

EFFECT OF BOTANICALS AND BIO-AGENTS ON *FUSARIUM OXYSPORUM* F. SP. *CICERI* CAUSES *FUSARIUM* WILTS OF CHICKPEA (*CICER ARIETINUM* L.)

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Received-03.10.2017, Revised-20.10.2017

Abstract: Chickpea (*Cicer arietinum* L.) an important pulse crop in the world, is a good source of protein and fixes the atmospheric nitrogen in the fields. It is one of the best crops for arid conditions. Fusarium wilt, a most severe disease and causes huge losses. The potential of anti-fungal activity of different botanicals and bio-agents were tested in laboratory conditions. Among seven botanicals tested, Palmarosa (*Cymbopogon martinii* var. *motia*) with minimum growth of pathogen and 56.36 per cent of inhibition was found most effective against *Fusarium oxysporum* f. sp. *ciceri* followed by others to inhibit the fungal growth in comparison to control. Among the bio-agents, *Trichoderma viride* inhibits the 62.57 per cent and proved to be best in suppressing the growth of the pathogen followed by others.

Keywords: Chickpea, Palmarosa, Bio-agent, *Trichoderma viride*

REFERENCES

- Bouregghda, H. and Bouznad, Z.** (2009). Biological control of Fusarium wilt of chickpea using isolates of *Trichoderma atroviride*, *T. harzianum* and *T. longibrachiatum*. *Acta-Phytopathologica-et-Entomologica-Hungarica*. 44(1): 25-38.
- Devi, Meena and Paul, Y. S.** (2003, 2005). Management of pea wilt/root knot complex by integrating plant extracts and biocontrol agents. Integrated Plant extracts and biocontrol agents. Integrated Plant Disease Management. Challenging Problems in Horticultural and Forest Pathology, Solan, India, pp. 101-105.
- Gourdar, S. B., Kulkarni, Srikant and Kulkarni, S.** (2000). Bioassay of antagonists against Fusarium udum, the causal agent of pigeonpea wilt, *Karnataka J. Agric. Sci.*, 13(1) : 65.67.
- Haware, M. P., Nene, Y. L. and Rajeswari, R.** (1978). Eradication of *Fusarium oxysporum* f. sp. *cicericis* transmitted in chickpea seed. *Phytopathol.*, 68: 1364-1368.
- Kamal Kanhan, A., Shanmygam, V., Surendra, M. and Srinivasan, R.** (2001). Evaluation of plant extracts against *Pyricularia oryzae*. *Ann. Pl. Protect. Sci.*, 9 (1): 68-72.
- Nene, Y.L., Sheila, V.K. and Sharma, S.B.** (1996). A world list of chickpea and pigeonpea pathogens. *ICRIAT Hyderabad, India*.
- Nikam, P. S., Jagtap, G.P. and Sontakke, P.L.** (2007). Management of chickpea wilt caused by *Fusarium oxysporium* f. sp. *ciceri*. *African-Journal-of-Agricultural-Research*. 2(12): 692-697.
- Patra, S. and Biswas, M. K.** (2017). Eco-Friendly Management of *Fusarium oxysporum* f. sp. *ciceri* the Causal Agent of Chickpea Wilt Disease under In-vitro Condition. *Int. J. Curr. Microbiol. App. Sci.*, 6(3):1852-1858.
- Prasad, C. S., Gupta, Vishal, Tyagi, Ashish and Pathak, Santosh** (2003). Biological control of *Sclerotium rolfsii* sacc., The incident of cauliflower collar rot. *Ann. Pl. Protect. Sci.*, 11(1) : 61-63.
- Sahani, R. K. and Saxena, A. R.** (2009). Fugitoxic properties of medicinal and aromatic plants against fusarium oxysporum f. sp. *pisi*. *Ann. Pl. Protect. Sci.*, 17 : 146-148.
- Singh, K.B. and Saxena, M.C.** (1996). Winter chickpea in Mediterranean type environments. A Technical Bulletin, International Centre for Agricultural Research in Dry Areas, Aleppo, Syria, 39.
- Singh, Y. P. and Sumbali, Gupta** (2007). Efficacy of leaf extract and essential oils of some plant species against *Penicillium expansum* rot of apples. *Ann. of Pl. Protec. Sci.*, 15 (1) : 135-139.
- Surendra, Singh and Hari, Chand** (2004). Effect of extracts of some medicinal plants on spore germination of chickpea wilt pathogen (*Fusarium oxysporum* f. sp. *ciceri* (Pad.) Snyder and Hans. *Indian-Journal-of-Plant- Protection.*; 32(1): 162-163.
- Vaidya, Manita, Shamagan, V. and Gutati, Arvind** (2004). Evaluation of bio-control agents against *Fusarium* isolates infecting carnation and gladiolus. *Ann. Pl. Protect. Sci.*, 12 (2): 614-320.
- Velikanov, L. L., Cukhonosenko, E. Ya, Nickolaeva, S. I. and Zavlisko, I. A.** (1994). Comparison of hyper parasite and antibiotic activity of the genes *Trichoderma* Per : Fr and *Gliocladium virence* Miller Giddena et foster isolates towards the pathogen causing root rot of pea. *Miklogiya-Phytopatologiya*, 28 : 52-56.

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