

ShortFor Project

Which silvicultural practices might improve biomass production in Short Rotation Forestry systems?



Ignacio Sevillano¹, Susan Foreman¹, Ian Short¹, Niall Farrelly²
 Forestry Development Department, Teagasc, Ashtown, Dublin 15
 Forestry Development Department, Teagasc, Athenry, Co. Galway



Keywords: short rotation forestry, planting density, biomass

Introduction

Predicted shortfall of timber for biomass

Pests and diseases

Climate change

Ireland's renewable targets to increase

Exploring the potential of Short Rotation Forestry (SRF) in Ireland

- *Single trees of fast-growing species
- *Reduced rotation length (8-20 years)
- *Niche between short rotation coppice and conventional forestry

Objectives

- To investigate the impact of planting density on species growth and performance
- To determine silvicultural practices (e.g. planting density and rotation length) that optimise returns

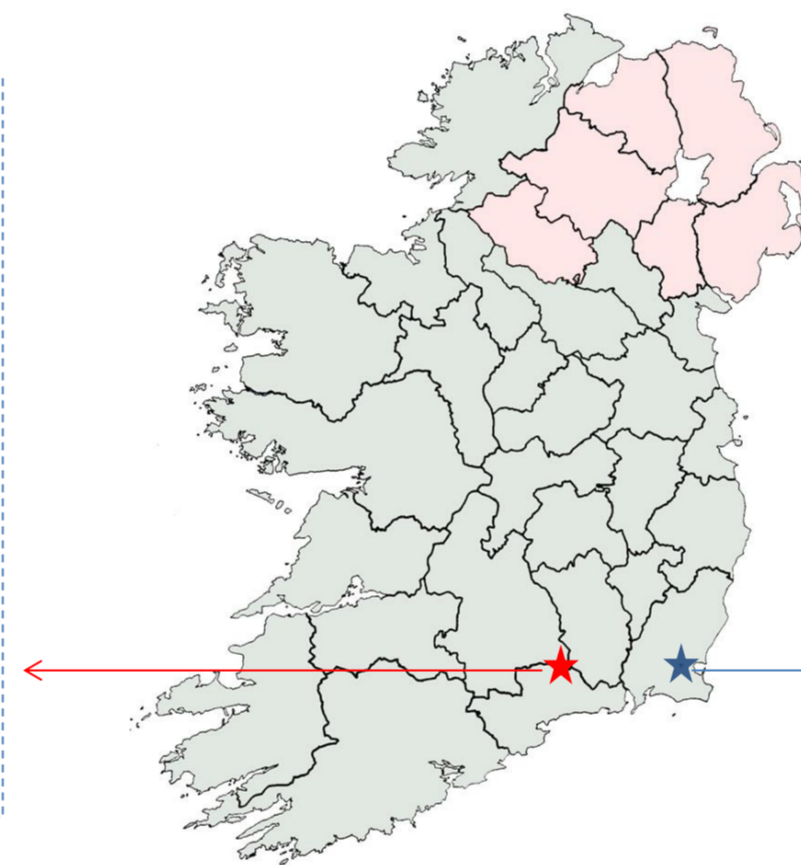


Field trials

Brownswood

- Location: Portlaw (Co. Waterford)
- Reforestation site (Coillte)
- Soil: acid brown earth
- Species & planting densities (trees/ha)

<i>Picea sitchensis</i>	10,000	<i>Eucalyptus nitens</i>	5,000
<i>Abies grandis</i>	5,000	<i>Alnus cordata</i>	2,500
	2,500		1,333



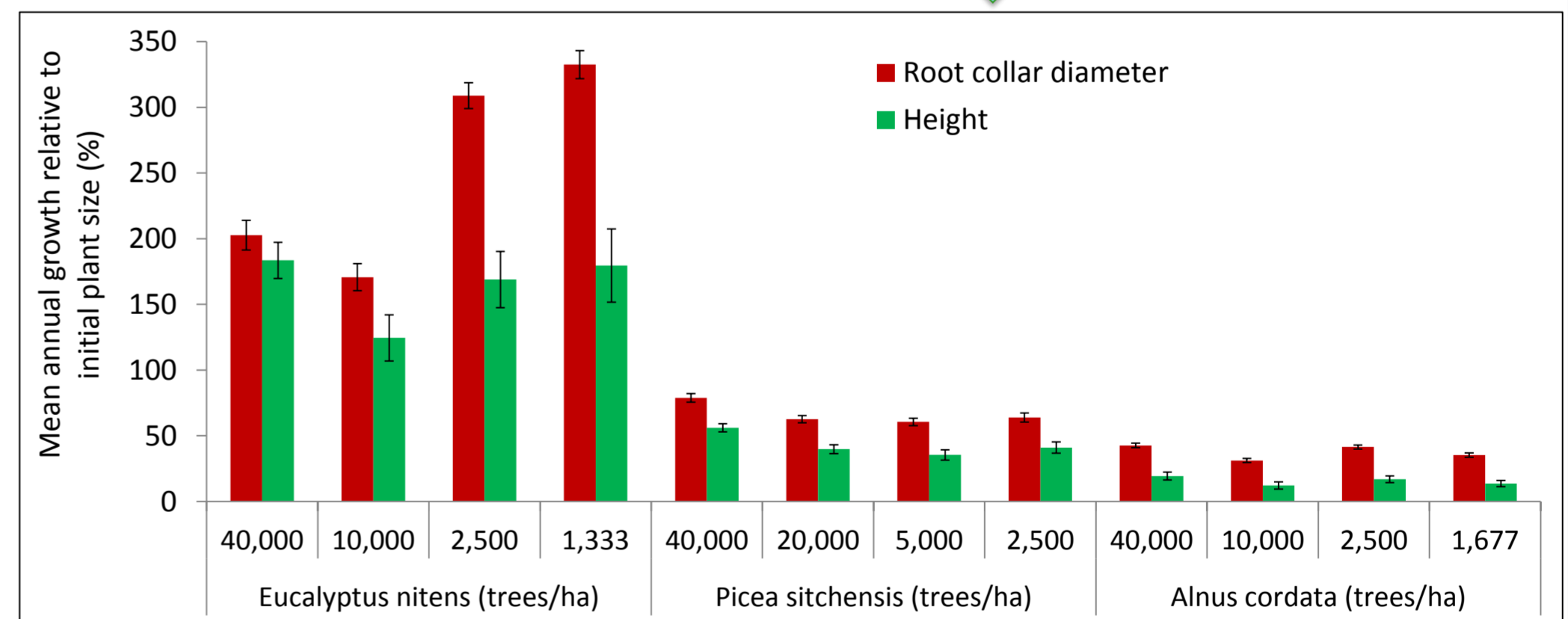
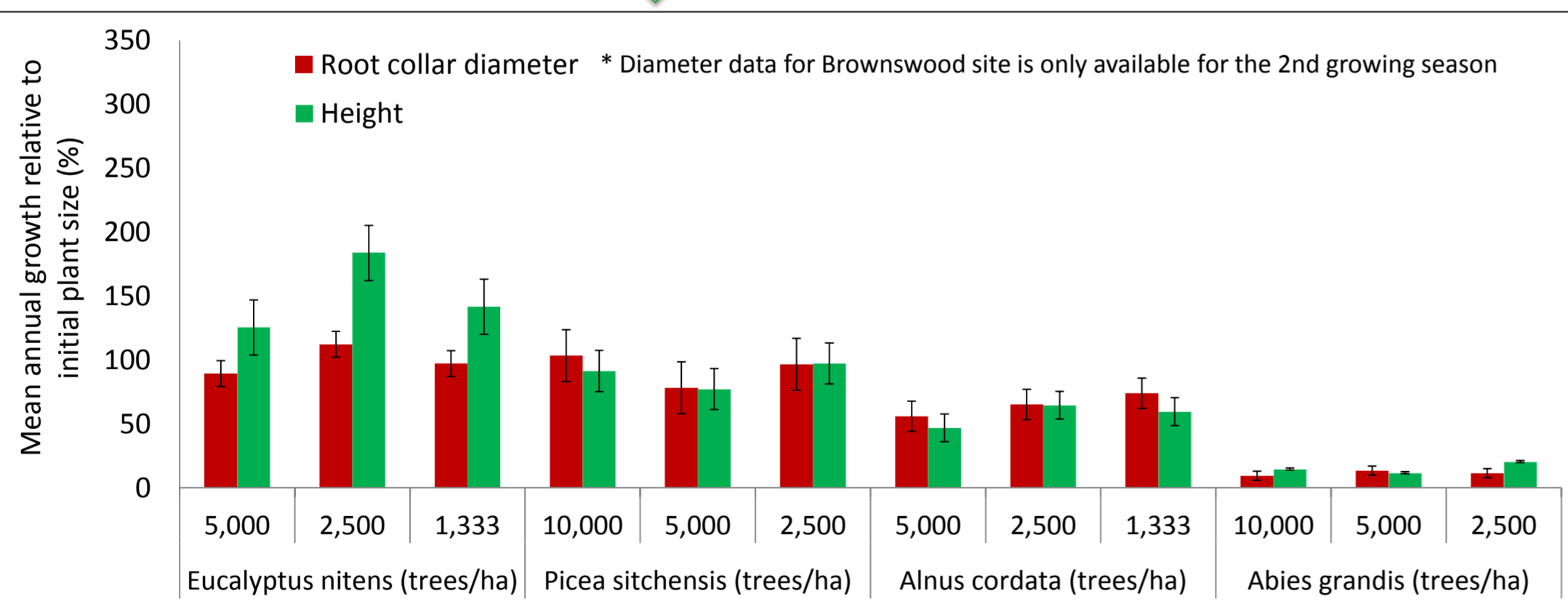
Johnstown Castle

- Location: Murntown (Co. Wexford)
- Afforestation site (Teagasc)
- Soil: gleysol
- Species & planting densities (trees/ha)

<i>Picea sitchensis</i>	40,000	<i>Eucalyptus nitens</i>	40,000
	20,000		10,000
	5,000		2,500
	2,500		1,333
<i>Alnus cordata</i>	40,000		
	10,000		
	2,500		
	1,677		

Measurements: survival, growth

Performance after two growing seasons



Mean annual height and root collar diameter growth relative to initial plant size in Brownswood (left; n=3 reps) and Johnstown Castle (right; n=5 reps).

Conclusions

- ✓ Planting density did not affect survival
 - ✓ Increased growth
- **Eucalyptus nitens* > other species
- Low density > high density



Species & planting density suitability



Fuel properties

Economic & environmental sustainability

Can SRF contribute to improve biomass production?

How (planting density, rotation length)?

Funding body

Research body

Project partners

