

# Research Program Summary

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## **Dr. Eric J. Jokela (.50 Research FTE)**

Professor

Silviculture and Forest Nutrition

Forestry is a vital part of the economy in Florida and the Southern United States. Recent estimates for the South indicate that there are over 28 million acres of forest land, and about one-third of this total is covered by pine types. Population increases and changing land-use patterns have reduced timberlands in this region by about 2.5 million acres since the 1960s. Such trends suggest that productivity on remaining timberlands must increase if future demands for forest products are to be met. One of the single most important factors regulating productivity of pine stands in Florida and the lower Coastal Plain is soil nutrient availability. Silvicultural practices such as forest fertilization provide the means for increasing yields and sustaining high levels of productivity.

My research program focuses on nutritional aspects of crop (forest) yield. Specific interests and research efforts are directed toward understanding stand-level responses (e.g., canopy dynamics, light interception, carbon allocation) and ecosystem processes (soil nutrient supply, nutrient cycling, uptake and use efficiency) that influence the production ecology of managed coniferous forests. During my tenure at UF, I have provided technical and administrative leadership to the Forest Biology Research Cooperative, the Cooperative Research in Forest Fertilization (CRIFF) program and the Partnership for Fundamental Research in Forest Productivity and Health. Research under these interdisciplinary programs has focused on understanding environmental factors controlling and limiting forest productivity.

Current research efforts, and those of my students, are examining the underlying importance of genetic controls on nutrient uptake and use efficiency, along with canopy processes related to leaf area development, light interception and radiation use efficiency of selected loblolly and slash pine families; micronutrient deficiencies in southern pines; effects of silvicultural practices on soil organic carbon; and uneven-aged silvicultural systems in longleaf pine. Information gained through these research efforts has played a critical role in providing land managers with knowledge and cost-efficient silvicultural systems for enhancing sustainable forest productivity.

### **Research Projects**

#### **CRIS Project--FOR-4095:**

Forest Productivity, Health and Sustainability

Terminates: 9/30/08

### **Active Contracts and Grants in Support of Research and Teaching:**

National Science Foundation, (with T. Martin, G. Peter, J. Davis)

Title: Center for Advance Forestry Systems, \$275,000 (2009-2014)

USDA – AFRI, (with T. Schuur, J. Vogel)

Title: The influence of genetic improvement and fertilization on the soil organic matter dynamics of loblolly pine forests, \$344,700 (2009-2012).

Florida Forestry Association, (with T. Martin, G. Peter, J. Davis)

Title: Forest Productivity, Health & Sustainability: Forest Biology Research Cooperative, \$750,000 (2009-2014).

### **Recently Completed Projects:**

Florida Forestry Association, (with T. Martin, G. Peter, J. Davis)

Title: Forest Productivity, Health & Sustainability: Forest Biology Research Cooperative, \$1,991,115 (1998-2008).

Florida Division of Forestry (with N. Comerford)

Title: Forest Fertilization BMP's, \$20,722

USDA Higher Educ. Challenge Grant (with J. Alavalapatti, M. Collins, D. Hamen, K. Portier, G. Tanner)

Title: Integrated Analysis of Forested Watersheds, \$99,814

USDA Higher Educ. Challenge Grant (with S. Jose)

Title: Restoration Ecology of Longleaf Pine, \$165,000

USDA For. Serv. and Florida Division of Forestry (with N. Comerford, S. Grunwald)

Title: Spatial Modeling of Nitrogen Emissions From Poultry Operations and Their Influence on Pitch Canker in *Pinus elliottii*, \$128,870

Dept. of Energy (with N. Comerford)

Title: Diagnosing and Correcting Nutrient Limitations, \$331,800