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RESEARCH ARTICLE

EFFECT OF DIFFERENT NITRAOGEN SOURCES ON THE GROWTH OF *ALTERNARIA DAUCI* CAUSING LEAF BLIGHT OF CARROT

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Abstract

Minimum inhibitory concentration of carbendazim among the 12 isolates of *Alternaria dauci* (Kuhn) Groves & Skollo causing leaf blight of carrot showed variation. Isolate Ad-11 was most sensitive have MIC 6% and Ad-2 was highly resistant have MIC 20%. The effect of Ammonium nitrate, Calcium nitrate, Sodium nitrate and Zinc nitrate were tested growth rate of *Alternaria dauci* causing leaf blight of carrot. Sodium nitrate was found to be best source of nitrogen for both isolates.

Introduction:-

Among all common fungal diseases leaf blight caused by *Alternaria dauci* (Kuhn) Groves & Skollo is very common which reduces food value. It is important pathogen of carrot in most 'production' areas of the world (Hooker, 1944; Netzer and Kenneth 1969; Scott and Wenham1973; Strandberg 1992b and Tahvonen, 1978).

For the proper growth of host, various nutritional sources are required. Nitrogen is one of the important nutritional source for the growth. Nitrates are help to maintain not only vigorous growth but also resists pests and diseases in plant. Therefore, the present study investigation has made on the effect of different nitrogen sources on the growth of *Alternaria dauci* causing leaf blight of carrot. This work helps to manage the growth of pathogen.

Materials And Method:-

Isolation of fungi

From different localities of Maharashtra and Karnataka states samples exhibiting the symptoms of leaf blight of carrot were collected and brought to the laboratory in clean sterilized polythene bags. After collection of samples isolation of *Alternaria dauci* was made. The samples were cut into small pieces and superficially sterilized by 70% ethyl alcohol. The cut pieces were placed on sterilized carrot leaf agar medium (30µg/ml) in petriplates. After 5-6 days, colonies were developed and these colonies were identified with the help of relevant mycological literature (Subramanian, 1971; Barnett and Hunter, 1972) as *Alternaria dauci*. Pathogen was sub-cultured on the same media to obtain pure culture and maintained in the BOD incubator.

Sensitivity of *Alternaria dauci* to carbendazim was tested by food poisoning technique (Dekker and Gielink, 1979). For this purpose, carrot leaf extract agar medium with different concentrations of carbendazim was used to prepare plates in triplicates. Discs of 6 mm of fungal cultures were taken from an actively growing colony and placed on the

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agar surface. The plates were incubated at 27±3˚C and radial growth of fungus was measured at different intervals. Plates without carbendazim treated as control.

Effect of nitrogen sources

The different nitrogen sources viz.: ammonium, calcium, potassium and zinc nitrates were amended in carrot leaf agar medium at 0.2 %. Discs 6mm of fungal culture were taken from an actively growing colony and were placed upside down on the agar surface. Plates without any nitrogen source served as control. Plates were incubated at 27±3˚C. The radial growth was measured at various intervals.

Observation Table:-

Effect of different nitrate sources on the radial growth (mm) of *Alternaria dauci* isolates sensitive and resistant to carbendazim on carrot leaf extract medium.

Nitrate source 0.2%	Isolate	Radial growth (mm)						
		1	2	3	4	5	6	7
Ammonium nitrate	Sensitive	08.00	12.33	16.66	21.33	24.66	28.33	36.00
	Resistant	12.00	19.33	21.66	26.00	31.66	39.33	42.00
Calcium nitrate	Sensitive	07.00	07.33	07.33	08.00	08.00	09.00	09.33
	Resistant	07.00	07.33	11.66	14.33	17.33	19.33	22.00
Sodium nitrate	**Sensitive**	**09.33**	**14.66**	**27.33**	**43.33**	**54.33**	**68.66**	**76.00**
	Resistant	**14.00**	**26.00**	**41.33**	**53.00**	**61.33**	**15.33**	**82.00**
Zinc nitrate	Sensitive	11.33	14.33	16.66	18.66	21.66	24.33	26.00
	Resistant	11.66	13.33	16.33	18.66	23.33	27.66	30.00
Control	Sensitive	14.33	24.66	39.00	52.66	68.33	76.00	90.00
	Resistant	19.66	33.33	48.66	61.33	74.33	81.00	90.00

Result and Discussion:-

Ammonium, calcium, sodium and zinc nitrates were incorporated (0.2%) in medium. Growth rate of sensitive isolate was found to be less than resistant isolate. In all nitrates, sodium nitrate had higher growth in both sensitive and resistant isolates while growth lower in calcium nitrate in both sensitive and resistant isolates. Sodium nitrate is essential for growth of *Alternaria dauci.* (Table)

Carbendazim resistant isolate of *Macrophomina phaseolina* causing Charcoal rot of potato showed higher growth than sensitive growth on nitrates as peptone, potassium nitrate, calcium nitrate, sodium nitrate and ammonium nitrate (Kamble,1991).

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