

UV-FLUORESCENCE SPECTROSCOPY IN MEASURING STILBENE CONTENT

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The aim of this project is to develop and experiment a fast, cost-effective and reliable technology to measure the extractive content of Scots pine heartwood.

Scots pine heartwood

Scots pine, *Pinus sylvestris* L., resists decay due to its phenolic extractives, stilbenes. Among the individual trees there is wide variation in stilbene content. Intelligent exploitation of heartwood requires fast and reliable measurement technology to sort and select heartwood material based on stilbene content.

Project activities

Technical setup, running software and procedures to measure phenolic stilbenes from Scots pine heartwood will be developed during the two-year project in 2015-2016.

The measurement procedures will be tested using samples from a forest tree breeding material. At the same time, it is possible to prepare the equipment for wider use.



Collaborators

- 3K-Factory of Electronics: Elmar Bernhardt, Henri Montonen
- Development of technical setup
Mikkeli University of Applied Sciences: Yrjö Hiltunen
- Expert on data management
Luke: Jukka Antikainen, Tarja Tapanila, Risto Korpinen, Piia Kinnunen
- Software development, stilbene extraction and chemical analyses

Funding of the project

The research and development activities are mainly funded by the European Regional Development Fund (ERDF), the Region of South Savo. Also Savonlinna Business Services Ltd, Savonlinna City and Luke participate in funding.

Heartwood - valuable natural resource for building

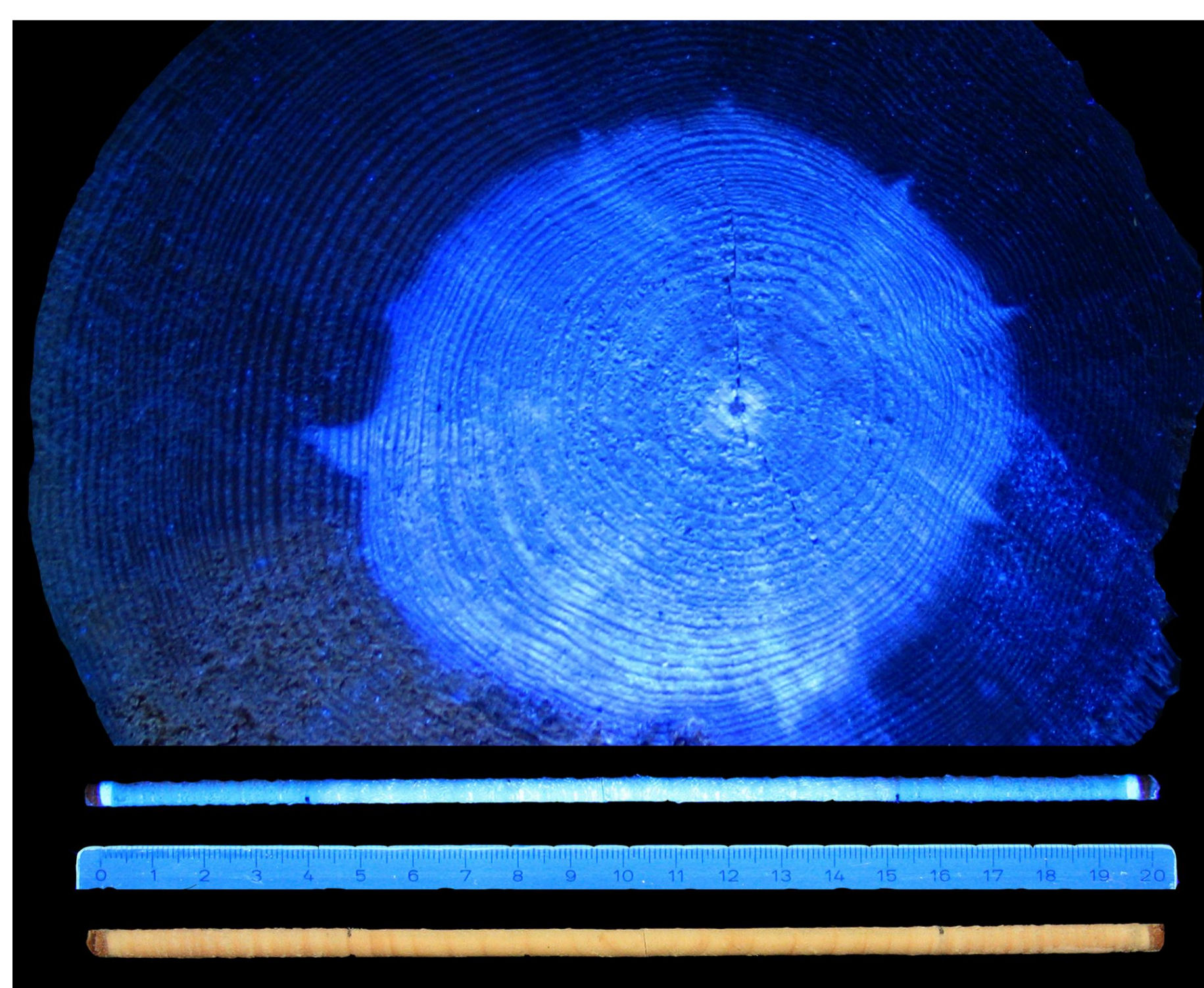
When heartwood is used in constructions where natural decay resistance suffice, it is possible to avoid unnecessary use of impregnated timber. The technology under development will contribute to quality control of wood raw material.

Improved seeds for forest regeneration

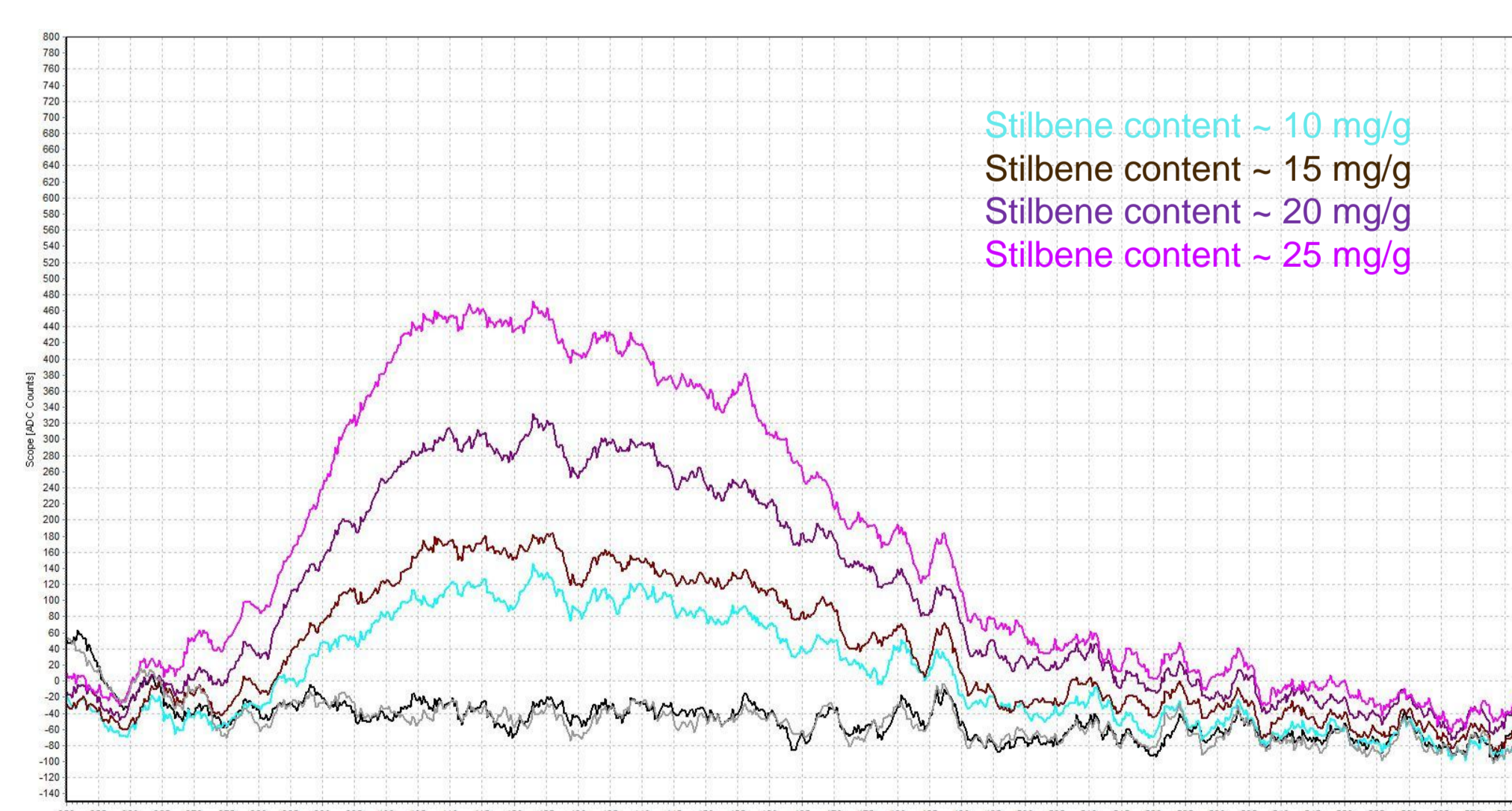
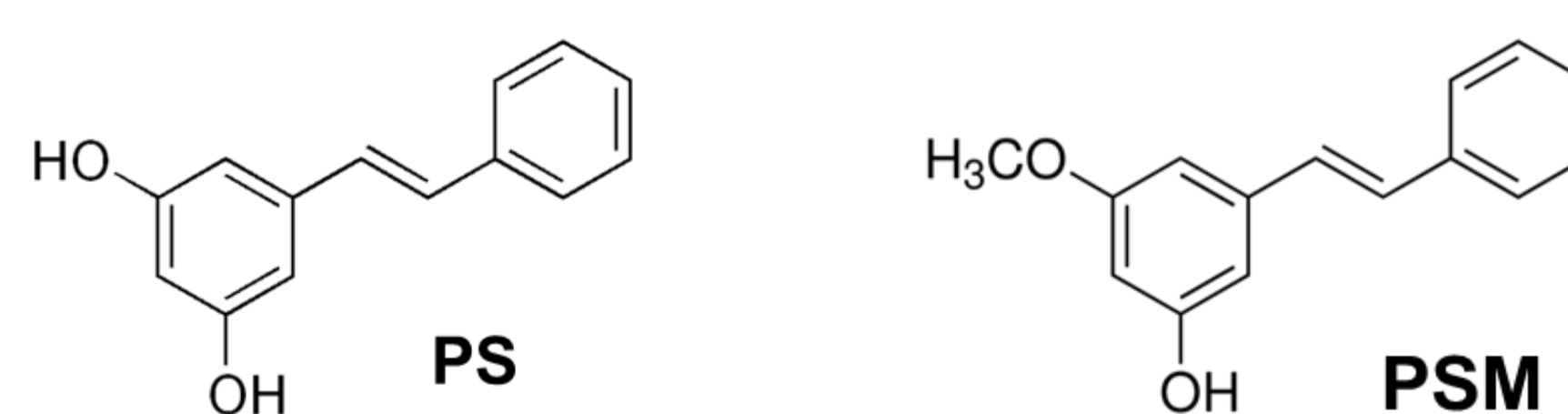
With this new technology, heartwood stilbenes could be measured from the seed producing trees located in seed orchards. Seeds collected from the selected trees would offer forest regeneration material having high potential for stilbene production in their heartwood when grown up.

Novel products of forest bioeconomy

Bioeconomy is based on the intelligent utilization of renewable natural resources. To fulfil the expectations, material-efficient production techniques, technologies and services are needed. The technology under development will contribute to new and improved products in forest-based industries.



Under UV-light, stilbene-containing wood emits light blue colour, the intensity of which could be measured.



The higher the stilbene concentration is, the brighter is the blue colour, and the higher is the measured peak of fluorescence.



Naturally extractive-rich Scots pine heartwood would be suitable for the decks of the bridges or for terraces.



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the EU
2014-2020



Photo:
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