

Identification of pathological causes of black pepper (*Piper nigrum* L.) plant death at the nursery level and use of a non – chemical method for their control

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The high mortality rate shown by black pepper (*Piper nigrum* L.) rooted cuttings was thought to be caused by soil borne pathogens. Two pathogenic fungi; *Rhizoctonia* and *Phythium* spp. were isolated from the potting medium of dead nursery plants. Koch's postulate confirmed these two pathogenic fungi as the causal agents of the plant death.

A non-chemical method of exposing the potting medium to direct sunlight (solarization), prior to planting of cuttings was tested in order to control the soil borne pathogens. The experiment consisted of three potting media, 'new' (fresh potting medium), 'old' (medium used previously for planting pepper cuttings) and 'old medium mixed with cow dung' (1:1). Five different durations of solarization: 10, 15, 20, 25 and 30 days were used with no solarization as the control treatment. A completely randomized design (CRD) with three replicates was used.

Solarization of 25 days had the lowest number of casualties, 19 – 21% ($p < 0.01$) in the nursery while both new and old potting media exposed to sunlight for 25 days had the highest mean leaf number, 7 - 9 ($p < 0.01$) and the highest mean root dry weight, 0.3 – 0.4 g ($p < 0.01$) per rooted cutting, 5 months after planting in poly bags. Maximum temperature of potting media exposed to sunlight reached 65°C. Results suggest the possibility of using solarization as a non-chemical and inexpensive method to reduce the casualties in black pepper nurseries and to minimize the wastage of potting mixtures.

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