EFFECTS OF PLANTING DENSITY ON THE BIOMASS PARTITIONING OF INTENSIVELY MANAGED LOBLOLLY PINE STANDS ON THE PIEDMONT AND UPPER COASTAL PLAIN OF GEORGIA

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Poster Summary

Increased planting density enhances overall stand growth by increasing resource capture and use. However, planting density also may affect the proportion of biomass partitioned to stem growth, a main factor controlling stand growth and yield. During the fourth growing season, we determined the biomass partitioned to leaf, branch, stem, and fine root (> 0.5mm) of intensively managed loblolly pine (*Pinus taeda* L.) stands in the Upper Coastal Plain and Piedmont of Georgia growing at 6 densities ranging from 740 to 4,440 trees ha^{-1} (5 replications). Current annual increment during the fourth growing season increased from 4,573 to 12,671 kg ha^{-1} as stand density increased from 740 to 4,440 trees ha^{-1}. Stem, leaf, and branch biomass all significantly increased with increasing planting density. However stem biomass increased to a greater extent. Therefore, biomass partitioning to stem relative to other stand components increased with increasing stand density. As stand density increased, the ratio of stem growth per foliage biomass increased from 1.02 to 1.54, the ratio of standing stem biomass to branch biomass increased from 1.77 to 3.27, and the ratio of standing stem biomass to fine root biomass increased from 3.56 to 7.79. These results indicate that in addition to increasing growth due to greater resource capture,planting density increases growth and yield by shifting production to stem growth.

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