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# Landowner Responses to Dynamic Timber Markets

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# Objectives

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- Review some of the silvicultural response literature and discuss growth rates that may be attainable
- Discuss some of the possible changes in landowner behavior in response to developing biomass markets

# Silviculture has changed in the south

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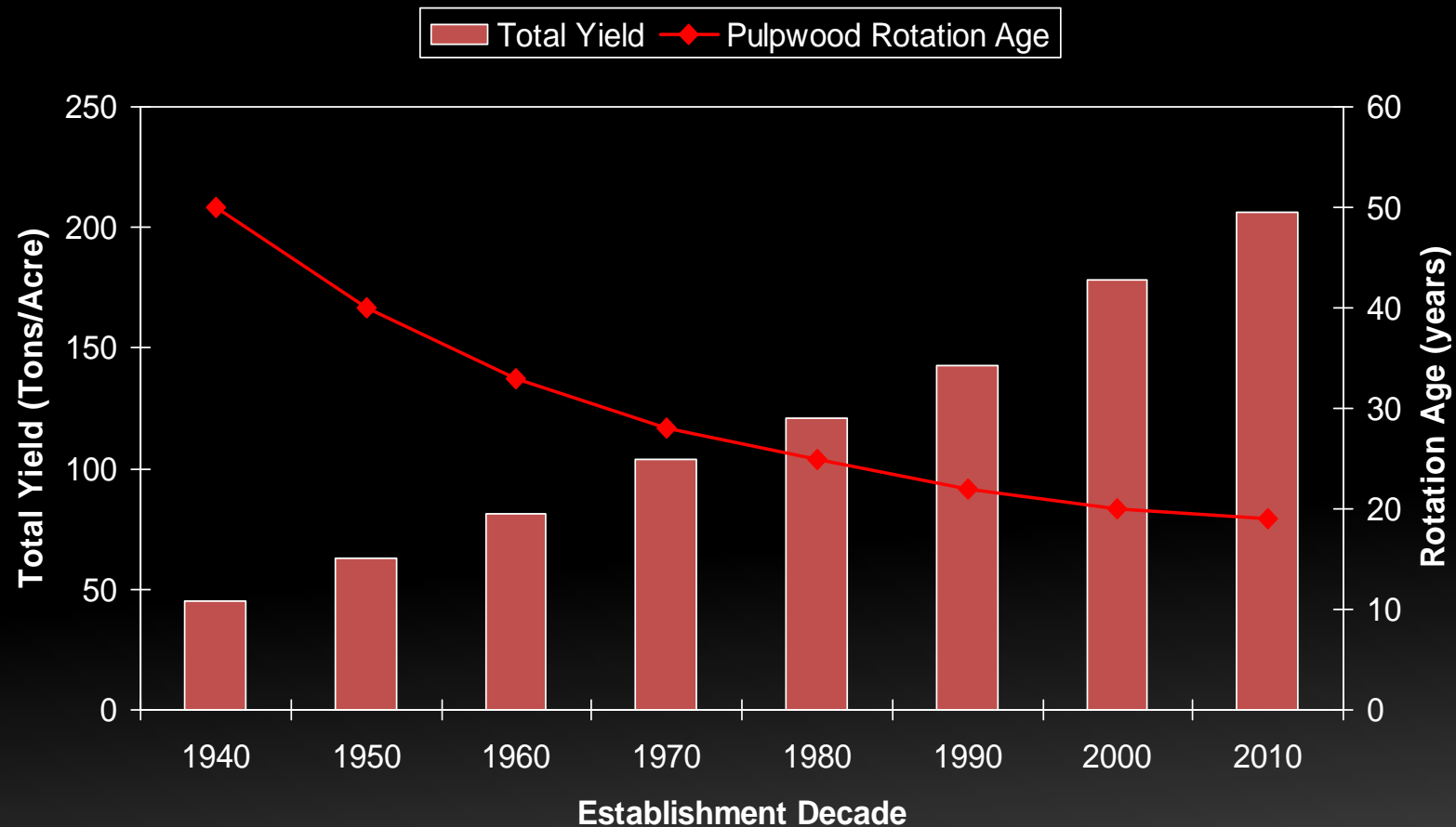
- With treatments like chemical and mechanical site preparation, herbaceous weed control, fertilization, and improved genetic stock growth rates have increased dramatically
- Today we do not, in many cases, employ all of these silvicultural tools to enhance growth of pine plantations – why?

# Forest Management Today

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- In fact over the past few years we have seen forestland owners
  - Decrease silvicultural intensity
  - Increase thinning
  - Decreased clearcutting
- These are the expected responses to declining stumpage prices

# Trends in Estimated “Potential” Total Yield and Pulpwood Rotation Age for Southern Pine Plantations



Adapted from Fox, Jokela, and Allen, 2004

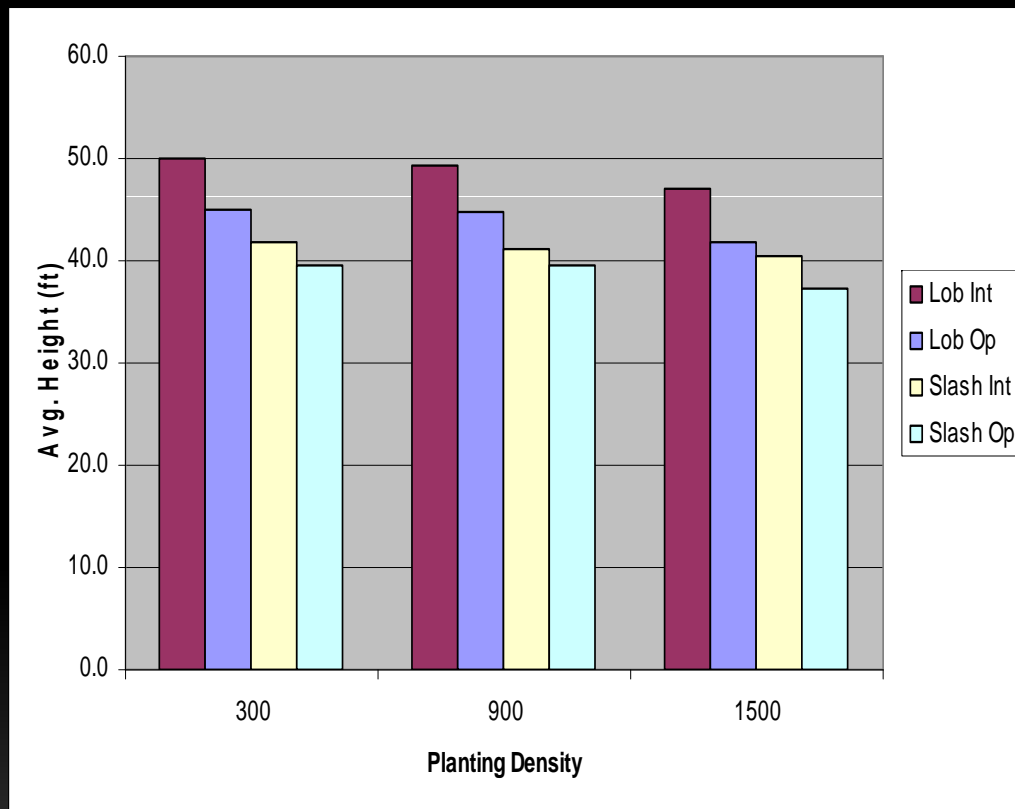
# PMRC Culture / Density Study

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- **Objectives**
  - Quantify and contrast the effects of intensive silviculture and current operational practices on the growth and yield of loblolly and slash pine plantations across a wide range of densities
  - Investigate potential interactions between cultural intensity and stand density across broad soil categories, particularly in the areas of survival, fusiform rust infection, volume and weight production, product class distributions, and carrying capacity as measured by limiting density measures such as stand density index and relative spacing

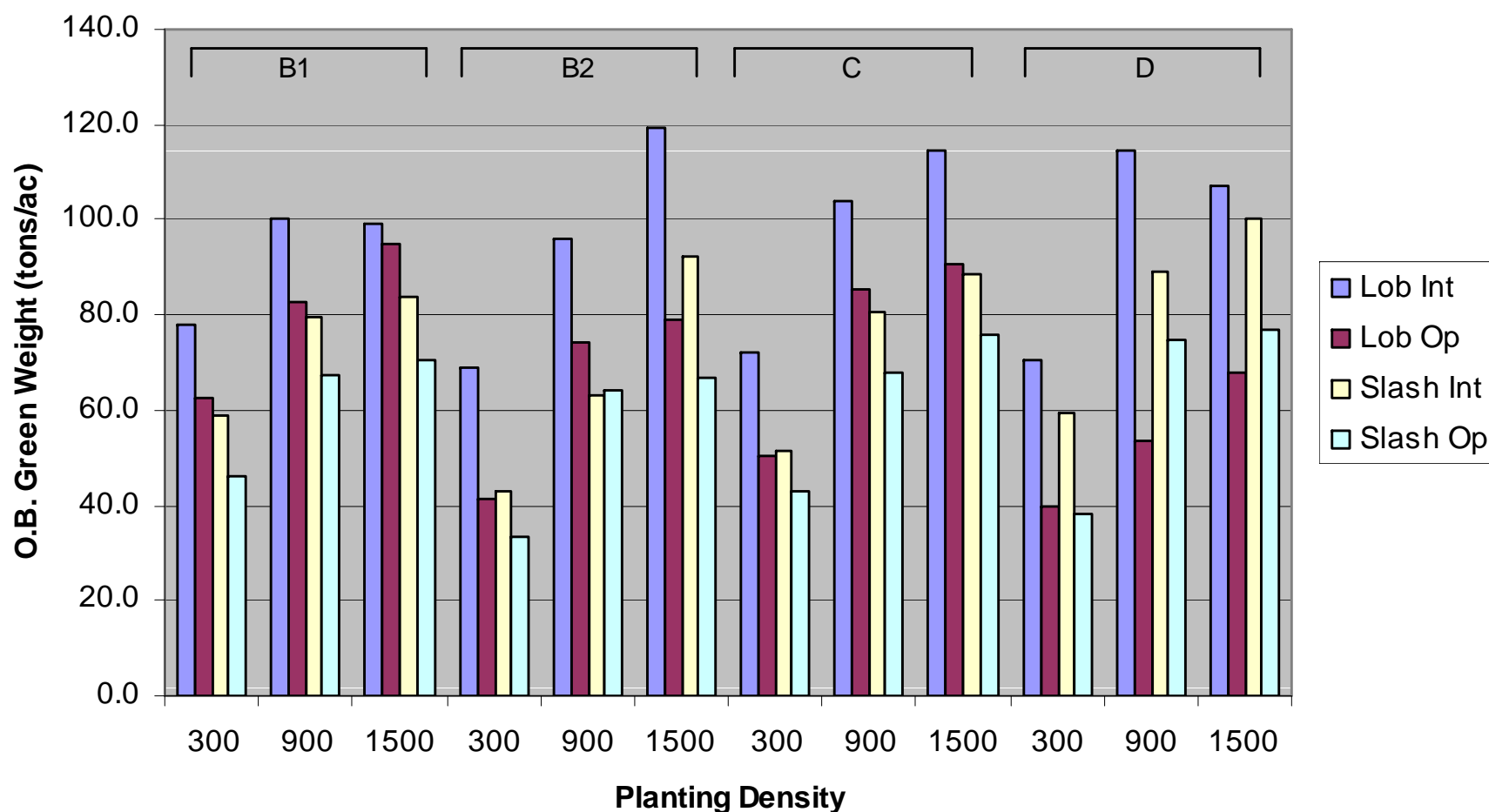
# Lower Coastal Plain Planting Density x Culture -Age 10 Average Heights

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Greater heights with loblolly  
Greater responses to culture  
with loblolly

# Age 10 Average Green Weight by Species, CRIFF Soil Group, Management and Density



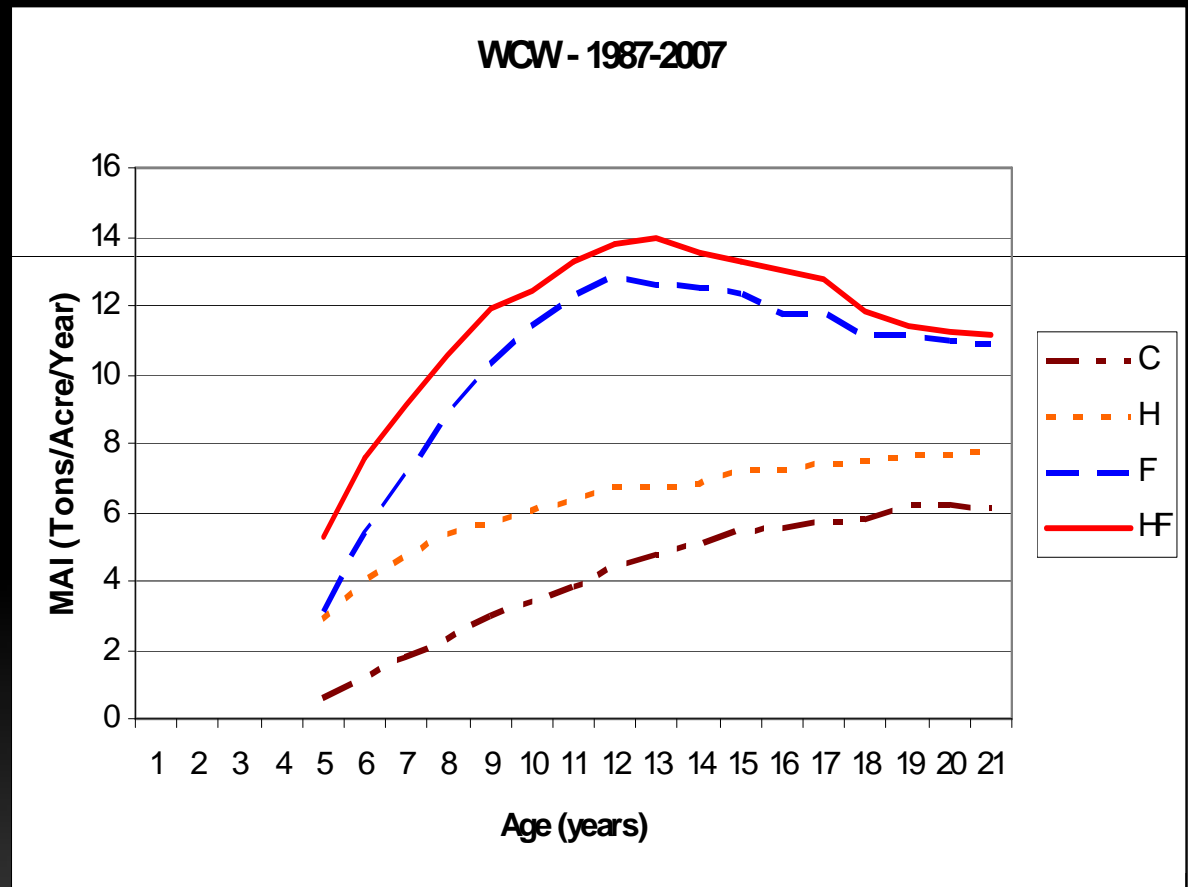


# Maximum Productivity of Loblolly Pine

Productivity on Pelham/Rigdon soils near Waycross; Site index (25 yrs) ranged from 75 to 97.



From B. Borders, Warnell;  
CAPPS Study



C=Operational site preparation; H=complete and sustained competition control;  
F=Annual fertilization; HF=complete vegetation control and annual fertilization

## Average Total Green Tons and DBH by Planting Density and Cultural Regime at Age 10 – Loblolly Pine in Flatwoods



Operational regime - mechanical/chemical site prep; 1<sup>st</sup> year HWC; Fert at yrs 0 and 8  
Intensive regime – mechanical/broadcast site prep; tip moth control, complete & sustained competition control, repeated fertilization  
17 installations; PMRC Coastal Plain Culture Density Study

## Average Total Green Tons and Total Height by Planting Density and Cultural Regime at Age 10 – Loblolly Pine in Flatwoods



Operational regime - mechanical/chemical site prep; 1<sup>st</sup> year HWC; Fert at yrs 0 and 8  
 Intensive regime – mechanical/broadcast site prep; tip moth control, complete & sustained competition control, repeated fertilization  
 PMRC Coastal Plain Culture Density Study



SAGS Culture/Density Installation #20  
Escambia County, Alabama

Image © 2007 DigitalGlobe

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# How Might Timber Markets Change

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- New markets for small trees, tops, limbs, and needles - maybe
- Increased competition for the traditional pulpwood material
- Increased competition and expanding markets for CNS material and mills

# What Might Landowner Responses Be?

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- If we assume that increased competition will lead to increased prices then . . .
  - Increased silvicultural investment which provides increased growth rates and ultimately increased sustainable harvest
  - Shorter rotation lengths
  - Less thinning
  - Possibly some timber management regimes focused exclusively on biomass production

# A Comment About Utilization

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- Initially many believed that these facilities could be run primarily off of small trees, logging residue, etc.
- While these sources can provide some additional biomass our research documents that these sources of fiber will increase yields 20 to 35% depending upon the additional effort (and cost) of harvesting and delivering this previously untapped source

# Market Dynamics

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- When speaking of these market dynamics many of us recognize that short-run behavior may be different than long-run behavior
  - Most expect short-run price “spikes” in some markets around the south if biomass markets come to fruition
  - Many also expect long-run prices to be less, in real terms, than pulpwood prices experienced during the mid to late 1990s



# What May Influence Market Development

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- The level / amount rate green energy desired from a policy perspective
- The definition of biomass and how that definition is used in policy development and execution
- The cost of traditional energy sources
- The extent to which a “level playing field” is created across the possible bioenergy feedstocks