



# Effect of Nitrogen and Cutting on Growth and Seed Yield of Coriander (*Coriandrum sativum* L.)

Navdeep Singh and Arshpreet Kaur

Vegetable Department, University College of Agriculture, Guru Kashi University,  
Talwandi Sabo, 151302 (Punjab), India

## ABSTRACT

A field experiment was conducted during *rabi* season of 2020-21 to study the effect of nitrogen and cutting on growth and seed yield of Coriander (*Coriandrum sativum* L.). The experiment comprised of eight treatment combinations with two levels of cutting at 45 d and 60 d and three levels of nitrogen *i.e.*, 15 kg, 30 kg, 45 kg/ ha and control was laid out in randomized block design with three replications. The results revealed that the combination of 30 kg nitrogen/ha + cutting at 45 d was significantly superior for plant height, number of branches per plant, plant spread, number of umbels per plant, number of seeds per umbellate, seed weight per plant and highest seed yield.

**Key Words:** Coriander, cutting, nitrogen, seed, yield.

## INTRODUCTION

Coriander (*Coriandrum sativum* L.) belongs to the family *Apiaceae* is one of the earliest spices being utilized by mankind (Luaza *et al*, 1996). The coriander plant gives two primary products that are used for flavouring purposes: the fresh green herb and the spice (Nanda *et al*, 2011). The herb is used for culinary flavouring purposes all over the world (Ramadan *et al*, 2002). For plant growth nitrogen is an essential nutrient element. Deficiency of nitrogen cause yellowish of lower leaves, stunted plant growth as well as poor yield (Yawalkar *et al*, 1967) whereas, excess application of nitrogen is responsible for luxurious shoot growth which makes plant more susceptible to pest and diseases. The green leaf yield of coriander was recorded highest with 90 kg N/ha and two cutting (Thakral and Tehlan, 2008). Foliage cutting at the appropriate time before flowering causes multiplying of the branches that lead to increase in inflorescence number and seed yield. On the other hand, delayed cutting or cutting near to flowering reduces the plant growth and decrease the seed yield. It was therefore, considered necessary to evaluate the

effect of nitrogen and cutting on growth of coriander and the effect of nitrogen and cutting on seed yield of coriander.

## MATERIALS AND METHODS

The research investigations were carried out in the experimental area of Guru Kashi University, Talwandi Sabo (Bathinda) during *Rabi* 2020-2021. The field experiment was carried out in randomized block design with three replications and the experiment consisted of eight treatments *i.e.* (T1): Control + cutting at 45 d, (T2): Control + cutting at 60 d, (T3): 15kg N/ha + cutting at 45 d, (T4): 15 kg N/ha + cutting at 60 d, (T5): 30 kg N/ha + cutting at 45 d, (T6): 30 Kg N /ha+ cutting at 60 d, (T7): 45 kg N/ha + cutting at 45 d and (T8): 45 kg N/ha + cutting at 60 d. The variety, Punjab Sugandh was used to conduct this study. The data were analyzed for the plant height (cm), number of branches per plant, plant spread (cm), number of umbels per plant, number of umbellate per umbel, test weight (g), number of seeds per umbellate, seed weight per plant (g), seed yield (q/ha) with the help of OPSTAT (Statistical Software Package for Agricultural

**Table 1. Mean performance of growth parameters in coriander.**

Treatment	Plant height (cm)	Number of branches per plant	Plant spread (cm)	Number of umbels per plant
T1: Control + cutting at 45 d	44.8	17.65	13.32	9.44
T2: Control + cutting at 60 d	44.9	17.27	13.62	9.5
T3: 15kg Nitrogen/ha + cutting at 45 d	45.73	17.3	13.72	9.5
T4: 15 kg Nitrogen/ha + cutting at 60 d	46.8	17.52	13.83	9.41
T5: 30 kg Nitrogen/ha + cutting at 45 d	49.53	18.41	14.93	10.81
T6: 30 Kg Nitrogen/ha + cutting at 60 d	48.21	18.18	14.72	9.91
T7: 45 kg Nitrogen/ha + cutting at 45 d	48.68	18.22	14.52	9.67
T8: 45 Kg Nitrogen/ha + cutting at 60 d	48.68	18.10	14.10	9.55
CD at 5%	1.58	0.20	0.40	1.08

Research Workers) (Sheoran *et al*, 1998). The critical difference at 5% level of implication was calculated to equate the mean different treatments.

## RESULTS AND DISCUSSION

The data (Table 1) revealed that T<sub>5</sub> gave the highest plant height (49.53 cm) and was at par with T<sub>6</sub>, T<sub>7</sub> and T<sub>8</sub> as well as the highest plant spread (14.93) which was at par with T<sub>6</sub> (14.72 cm). Application of nitrogen and cutting proved significantly superior in T<sub>5</sub> and was at par with T<sub>7</sub> about number of branches per plant. It was observed that application of 30 Kg Nitrogen/ha + cutting at 45 days significantly increased the number of umbels per plant of coriander. Similarly, Materechera and Medupe (2006) concluded that bi-weekly cutting increased the number of leaves, fresh weight and leaf dry matter produced per plant of amaranth. Suphachai *et al* (2006) also studied that kale, pakchoi and green petiole, the fertilizer efficiency was best at the nitrogen fertilizer rate of 156 k/ha.

The data (Table 2) revealed that T<sub>5</sub> proved to be notable on the effect on number of umbellate per umbel. Singh *et al* (2018) also found that nitrogen level 60 kg/ha and cutting at 60 DAS gave the maximum harvest index of 0.44. It was recorded that there was significant increase in mean number

of seeds per umbellate in T<sub>5</sub> which was at par with T<sub>7</sub> and T<sub>8</sub>. Treatment T<sub>5</sub> gave more seed weight per plant and highest test weight (14.12g) in coriander over other treatments. Guha *et al* (2013) also found that highest leaf yield in two cutting and highest seed yield was observed in one cutting. Rop *et al* (2012) also suggested that either 90 kg N/ ha or 120 kg N/ ha can be used to enhance quality and leaf yield in Indian spinach. The highest seed yield (13.88 q/ ha) was recorded from T<sub>5</sub> followed by T<sub>7</sub> with seed yield 13.30 q/ha. Diwan *et al* (2018) explained that maximum seed yield of 16.66 q/ ha was obtained in coriander (Jawahar Dhaniya-2) with treatment combination N<sub>5</sub>S<sub>1</sub> (N: 90 kg N/ ha, S: 30x10 cm).

## CONCLUSION

Major nutrient and cutting days which are required for the good production or yield of Coriander. Seed yield ultimately depends on good yield contributing characters, which can be obtained from adequate dose of fertilizers and cutting. It can be concluded that appropriate dose of nitrogenous fertilizers along with the cuttings has significant effect on various parameters whereas, the combination of nitrogen (30 kg/ha) and cutting at 45 days fetched the superior results in most of the attributes seed weight per plant 4.35g and seed yield 13.88 q/ha which was at par with 45 kg/ha nitrogen

## Effect of Nitrogen and Cutting on Growth and Seed Yield

**Table 2. Mean performance of seed yield parameters in coriander.**

Treatment	Number of umbellate per umbel	Test weight (g)	Number of seeds per umbellate	Seed weight per plant (g)	Seed yield (q/ha)
T1: Control + cutting at 45 d	3	13.36	4.64	3.22	12.08
T2: Control + cutting at 60 d	4.36	12.75	4.72	3.66	12.18
T3: 15kg/ha Nitrogen +cutting at 45 d	4	13.36	4.64	4.05	12.25
T4: 15 kg/ha Nitrogen + cutting at 60 d	4	13.7	4.5	4.15	12.59
T5: 30 kg/ha Nitrogen + cutting at 45 d	5	14.12	4.98	4.35	13.88
T6: 30 Kg/ha Nitrogen + cutting at 60 d	4	13.52	4.63	4.21	13.15
T7: 45 kg/ha Nitrogen + cutting at 45 d	4	14.11	4.96	4.30	13.30
T8: 45 Kg /ha Nitrogen + cutting at 60 d	4	13.52	4.73	4.18	12.72
CD at 5%	0.22	0.50	0.32	0.025	2.95

+ cutting at 45 days in coriander as comparison to other treatment combinations.

### REFERENCES

- Diwan G, Maida P and Bisen B (2018). Effect of nitrogen doses and row spacing on growth and seed yield of coriander (*Coriandrum sativum* L.). *Int J Chem Sci* **6**(4):2768-2772.
- Guha S, Sharangi A B and Debnath S (2013). Effect of different sowing times and cutting management on phenology and yield of off season coriander under protected cultivation. *Trends Hort Res* **3**: 27-32.
- Luaza G, Brevendan R and Palomo (1996). *Coriander under irrigation in Argentina*. In: Janick, J. (Ed) Progress in New Crops. ASHS Press, Arlington, VA. pp. 590-594.
- Materechera S A, Medupe M L (2006). Effects of cutting frequency and nitrogen from fertilizer and cattle manure on growth and yield of leaf amaranth (*Amaranthus hybridus*) in a South African Semi-Arid Environment. *Biol Agric Hort* **23**(3): 251–262.
- Nanda J S, Agrawal P K (2011) *Botany of Vegetable Crops*. Kalyani Publishers. pp.177.
- Ramadan F M and Morsel J T (2002). Oil composition of coriander (*Coriandrum sativum* L.) fruit-seeds. *Eur Food Res Technol* **215**: 204-209.
- Rop N K, Mutui T M and Kiprop E K (2012). Influence of nitrogen fertilizer on the growth, yield and quality of Indian spinach (*Basella alba* L.). *African J Hort Sci* **6**:111-117
- Sheoran O P, Tonk D S, Kaushik L S, Hasija R C and Pannu R S (1998). *Statistical Software Package for Agricultural Research Workers*. Recent Advances in information theory, Statistics & Computer Applications by D.S. Hooda& R.C. Hasija Department of Mathematics Statistics, CCS HAU, Hisar, pp. 139-143
- Singh S, Dhangra V, Singh V, Thenua O, Pal K and Shukla R (2018). Nitrogen rate and cutting management for fenugreek green leaf and seed production. *Int J Bio-resour Stress Manag* **9**: 523-526.
- Suphachai A, Takagaki M, Chaireag S, Sutevee S and Inubushi K (2006). Effect of amount of nitrogen fertilizer on early growth of leafy vegetables in Thailand. *Japnese J Trop Agr* **50** (3): 127-132.
- Thakral K K and Tehlan S K (2008). Effect of different levels of nitrogen and leaf cutting on leaf and seed yield of coriander (*Coriandrum sativum*). *J Spices and Aromatic Crops* **17**(2): 180–182.
- Yawalker K S, Agarwal J P and Bokde S (1967). *Manures and Fertilizers*. Agri Horticultural Publishing House, Nagpur (Maharashtra). pp. 4-11.

Received on 15/12/2021

Accepted on 20/2/2022