         Mean         F1         F2         F3         F4         F5           1030         64620         61740         65700         66600         63938         43830         46920         42840         47900         49600           7500         74520         72900         60660         62100         67536         50300         56820         54000         42860         45100           5080         59940         60480         55980         55260         57348         37880         42240         41580         38180         38260           1203         66360         65040         60780         61320         62941         44003         48660         46140         42980         44320           S.Em±         C.D @ 5 %         S.Em±         C.D @ 5         341.3         1024         581.09         1739           218.2         642         371.51         1092         1333.64         2881           783.3         1692         1333.64         2881         2881	F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F5       Mean         1030       64620       61740       65700       66600       63938       43830       46920       42840       47900       49600       46218         7500       74520       72900       60660       62100       67536       50300       56820       54000       42860       45100       49816         5080       59940       60480       55980       55260       57348       37880       42240       41580       38180       38260       39628         1203       66360       65040       60780       61320       62941       44003       48660       46140       42980       44320       45221         S.Em±       C.D @ 5 %       S.Em±       C.D @ 5 %       S.Em±       C.D @ 5 %       341.3       1024       581.09       1739         218.2       642       371.51       1092       783.3       1692       1333.64       2881       2881	F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F5       Mean       F1       S2       F3       F4       F5       Mean       F1       F2       F3       F4       F5       Mean       F1         1030       64620       61740       65700       66600       63938       43830       46920       42840       47900       49600       46218       3.6         7500       74520       72900       60660       62100       67536       50300       56820       54000       42860       45100       49816       3.9         5080       59940       60480       55980       55260       57348       37880       42240       41580       38180       38260       39628       3.2         1203       66360       60780       61320       62941       44003       48660       46140       42980       44320       45221       3.6         S.Em±       C.D @ 5 %       S.Em±       C.D @ 5 %       S.Em±       71.51       1092       (0         218.2       642       371.51       1092       (0       78	F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F3       Mean       F1       F2       F3       F4       F3       F3       F3       F3       F	F1       F2       F3       F4       F5       Mean       F1       F2       F3       F3       F4       F3       Mean       F1       F2       F3       F3       F4       F3       F3       F	F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F3       Mean       F1       F2       F3       F4       F3       Mean       F1       F3 <th< th=""><th>F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F5       Mean       F4       F5       F4       F5       Mean       F4       F3       F4       F3       F4       F3       F3       F4</th></th<>	F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F5       Mean       F1       F2       F3       F4       F5       Mean       F4       F5       F4       F5       Mean       F4       F3       F4       F3       F4       F3       F3       F4		

Where - F1-25:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha, F2- 35:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha (RDF), F3-45:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/ha, F4-FYM @ 6.25 t/ha, F5- Vermi compost @ 3.5 t/ha.

#### CONCLUSION

#### Kurubetta et al

Sowing of coriander in a row spacing (S2)  $30 \times 10$  cm with fertilizer dose F2- 35:35:35 kg NP<sub>2</sub>O<sub>5</sub>K<sub>2</sub>O/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.

#### REFERENCES

- 1. Arora, N. D. Malik, B. S. and Lodhi, G. P., (1971). Studies on effect of row spacing and seed rate on the grain yield of cowpea (*Vigna sinensis* L.), *Haryana Agricultual University Journal of Research*, 3:28-29
- 2. Kurubetta , K. D., Alagundagi, S. C., Mansur, C. P. and Uppar, D. S. (2008), Effect of time of sowing, spacing and seed rate on seed yield and quality of fodder [*Vigna unguiculata* (L.) WALP.], *Seed Research*, 36 (2): 208-210.
- 3. Kurubetta , K. D., Alagundagi, S. C., Mansur, C. P., Hosamani, S. V. and Uppar, D. S. (2008), Effect of time of sowing, spacing and seed rate on seed production potential and economics of fodder cowpea, *The Andra Agriculture Journal*, 55 (1): 14-17.
- 4. Malhotra, S. K., Vashista, B. B. and Apparao, V. V. (2006), Influence of nitrogen, azospirillum sp. and farm yard manure on growth, yield and incidence of stem gall disease Coriander (*Coriandrum sativum* L.), *Journal of Spices and Aromatic Crops*, 15 (2) : 115-117.
- 5. Roshan Lal Sahu, Hansa Sahu and Sachin Kumar (2014). Effect of application of inorganic fertilizers and biofertilizers on growth components and yield traits of coriander (*Coriandrum sativum* L.). Progressive Horticulture, 46(1): 102-106
- 6. Yadav, G. L., (2003). Effect of time, row spacing and seed rate on yield of cowpea under rainfed condition. *Indian Journal of Pulses Research*, 16 (2): 157-158.

CITATION OF THE ARTICLE

Krishna D. Kurubetta, R. K. Mesta, T. B. Allolli, M. H. Tatagar, M. Abdul Kareem and K. Sweta. Effect of Spacing and Fertilizer Dose on Seed Yield and Economics of Coriander (*Coriandrum sativum* L.). Bull. Env. Pharmacol. Life Sci., Vol 7 [5] April 2018 : 11-13