Hokkaido Forest Products Research Institute
Striving for a Sound Material-Cycle Society Using Wood

~ Wood Contributes to our Survival ~

The Forest Products Research Institute was established in 1950 to support Hokkaido’s wood industry and has since worked diligently in research and development and prepared extension activities from the results for the efficient use of wood products. In recent years the focus of research has changed dramatically due to rising environmental concerns and the diversification of social needs concerning forests and forestry. Under these circumstances the institute is encouraging more practical research aimed at developing the wood industry and improving the lives of Hokkaido’s residents.

History

1950 Establishment of the “Hokkaido Forestry Service Office” in Midori-machi, Asahikawa City.
1964 Name changed to the “Hokkaido Forest Products Research Institute”
1986 Relocated to Nishi-kagura, Asahikawa City.
1989 Establishment of the “Wood and Lifestyle Information Hall”
2000 50th anniversary
Three mainstays of research

1 Increasing the demand of engineered wood

The institute aims to increase the demand of engineered wood through technological development in order that it becomes an attractive and superior choice to competitive material. Technological developments include: exploiting its advantages of lightness, high strength, warmth, and humidity regulation; research to increase the added value of engineered wood by giving it new properties and improving upon its conventional properties; and research to compensate for its susceptibility to decompose and warp.

2 Efficient use of wood resources

The institute is developing the technology to use wood, a carbon-neutral renewable resource, as a petroleum substitute. To promote forest resource recycling the institute is also seeking technological developments to create new industries using underutilized resources and encourage wood waste recycling. It is also developing and improving mushroom cultivation techniques and introducing new varieties with superior characteristics.

3 Strengthening the Structure of the Wood industry

The institute is carrying out technological development to improve the quality and reduce the cost of wood products, strengthen the management structure, and is researching ways to invigorate local industry. It also advances the wood industry in the new millennium by endorsing the superiority of wood from Hokkaido’s artificial forests and seeks technological developments to ensure that wood from Hokkaido’s artificial forests outperform imported products and competitive materials. The institute is focusing on technological developments for the efficient use of medium to large diameter trees.

- Drying technology of larch
- Wooden sash
- Oil absorption mat
- Large area floor heating system
- Mushroom breed development
Increasing the Demand of Engineered Wood

I-beam made from Hokkaido wood
Combination of Sakhalin fir lumber and Japanese larch plywood from Hokkaido. Received certification as housing structural material from the Minister of Land, Infrastructure, Transport and Tourism.

Colored uzukuri plywood
Color and surface irregularities create innovative design. This open shelf made from uzukuri plywood (left) was highly rated in international expositions.

Decay diagnostic technique for wood houses
A non-invasive technique was developed to evaluate the level of house wood decay and resulting strength deterioration. This technique is included in a diagnostic manual.

Efficient Use of Wood Resources

A Hokkaido type pellet heater and wood pellets
Functional and tasteful FF type pellet heaters for homes in Hokkaido were jointly developed with a private company. These popular heaters have been on the market since 2007.

Wood bio-ethanol
Research is ongoing for the efficient production of ethanol from wood biomass as a substitute for fossil fuel.

Mobile composter
Using wood powder this device rapidly composts marine waste, such as starfish and sea urchin shells, even at low temperatures. It can also process waste from the agricultural, livestock, and food industries.

Strengthening the Structure of the Wood Industry

Development of wood products with curved laminated lamber
A device was developed for the efficient manufacturing of small-size curved laminated lamber. Diverse products using curved laminated lamber are proposed.

3-dimensional wood processing system
Wood can be worked into complex shapes using a computer-controlled woodworking lathe. Time and cost reductions were possible.

Automatic control system for kiln dry
This system automatically controls the temperature and humidity of a steam dryer for wood. It is a multifunctional system that also helps to elaborate drying schedules.
Fireproof wood shutter
This shutter is not only designed to beautify the house and garage but is also fireproof. Future certification as a fireproof device is being considered.

Technique to improve durability with chitosan
A technique was developed to improve the durability of wood using chitosan obtained from crab shells. It received much attention as a safe treatment technique.

Registered mushroom varieties
Varieties were developed, such as the high quality Branched Oyster Mushroom (left) suitable for processing and the Hen of the Woods (right), that can be cultivated in substrate containing Japanese larch sawdust.

Technology to increase GABA
This technology can greatly increase the level of the functional amino acid GABA found in mushrooms. The use of functional food ingredients is being developed.

Softwood plywood for interior furnishings
Interior wood furnishings create an atmosphere of warmth and calmness that only wood can offer. Products made of Sakhalin fir from Hokkaido are on the market.

Evaluating the environmental impact of wood products
To clarify the eco-friendliness of wood products and lumber produced in Hokkaido, research is being undertaken to quantify their impact on the environment.

Japanese Larch Use Handbook
This handbook introduces basic information about Japanese Larch. It is a comprehensive book of research results and techniques the institute has gathered over the long term.

For Clean Indoor Air
Comprehensive explanation of “sick house syndrome” and the VOCs (volatile organic compounds) that cause the syndrome.

Introduction - CCA Treated Lumber Classification
An introduction on CCA (a preservative containing chromium, copper, and arsenic) treated wood, simple identification methods handy in the demolition field, and identification and classification procedures of treated wood.

Techniques on Forest Biomass Use
A special feature on wood chipping techniques and wood chip use which are indispensable for forest biomass utilization.
Full-scale tests can be conducted with factory scale production tests and a largescale testing machine.
Organizational Structure of the Forest Products Research Institute

- **General Affairs Section**
  - Planning Section
  - Extension Section
  - Management Section
  - Design Section
  - General affairs; financial affairs; commodities; public property; power management
  - Planning, coordination and evaluation of research and investigation, publications, technical information
  - Planning and coordination of extension activities; technical consultation; technical guidance; technical training; research support
  - Research and investigation on management of the forest products industry
  - Design of forest products and wood constructions

- **Timber Engineering Division**
  - Senior Researcher
  - Timber Construction Section
  - Fire Protection Section
  - Wood Preservation Section
  - Gluing and Finishing Section
  - Wood-based Products Development Section
  - Strength of wood and wooden structural materials
  - Fire resistant properties of engineered wood and wood buildings
  - Biological decay control techniques and durability evaluation techniques of engineered wood and wood buildings
  - Refinement of gluing and surface treatment techniques of wood and engineered wood and improvement of indoor air quality
  - Development and performance evaluation of superior wood-based materials and components

- **Wood Utilization Division**
  - Senior Researcher
  - Wood Anatomy and Physics Section
  - Physical Utilization Section
  - Wood Chemical Commodities Section
  - Wood Recycling Section
  - Chemical Treatment and Processing Section
  - Correct evaluation of quality and use of wood
  - Effective use of engineered wood’s physical properties
  - Effective use of wood components and forest biomass
  - Recycling of wood resources
  - Chemical treatment to improve wood and engineered wood

- **Wood Processing Division**
  - Senior Researcher
  - Sawmilling & Drying Section
  - Wood Processing Section
  - Plywood Section
  - Board Section
  - Wood Working Mechanics Section
  - Improvement and development of sawing and drying techniques
  - Improvement of superior engineered wood processing techniques and developing new uses
  - Improvement and development of veneering techniques
  - Improvement and development of crushed wood molding techniques
  - Improvement and development of machinery and devices for the forest products industry
  - Development and improvement of mushroom varieties
  - Development and improvement of mushroom cultivation techniques and applied technology using microorganisms

- **Mushroom Division**
  - Senior Researcher
  - Breeding Section
  - Cultivation Section