SOUTHERN PINE SEEDLING HEALTH AND QUALITY AFTER THREE OR FOUR CONSECUTIVE CROPS IN FUMIGATED SOIL, SOIL TREATED WITH ORGANIC AMENDMENTS, OR UNTREATED SOIL

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A project to examine the effects of soil fumigation or the addition of organic amendments on the production of slash pine seedlings has been completed after four consecutive crops (1993-96) at a bare root nursery in Florida. A similar study with three loblolly pine seedling crops (1994-96) was conducted in South Carolina. Plots amended with organic residue received annual applications of either pine bark or composted organic materials. Composted organic residues consisted of composted yard waste at Andrews Nursery in Florida in 1993 and 1994, aged hardwood bark at International Paper Co. Supertree Nursery in South Carolina in 1994, and a commercially available composted municipal waste in both nurseries in 1995 and 1996. Control plots were untreated. Plots were established in fields that had not been fumigated for at least 2 years prior to the initiation of the study and maintained to simulate conditions that may occur without fumigation over time. Seedling survival and quality were evaluated in the nursery. Seedling growth and survival also were evaluated one year after transplanting to cutover reforestation sites. Plant pathogenic fungi, including species of Fusarium, *Macrophomina, Pythium,* and *Rhizoctonia*, and plant parasitic nematodes (species of *Meloidogyne, Belonolaimus, Hoplolaimus, Trichdorus, Tylenchorhynchus, and Criconomeoides)* were detected at one or both nurseries; however, no serious disease development was observed. Slash pine seedlings from fumigated plots were usually taller than seedlings from other treatments at the time of transplant; however, at the end of the first growing season in reforestation sites, the size and survival of seedlings from all treatments were not significantly different. Survival of slash pine seedlings in nursery plots was similar in all treatments, with the exception of a high level of municipal waste where numbers of slash pine seedlings were reduced when compared to counts from fumigated plots. One year after transplant of the seedlings to a reforestation site, size and survival of the slash pine trees did not differ significantly among any of the treatments. A reduction in size of loblolly seedlings was observed in the outplant evaluations of trees grown in soil amended with composted hardwood bark when compared to trees from fumigated plots. There were no other significant differences in size or survival of loblolly seedlings, in either the nursery or the field, among any of the treatments over the duration of the study.

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