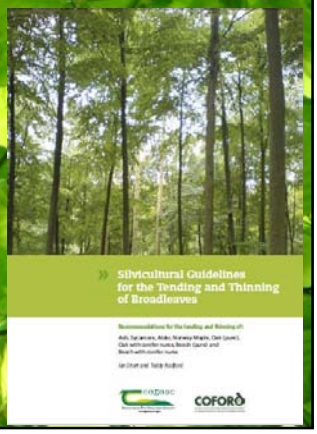
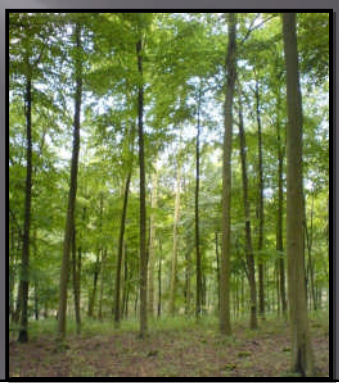
BROADLEAF THINNING AND KNOWLEDGE TRANSFER

Ian Short (UCD)
Toddy Radford (retired)
Jerry Campion (Teagasc)



Introduction

- 30,000 ha broadleaf
- Majority is privately owned
- Mostly planted during the last 15 years



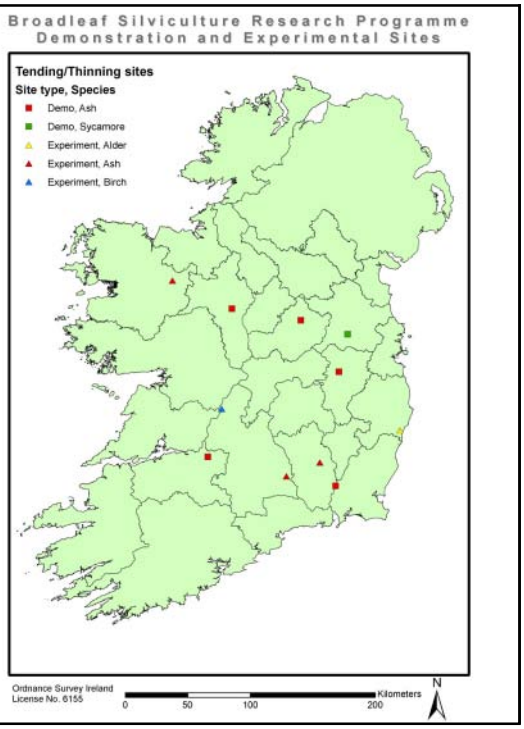
Broadleaf management

- €750 ha^{-1} thinning grant
- Emphasis on high quality, vigorous stems
- Selection is vital
- Select Potential Crop Trees (PCT)
  - Disease free
  - Good stem form
    - 6m ⇨ 5m ⇨ 4m ⇨ …
  - Vigour
  - Distribution

Broadleaf thinning trials and demos

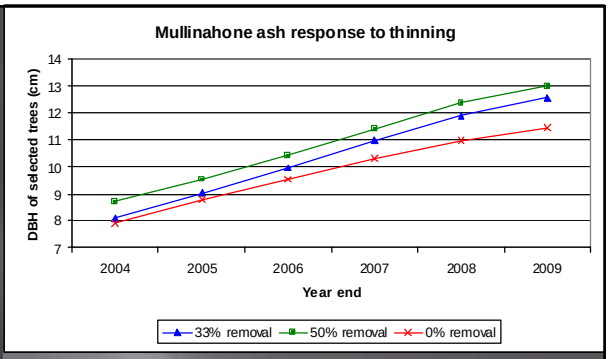
- 6 demonstration sites to date
- 5 experimental sites

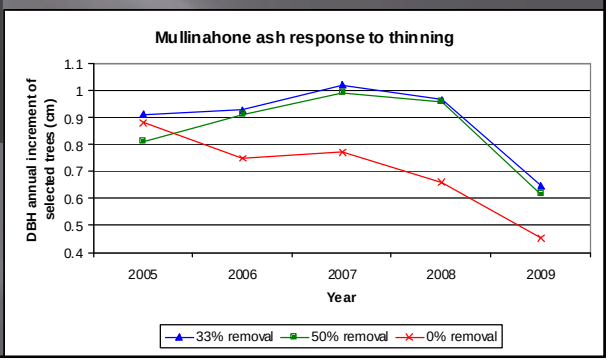
Ash
Alder
Sycamore
Birch



Ash experiment sites

	Castlefield	Mullinahone
Planted	1994	1995
Spacing	2 x 1.5	2 x 2
Thinning year	2003/2004	2003/2004
PCT DBH at thinning (cm)	Control: 8.5 33%: 8.2 50%: 8.6	Control: 7.9 33%: 8.1 50%: 8.7
PCT DBH 2008/2009	Control: 11.8 33%: 12.4 50%: 13.3	Control: 10.9 33%: 11.9 50%: 12.4
PCT DBH increment increase over Control	33%: 28% 50%: 40%	33%: 24% 50%: 20%





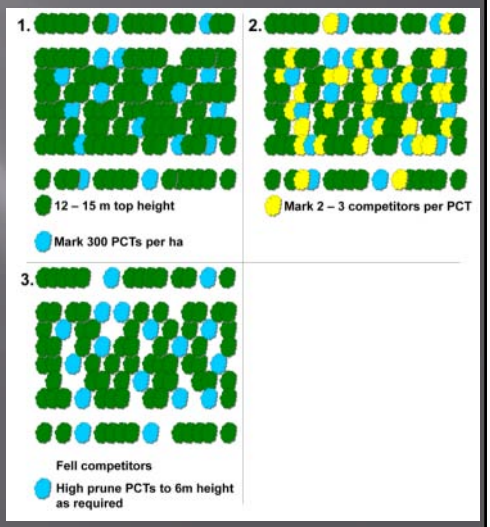
Ash demo sites

	Kilmeague	Crookedwood
Planted	1995	1995
Spacing	2 x 1.5	2 x 2
Thinned	June 2007	April 2008
PCT DBH at thinning	Control: 12.6 Thinned: 10.9	Control: 11.6 Thinned: 10.4
PCT DBH end 2009 (increment)	Control: 14.8 (0.94) Thinned: 13.6 (1.16)	Control: 13.6 (0.78) Thinned: 12.7 (1.15)
Thinned PCT DBH increase over Control	23%	47%

Thinning of ash

- Thinning should have commenced by the time stand top height has reached 10m (Evans, 1984)
- **Insufficient thinning is a common mistake** in *F. excelsior* management (Selby, 1842; FRAXIGEN, 2005)
- Thinnings should be heavy and frequent (Savill, 1991; FRAXIGEN, 2005)
- Select and mark potential crop trees (Schlich, 1910; Bolton, 1956; Evans, 1984; Mutch, 1998; Horgan *et al*., 2003)

Ash, sycamore, maple, alder



Hurley butts

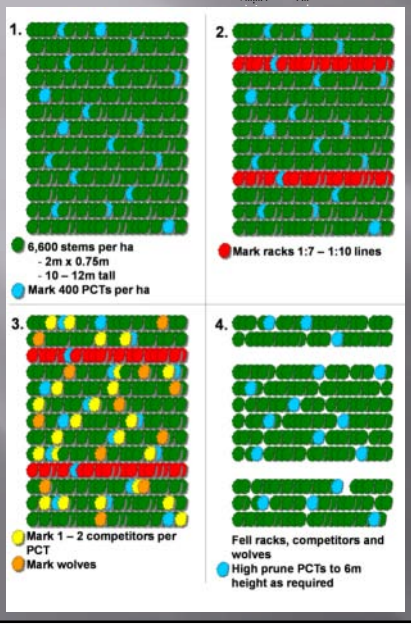
- Select and mark hurley butts
- Remove competitors
- Sawlog takes precedence over hurley butts

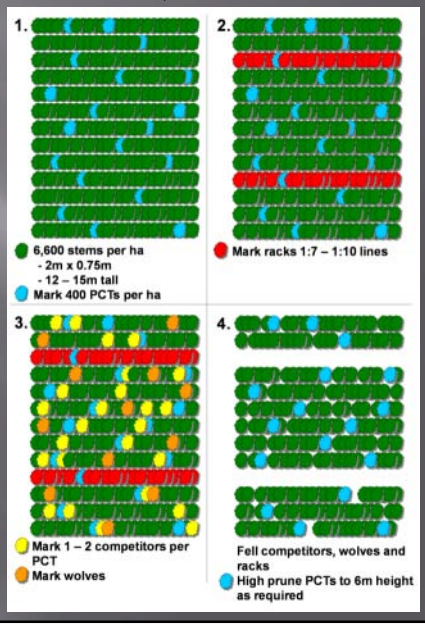
Tending pure oak / beech

Species	Height (m)	PCTs required
Oak	8 – 10	600
Beech	7 – 8	600

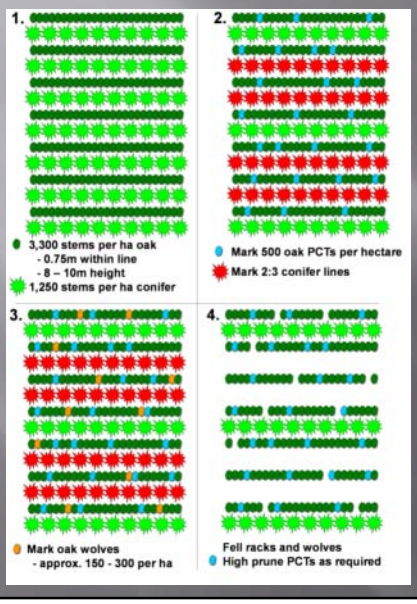
- No removals required
  - Wolves?
- Select, mark and high prune PCTs as required

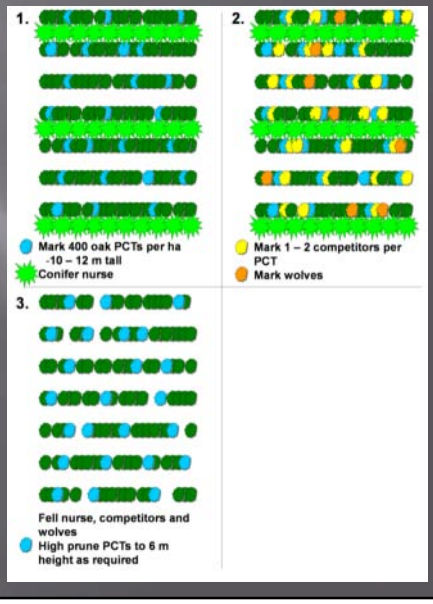
Thinning pure oak / beech



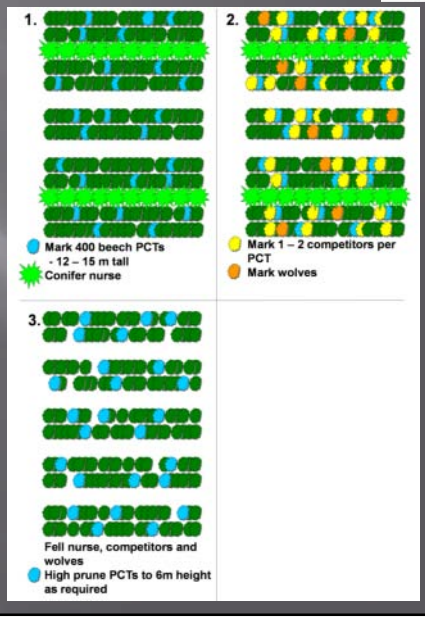


Oak / conifer mixture

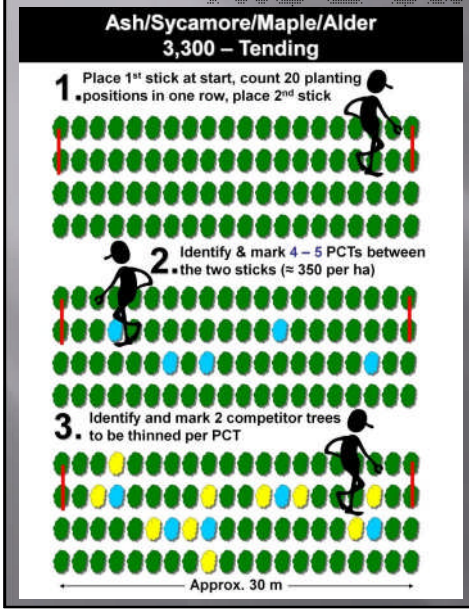


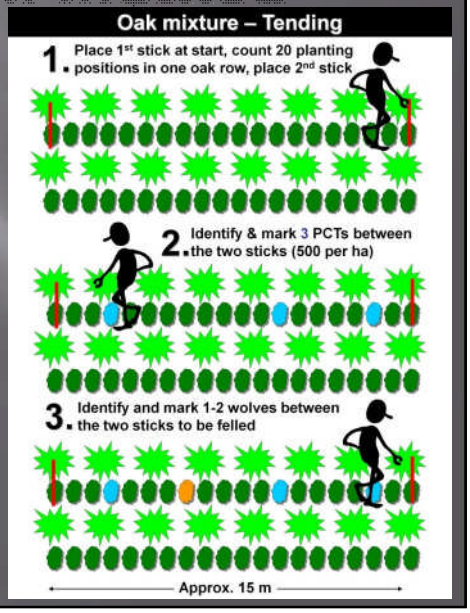


Beech / conifer mixture



The 2-stick method



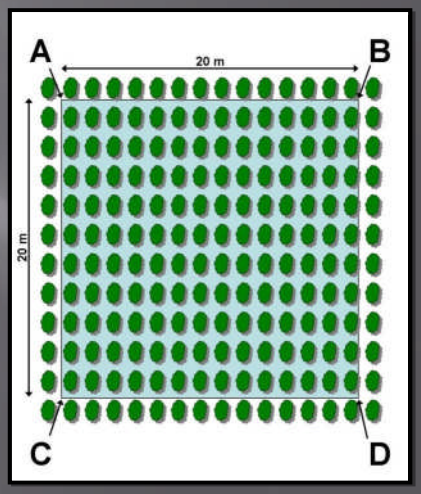


The 2-stick method

Species	Spacing	Operation	No. PCTs	PCTs /ha
Ash/Syc/Map/Ald	2,500	Tending Thinning	5 – 6 4 – 5	≈ 350 ≈ 300
	3,300	Tending Thinning	4 – 5 3 – 4	≈ 350 ≈ 300
Pure Oak / Beech	2,500	Tending Thinning	9 – 10 6 – 7	≈ 600 ≈ 400
	6,600	Tending Thinning	3 – 4 2 – 3	≈ 600 ≈ 400
Beech/Conifer	4,400	Tending Thinning	4 – 5 4	≈ 500 ≈ 400
Oak/Conifer	3,300	Tending Thinning	3 2 – 3	≈ 500 ≈ 400

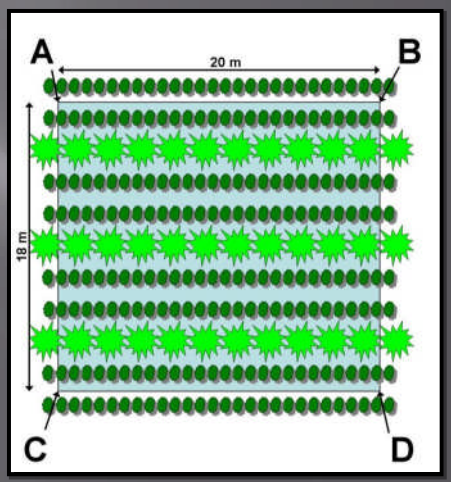
Thinning control plots

- 20 x 20m plot (20 x 18m for beech/conifer mixture)
- Install using permanent posts after trees are selected but prior to cutting
- Can check quantity of marked trees
- Can estimate harvest volume



Thinning control plots

- 20 x 18m plot for beech/conifer mixture
  - 20m along the line
  - 18m perpendicular to the line

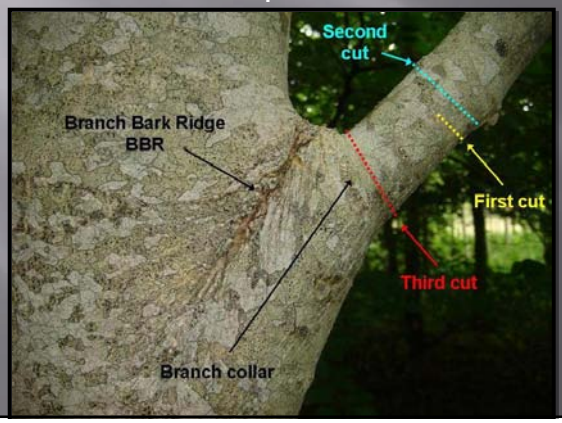


Extraction

- Quad and trailer / skidder
- Tractor and trailer / buck rake
- Forwarder
- Horse
- Demo days

High pruning

- High prune PCTs as required to improve timber length
- Never flush prune

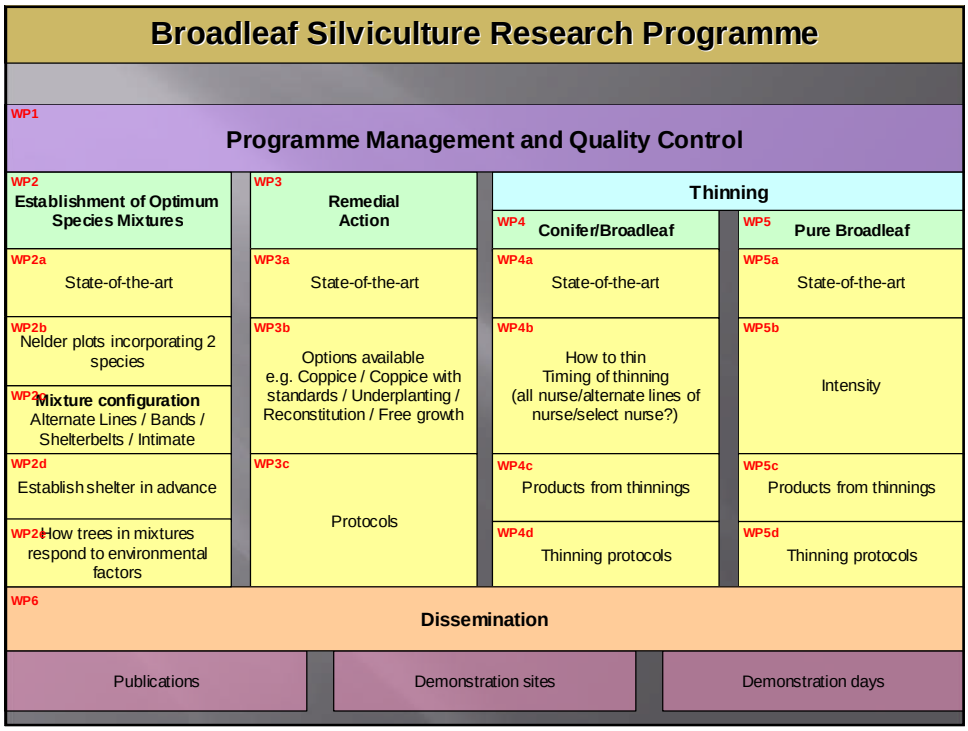


Health and Safety

- **Never work alone when using chainsaw**
- Use appropriate PPE

Future work

- New 5-year project beginning 1st July
  - ≈ € 1 million COFORD funding
- Teagasc/UCD
- New Teagasc Broadleaf Silviculture contract researcher begins 1st July
- Teagasc Walsh Fellowship approved for Ph.D. student



FDU Technology Transfer

- 9 Forestry Development Officers
- 1 Forestry Specialist
- 1 College Lecturer
- Researchers also involved

- Free independent advice
- Demonstration days / Farm forest walks
- Courses
  - Short training courses
  - Advanced Certificate in Forestry
- Website – www.teagasc.ie/forestry
- Publications
- Newsletters
- Today's Farm
- Brochures / Leaflets / Booklets

Research Interactions


Dr Ian Short
Ian.Short@ucd.ie
Ian.Short@teagasc.ie