

Original Research Article

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Effect of Oilcakes on the Management of Wilt Disease of Tomato Caused by *Fusarium oxysporum* f. sp. *lycopersici*

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ABSTRACT

Keywords

Tomato, *Fusarium oxysporum* f. sp. *lycopersici*, Wilt, Oil cake.

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Five oil cakes viz., neem (*Azadirachta indica*), coconut (*Cocos nucifera*), gingelly (*Sesamum indicum*), cotton (*Gossypium hirsutum*) and mahua (*Madhuca latifolia*) were evaluated *in vitro* against *Fusarium oxysporum* f.sp. *lycopersici* causing wilt disease of tomato. Among these, oil cake extracts *A. indica* and *M. latifolia* recorded the lowest mycelial growth of pathogen *in vitro*.

Introduction

Tomato (*Solanum lycopersicum* L.) is one of the most important solanaceous crops grown throughout the world, and commonly grown in Tamil Nadu. It is one of the most and popular vegetables being second after potato in terms of food value but ranks first in terms of processing value (Dutta *et al.*, 2013). All over India vegetable cultivation reaches 9205 thousand ha and 162187 metric tonnes (Mt) of production, in which tomato is being cultivated in about 879.63 thousands ha and the production is 18226.64 Mt with a productivity of 20.7 Mt/ha (NHB, 2013). The area of tomato cultivation in Tamil Nadu is 25, 370 hectares with production of 328.2 tonnes per hectare. The major tomato growing districts in Tamil Nadu are Dharmapuri which

occupies rank first followed by Krishnagiri, Salem, Theni, Dindigul and Coimbatore (Anonymus, 2009).

The tomato fruit is responsible for “red revolution” in agriculture and it may also be called as “poor man’s orange” in India and “love of apple” in England. It served as important source of vitamin A and C, minerals, some dietary fibre, a little protein and much water. Several successful attempts have been made for the integration of chemical and biological method of plant disease control. Jatav and Kusum Mathur (2005) reported that neem oil and neem cake extract have been found to be effective against several plant pathogens.

Materials and Methods

Required quantity of each oilcake was made into powder separately. It was soaked in sterile distilled water @ one gram in 1.25ml of water separately and kept overnight. Then the material was ground using pestle and mortar and filtered through a muslin cloth and the filtrate was centrifuged at 10000 rpm for 15 min. The supernatant served as the standard extract solution (100%) (Dubey and Patel, 2000)

The efficacy of oil cake extract was tested against *Fusarium oxysporum* using poisoned

food technique (Schmitz, 1930). The freshly prepared PDA was distributed @ 50ml medium per conical flask. Aqueous extracts oil cake 5ml was mixed with 50ml of PDA medium to obtain 5 per cent and sterilized. The sterilized PDA medium (15 ml per Petri dish) was poured on sterilized Petri dish and then allowed to solidify. A nine mm mycelial disc of *Fusarium oxysporum* was transferred from actively growing culture and placed at the centre of the Petri dish and incubated at room temperature. The PDA medium without extract of oilcake served as control. The radial growth (cm) of *Fusarium oxysporum* was recorded after seven days of inoculation.

Table.1 Efficacy of extracts of five oil cake extract against the growth of *Fusarium oxysporum* f. sp. *lycopersici* in vitro

S. No.	Organic amendments	Conc. (%)	Mycelial growth at 10 DAI (cm)*	Growth reduction over control (%)
1.	Mahua cake (<i>Madhuca longifolia</i>)	10	2.13	76.33
2.	Neem cake (<i>Azadirachta indica</i>)	10	1.73	80.77
3.	Gingelly cake (<i>Sesamum indicum</i>)	10	3.10	65.56
4.	Cotton cake (<i>Gossypium hirsutum</i>)	10	3.20	64.44
5.	Coconut cake (<i>Cocos nucifera</i>)	10	3.46	62.11
6.	Control	-	9.00	0.00
CD (P= 0.05)			0.12	-

Plate.1 Efficacy of extracts of five oil cake extract against the growth of *Fusarium oxysporum* f. sp. *lycopersici* in vitro



Results and Discussion

The result on the efficacy of extracts of five oil cake extract against the growth of *Fusarium oxysporum* f. sp. *lycopersici* are furnished in the Table 1.

The result showed that neem cake extract (10%) recorded the maximum (80.77) per cent reduction of mycelial growth over control followed by Mahua cake (10%) extract (76.33) per cent. The minimum (62.11) per cent reduction was observed in coconut cake. Padmodaya *et al.*, (1999) reported that maximum inhibition of the growth of *F. solani* was recorded in neem cake 59.29 per cent next best in the order of merit was Mahua cake 52.61 per cent.

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