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Worm Power Against Fungal Diseases in Aroids: Prospects and Future Strategies

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Abstract

Organic growers have limited options for plant disease control since most of the effective fungicides are synthetic, toxic and potentially polluting. Vermicompost and vermiwash have been widely explored as eco-friendly options for controlling plant diseases. We explored the possibility of utilizing vermicompost to manage *Phytophthora colocasiae* and *Sclerotium rolfsii* that cause taro leaf blight and collar rot of elephant foot yam, respectively. Microbial diversity was assessed in terms of quality and quantity in 35 vermicompost samples collected from different parts of the country. The distinct isolates were screened against the target pathogens under *in vitro* conditions. Potent organisms were identified by ITS and rRNA sequencing. Induced systemic resistance (ISR) was quantified in terms of phenol content, chitinase and glucanase activities. The variability in disease suppression by various vermicompost samples was studied under *in vitro* conditions. Pot culture studies were conducted in taro and elephant foot yam for two years to assess the potential of vermicompost/vermiwash for disease suppression. A total of 309 culture dependant isolates of vermicompost origin were obtained and 18.9% and 36.4% of these organisms showed >50% inhibition against *S. rolfsii* and *P. colocasiae,* respectively. The disease suppression potential varied with the source of vermicompost. Vermicompost/vermiwash treated plants showed <10% TLB incidence and 0-50% collar rot incidence. Yield increase of 14–70 % was also noted in both crops. There is scope for utilizing vermicompost for eco-friendly management of taro leaf blight and collar rot of elephant foot yam.

Key words: Aroids, vermicompost, *Phytophthora colocasiae, Sclerotium rolfsii, Trichoderma, Bacillus*