

## Publications and communication

The five most important publications are indicated by \*

### SCIENTIFIC PUBLICATIONS

#### Articles in international scientific journals with referee practice

Jaakkola, T., Mäkinen, H., Sarén, M.-P., and Saranpää, P. 2005. Does thinning intensity affect the tracheid dimensions of Norway spruce? *Can. J. For. Res.* 35: 2685-2697.

Jaakkola, T., Mäkinen, H. & Saranpää, P. 2006. Wood density of Norway spruce: responses to timing and intensity of first commercial thinning and fertilization. *For. Ecol. Manage.* 237(1): 513-521.

Jaakkola, T., Mäkinen, H. & Saranpää, P. 2006. Wood density within Norway spruce stems. *Wood Sci. Technol.* (submitted)

\* Jaakkola, T., Mäkinen, H. & Saranpää, P. 2006. Thinning and fertilisation cause only minor changes in tracheid dimensions and lignin content of Norway spruce. *Holzforschung* (in press).

Kantola A. and Mäkelä A. 2006. Development of biomass proportions in Norway spruce (*Picea abies* [L.] Karst.). *Trees* 20(1):111-121

Kantola, A., Mäkelä, A. 2004. Crown development in Norway spruce (*Picea Abies* [L.] Karst.) *Trees* 18:408-421.

\* Kantola, A, Mäkinen, H. & Mäkelä, A. 2006. Stem form and branchiness of Norway spruce as a sawn timber – predicted by a process based model. *For. Ecol. Manage.* 241: 209-222.

\* Mäkinen, H., Jaakkola, T., Saranpää, P. & Piispanen, R. 2006. Predicting wood and tracheid properties of Norway spruce. *For. Ecol. Manage.* 241: 175--188.

\* Mäkinen, H., Jaakkola, T. & Saranpää, P. 2007. Variation of tracheid length within annual rings of Norway spruce and Scots pine. *Holzforschung* (submitted)

Vanninen P., Härkönen S., Enkenberg J. and Mäkelä A. 2006. PuMe – Interactive learning environment employing the PipeQual model for forest growth and wood quality. *New Zealand Journal of Forestry Science* 36 (in press)

## **Other scientific publications, such as articles in scientific non-refereed journals and publications in university and institute series**

Lundqvist, S.-O. (editor), Innovative use of wood and fibres – Results from the Innovood project. Documentation of the concluding seminar, Stockholm, March 21, 2007 (A web-based version and a referable paper version in the format of an STFI-Packforsk Report are being prepared.)

Lundqvist, S.-O. (editor), Key products of the forest-based industries and their demands on wood raw material properties. Public report within the EFORWOOD project, April 2007 (being finalized).

Lundqvist, S.-O., Mohlin, U.-B., Johansson, M., Key products of the paper industry and their demands on wood raw material properties, STFI-Packforsk Report, May 2007 (being finalized).

Mäkinen, H., Ojansuu, R., Jaakkola, T., Saranpää, P., Hynynen, J. & Mäkelä, A. 2005. Predicting wood and branch properties of Norway spruce from simple stand and tree properties. In: Nepveu, G. (ed.). Proceedings of IUFRO WP S5.01-04 Fifth Workshop 'Connection between forest resources and wood quality: Modelling approaches and simulation software'. Waiheke Island Resort, Auckland, November 20-26, 2005, New Zealand. (in print)

Song, T., Pinto, I., Usenius, A. 2005. Sawing Simulation of pine heartwood products as a new WoodCIM® feature. In: Nepveu, G. (ed.). Proceedings of IUFRO WP S5.01-04 Fifth Workshop 'Connection between forest resources and wood quality: Modelling approaches and simulation software'. Waiheke Island Resort, Auckland, November 20-26, 2005, New Zealand. (in print)

Usenius, A., Song, T. 2005. Optimal Model system for optimal allocation of wood raw material throughout conversion chains. . In: Nepveu, G. (ed.). Proceedings of IUFRO WP S5.01-04 Fifth Workshop 'Connection between forest resources and wood quality: Modelling approaches and simulation software'. Waiheke Island Resort, Auckland, November 20-26, 2005, New Zealand. (in print)

Usenius, A., Song, T., Marjavaara, P., 2005, Automated Heartwood Detection and Optimization of the Manufacturing of Heartwood Components, ScanTech Conference 2005, Las Vegas, USA.

Usenius, A., Heikkilä, A. and Song, T. (2006) WoodCIM®Sistema de Software Integrado para Soporte en la Toma de Decisiones en Aserraderos – desde el Bosque hasta los Productos Finales (WoodCIM® - integrated software system supporting decision making at the sawmills - from the forest to the end products. Proceedings of Scantech 2006. Buenos Aires, Argentina 2-3.11.2006 Expo VESTAS and Wood Machining Institute, Berkeley, USA, pp. 4 - 30

## **OTHER DISSEMINATION**

Jaakkola, T., Mäkinen, H. & Saranpää, P. Influence of thinning intensity on wood properties in Norway spruce. The Forestry Woodchain - Quantification and forecasting quality from forest to end product. Heriot-Watt University, Edinburgh, 28-30 September, 2004. (poster)

Jaakkola, T., Mäkinen, H., Saren, M.-P., Saranpää, P. Effects of thinning intensity on growth rate, wood density and fibre properties in Norway spruce. International Symposium on Wood Sciences, October 24-29, 2004, Montpellier, France (poster)

Jaakkola, T., Mäkinen, H. & Saranpää, P. Harvennusvoimakkuuden vaikutus kuusen kasvunopeuteen, puuaineen tiheyteen ja kuidunpituuteen. Forest Science days, 20.10.2004, Helsinki. (poster, , in Finnish)

Jaakkola, T., Mäkinen, H., Sarén, V.-M. & Saranpää, P. Vaikuttaako harvennusvoimakkuus kuusen (*Picea abies*) (L.) Karst) puuaineen rakenteeseen? Forest Science days, 20.10.2004, Helsinki. (poster, in Finnish)

Lundqvist, S.-O., The Innovood project. Presentation at the annual meeting of the programme "Wood Material Science and Engineering", Stockholm, 050413

Jaakkola, T., Mäkinen, H. & Saranpää, P. Tracheid properties of Norway spruce grown at long-term thinning-fertilisation regimes. Forest Science days, 18.10.2005, Helsinki. (poster, in Finnish)

Jaakkola, T., Mäkinen, H. & Saranpää, P. Ympäristötekijöiden vaikutus puun ja puukuitujen ominaisuuksiin. Paremmasta parempaa - Puuraaka-aineen määrän ja laadun optimointi metsän kasvatuksessa ja teollisuuden prosesseissa. Suomen Luonnonvarain Tutkimussäätiö, 29.3.2006, Helsinki. (presentation, in Finnish)

Jaakkola, T., Mäkinen, H. & Saranpää, P. Ympäristötekijöiden vaikutus puun ja puukuitujen ominaisuuksiin. Forest Science days, 1.11.2006, Joensuu. (poster, in Finnish)

Jaakkola, T., Mäkinen, H., Sarén, M. & Saranpää, P. Tracheid properties of Norway spruce grown in different thinning and fertilisation regimes. 6th PRWAC, December 3, 2005, Kyoto, Japan. (presentation)

Jaakkola, T., Mäkinen, H. & Saranpää, P. Tracheid properties of Norway spruce grown at long-term thinning-fertilisation regimes. 2nd meeting of the Nordic-Baltic network in wood material science & engineering, 30-31 October 2006, Stockholm, Sweden. (presentation)

Lundqvist, S.-O., Poster presentations at the annual meetings of the programme "Wood Material Science and Engineering", Helsinki 2004, Stockholm 2005 and Helsinki 2006

Lundqvist, S.-O., “Innovood – Multi-sectorial database, model system and case studies”, Poster at Conference COST Action E44 “Wood as a renewable resource”, 15-17 November 2004, Växjö, Sweden

Lundqvist, S.-O. (organiser), Concluding seminar: Innovative use of wood and fibres – Results from the Innovood project. Stockholm, March 21, 2007

Lundqvist, S.-O., Innovood – improved knowledge-base for innovative use of wood. Article in STFI-Packforsk Partner Update, May 2007 (in press).

Prof. Arto Usenius, VTT, is using models and materials produced by the project in his teaching at the Lappeenranta University of Technology in courses on “Information technology for wood industry” and “Woodworking and Secondary conversion of wood products”.

Results on wood properties and processing have been presented by VTT in a number of national and international meetings with strong industrial involvement.

Results have continuously been presented to the pulp and paper industry by STFI-Packforsk. One channel has been the industry board of the Cluster “Tools for Optimal Fibre Utilization (TOFU)”, in which several of the largest Swedish and Finnish paper companies participate. Results have also been presented nationally and internationally to other companies, universities and institutes at meetings and within other cooperative research projects.

Similar information activities have been performed also by the other project partners, addressing also the forestry side.

## **DEGREES**

Räsänen, O. 2005. Effect of site fertility and thinning on wood quality of Scots pine (*Pinus sylvestris* L.). MSc thesis. Department of Forest Resource Management, Faculty of Agriculture and Forestry, University of Helsinki. (in Finnish with English summary)

Jaakkola, T. 2007. Environmental control of wood and tracheid properties of Norway spruce. Department of Forest Resource Management, Faculty of Agriculture and Forestry, University of Helsinki

## **PUBLICATIONS AND OTHER DISSEMINATION UNDER PREPARATION OR PLANNING**

\* Olsson, L., Grahn, T. Lundqvist, S.-O., Mäkinen, H., Models for annual ring averages of wood density, fibre dimensions and latewood content in Norway spruce and Scots pine. Conference presentation and scientific publication (Tentative title. Manuscript under preparation).

Kantola, A. Härkönen S., Mäkinen H. and Mäkelä A.. Evaluating the RetroSTEM model for Norway spruce. Manuscript (Tentative title, forum to be decided).

Lundqvist, S.-O. et al, Articles about the Innovood project and its results in scientific and technical magazines and newspapers for different target groups, successively during 2007.

Lundqvist, S.-O. et al, Integrated measurement database and models for within stem variations in wood and fibre properties of Norway spruce and Scots pine on annual ring level. Examples from simulations. Conference presentation and scientific publication (Tentative title. Co-authors and forum to be decided)

Mäkelä, A., Härkönen, S. et al, Platform for simulation and visualization of growth and property variations in tree stems. (Tentative title. Under planning, suitable forum to be identified)

Hansson, Å., Lundqvist, S.-O., Härkönen, S., Simulate properties in tree stems with new tool on the web. (Tentative title. Article in scientific/technical magazine, under planning)