RESEARCH PAPER

Asian Journal of Bio Science, Vol. 4 Issue 1 : 56-58 (April to September, 2009)

Efficacy of bioagent and different root extracts for supression of chickpea wilt *in vitro*

P.R. PADGHAN AND M.M.BAVISKAR

Department of Plant Pathology, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA (M.S.) INDIA

(Accepted : February, 2009)

In an attempt to study the effect of different root extract and bioagent against *Fusarium oxysporum* f.sp.*ciceri* in laboratory, least radial mycelial growth and maximum inhibition was recorded in sorghum root extract medium (28.00 mm and 54.34%), respectively, however, it was at par with groundnut root extract medium (30.00 mm and 51.08%) as compared to control (61.33 mm). In dual culture technique the growth of *Fusarium oxysporum* f.sp.*ciceri* was restricted by *Trichoderma viride* (56.16%) followed by *Trichoderma harzianum* (50.57%). *Trichoderma* lignorum gave minimum zone of inhibition (40.45%).

Key words : *Fusarium oxysporum* f.sp.*ciceri*, *Trichoderma* spp.,Root extract, Inhibition.

INTRODUCTION

Chickpea (*Cicer arietinum* L.) is a native of Asian plant species grown as a pulse crop throughout tropical and subtropical Asia. Though India is a home of pulses yet they are to be imported from foreign countries because of low production and is mostly stagnant. There are various reasons for low yield of chickpea. Amongst them diseases play an vital role in reducing the yield. More than seventy pathogens have been reported on chickpea. *Fusarium oxysporum* f.sp. *ciceri*, *Rhizoctonia bataticola* and stunt are important (Zote and Dhutraj, 1996). Wilt (*Fusarium oxysporum* f.sp. *ciceri*) of chickpea is a major disease of almost worldwide distribution with wide spread host range inflicting considerable yield losses, (Nene *et al.*, 1996). Many of the workers reported the yield losses up to 10 per cent due to chickpea wilt,(Mathur *et al.*,1960; Singh and Dahiya,1973; Jani *et al.*,1999). Successful management of the disease by a single mean including fungicides seems to be a difficult proposition, warranting new management approach. Fungal antagonist (*Trichoderma* spp.) have exhibited promising control of soil/seed borne pathogens causing wilts, root rot in chickpea and other pulses (Mukhopadhyay, 1987; Kaur and Mukhopadhyay, 1993). Most of the workers also studied the antagonism *in vitro* by using bioagents (Moon *et al.*, 1988; Xu *et al.*, 1993) and by using root extracts of various crops (Satyaprasad and Rama Rao, 1983; Sahana *et al.*, 1987). Hence keeping in view, the present study was undertaken to study the efficacy of different means in suppression of chickpea wilt.

MATERIALS AND METHODS

Chickpea plants from Pulses Research Unit, Dr. Panjabrao Desh Mukh Krishi Vidyapeeth, Akola showing wilting symptoms *i.e.*, drooping of leaves and defoliating were gently uprooted and brought to the laboratory. The disease samples were subjected to isolation on Potato Dextrose Agar (PDA) medium. On the basis of morphological and cultural characteristics, the pathogen was identified as *Fusarium oxysporum* f.sp. *ciceri*. By frequent sub-culturing, the pathogen was purified and maintained on PDA.

Pure cultures of *Trichoderma* spp. were obtained from Agro-Product Development Research Centre (APDRC), Dr. P.D.K.V., Akola (M.S.). Autoclaved PDA was poured in 90 mm diameter Petriplates and allowed to solidify. Seven days old culture disc of 5 mm diameter of *Trichoderma* spp. were placed on four sides of plates and 6 mm disc of each *Fusarium oxysporum* f. sp. *ciceri*, was placed in centre of plates. This combination was replicated three times. The plates were incubated at room temperature. Observations on colony diameter of *Fusarium oxysporum* f. sp. *ciceri* hyperparasite growth of *Trichoderma* spp. and zone of inhibition between *Trichoderma* and *Fusarium* were recorded at 24 hrs. interval. Colony diameter was recorded in two marked directions passing through the centre of colony and means were worked out and per cent inhibition was calculated.

The work of effect of different crop root extract *Fusarium oxysporum* f. sp. *ciceri* was undertaken to study the influence of root extract of soybean, sunflower, udid, sorghum, groundnut and mung on the growth formation of *Fusarium oxysporum* f. sp. *ciceri*, a wilt of chickpea.