

	<p>Journal Homepage: - <a href="http://www.journalijar.com">www.journalijar.com</a></p> <h2>INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)</h2> <p>Article DOI: 10.21474/IJAR01/15361 DOI URL: <a href="http://dx.doi.org/10.21474/IJAR01/15361">http://dx.doi.org/10.21474/IJAR01/15361</a></p>	
---	---	---

### RESEARCH ARTICLE

## SENSITIVITY OF CARBENDAZIM AGAINST *ALTERNARIA DAUCI* CAUSING LEAF BLIGHT OF CARROT

Mrunalini S. Mishrakoti<sup>1</sup> and S.S. Kamble<sup>2</sup>

1. Department of Agrochemicals and Pest Management.
2. Department of Botany, Shivaji University, Kolhapur Maharashtra, India.

### Manuscript Info

#### Manuscript History

Received: 10 July 2022

Final Accepted: 14 August 2022

Published: September 2022

#### Key words:-

*Alternaria Dauci*, Carbendazim, Leaf Blight, Carrot

### Abstract

Leaf blight of Carrot reduces food value. It was found that in the MIC of carbendazim of *Alternaria dauci* collected from Maharashtra and Karnataka were variable on both *in vitro* & *in vivo*. MIC on agar plates ranged from 6-20% & was 5.5-18% on carrot leaves. Isolate Ad-2 was resistant showed 20% MIC *in vitro* & 18% on *in vivo*. Ad-11 was sensitive showed 6% MIC *in vitro* & 5.5% *in vivo*.

Copy Right, IJAR, 2022.. All rights reserved.

### Introduction:-

Carrot (*Daucus carota* L.) is member of family Apiaceae, used worldwide as important source of a vegetable. Among all these fungal diseases leaf blight caused by *Alternaria dauci* (Kuhn) Groves & Skollo is very common and reduces food value. It is important pathogen of carrot in most 'production' areas of the world (Hooker, 1944; Netzer and Kenneth 1969; Scott and Wenham 1973; Strandberg 1992a and Tahvonen, 1978). Leaf blight reduces photosynthetic area and can reduce yield. The present investigation is carried out to determine the minimum inhibitory concentration of carbendazim for effective management of disease.

### Material & Method:-

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, 1972; Barnett and Hunter, 1972) as *Alternaria dauci*. Total 12 isolates of *Alternaria dauci* were obtained. Culture tubes were maintained at 4°C and used for further study whenever necessary

For *in vitro* 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 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. For *in vivo* studies, sensitivity of *Alternaria dauci* to carbendazim was tested on healthy carrot plants. Healthy carrot plants were treated with different concentrations of carbendazim solutions. After 24 hrs., these treated plants by carbendazim were inoculated with 10 ml of mycelial suspension of *Alternaria dauci*. The mycelial suspension was prepared using a 7day old culture in sterile distilled water. The spore suspension (concentration) was then sprayed on carrot leaves and covered with polythene covers to

avoid secondary infection. The percentage of infection was recorded. Carrot plants without fungicide treatment were treated as 'control'. Carrot plants without any treatment were treated as 'absolute control'

### Observation Table:-

MIC of carbendazim against *Alternaria dauci* isolates causing leaf blight of carrot (Concentration of carbendazim).

Name of collection place		MIC <i>in vitro</i>	MIC <i>in vivo</i>
Terkhada, Beed	Ad-1	8%	6.5%
Belgam	Ad-2	20%	18%
Gokak, Belgam	Ad-3	18%	17%
Nipani, Belgam	Ad-4	19%	17.5%
Kolhapur	Ad-5	13%	11.5%
Nesari, Kolhapur	Ad-6	15%	13%
Mumbai	Ad-7	13%	11%
Kalamb, Osmanabad	Ad-8	11.5%	10%
Pune	Ad-9	8%	7%
Satara	Ad-10	6.5%	6%
Dhalgaon, Sangali	Ad-11	6%	5.5%
Takali, Sangali	Ad-12	7%	6.5%

### Result and Discussion:-

There was variation in the minimum inhibitory concentration of carbendazim against *Alternaria dauci* on *Daucus carota* (Table). Minimum inhibitory concentration *in vitro* ranged from 6% to 20% while minimum inhibitory concentration *in vivo* ranged from 5.5% to 18% to carbendazim. The isolate Ad-11 from Dhalgaon, Sangali was most sensitive, MIC-6% to carbendazim *in vitro* and *in vivo* was MIC 5.5%. The isolate Ad-2 from Belgam was most resistant to carbendazim, MIC-20% *in vitro* and MIC 18% *in vivo*.

The results are agreeing with other workers also. Mane (2009) reported MIC of carbendazim against *Alternaria tenuissima* causing leaf spot of Taro which is ranged from 4 to 8.5% *in vitro* and 100 to 20,000 µg/ml *in vivo*. Similarly, Bhale *et. al.*, (2009) reported the MIC of carbendazim against *Alternaria alternata* causing fruit rot of pomegranate ranging from 500-1000 µg/ml. Similarly Sutar (2010) found that MIC of carbendazim against *Alternaria alternata* causing leaf spot of gerbera ranging from 10-15% *in vitro* and *in vivo*. According to Waghmare (2010), the MIC of carbendazim against *Alternaria alternata* causing leaf spot of rose ranged from 1.5-5% (*in vitro*) and 1-4% (*in vivo*). Bhale (2009) found that 350-700 µg/ml MIC of carbendazim against *Alternaria alternata* causing leaf spot of spinach. The MIC of carbendazim among 12 isolates of *Alternaria alternata* causing root rot of fenugreek was ranging from 2500 to 5000 µg/ml *in vitro* and 500-1000 µg/ml *in vivo* (Khandare and Kamble, 2013).

### References:-

1. **Bhale, U.N., Rajkonda, J.N. and Sarwade, P.P. (2009):** Evaluation of botanicals against *Alternaria spinacea* causing leaf spot of spinach (*Spinacea oleracea* L.). *Geobios* 36:125-128.
2. **Dekker, J. and Gielink, A. J. (1979):** Acquired resistance to pimaricin in *Cladosporium* f. sp. *narcissi* associated with decreased virulence. *Neth. J. Pl. Pathol.* 85: 67 - 73.
3. **Hooker, W.J. (1994):** Comparative studies of two carrot leaf diseases. *Phytopathology* 34:606-612.
4. **Khandare, N. K. and Kamble, S. S. (2013):** Sensitivity of carbendazim against *Alternaria alternata* causing root rot of Fenugreek. *Bioinfolet10(1B):307-308,2013*.
5. **Mane, M. J. (2009):** Studies on management of Taro leaf spot .M.Phil. Dissertation, Shivaji University, Kolhapur.
6. **Netzer, D. and R. G. Kenneth (1969):** Persistence and transmission of *Alternaria dauci* (Kuhn) Groves and Skolko in the semiarid conditions of Israel. *Ann. Appl. Biol.* 63:289- 294.
7. **Scott, D. J. and H.T. Wenham, (1973):** Occurrence of two seedborne pathogens *Alternaria radicina* and *Alternaria dauci* on important carrot seed in New Zealand. *N. Z. J. Agr. Res.* 6: 247-250.
8. **Sutar, M. A. and Kamble, S.S. (2010):** Studies on chemical management of leaf spot of gerbera, M.Phil. Dissertation, Shivaji University, Kolhapur.
9. **Waghmare, M. B. (2010):** Studies on management of some important diseases of rose. Ph. D. thesis Shivaji University, Kolhapur.