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Research Article

Effect of Plant Protection Chemicals on the Survivability of *Phytophthora* spp. Infecting Black pepper (*Piper nigrum* L.)

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Abstract

Foot rot incited by soil borne pathogen, *Phytophthora* spp. is a significant constraint in black pepper (*Piper nigrum* L.). Metalaxyl sensitivity assays on the isolates of *P. capsici* (05-06, 18-01, 20-01) and one isolate of *P. tropicalis* (98-93) at different concentrations in ppm (1250, 1000, 750 and 500) revealed that the isolate, 20-01 developed fungicidal resistance even at 1000 ppm. In contrast, all isolates were equally sensitive to all tested doses of copper sulphate in ppm (8000, 4000, 2000,1000 and 500). The effect of plant protection chemicals (fungicides–metalaxyl + mancozeb, propamocarb + flupicolide, copper oxychloride, nematicide-fluopyram, and soil fumigant-formaldehyde) on the survivability and viability of *Phytophthora* propagules was evaluated *in vitro* qualitatively by leaf baiting and quantitatively by soil dilution plating technique for one year. Irrespective of different plant protection chemicals, all the tested isolates were able to survive in soil one year after inoculation. Mean survivability of *P. capsici* isolate (20-01) was found to be the highest among tested isolates under all treatments and it ranged from 2.33 to 19.67×10^3 CFU g^{-1} soil followed by *P. tropicalis* (98-93) which has range of 3.33 to 15.33×10^3CFU g^{-1} soil respectively, one year after inoculation.

Key words: Chemicals, foot rot, fungicidal sensitivity, *Phytophthora*, plant protection, survivability

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