

IDENTIFICATION OF THE CAUSAL ORGANISM OF WILT DISEASE IN BLACK PEPPER (*Piper nigrum* L.) IN NURSERY STAGE AND ITS MANAGEMENT

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Abstract

Black Pepper (*Piper nigrum* L.) is an economically important spice crop in Sri Lanka. The wilt disease in black pepper is one of a major problem and inflicting significant loss of immature plants at nursery stage, therefore, pepper industry of Sri Lanka is being lost its millions of rupees' export earnings annually. An investigation was planned to identify the causal organisms of the black pepper wilting disease and its management. The soil samples were collected from infected nurseries and baiting method was used to isolate possible causes. Koch's postulates and microscopic examinations were performed to confirmation and identification of the causes. To manage the causal agents, different concentrations of three commercially available fungicides namely, Topsin® 70% WP (350,420,490 ppm), Homai® 80% WP (640,800,960 ppm) and Ridoaxyl Metalaxyl® 72% WP (1440,1800,2160 ppm) were used for the In vitro fungicidal assay to identify the best fungicide with the concentration against each cause. Treatments were arranged in CRD Design with three replicates. Data were collected to calculate the mean mycelia growth of two fungal isolates. The collected data were subjected to ANOVA using SAS and mean separation was performed with LSD to know the best treatment at the P value of 0.05. According to the results, isolated fungus produced stellate, rosaceous, and radial colony and pear shape sporangia was confirmed as *Phytophthora capsici* and; branched, thin, white in coloured and non-septate colony with ovoid or spherical shape sporangia produced fungus confirmed as *Pythium* spp. Homai® 80% WP (640, 800, 960 ppm) and Ridoaxyl Metalaxyl® 72% WP (1440,1800,2160 ppm) all concentrations were showed inhibition of mycelia growth in *P. capsici* and Homai® 80% WP 960 ppm concentration and Ridoaxyl Metalaxyl® 72% WP (1440,1800,2160 ppm) all concentrations were showed significant inhibition of mycelia growth in *Pythium* spp at P <0.05. According to the findings the study investigated that *P. capsici* and *Pythium* are the causes for the wilting disease in pepper nurseries in Intermediate zone of Sri Lanka. 960 ppm concentration of Homai® and 1440 ppm of Ridoaxyl metalaxyl® can be recommended for the management of wilting disease of Black Pepper. Field studies are needed to recommend the concentrations.

Keywords: Black Pepper, Fungicides, *Phytophthora capsici*, *Pythium* spp., Wilt disease

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