



RESEARCH ARTICLE

# Efficacy of organic amendments on wilt of carnation (*Dianthus caryophyllus* L.) caused by *Fusarium oxysporum* f.sp.*dianthi* in vitro

■ P. MAHALAKSHMI\* AND I. YESURAJA

Department of Plant Pathology, Agricultural College and Research Institute, MADURAI (T.N.) INDIA  
(Email :yesupatho@yahoo.co.in)

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\*Corresponding author:  
magaagri\_19@rediffmail.com

## ABSTRACT

Studies were conducted to test the effect of oil cakes and organic manures on the growth of wilt pathogen under *in vitro* conditions. The extracts of different oil cakes and organic manures were tested against *F.oxysporum* f.sp.*dianthi* by poisoned food technique in *in vitro*. Least growth of pathogen was recorded in extracts of neem cake showing excellent inhibitory effect of 80.44 per cent reduction over control. Next best in order of merit was Mahua cake (75.11%) followed by neem seed kernel extract (60%) and pungam cake (38.22%) and least by others. Among the organic manures tested, vermicompost and composted coir pith showed maximum growth inhibition of 37.56 and 36.55 per cent over control, respectively.

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## INTRODUCTION

Carnation (*Dianthus caryophyllus* L.) is one of the most popular commercially grown flowers of the world. Carnation is preferred to roses and chrysanthemums by several exporting countries, on account of its excellent keeping quality, wide range of forms and colours and ability to withstand long distance transportation. Cut carnations, roses and chrysanthemums contribute close to 50 per cent of the world cut flower trade (Jawaharlal *et al.*, 2009). There are several diseases reported in carnation including rust caused by *Uromyces dianthi*, leaf blight by *Alternaria dianthi*, grey mold by *Botrytis cinerea*, Fusarium wilt caused by *Fusarium oxysporum* f. sp. *dianthi*, leaf spot by *Cercospora* and *Cladosporium* and root and stem rots caused by *Rhizoctonia solani* or *F. roseum*. Among them, Fusarium wilt is an important soil borne disease occurring prevalently in carnation fields (Kyoung *et al.*, 2001).

The wilt is being controlled through systemic fungicides but it leads to health hazards, environmental pollution and

toxicity. It also reduces population of beneficial microorganisms in soil. Hence, it is obligatory to find out some alternate resources to reduce the chemical fungicides usage. Therefore, research on suitable organic substrate (oil cakes) is needed to get positive results in the biological control of soil borne pathogens. The present investigation was taken to manage the disease by use of organic substrates due soil borne nature of the pathogen.

## MATERIALS AND METHODS

### Efficacy of oil cake extracts against *F.oxysporum* f.sp.*dianthi* in vitro :

#### Preparation of aqueous extracts from oil cakes :

Required quantity of each oil cake was taken and made into powder separately. It was soaked in sterile distilled water @ one g in 1.25 ml of water separately and kept overnight. The material was ground using a pestle and mortar and filtered through a muslin cloth and the filtrate was centrifuged at 10,000 rpm for 15 min. The supernatant served as the standard extract