

USE OF LIGNITE FLY ASH AS A SOIL AMENDMENT

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One-year-old loblolly pine (*Pinus taeda* L.) seedlings were grown in a greenhouse in potted mixtures of two Texas lignite fly ashes and a Troup sand, Sacul sandy loam, and a sandy clay loam strip-mine spoil. Mixtures contained 0, 25, 50, 75 and 100 percent fly ash. After six months, soil:fly ash mixtures were analyzed for N, P, Ca, Mg, K, Na, Mn, Zn, pH, cation-exchange capacity, percent base saturation, and texture. Needle and root tissue analyses were performed on both live and dead seedlings.

Survival and height growth were both adversely affected by fly ash amendments. Nearly all seedlings grown in fly ash amended soils were exhibiting needle die-back at the end of the six-month growing period.

Soil analyses revealed the effects of fly ash amendments to include: 1) elevated pH, 2) excessive free salts, particularly calcium, and extremely high levels of percent base saturation, 3) reduced cation-exchange capacity, 4) reduction of available phosphorus to extremely low levels. Conditions such as these were not conducive to the survival or growth of loblolly pine.

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