



RESEARCH ARTICLE

# Evaluation of fungicides against *Botryodiplodia theobromae* causing collar rot in *Jatropha curcas*

■ YASHODA R. HEGDE\*, NEELKANTH S. HIREMANI, RAJALAXMI S. KESHGOND AND TIPPESHI L. CHAVHAN

Department of Plant Pathology, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

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\*Corresponding author:  
uasyashoda@rediffmail.com

## ABSTRACT

*Jatropha curcas* is gaining importance as a biodiesel crop. Among the different diseases affecting *Jatropha*, collar rot caused by *Botryodiplodia theobromae* is an important one. Very little information is available on the management aspects of this disease. Therefore, different contact, systemic and combi product fungicides were evaluated against *Botryodiplodia theobromae*. Among the different fungicides tested, mancozeb and propineb (contact), propiconazole and carbendazim (systemic) and Quintal and Saaf (combi product) were found to be effective to manage the pathogen under *in vitro* conditions.

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## INTRODUCTION

Physic nut (*Jatropha curcas* L.) globally known as *Jatropha* belongs to the family Euphorbiaceae. It is a large shrub or small tropical tree widely distributed in arid and semiarid areas. It is a multipurpose crop of significant economic importance as a biofuel. Moreover, parts of the shrub are used in traditional medicine and as raw material for pharmaceutical and cosmetic industries (Paramathma *et al.*, 2006). Collar rot of *Jatropha curcas* caused by *Botryodiplodia theobromae* is becoming a major biotic constraint in the cultivation of this biodiesel crop. It is also called root rot disease. Symptoms can be observed at the collar portion or on stem as black discoloration in the beginning. Later extend in both directions resulting in drying of the twigs. In severe cases, drying spreads to the entire tree resulting in death of the tree. Symptoms can be observed in seedling stage also. Latha *et al.* (2009) reported this disease on *J. curcas* in India during 2007 from Tamil Nadu. Reports on chemical management of this disease are not much. *In vitro* evaluation of fungicides helps to identify effective fungicide for application in fields. Hence, an attempt was made to identify the effective fungicide to manage *B. theobromae*.

## MATERIALS AND METHODS

### *In vitro* evaluation of fungicides against *Botryodiplodia theobromae* :

Contact, systemic and combi product fungicides were evaluated against *B. theobromae* by employing poisoned technique (Nene and Thapliyal, 1982) at three concentrations. The calculated quantity of fungicide was added to Potato dextrose agar (PDA), mixed thoroughly and poured into sterilized Petri plates and allowed to solidify. After solidification each plate was inoculated with a 5 mm diameter disc obtained from an actively growing margin of *B. theobromae* colony on PDA. There were 3 replicates of each treatment. The Petri dishes were incubated at 27±1°C in BOD incubator. The observations on colony diameter were recorded when control plate was completely covered with the test fungus. Per cent inhibition of mycelial growth of test fungus was calculated by using the following formula the results were analysed statistically :

$$I = \frac{C - T}{C} \times 100$$

where,

I: Per cent inhibition