ROLE OF HOST EXUDATES IN THE DEVELOPMENT OF BLACK ROOT ROT

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Abstract

Thielaviopsis basicola, the cause of black root rot, is an important pathogen in the early season development of cotton worldwide. Unlike many soilborne pathogens, this pathogen is not considered to have a saprophytic phase and ecologically acts as an obligate parasite, hemibiotroph. A cotton isolate of *Thielaviopsis basicola* was examined for its reproductive potential on several plant species,including host and nonhost crops, in pasteurized soil infested with individual chamydospores. Plants were removed after three weeks and the rhizosphere population was determined by dilution plating on the selective medium TB-CEN. Germination in response to host exudates was examined by placing root tips of intact plants in a chlamydospore suspension for 24 hours and recording percent germination microscopically. Reproduction was greatest on cotton, increasing over 500x. Several other host crops supported reproduction; including chickpea, alfalfa and soybean. Other reported hosts, including cucumber, tomato, and several other legumes, and nonhosts, wheat, onion, and canola, did not allow reproduction of the pathogen. Chlamydospore germination was greatest in root exudates of cotton. Exudates from other plant species, including chickpea and soybean, resulted in lower levels of germination. Wheat, a nonhost, supported appreciable germination when compared to several reported hosts, indicating germination in root exudates is not host specific. Specific compounds were tested for their ability to stimulate chlamydospore germination. Compounds examined included sugars and amino acids in varying C:N ratios with and without yeast extract and vitamins and the fatty acids palmitoleic and linoleic acid. No individual compound or combination of compounds examined supported chamydospore germination.

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