

# A Spatially Explicit Economic Analysis of *Eucalypts benthamii* for Short-Rotation Biomass in the Southern United States

James H. Perdue  
U.S. Forest Service

John Stanturf, Ph.D.  
U.S. Forest Service

\*Timothy M. Young, Ph.D.  
The University of Tennessee<sup>1</sup>

Doug Dougherty  
Dougherty and Dougherty Forestry Services, Inc.

The study estimates the obtainable yield in mean annual increment (MAI) and economic returns on investment (IRR and NPV, including land expectation value (LEV) for *Eucalypts benthamii*. Projected MAI values from the five year modeled regime ranged from 0.8 to 18.6 dT acre<sup>-1</sup> year<sup>-1</sup>, with a mean of 5.4 dT acre<sup>-1</sup> year<sup>-1</sup>. Spatially, east coast of North Carolina, southeast coast of South Carolina and Escambia areas in Florida have the highest yield production in the range from 35 m<sup>3</sup>/HaYr to 77 m<sup>3</sup>/HaYr equivalent to the range from 8.57 dT acre<sup>-1</sup> year<sup>-1</sup> to 18.6 dT acre<sup>-1</sup> year<sup>-1</sup>. Central South Carolina and west Arkansas have the lowest yield production lower than 15 m<sup>3</sup>/HaYr (3.67 dT acre<sup>-1</sup> year<sup>-1</sup>). Excluding the coastal sites Charleston City in South Carolina, Panama City and Sea Hag Marina in Florida because of alternative land use options, the LEV of *Eucalypts benthamii* range from \$-2707.5 to \$1531.95 per acre. It is profitable to plant *Eucalypts benthamii* as short-rotation woody biomass crops on a small percentage (12%) of studied sites in the southern U.S. due to the low projected yields on most sites because of the limitation of weather. The maximum estimated IRR is 15.9%.

**Keywords:** Short-Rotation Woody Crops, 3-PG models, economic model, *Eucalypts benthamii*

---

<sup>1</sup> Department of Forestry, Wildlife and Fisheries, Center for Renewable Carbon, The University of Tennessee, 2506 Jacob Drive, Knoxville, TN 37996-4570, [tmyoung1@uk.edu](mailto:tmyoung1@uk.edu), 865-946-1119

Timothy M. Young, Ph.D. is a Full Professor and Graduate Director in the Center for Renewable Carbon at the University of Tennessee. He has Ph.D. in Natural Resources (*concentration Statistics*) and M.S. degrees in Statistics (*minor - Operations Research*) from the University of Tennessee. He also holds M.S. (*Forest Economics*) and B.S. (*Forestry*) degrees from the University of Wisconsin.

He has 261 scientific publications and has given more than 350 professional presentations and has been a keynote speaker at 12 scientific meetings. He is an adjunct professor at Salzburg University of Applied Sciences in Kuchl, Austria. Tim has been an invited international speaker at conferences in Austria, Canada, China, Germany, Ireland, New Zealand, Romania, and Wales. He was an Austrian-American Fulbright Professor at Salzburg University of Applied Sciences in Kuchl Austria from September '13 to February '14. He has extensive grants totally more than \$4.1 million.