

# OUTLINE



Local Independent Administrative Agency Hokkaido Research Organization

Forest Research Department

# Forest Products Research Institute



# Creating Circulating Society by Utilizing Wood

- Wood can save the earth -

Forest Products Research Institute was established in 1950 to support Hokkaido's wood industry. Ever since then, the Institution has consistently been working toward research and development and public awareness of advanced use of forest products.

The research background has changed significantly by surfacing environmental issues and diversification of social needs for forestry. Under these circumstances, the Institution is conducting practical research with a view to development of wood industry and improvement of the lives of Hokkaido citizens.

Cross Laminated Timber (CLT)



Correction Cutter Machine For molder datum level



Fire proofing ash



Crash barrier made of Hokkaido wood



Pink Oyster Mushroom



## 1 Research and development for advanced production and distribution of wood and wood products

Although usage opportunity of domestic wood is gaining momentum, self-sufficiency rate of Hokkaido wood for construction remains only 20%. In order to promote wood usage for construction, research and development for competitive products is necessary in terms of functionality/quality, cost and supply in comparison with imported products and non-wood materials. To that end, the Institution is working toward production technology for high-quality construction materials of Hokkaido wood, such as CLT (a new type of wood product), high-strength laminated wood and timber and horizontal structural members for residential use, as well as research and development of highly-marketable products reflecting diversifying user needs, and for machines/equipment for efficient production. Also in order to promote stable production and supply of Hokkaido wood products, the Institution is working toward research and development of production/distribution system for expanding market in view of changing conditions of forestry resources and future development.

## 2 Research and development for safety, reliability and functional improvement of wood, wood products and wooden structures

After the Great Hanshin-Awaji Earthquake disaster, earthquake resistance improvement of buildings and supply for safe and reliable wood, wood products and wooden buildings have been called for. Therefore, it is necessary to grasp the strength performance of wooden parts and joints and implement research development of evaluating/designing technology of safe and practical wooden buildings. The Institution is also working toward research development of evaluating/improvement technology for durability and fire resistance of wood products in order to meet the need for highly-durable wooden products and buildings and fireproof regulation for middle and large-scale buildings. Moreover, research development is being conducted for functionality evaluation technology for wood and wood products in order to improve living environment through the use of wood.

## 3 Research and development for promotion of integration use of forestry biomass

It is essential to promote the use of recyclable, carbon-neutral forestry biomass as an alternative of fossil fuel resource such as petroleum in order to countermeasure global warming effect, form circulating society and reinvigorate mountain village areas. Therefore, the Institution is working toward quality improvement of low environmental impact, research development of conversion technology and component application technology which meet needs such as roughage production using Japanese white birch. All of these initiatives are important in making good use of forestry biomass. Also, research development for energy utilization technology is being conducted such as stable supply of wood biomass that is required by implementing FIT (Feed-in Tariff).

## 4 Research and development for value improvement of mushrooms

Hokkaido is one of Japan's most famous areas for mushrooms production. In recent years, the Mushrooms industry is calling for more functional and highly-flavorful mushrooms to meet the increasing demands for health-oriented foods and countermeasure the declining mushrooms consumption among younger generations. As aged households increase, the development for processed mushrooms products that are easy to cook is called for. In order to adequately respond the needs of consumers such as health improvement and diversified diet, the Institution is working toward research and development of production and application technology of mushrooms high in functionality and flavor.



### History

- 1950 Establishing Hokkaido Forest Products Research Institute in Midori-match, Asahikawa City
- 1986 Moving to Nishi-Kagura, Asahikawa City
- 1989 Establishing Wood and Lifestyle Information Hall
- 2010 Local Independent Administrative Agency Hokkaido Research Organization was established, and the Institute became Forest Research Department: Forest Products Research Institute



# Scope of Research

## Research and development for advanced production and distribution of wood and wood products



### New drying technology "Core-Dry"

To accelerate the use of Japanese larch in residential buildings, "Core-Dry", a drying technology for drying timber with pith has been developed and registered for promoting its branding.

Holder of trademark right: Hokkaido Federation Wood Industry Cooperative Associations



### Cross Laminated Timber (CLT) made of Hokkaido wood

Research is being performed for making new-type wood building materials "CLT" with Hokkaido wood for middle-high-rise buildings.



### Compressed Fir wood

Aiming for using fir as interior material, compressed wooden flooring having the same level of functionality with hardwood is being developed.

Patent No. 5629863



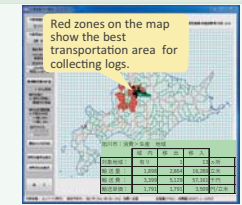
### ICT technology for sharing of distribution information

To facilitate the improvement of wood distribution, research is being conducted such as information sharing during distribution process from raw lumber to wood/wood products.



### High-strength Japanese larch laminated materials

Research is being made for developing high-strength laminated materials for buildings (laminated timber, LVL) that feature strength properties of medium-large-diameter larch timber.



### Calculation simulator for the best transportation distance for collecting logs of Hokkaido

The location and scale of factories that facilitate efficient and stable collection of logs are evaluated.

## Research and development for safety, reliability and functional improvement of wood, wood products and wooden structures



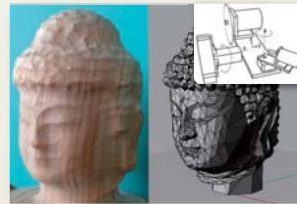
### Adding high value to Hokkaido's birch

Technology development is performed to produce wooden materials from Hokkaido's birch used as interior and furniture materials.



### Flooring materials suited for living together with pets

To increase usage of softwood, flooring materials are developed that are suited for recent lifestyle such as living together with pets.



### 3-D wood processing technology enabling fine uneven processing

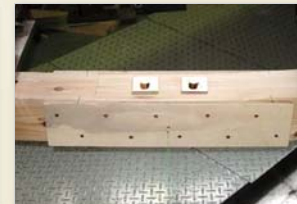
High-speed processing with chip saw and fine processing with swinging bar blade are combined to create low-cost NC wood-turning lathe.

Patent pending



### Technology to improve weather resistance of painted materials

To lengthen the durable life of exterior products, wood surface treatment technology is developed to improve weather resistance of painted materials.



### Joint design technology for wooden buildings

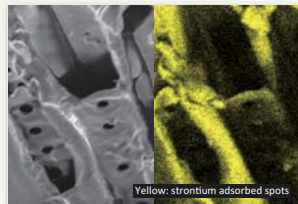
To construct wooden public buildings that highlight characteristics of Japanese larch and fir, technical development is performed for parts and joints.



### Technology for estimating durable life of wooden buildings

Technology is developed for estimating degraded state and durable life of existing buildings in order to properly maintain and control wooden road guards.

## Research and development for promotion of integration use of forestry biomass



### Heat-treated wood adsorbents

Production technology is developed for wood materials with adsorption effect against metal ion such as cesium and strontium, and ammonia.



### Pellet fuel from various materials

We produce pellet fuel experimentally from various materials and perform evaluation test.



### Wood fuel quality control technology

Research is performed at the chip-drying facility utilizing natural energy to optimize the quality control technology needed for efficient use of wood fuel.

## Research and development for value improvement of mushrooms



### High-quality Shiitake mushrooms grown on willow culture medium

By using sawdust of fast growing willow tree for growing Shiitake mushrooms, the technology is developed for stable production of large-sized Shiitake mushrooms with outstanding taste and texture.



### Functionality-proven "Taisetsu-Hananomai-1"

The Institute has developed this Maitake mushroom variety, and performs the research to verify its functionality such as enhanced vaccine effect for influenza.

Variety registration No. 17041



### Growing Hokkaido mushrooms which meet needs and developing food materials

Developing processed products using healthy mushrooms, and cultivating superior varieties such as Golden oyster mushroom and Pink oyster mushroom.

# Technical Assistance

-Welcome to use the facility of Forest Products Research Institute-



Bending strength test of full-size timber



Automatic control system of artificial drying equipment



Production experiment of wood board



Analysis of antiseptics



Analysis of wood components



Development of mushroom varieties

## Technical Assistance System

Collaborative research

Joint research with enterprises **(fee-based)**

Planning & Supporting G  
(0166-75-4235)

Consigned research

Conducting research in place of enterprises **(fee-based)**

Technical counseling

Providing technical advice on wood and mushrooms. **(free)**

Requested review

Conducting test and analysis based on JAS and JIS standards. **(fee-based)**

Facility use

Machines and equipment of the Institute are available for use for production development and trial production. **(fee-based)**

Technical guidance

Dispatching staff for technical assistance at production site. **(fee-based in general)**

Issue-targeted assistance

Along with technical assistance, performing simple or short-term test and analysis. **(fee-based)**

Dispatching trainer

Dispatch a lecturer for lecture meeting, and giving presentation or providing advice as a committee member or advisor. **(fee-based)**

Technical training

Conducting technical training session for obtaining wood or mushroom-related basic techniques and practical techniques necessary for production development. **(free in general)**

Use of the library

Materials of the Institute's library are available for reading. **(free)**

Intellectual property right

Intellectual properties are available for use. The contract is handled by Hokkaido Research Organization head office. **(fee-based)**

Planning & Supporting G  
(0166-75-4242)

Planning & Supporting G  
(0166-75-4235)

Extension & Collaboration G  
(0166-75-4237)

## Tree Cultivation



Koropokkuru



Kininaru-Festival

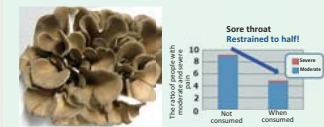


Hokkaido Children's Woodwork Contest

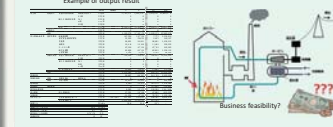
## Manuals/Special Topics

Please see the following website. (in Japanese)

<http://www.hro.or.jp/list/forest/research/manual/default.htm>



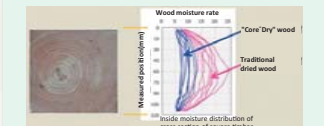
**Delicious and healthy! Hokkaido mushroom Taisetsu-Hananomai-1**  
Taisetsu-Hananomai-No.1 has good texture and good flavor, as well as various health functionalities. The website introduces its appealing points and characteristics in more details.



**A business simulator for woody biomass power generation and cogeneration**  
We have developed a business simulator to conveniently evaluate the profitability of woody biomass power generation and cogeneration by steam turbine system.



**Using planted forest materials as interior materials**  
The website introduces production methods to reduce knags that become a challenge when using softwood as interior material, processing methods to supplement knags, and methods to utilize knags.



**Pillars made of Japanese larch with less torsions and cracks: Core-Dry**  
For using Hokkaido's planted larch trees as building materials, we have developed a technology to prevent warping (twisting) or cracks caused by desiccation that occurs after building.

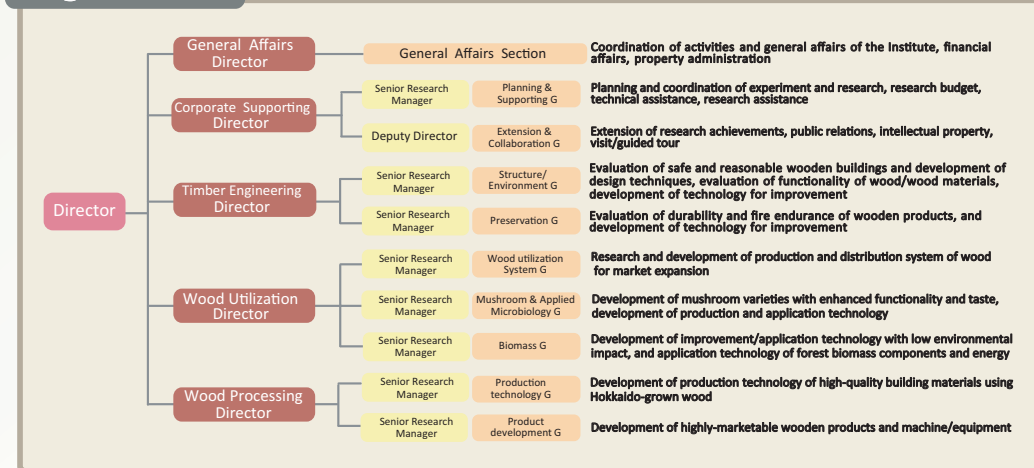


**Design portfolio to improve the durability of wooden playground equipment**  
We have developed wooden playground equipment with improved durability and easiness for maintenance, and compiled the technical achievements.

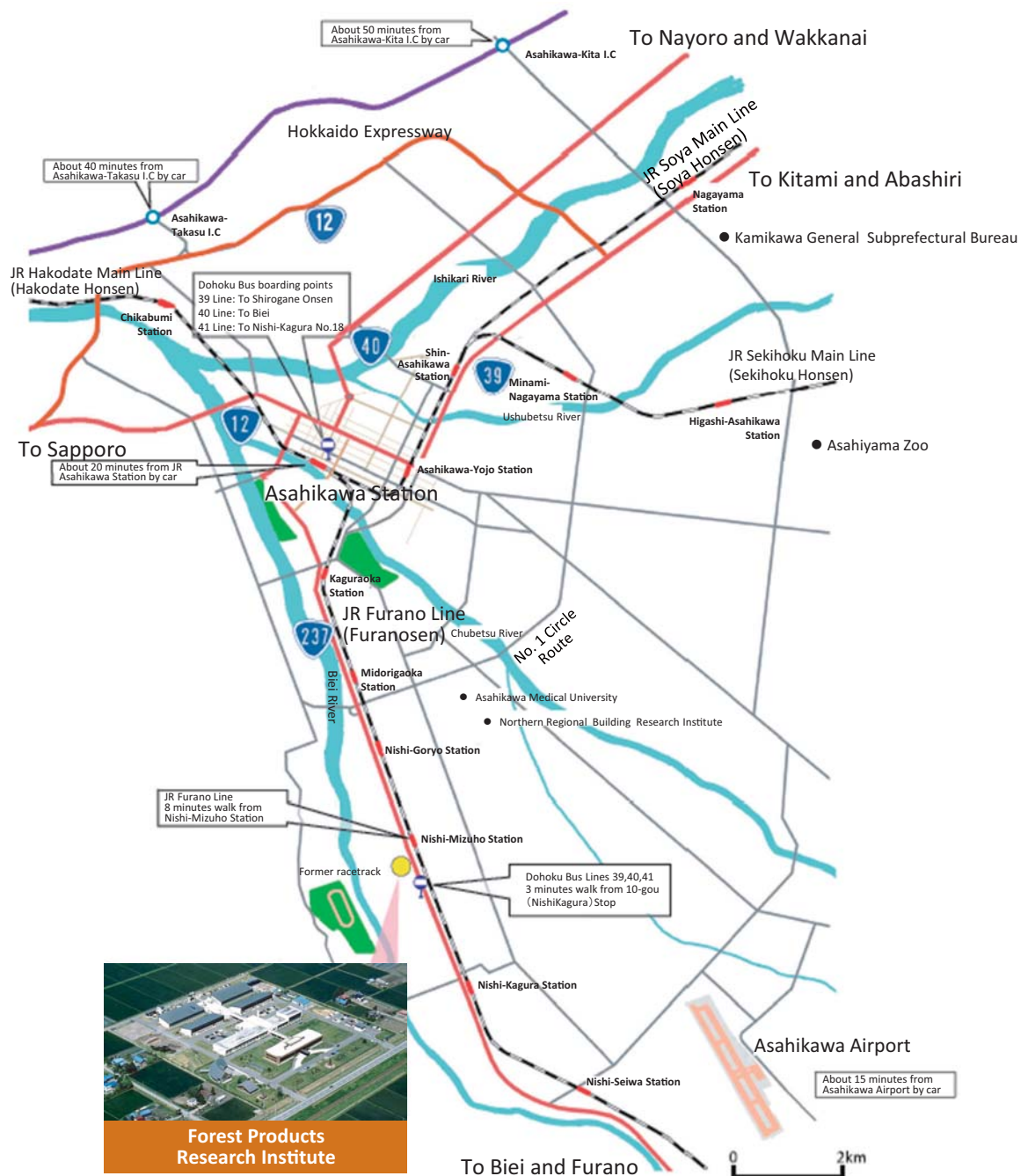


**Program for cutting large-diameter larch timber**  
Based on the information on diameter and torsion of the raw wood, this program directs the most effective pattern to cut out the wood, including the length and width.

## Organization







**Website (in Japanese)**  
<http://www.hro.or.jp/fpri.html>

- Basic information :Introducing the outline of the Institution, access method, contact information, and telephone number
- Organization : Introducing activities and research contents of each group
- Research and development :Introducing research subjects, procedures for collaborative research projects, intellectual properties and so on
- Technical support :Introducing ways for contract research, facility usage, technical advice and so on
- Public relations :Providing information on events, Wood and Lifestyle Information Hall, and “Koropokkuru



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