

SCREENING FOR PINK ROOT RESISTANCE IN ONION

Maintain *Pyrenochaeta terrestris* in sterilized soil stored at 4 C. Transfer soil to potato dextrose agar (PDA) plate and grow at 24 C. Transfer 3 x 3 mm piece of mycelium to PDA plates for increase. Grow for 10 days at 24 C. Aseptically cut mycelium and PDA with a #5 cork borer (10 mm diam.). Place 15 plugs in a 2800 ml Fernbach flask with 500 ml Czapek's broth. Shake bottles 3 times per week. Grow 10 days at room temperature, lighting not controlled. Comminute mycelium and broth (250 ml at a time to reduce the spilling) at low speed in Waring blender for three 30 second bursts. Check to be sure there is no bacterial contamination. Set spectrophotometer to 600 nm. Measure transmission of mycelial suspension, using water as 100%. Adjust solution to 75% transmission. Add 250 ml of this suspension per 100 lbs of sand in a volume of 1000 ml. This volume wets the sand thoroughly without water running out of cement mixer. Mix for 5 minutes. After pouring sand-inoculum mix out of cement mixer, mix by hand to incorporate any dry sand.

Fill metal pans with the infested sand and even out the top using the wooden device. Make 8 rows 1 cm deep using dibble board. Plant 100 seeds per row. Include resistant and susceptible varieties as checks. Place pan in water in temperature tank under fluorescent lights. Sand temperature should be 20-22 C. When onions reach "flag" stage, sand temperature should be increased to 24 C. Water or fertilize as needed.

Test can be read in 3-4 weeks. Dig up plants and rinse off sand in tap water to observe roots. Susceptible plants die or have very deep pink roots. Resistant plants have white or pale pink roots. Resistant plants can be transplanted to soil and grown in the greenhouse.

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