



Latvian State Forest Research Institute "Silava" is the main centre of forest science in Latvia and leader of scientific ideas in forestry and the related research and development in the country.

www.silava.lv

Search

The principal goal of LSFRI Silava: getting new knowledge, based on scientific methods, and developing the innovative technologies to promote the sustainable development and competitiveness of forest sector.

Home About us Research Events Staff Mezzinatne Library

The forest science – supporting science for Latvian forestry sector

- The development of theoretical competence
- The creation of new knowledge to increase the competitiveness of national forestry sector
 - New products in the market
 - New technologies for producers
 - Recommendations, solutions of problems
- The strengthening of Latvian forestry sector's international positions

The space of Latvian forest research

LSFRI SILAVA

- THE INCREASE OF FOREST CAPITAL VALUE
- FOREST FACILITY, LATVIAN UNIVERSITY OF AGRICULTURE
- THE FOREST QUALITY AND PLANNING
- FOREST AND WOOD PRODUCTS RESEARCH AND DEVELOPMENT INSTITUTE
- WOOD MATERIALS, MECHANICAL PROCESSING OF WOOD, NEW PRODUCTS
- LATVIAN STATE INSTITUTE OF WOOD CHEMISTRY
- WOOD CHEMICAL PROCESSING, NEW PRODUCTS

The capacity of LSFRI Silava at 2014

- 160 full time personal, including:
 - 94 scientific staff (leading researchers, researchers and scientific assistants, incl. 33 PhD and 30 PhD students, 28 masters of science)
 - 45 PLE engineers, laboratory assistants
 - 11 PLE technical staff
 - 10 PLE administrative staff
- Total funding for research in 2013 – 5.3 mil. EUR, incl. 33% funded by commercial sector and 67% directly funded by state.

THE HISTORY OF LSFRI SILAVA – BASIS FOR FORESTRY SECTOR

Latvian forest typology

The theoretical basis for forest selection (stratig)

The theoretical basis of forest breeding

The theoretical basis of forest protection

Other basis

The results of national forest science for the practice of forestry sector

The technology of multiplication for hybrid aspen

The production unit of hybrid aspen plants in Jaunkalsnava, JSC Latvian State Forests

The results of national forest science for the practice of forestry sector (cont.)

The investigation of root rot – the research about the spread, the identification of causes, the methods of restriction

- The application of stump treatment using "biobio" (used in production in JSC Latvian State Forests)
- The producing of new, more efficiently preparation for Latvian conditions (the patent LV 14608 A).

The results of national forest science for the practice of forestry sector (cont.)

The theoretical basis of forest tree breeding

The use of improved seed material in commercial forestry in area of 8000 ha each year

The international evaluation of Latvian science (2013) – conclusions

QUALITATIVE ASSESSMENT:

- "Silava" has a young age structure, good facilities and good international contacts making its development potential considerable
- "Silava" has six well equipped laboratories
- "The Panel was impressed by the scope and dynamism of this Institute's activities"

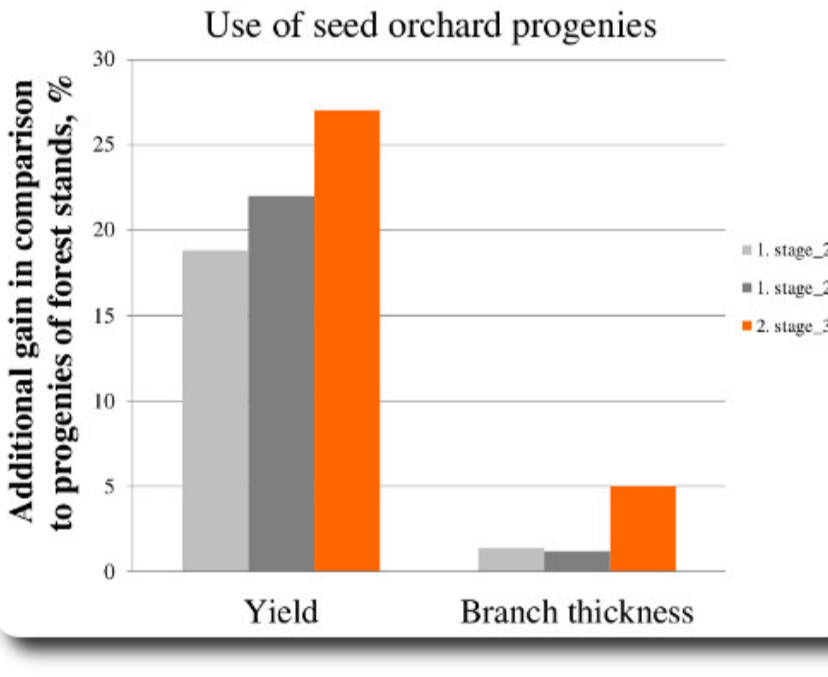
General recommendations:

To strengthen and intensify international cooperation and distribution of knowledge between other countries and scientists

Events Staff Mezzinatne Library

- Mezzinatne 27/08/2013
- Mezzinatne 26/09/2012
- Mezzinatne 23/08/2012 (special issue)
- Mezzinatne 24/07/2011
- Mezzinatne 23/06/2011
- Mezzinatne 22/05/2010
- Mezzinatne 21/04/2010
- Mezzinatne 09/03/2009
- Mezzinatne 19/12/2009
- Mezzinatne 19/03/2008
- Mezzinatne 17/09/2008

"Mezzinatne" (Forest Science) is the scientific collection of articles about the Institute's proceedings. The papers included in the Proceedings periodically show the most important fundamental and applied results and conclusions of the researches.



Some results of European Development Fund & European Social Fund supported projects for industry

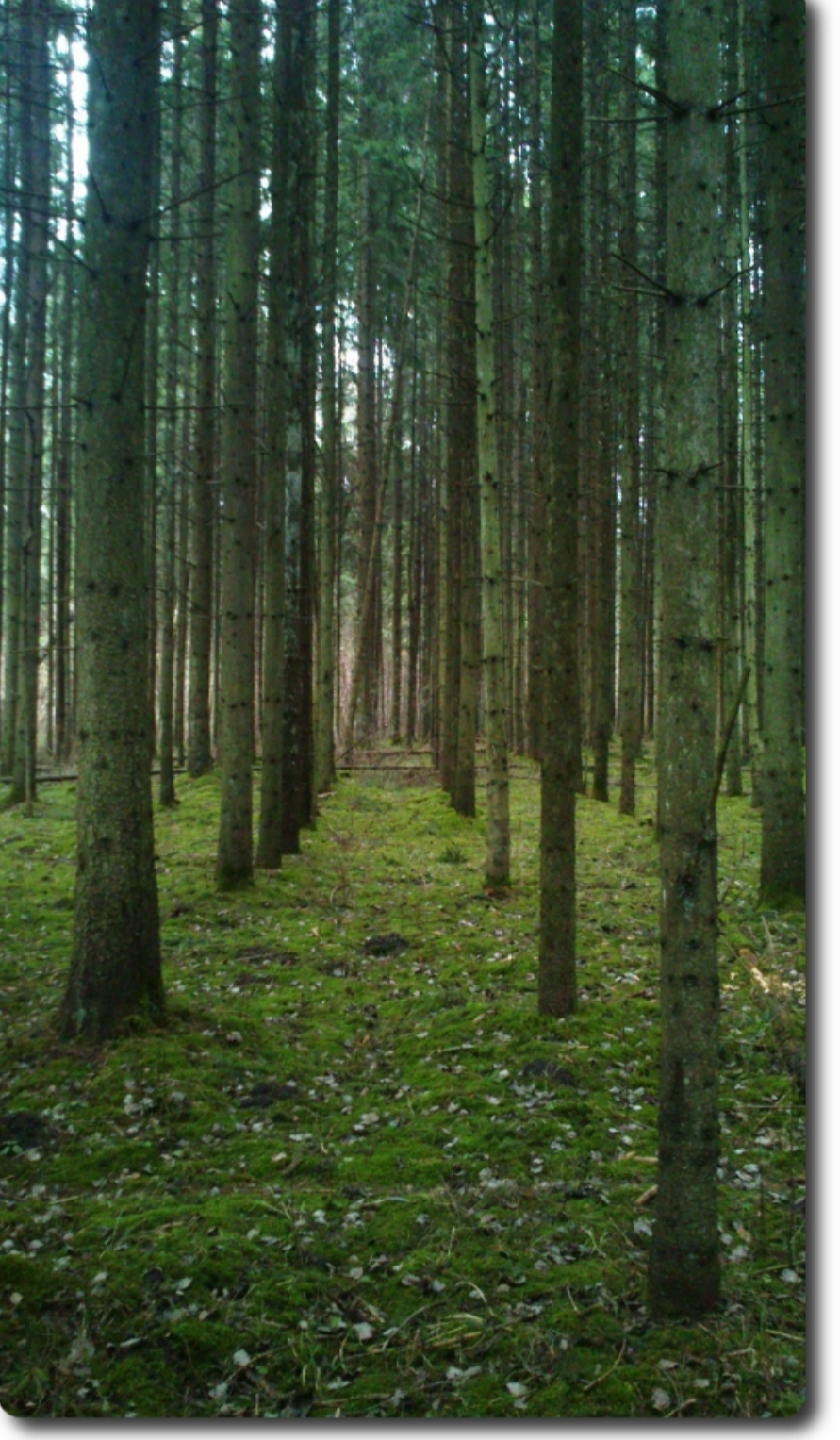
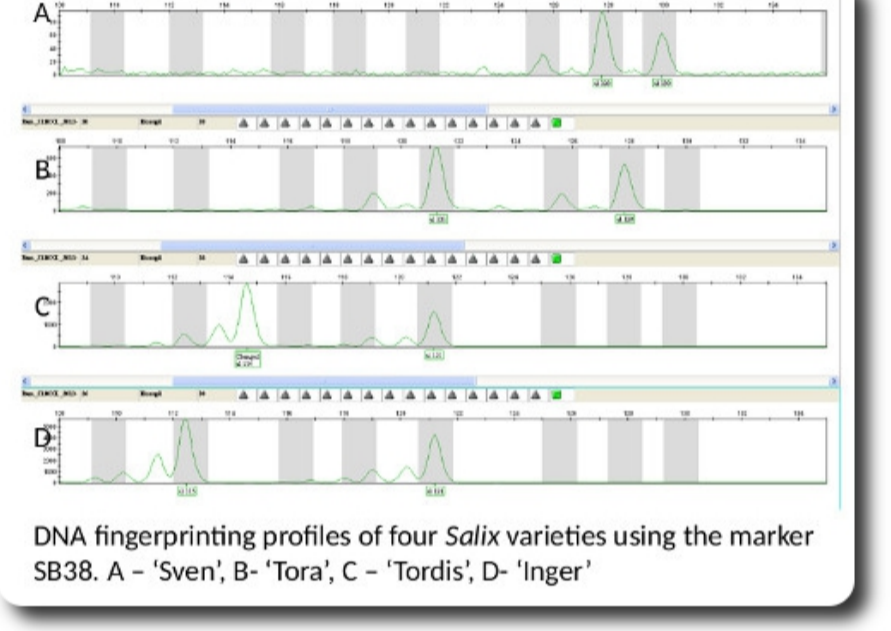
New clones of fast growing trees or scrubs *Salix burjatica* female Monika and male Visvaldis are on procedures of registration in CPVO and one poplar clone Auce is waiting for exams (projects "Developing the methods of plantation cultivation of fast-growing forest crops and evaluating the suitability of their wood for pelleting", "Elaboration of models for establishment and management of multifunctional plantations of short rotation energy crops and deciduous trees").

Different methods for management of forest stands elaboration, GHG emissions calculations and possible transfer of technologies are in testing process before implementing in forest practices in Latvia (project "Developing and testing a multifunctional prototype machine for stubbing and mounding on cutovers", "Methods and technologies for increasing the value of forest capital").

DNA fingerprinting enables rapid and accurate identification of varieties, which can be useful for quality control and varietal protection purposes. DNA fingerprinting protocols were developed for both Latvian and foreign *Salix* varieties, comprising of various species and hybrids, using a set of 8 DNA markers - SB243, SB93, SB38, SB80, SB201, SB24, SB194 and SB199 (Barker et al, 2003). This marker set enabled discrimination of the cultivars, and confirmation of the genetic identity of the same cultivar collected from various locations. DNA has been extracted from a total of 76 *Salix* varieties, and a DNA collection has been established, as well as a database of genetic fingerprints for future reference and comparison (project "Elaboration of clone identification technology of vegetative reproducing fast growing trees").

Shortening of the rotation of birch stands by intensive management of young stands and use of genetically improved reproductive material in establishment of birch on forest lands and surplus farmlands are the main opportunities to overcome the foreseen shortage of birch roundwood in the future. The proper timing of first commercial thinning plays important role to maintain the fast growth of silver birch on former farmlands. We are suggesting the thinning schedule that includes two thinnings, first of them carried out when the average height of trees is reaching 12 meters, reducing the number of the stems to 1000 – 1200 stems per hectare. The second thinning should be performed when the average height of the trees has reached the 22 – 24 meters when the final stem number (500-600 stems per ha) is attained. The expected rotation of silver birch plantations on former agricultural fields is 40 – 50 years (project "Methods for establishing and managing birchwood plantations").

Selected reproductive material with faster growth and higher branch quality for establishment of seed orchards. Selected provenances of introduced tree species, demonstrating fast growth and high above-ground biomass – an alternative for forest regeneration on poor soils. Selection of best-performing clones for vegetative propagation, development of methodology for vegetative propagation (project "Ecological and technical aspects of cultivating vital spruce stands", "Importance of Genetic Factors on Formation of Forest Stands with High Adaptability and Qualitative Wood Properties").



Patented ideas, prototypes and products :

- 20.07.2014. Nr.14833 **Device for pruning of vigorous and dry branches** - "Augošu koku zaļo zaru un sauso zaru apgriešanas iekārta". Dr.silv. Kaspars Liepiņš.
- 20.05.2014. Nr.14804 **Biological components inhibiting Botrytis cinerea** - "Bioloģiski aktīvs sastāvs, kas inhibē pelēko puvi (*Botrytis cinerea*), un tā iegūšanas paņēmieni". Dr.sc.ing. Māris Daugavietis, Ojārs Polis un Ausma Marija Korica, Līga Jankevica, Vadims Barkevičs, Līga Lepse un Regina Rancāne.
- 20.05.2014. Nr.14791 **Biological preparation for inhibition of Heterobasidion annosum development on stumps of coniferous trees** - "Bioloģisks līdzeklis skuju koku celmu aizsardzībai pret *Heterobasidion annosum* s.l. bazīdijsporu infekciju". Kristīne Kenigvalde, Lauma Brūna, Astra Zaļuma, Dārta Kļaviņa, Dr.silv. Tālis Gaitnieks, Vizma Nikolajeva, Laura Alksne, Zaiga Petriņa, Daina Eze un Kari Korhonen.
- 20.03.2014. Nr.14769 **Multifunctional stump extraction - splitting and soil scarification bucket** - "Multifunkcionāla iekārta celmu raušanai-plēšanai ar pacilveida stādvieta veidošanu". Patenta izgudrotāji : vadošie pētnieki, Dr.silv. Andis Lazdiņš un Dr.silv. Dagnija Lazdiņa, pētnieki Valentīns Lazdāns un Agris Zimelis, kā arī sadarbības partneru pārstāvji - Igors Gusarevs, Ervīns Kurmis un Vjačeslavs Dmitrijenko.
- 20.10.2013. Nr.14692 **Bucket for mounding in forest soils** - "Iekārta pacilveida stādvieta veidošanai meža augsnēs". Dr.silv. Andis Lazdiņš, Dr.silv. Dagnija Lazdiņa, Valentīns Lazdāns un Agris Zimelis, Igors Gusarevs, Ervīns Kurmis, Vjačeslavs Dmitrijenko.
- 20.04.2013. Nr.14608 **Biological preparation for protection of stumps of coniferous trees against infection of Heterobasidion annosum** - "Bioloģisks līdzeklis skuju koku celmu aizsardzībai pret *Heterobasidion annosum* s.l. bazīdijsporu infekciju". Patenta izgudrotāji : vadošais pētnieks, Dr.silv. Tālis Gaitnieks, Alīna Mihailova un Kari Korhonen.
- 20.02.2013. Nr.14607 **Device for production of essential oils** - "Ēterisko eļļu iekārta". Patenta izgudrotāji : zinātniskais asistents Kaspars Spalvis, vadošais pētnieks, Dr.sc.ing. Māris Daugavietis un Uldis Daugavietis.
- 20.01.2013. **Trade mark** Nr. 65596 "LUBISILS".
- 20.01.2013. Nr.14570 **Biological active preparation and production of it from coniferous tree needles** - "Bioloģiski aktīvs sastāvs no skuju koku zaleņa ekstraktvielām, kas nesatur svešķābes. un tā iegūšanas paņēmieni". Dr.sc.ing. Māris Daugavietis, Ojārs Polis un Ausma Korica, Kaspars Spalvis.
- 20.12.2012. Nr.14568 **Content of premix to livestock and fowl food preparing** - "Premiksa sastāvs lauksaimniecības dzīvnieku un putnu barības sagatavošanai". Dr.sc.ing. Māris Daugavietis, zinātniskais asistents Kaspars Spalvis, Ojārs Polis un Ausma Korica.
- 20.06.2012. Nr.14481 **Method of extraction of water soluble and nonsoluble essential oils from plants** - "Ūdenī nešķīstošu un ūdenī šķīstošu ēterisko eļļu iegūšanas paņēmieni no augu izejvielām". Dr.sc.ing. Māris Daugavietis, zinātniskais asistents Kaspars Spalvis, pētnieki Ojārs Polis un Ausma Korica.
- 20.04.2011. Nr.14276 "Paņēmieni gaistošus, bioloģiski aktīvus toksiskos savienojumus nesaturošu skuju ekstraktu ieguvei ogļūdeņražu šķīdinātājos". Dr.sc.ing. Māris Daugavietis un pētnieki Ojārs Polis un Ausma Korica.
- 20.11.2009. **Trade mark** Nr. 61421 "PLANTSTIM".
- 20.05.2009. Nr.13882 **Method stimulating rooting of cuttings** - "Spraudzeņu apsākņošanu stimulējošs paņēmieni". Dr.sc.ing. Māris Daugavietis un Dr.sc.ing. Mudrīte Daugaviete.
- 20.05.2009. Nr.13883 **Preparation stimulating rooting of cuttings** - "Spraudzeņu apsākņošanas stimulējošs preparāts". Dr.sc.ing. Māris Daugavietis un pētnieki Ojārs Polis un Ausma Korica.