

## Field management package for anthracnose, a destructive disease of *Jatropha curcas* L. - A bio-fuel yielding perennial species

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### SUMMARY

In lab assays fifteen fungitoxicants were evaluated against *Colletotrichum gloeosporioides* causing anthracnose of *Jatropha*. Among six fungicides, carbendazim, chlorothalonil, propiconazole and mancozeb showed cent per cent mycelial growth inhibition at both test concentrations (500 and 1000ppm). In nine fresh leaf plant extracts, *Prosopis juliflora* efficiently inhibited mycelia growth (96.22%) followed by *Azadirachta indica* (86.67%) at 100ppm. In field evaluations under nursery level done with 4 fungitoxicants, 0.2 per cent mancozeb (0.0005) and 0.1 per cent carbendazim (0.0006) were efficient in reducing disease severity index (DSI) over control. Similarly, rate of disease development ( $r$ ) over initial was very low in 0.2 per cent mancozeb (0.0033) and was high in control (0.0099). Recorded data on per cent defoliation at 60 days of second spray was least in 0.2 per cent mancozeb (12.29%) imposed treatment over untreated (21.92%) indicating timely spraying with 0.2 per cent mancozeb as best management package.

**Key Words :** Anthracnose, Bio-fuel, Defoliation, Fungicide, Plant extract

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Sustained supply of good quality seeds is most essential for successful afforestation or reforestation networks starting from nursery to plantations in majority of forest trees. Seeds of some species are in great demand for their valuable oils as fuel or as a base in soap and cosmetic industries. Our country has potentials to meet only 30 per cent of total fuel demands and loosing huge sums of money on fossil fuel imports. In context of increased fossil fuel, import costs in India, bio-fuel sources like tree borne oil seeds are getting higher importance (Parthiban *et al.*, 2009). Among the biofuel plants, *Jatropha curcas* L. native to South America and Africa has taken a lead in commercial cultivation. Its properties like hardness, rapid growth, easy propagation, wide adaptability, 25-30 per cent bio-degradable oil recovery/kg of seed and other usefulness made it to spread beyond its origin.

Due to commercialization through extensive nursery and plantation networks diseases are becoming one of the bottle

necks (Suryanarayana *et al.*, 2010). In northern parts of Karnataka it suffers from nine diseases and anthracnose incited by *Colletotrichum gloeosporioides* cause huge economic loss through premature defoliation, flower and fruit drop (Chavhan, 2008). Considering seriousness of problem, the present investigation on field evaluation of effective fungicides and plant extracts as evidenced from *in vitro* studies was carried out.

### MATERIALS AND METHODS

The field management study was carried out at college of forestry, Sirsi, Karnataka during 2009-2010. In the field management trial, *Jatropha* nursery raised at college of forestry of Sirsi taluk recorded highest incidence and severity in disease survey was selected. The site is situated at a latitude and longitude of 14° 36.410' N and 074° 50.825' E with an annual rainfall of 2500 mm. Based on *in vitro* studies, the best proven fungicides and plant extracts in mycelia growth inhibitions were selected for field evaluations at nursery conditions. The treatments employed were, carbendazim 50% W.P. (0.1 %),

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