

Soil-borne Diseases of Greenhouse Crops

Control of Soil-borne Disease of Greenhouse Crops

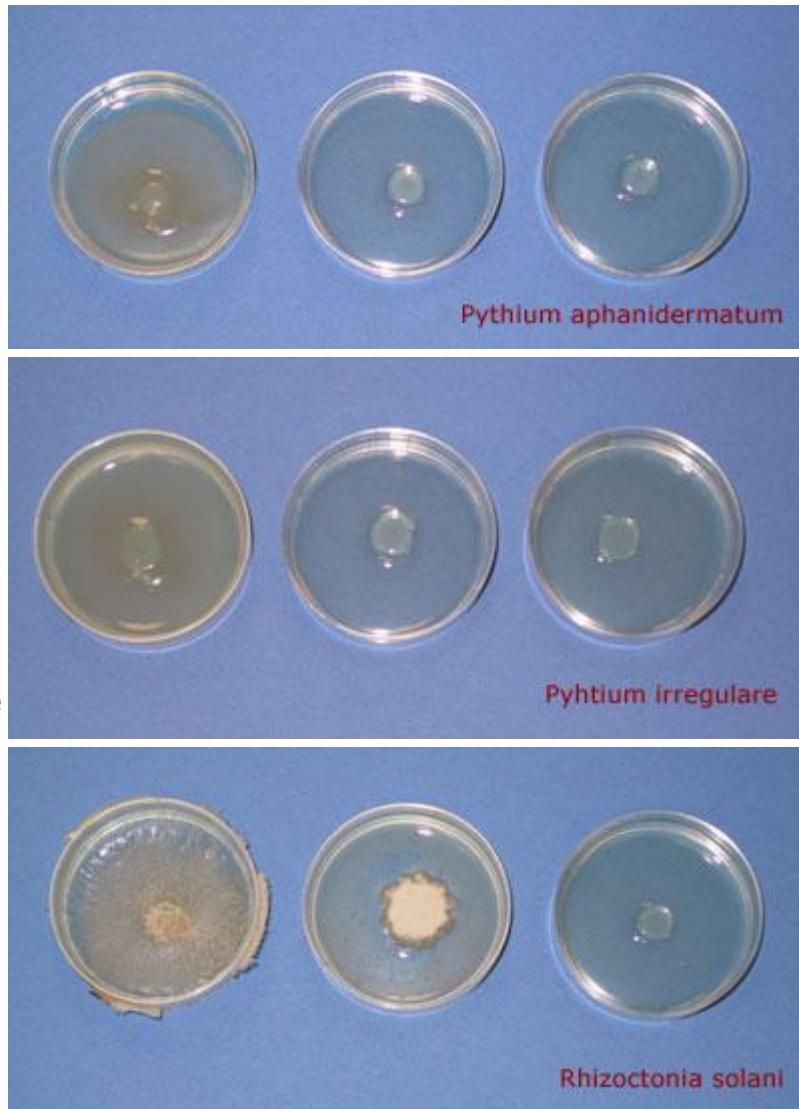
We conduct research on substrate components (i.e., coconut coir, composted bark) and amendments (i.e., surfactants, garlic extract, etc.) that can increase the disease suppressiveness of greenhouse and nursery substrates, particularly against *Pythium* and *Phytophthora*.

We demonstrated that coconut coir is disease suppressive and that the mechanism is chemical in nature rather than biological (sterilization does not reduce or eliminate the suppressiveness of coir). We have also demonstrated that not all coir is suppressive.

Relatively "fresh" coir is more consistently suppressive than older coir.

We are currently working with several byproduct materials that have disease suppressive properties including waste pepper pulp and a garlic extract. Our goal is to develop protocols for the use of these materials for the suppression of soil-borne diseases in greenhouse and nursery crops.

We are also conducting research on rice hull products which we have demonstrated to have a level of disease suppressiveness against certain soil-borne fungal pathogens.



***Pythium aphanidermatum*, *Pythium irregulare*, and *Rhizoctonia solani* grown on liquid nutrient medium and liquid nutrient medium amended with metalaxyl or 10% garlic extract (L to R).**



Tomato seedlings in substrates inoculated with *Phytophthora nicotiana*. Substrates are (bottom row L to R) unautoclaved Sphagnum peat, autoclaved Sphagnum peat, unautoclaved coir, (top row L to R) autoclaved coir, and fungicide treatment.



Geranium grown in *Pythium irregulare*-inoculated substrate amended with 0%, 2%, and 25% dried pepper pulp (L to R).



***Pythium irregulare* grown on liquid clarified V8 (L) medium and liquid clarified V8 medium amended with pepper pulp extract.**



Vinca grown in rice hull substrate with rice hull powder added(L) and in a Sphagnum peat and perlite substrate. Both were inoculated with *Phytophthora nicotianae*

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Last Modified: Tuesday, 09-Nov-04 17:18:10
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