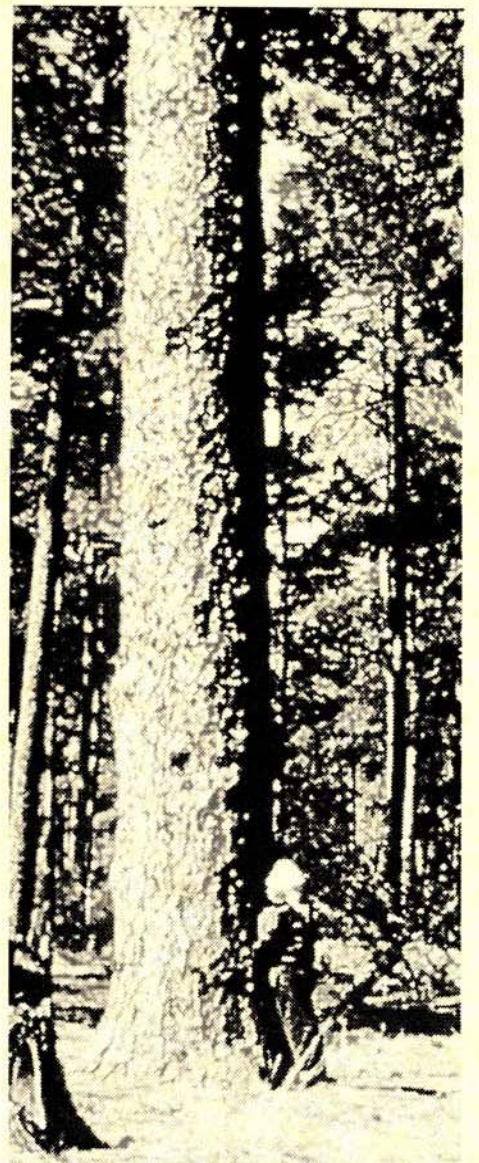


PROCEEDINGS

First Longleaf Alliance Conference

LONGLEAF PINE:
A REGIONAL
PERSPECTIVE OF
CHALLENGES AND
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Fire, Nutrients and Atmospheric Influences in Longleaf Pine Woodlands

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ABSTRACT - Fire is an important ecological factor influencing the structure and function of longleaf pine ecosystems, including forest floor and groundcover nutrient pools and availability, forest to atmosphere interactions, and potential nutrient controls on productivity. However, little is known about interactive effects of seasonality of fire, litter types and mass upon forest floor N and P losses, or their atmospheric influences. This paper reports results from comparative summer and winter burns conducted in different groundcover types with different manipulated fuel loadings, as well as effects from ambient fuel accumulations of 1-3 years following the last fire. Peak fire temperatures and severity of burning were similar across groundcover types and seasons, but higher pine litter loadings produced elevated temperatures not exceeding 800° C. More N was lost from growing season burning since summer biomass had higher N content. Although C and N losses were 80-94% of total litter and groundcover pools, P losses were negligible in any of the experimental burns probably due to temperatures remaining below 800° C. Important aspects of N cycling processes and regulatory influences on productivity as affected by fire in longleaf pine ecosystems need further examination. These include within site conservation and redistribution of N during burning, influences of burn season on legume populations and N inputs through biological fixation. We also must thoroughly characterize atmospheric emissions from both prescribed and wildfire scenarios, and attempt to relate them to historic, baseline atmospheric processes that previously existed in the southeastern coastal plain.