

Exploitation And Realisation of Thinnings from Hardwoods (E.A.R.T.H.)

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Introduction: Thinning involves the removal of competitors of selected high quality trees, diseased trees and trees removed for extraction racks, all to favour the growth of the selected trees, maintain stand health and vigour, and to provide access for future management. Many felled trees are small-diameter or of lower quality. In Ireland, hardwood thinnings are mainly used for energy production. Other uses are in chipped form for use in the manufacture of wood-based panels or in the pulp/paper industry.

There is commercial value in seeking to use it in higher value-added end uses as structural components within the construction industry and to develop its volume use in local rural industry.

This project aims to investigate novel and potential added-value uses of Irish hardwood thinnings and develop grading system for sorting thinnings into different end-use classes.



Fig. 1: Forest thinnings



Fig. 2 : NDT measurements on standing trees(a), logs (b) and mechanical test (c)

Tasks:

1. Quantify the available resource and quality (from 1st and 2nd thinnings from Alder, Ash, Birch and Sycamore).
2. Determine physical and structural properties of the material, through experimental testing (NDT and mechanical tests).
3. Study issues related to drying and durability.
4. Identify potential end-uses of the material (round timber and wood products, in addition to wood energy products).



Fig. 4 : End-uses of round timber: playgrounds (a,b), footbridge (c), kiosk (d)

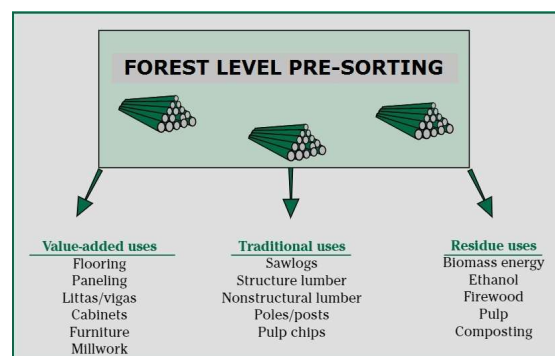


Fig. 3 : Hierarchy of uses for small-diameter material

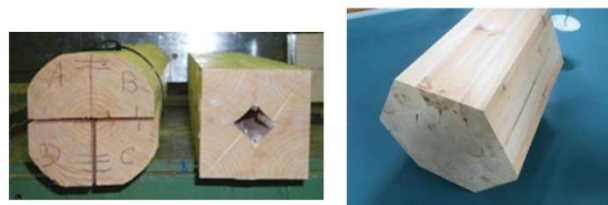


Fig. 5 : Round timber products: ISO beams (a) and hexagonal (b)

Partners:

The project partners, NUI Galway and Teagasc bring expertise in characterisation of wood products and broadleaf silviculture, respectively, to the project.

Industry participation:

Two commercial partners are on board and have agreed to contribute to the project:

ECC Teoranta (www.ecc.ie)

Lonza (www.lonzawoodprotection.com/eu/local-support/ireland/)

[Fig. 1] <https://www.nrs.fs.fed.us> (website visited 11/05/2017)
 [Fig. 2a] <http://akopp.com/> (website visited 10/05/2017)
 [Fig. 2b] Own source
 [Fig. 2c] Villanueva, J.L. (2009). Caracterización mecánica de rollos de sabinas (*Juniperus thurifera* L.) de Castilla y León. Prueba de clasificación visual y evaluación mediante resonancia. Final project degree. Universidad de Lérida. E.T.S.I. Agraria. 65 p. PDF file: <http://repositori.udl.cat/handle/10459/145926>
 [Fig. 3] Levan-Green, S.L., Livingstone, J. (2001). Exploring the uses for small-diameter trees. Forest Prod. J., 51(9):10-21
 [Fig. 4 a,b,c] Own source
 [Fig. 4d] USDA (2004). Construction Information. Small-Diameter Roundwood Kiosk
 [Fig. 5a] Jones, D. (2008). Woodknowledge Wales Brochure 2008, www.wfip.co.uk/files/WKWbrochure.pdf (website visited 11/05/2017)
 [Fig. 5b] Rongrong, L., Pingxiang, C., Xiaoli, G., Futang, J., Ekevad, M., Wang, A.X. (2015). Novel sawing method for small-diameter log. Wood Research, 60(2):293-300