www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2018; 7(8): 102-104

www.thepharmajournal.com
Received: 18-06-2018
Accepted: 19-07-2018

Janeesa Nabi
Division of Vegetable Science, Faculty of Horticulture, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Jammu and Kashmir, India

Faheema Mushtaq
Division of Vegetable Science, Faculty of Horticulture, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Jammu and Kashmir, India

Nighat Mushtaq
Division of Vegetable Science, Faculty of Horticulture, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Jammu and Kashmir, India

Labiba Riyaz
Division of Vegetable Science, Faculty of Horticulture, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Jammu and Kashmir, India

Nayeema Jabeen
Division of Vegetable Science, Faculty of Horticulture, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Jammu and Kashmir, India

Correspondence
Janeesa Nabi
Division of Vegetable Science, Faculty of Horticulture, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Jammu and Kashmir, India

Influence of different levels of nitrogen fertilization on initiation of germination and branching number in coriander (*Coriandrum sativum* L.) var. Shalimar Dhania-1

Janeesa Nabi, Faheema Mushtaq, Nighat Mushtaq, Labiba Riyaz and Nayeema Jabeen

Abstract
Cultivation of nutrient responsive crop using eco-friendly innovative techniques like integrated use of organic manures along with inorganic fertilizer for sustainable use of available resources has proved to be best way to increase production level. Integration of organics with inorganic source of nitrogen (urea) resulted in significant influence on various growth and other parameters as compared to sole application of various levels of nitrogen through urea. Maximum number of lateral branches plant^{-1} (8.50) was recorded by treatment, T_9 (50% nitrogen of T_3 through urea + 50% nitrogen of T_3 through vermicompost. The study also revealed that minimum days taken for 50% germination (19.63) were also recorded by treatment T_9 (50% nitrogen of T_3 through urea + 50% nitrogen of T_3 through vermicompost) and maximum in control.

Keywords: Coriander, FYM, Vermicompost, growth, germination, Shalimar Dhania-1

1. Introduction
Coriander (*Coriandrum sativum* L.) is an annual herb and grown for both green leaves and dried seeds. Coriander is famous for its nutritional value, medicinal effects and therapeutic uses. It is used as a natural flavoring agent in food industry. Leaves are rich source of vitamin C (12 mg/100g), vitamin A (10,460 I.U./100g) and dietary fibre (10.40 mg/100g). The leaves and seeds contain 52.10 g/100g and 54.99 g/100g carbohydrates, 21.93g/100g and 12.37g/100g proteins and 1246 mg/100g and 709 mg/100g calcium, respectively (Anonymous, 2013) [1]. Coriander is an important seed spice grown as a winter crop in Kashmir. The crop responds well to the application of both organic manures and inorganic fertilizers. Although agroclimatic conditions of Kashmir valley are quite congenial for the cultivation of coriander crop but acreage as well as production of this crop is still low. One of the reasons for this low production and acreage may be non judicious use of fertilizers to raise this crop Nitrogen fertilization plays major role in crop yield improvement with better plant health (Kizil and Ipek, 2004) [3]. Application of nitrogen encourages vegetative growth, which results in the increased yield of leaves and seeds of coriander (Datta *et al*., 2008) [2]. Deficiency of nitrogen induces several morphological and physiological hazards like growth retardation, decreased leaf and branch number (Nasim *et al.*, 2012) [4]. To have consistently higher yield of quality produce of the leafy type coriander varieties, standardization of nitrogen requirement is very much pertinent, which can be achieved by use of both organic and inorganic fertilizers.

2. Materials and methods
The experiment was carried out at Experimental Field of the Division of Vegetable Science, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Shalimar, Srinagar. The experimental material consisted of one variety of coriander crop Shalimar Dhania-1. Urea and organic manures *viz.* Farmyard manure (FYM) and vermicompost were used as sources of nitrogen. Thirty plots of 2.0m × 2.0m size were prepared as per layout specifications to accommodate 200 plants plot^{-1}, planted in 10 rows with 20 plants row^{-1}. The seeds of Coriander variety Shalimar Dhania-1 were sown with spacing of 20 × 10 cm.

3. Result and discussion

3.1 Days taken for initiation of germination

Maximum days taken for initiation of germination was recorded with treatment, T_3 (100 kg nitrogen ha^{-1} through urea) i.e. 14.94 which was statistically at par with treatment T_2 and superior to treatment T_1. Maximum days taken for initiation of germination (15.24) were recorded in treatment, T_{10} (control) and the minimum days (12.00) were recorded in treatments, T_6 (50% nitrogen of T_3 through urea + 50% nitrogen of T_3 through FYM) and T_5 (50% nitrogen of T_2 through urea + 50% nitrogen of T_2 through FYM).Among individual levels of nitrogen maximum days taken for 50% germination were recorded with treatment, T_3 (100 kg nitrogen ha^{-1} through urea) i.e. 24.00 which was statistically at par with other two levels. The superiority of this combination might be due to added advantage of FYM, which besides being a bulky organic manure and a good source of all the essential macro and micro nutrients, also improves physical conditions of soil such as granulation, friability, porosity and water holding capacity, which enable the crop to utilize nutrients and water more efficiently. Similar findings have been reported by Ravimycin (2016) [5] in coriander.

3.2 Days taken for 50% of germination

Maximum days taken for 50% germination were recorded in treatment, T_{10} (control) viz., 25.31 which was statistically superior to all other treatments tested and was followed by treatment, T_4 (50% nitrogen of T_1 through urea + 50% nitrogen of T_1 through FYM) recording 24.80 days taken to 50% germination. The minimum days taken for 50% germination (19.63) were recorded by treatment, T_9 (50% nitrogen of T_3 through urea + 50% nitrogen of T_3 through vermicompost) which was statistically at par with treatment, T_8 (50% nitrogen of T_2 through urea + 50% nitrogen of T_2 through vermicompost) recording 19.72 days. followed by treatment, T_7 (50% nitrogen of T_1 through urea + 50% nitrogen of T_1 through vermicompost) recording 20.47 days for 50% germination. Because vermicompost is a rich source of macro and micro nutrients which are released into the soil slowly over a period of time, enabling the plants to consume these nutrients throughout their life cycle. Vermicompost also contains beneficial soil bacteria (Sinha *et al*., 2010) [8]. So, its dominating role over FYM is obvious.

3.3 Number of lateral branches

Maximum number of lateral branches (7.75) was recorded with highest level of nitrogen application viz., 100 kg nitrogen ha^{-1} through urea with 7.50 number of lateral branches. Treatment, T_9 (50% nitrogen of T_3 through urea + 50% nitrogen of T_3 through vermicompost.) recorded maximum number of lateral branches viz., 8.50. Minimum number of lateral branches (4.72) was recorded in T_{10} (control). Probable reason for increased number of lateral branches in treatment, T_9 (50% nitrogen of T_3 through urea + 50% nitrogen of T_3 through vermicompost) may be increased rates of photosynthesis. This character is also found to be related with endogenous hormonal level and apical dominance in the plant. Similiar findings have been reported by Vliki *et al*. (2015) [9] in fennel and Sahu *et al*. (2014) [6] in coriander. It seems that lack of nutrient elements led to lowest growth in treatment, T_{10} i.e. control.

Table 1: Influence of different levels of nitrogen on growth parameters of coriander var. Shalimar Dhania- 1

Treatments		Days taken for initiation of germination	Days taken for 50% germination	Number of lateral branches
T_1	40 kg nitrogen ha^{-1} through urea	14.50	5.83	50.07
T_2	70 kg nitrogen ha^{-1} through urea	14.75	7.50	69.10
T_3	100 kg nitrogen ha^{-1} through urea	14.94	7.75	69.15
T_4	50% nitrogen of T_1 through urea + 50% nitrogen of T_1 through FYM	12.15	6.08	52.75
T_5	50% nitrogen of T_2 through urea + 50% nitrogen of T_2 through FYM	12.00	7.58	70.21
T_6	50% nitrogen of T_3 through urea + 50% nitrogen of T_3 through FYM	12.00	8.00	70.50
T_7	50% nitrogen of T_1 through urea + 50% nitrogen of T_1 through vermicompost	13.50	6.95	55.91
T_8	50% nitrogen of T_2 through urea + 50% nitrogen of T_2 through vermicompost	13.00	8.00	74.12
T_9	50% nitrogen of T_3 through urea + 50% nitrogen of T_3 through vermicompost	13.00	8.50	74.50
T_{10}	Control	15.24	4.72	40.00
	C.D ($p<0.05$)	0.28	0.76	3.15
	SE(d)	0.14	0.38	1.57

4. References

1. Anonymous. USDA National Nutrient Database for standard reference Release 26 full report (all nutrients) Nutrient data. Spices, Coriander Seed, 2013.
2. Datta S, Alam K, Chatterjee R. Effect of different levels of nitrogen and leaf cutting on growth, leaf and seed yield of coriander. Indian Journal of Horticulture. 2008; 65(2):201-203.
3. Kizil S, Ipek A. The effects of different row spacing and nitrogen on yield, yield components and essential oil content of some coriander (*Coriandrum sativum* L.) lines. Journal of Agriculture. 2004; 10(3):237-240.
4. Nasim WAJID, Ahmad A, Hammad HM, Chaudhary HJ, Munis MFH. Effect of nitrogen on growth and yield of sunflower under semi-arid conditions of Pakistan. Pakistan Journal of Botany. 2012; 44(2):639-648.
5. Ravimycin T. Effect of vermicompost and farmyard manure on the germination percentage, growth biochemical and nutrient content of coriander. International Journal of Advanced Research in Biological Sciences. 2016; 3(6):91-98.
6. Sahu RL, Sahu H, Kumar S. Effect of application of

inorganic fertilizers and bio-fertilizers on growth components and yield traits of coriander (*Coriandrum sativum* Linn.). International Journal of Agriculture Science. 2014; 10:433-436.
7. Singh SP. Effect of bio-fertilizer azospirillum on growth and yield parameters of coriander (*Coriandrum sativum* L.) cv. Pant haritima. Vegetable Science. 2013; 40(1):77-79.
8. Sinha J, Biswas CK, Ghosh A, Saha R. Efficiency of vermicompost against fertilizers on Cicer and Piscum and on population diversity of nitrogen fixing bacteria. Journal of Environmental Biology. 2010; 31:287-292.
9. Valiki SRH, Ghanbari S, Golmohammadzadeh S, Tat OF. The Effect of vermicompost and npk fertilizer on yield, growth parameters and essential oil of fennel (*Foeniculum vulgare*). International Journal of Life Sciences. 2015; 9(4):38-43.