

Effect of planting time and plant spacing on root rot of nigella (*Nigella sativa* L.)

Y. K. Sharma* and S. S. Meena

National Research Centre on Seed Spices, Tabiji - 305 206, Ajmer, Rajasthan, India

ABSTRACT

Field experiments were conducted during 2007-08 and 2008-09 under semi arid condition of Rajasthan on different sowing dates and row spacing of nigella and root rot incidence was observed under natural conditions. The results revealed that date of sowing significantly affected root rot incidence of nigella. Sowing of nigella on 30th October (D3) exhibited minimum root rot incidence in all three plant spacing, where as maximum root rot incidence was observed in early sown crop i.e. 1st October. Root rot incidence was observed at par in row spacing of 30, 25 and 20 cm.

Key words: Date of sowing, *Nigella sativa*, Row spacing, Root rot.

INTRODUCTION

Nigella (*Nigella sativa*) is an important seed spices crop, which is mainly used as spice and condiment. It is cultivated in various parts of the world. The seeds, also known as black cumin or black caraway, have been use in many Middle Eastern, and Far Eastern Countries as a natural remedy for over 2000 years. The seeds or its oil is believed to have carminative, diuretic, lactagoge and vermifuge (Ali and Blunden, 1). Recent pharmacological investigations of the seed extract revealed a broad spectrum activities of nigella including antibacterial, anti-inflammatory, analgesic, hypoglycemic, and smooth muscles relaxant. Some of these activities have been predominantly attributed to the essential and fixed oils (Ali and Blunden, 1, Houghton et al., 2). It is considered to be hardy crop from the view point of affected by diseases. However, it is affected by root rot disease under favourable conditions. The disease incidence upto 40% was observed during *rabi* 2008 & 2009 (unpublished). The crop has occupied less acreage of area under cultivation and has not been studied in details; standardization of agronomical practices for general cultivation is needed to get the maximum yield per unit area. Agronomical practices also effect on the appearance and spread of diseases. In this study effect of agronomical practices such as time of planting and plant spacing on root rot incidence of nigella were evaluated under field conditions in consecutive two years i.e.

2008-09 and 2009-10.

Twelve treatment combinations comprising of four dates of sowing viz. 1st October (D1), 15th October (D2), 30th October (D3), and 15th November (D4) and three row spacing viz., 20 cm, 25 cm and 30 cm were taken in randomized block design in three replications. The seeds of variety Ajmer nigella-1 were sown keeping seed rate of 25 kg per ha. Recommended dose of fertilizer as well as other standard agro-techniques including weed management were followed for raising good crop. Harvesting of the crop was done manually by pulling the dry plants out of the soil and removing the roots. Observations on root rot incidence was taken by counting number of diseased plants and total number of plants and percent disease incidence was calculated. The data were analyzed statistically using standard procedures.

The mean data of two years revealed that root rot incidence of nigella was significantly influenced with varying date of sowing and row spacing (Table 1). Sowing of nigella on 30th October exhibited the minimum root rot incidence and 1st October exhibited maximum root rot incidence in all three row spacing. Sowing of seed on 15th October, and 15th November resulted root rot incidence at par. Row spacing of crop also affected root rot incidence of nigella (Table 1).

* Corresponding Author: Email : yksharma.nrcss@yahoo.co.in

Table 1. Effect of plant spacing and planting time on root rot of nigella during rabi 2008-09 and 2009-10

Treatment		Root rot incidence (%)		
Row spacing	Date of sowing	2008-09	2009-10	Mean
20 cm	D1 (1st Oct)	50.3 (7.2)	22.61 (4.86)	36.43 (6.11)
	D2 (15th Oct)	31.1 (5.7)	9.07 (3.17)	20.10 (4.59)
	D3 (30th Oct)	11.6 (3.5)	9.05 (3.17)	10.31 (3.36)
	D4 (15th Nov)	25.9 (5.1)	9.26 (3.19)	17.60 (4.26)
25 cm	D1 (1st Oct)	42.5 (6.6)	11.74 (3.53)	27.10 (5.27)
	D2 (15th Oct)	28.1 (5.4)	7.82 (2.97)	17.95 (4.34)
	D3 (30th Oct)	16.7 (4.1)	5.49 (2.49)	11.11 (3.41)
	D4 (15th Nov)	23.6 (4.9)	7.15 (2.82)	15.35 (4.04)
30 cm	D1 (1st Oct)	49.8 (7.1)	11.14 (3.48)	30.45 (5.61)
	D2 (15th Oct)	12.3 (3.6)	5.53 (2.55)	8.89 (3.14)
	D3 (30th Oct)	4.9 (2.4)	3.08 (2.02)	5.14 (2.48)
	D4 (15th Nov)	8.5 (3.1)	6.09 (2.66)	7.29 (2.87)
CD at 5%		11.71 (1.06)	3.81 (0.65)	7.01 (0.85)

However, it was at par in all three row spacings. The incidence was less in wider rowed plants as compared to narrow rowed plants. The results showed that planting of crop in late October or early November with 25-30 cm row spacing were better conditions for low incidence of root rot in nigella.

REFERENCES

1. Ali, B.H., Blunden, G. 2003. Pharmacological and Toxicological Properties of *Nigella sativa*. *Phytother. Res.* **17**: 299-305.

2. Houghton, P.J., Zarka, R., Heras, B. and Hault, R.S. 1995. Fixed oil of *N. sativa* and derived thymoquinone inhibit eicosanoid generation in leucocytes and membrane lipid peroxidation. *Planta Med.* **61**: 33-36.

Received : Oct. 2011; Revised : Dec. 2011; accepted : Dec. 2011.