JASA NEWS LETTER vol3

IFSA-KYOTO

ARM REPORT

CONTENS

PREFACE

Dear JASA members

I am so glad to send this JASA News letter vol3. We IFSA-Kyoto organized the 2nd Asia Regional Meeting 2011. And it was great that we could invite Natassja to this event with this friendly ship. In general, ARM could make a success. This success is not only owed to the Staff members works but also to the participant's corporations and IFSA's spirit. From IFSA Kyoto, we send the last news letter about ARM.

Through this event, we could share the knowledge and information about forest or forestry of each country. We also could learn different culture. These are the real thrill of IFSA event. After all, we are glad that participants could learn Japanese wooden culture. Japanese forestry and ways of using timbers are so particular. Therefore the problem of Japanese forest is also special. Consequently, to discuss among foreign students, and to think together have a lot of points in finding the solution.

A tradition is first a tradition when it is followed up and takes place from year to year. Therefore this event had great meanings in IFSA of Asia regional history. For this reason, we feel a sense of proud in contribution to this event. Furthermore, I am glad if you find this news letter informative for SARM.

I am sure that SARM will make success. And from IFSA Kyoto Akio and Shun will participate in SARM. I am looking forward to hearing the memory about SARM from Akio and Shun.

With kind regards,

Takayuki Yamashita
President of IFSA-Kyoto 2010-2011

International Forestry Students' Association (IFSA)
Forest and Biomaterials Science Faculty of Agriculture
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Japan

ARM SCHEDULE

Day1 **16/5**	-Opening Ceremony -Lecture: "Vegetation and Forestry in Japan" ~Move to Ashiu -Practice Work: "Cedar tree& wood character" -Presentation and Discussion <1>	KYOTO UNIV. ASHIU-EXPERIMENT FOREST
Day2 **17/5**	-Field Work: "Observation of the natural forest in Asuiu and the Impact of Wildlife" -Presentation and Discussion <2>	ASHIU-EXPERIMENT FOREST
Day3 **18/5**	~Move to Kitayama Area -Field Work: "Traditional Forestry & Man-made Forest in Kitayama" ~Move to Kyoto City -IFSA Asia Regional Meeting -Convivial Party	KITAYAMA-AREA (KYOTO)
Day4 **19/5**	-Field Work: Traditional Japanese Architecture and Tea culture ~Move to Nara City -Field Work: Sightseeing of Wooden Cultural Heritage -International Night	KYOTO CITY NARA CITY
Day5 **20/5**	~Move to Yoshino Field Work: The most ancient man-made forest in Japan & to Visit Forestry Museum	KAWAKAMI-VILLAGE, YOSHINO AREA(NARA)
Day6 **21/5**	Closing	NARA CITY

1st day

Opening Ceremony

The 2nd Asia Regional meeting began with greeting of the president of this event, Takuya Ito. And So who is one of the organizing committee's members played *shamisen* which is Japanese traditional music instrument.

Lecture: "Facts about Japanese Forest and Forestry" by Mr. Mamoru Kanzaki

Professor Mamoru Kanzaki gave lecture about Japanese Forest and Forestry. Japan is covered with forest by 66%. And 41% forest is plantation and 43% of plantation is sugi (Cryptomeria japonica) plantation. Plantation area doubled during last 60 years because forest agency policy from 1950's enhanced the replacement charcoal production forests by conifer plantation. By the way, 70% of wood consumption in Japan is imported one. This is the problem in Japan now.

Practice Work: "Cedar tree& wood character"

We moved to Ashiu Research forest got a lecture of Ceder tree and wood character.

Presentation and Discussion1

Each script of presentation is below. They are so educational. And each presenters made great presentation.

South Africa

Forestry and the Forest Industry in South Africa

Does forestry and the forest industry of South Africa differ much from Asian countries? The report Forestry and the Forest Industry in South Africa, aims at answering this question by briefly covering a wide range of the characteristics of the South African context. This will hopefully inform the "knowers" of the Asian context to such a degree that they will be able to ascertain whether or not we have similarities or whether worlds of difference occur. The author is of the first from her association, the Saasveld Forestry Association (SFA), to be invited to the International Forestry Students Association's (IFSA) annual Asia Regional Meeting (ARM). Therefore the report gives only a glimpse of forestry and the forest industry of South Africa, as it serves as an introduction to this to the attendees of the meeting. Attendees include delegates from Turkey, Peru, Mongolia, Nepal, South Korea, Taiwan, Indonesia, Vietnam, Philippines, Iran, Germany, Japan and Istanbul. This serves to be a great platform to invite students from around the globe into the arena of South Africa's forests sector. The title of the document can be broken down into two sections, namely firstly "forestry" and secondly "forest industry". This means that the wide range of topics that will be covered will relate to "forestry" and its subdivisions of areas relating to plantations up to off loading at the mill, and then also to the "forest industry" that is the

industry as a whole with all the supportive services to the practice of forestry. The report covers general South African "forestry" issues such as the history of how our forests came about; the general climate, main soil types, elevations and areas that forestry occur in; the social, environmental and economical state (status of the triple bottom line) and then also silviculture, harvesting, transport and protection. "Forest industry" issues dealt with include institutions providing tertiary education in this sector; products produced including the mills catering for them; the markets that are catered for; certification shemes including FSC and the current amount of certified growers; biomass possibilities (seeing as this is a global "hot topic" at the moment); laws pertaining to the afforestation of new land, as this is one of the largest forces pertaining to forestry growth; the high labour availability rate, its influences on the sector and the effect of HIV/AIDS on the system as a whole – this section has been added due to the fact that Sub-Saharan Africa has the world's highest HIV/AIDS infection rate. Within the walls of these areas lie forestry and the forest industry in South Africa, a well developed sector known throughout the world. The SFA has been in a partnering friendship with Kyoto University's student forestry association (Japan) since 2010. Coupled with the fact that the 2011 ARM will be held at Kyoto University, the author, and other members of the SFA, wish to broaden the perspective of our asian collegues on the way we do forestry in our country. This will be a great opportunity to learn and share.

Otani Kanae (Japan)

Forestry and Forest industry in Japan

1. The effect for an ecosystem by thinning out a forest

In a thinned forest, gaps of a tree canopy are formed, and there are various vegetation. They say that there are not less than 50 kinds of vegetation in a thinned forest of Japan. And, it's hard to landslide in the forest that has various vegetation, because roots of various vegetation get intertwined underground. Furthermore, the intertwined roots lead to watershed protection ability of the forest. In consequence, thinning out a forest

brings an abundance of an ecosystem.

For example, there are 61 kinds of vegetation at a thinned area, while only 8 kinds of vegetation at a no thinned area in a forest of Asuke city.

2. The present forestry situation in Japan

Now, forests are about 70% of the land, artificial forests are 41% of the forests in Japan. And, almost Japanese artificial forests aren't thinned enough (These are thinned once every 20 years). Therefore, there are few kinds of vegetation, landslidings are frequency, litter and buried seeds run down, and an abundance of the ecosystem is lost in Japanese artificial forests. We call these forests "a desert of green".

People say that "a desert of green" is caused by hard economy of forestry in Japan. Almost artificial forests were planted for building materials as a national policy in about 1950. But following liberalization of the import of woods, the demand of Japanese woods were suddenly reduced because foreign woods were cheapness and easy to obtain on a massive scale. In consequence, forest industry declined in Japan. Now, people thin out a forest and research vegetation as volunteers.

3. Some cure for the present forestry situation

Today, We need renewal of forest industry in Japan. For the renewal, many Japanese thinned woods should be used.

The Japanese Forestry Agency promotes "The Appeal of Using Domestic woods", we say "Kizukai-Undo", it is the project to use domestic woods actively by a state, corporations, and schools in Japan. By using them actively, the profits will be plowed back into forestry, so we will be able to put the abandoned forests in good condition. Besides, there

are some regions to rebuild forestry by cooperating with another undertaking. For example, in Toyota city, the water charges will be used for putting the forests in good condition from 1994, the reserve is about 439,000,000yen till 2007!

Now, we should think how to keep Japanese artificial forests in good condition. If we thin out the forests from now on, we will keep them in good condition, and the ecosystem will become abundant. Furthermore, the ability of the forests as carbon sinks will be higher than now.

IFSA-Kyoto (Japan)

Japanese forestry

1. Present situation of Japanese forestry

Japanese forestry is declining. Japan relies on timbers imported although two thirds of land in Japan is forest. Japan has many forests but most forests are located in mountains. It is hard to cut and carry trees efficiently. What's more, liberalization of imports contributes to forestry depression.Foresters are aging and there are few successors to forestry. It is also serious problem.

2. Contents of Japanese forestry

Japanese forestry produces mainly Japanese cedar (scientific name: Cryptomeria japonica) and Japanese cypress (scientific name: Chamaecyparis obtusa).

Main methods are weeding (cutting weeds), pruning (cutting branches), thinning.

3. Modern history of Japanese forestry

High economic growth in 1950-70s brought about a rush to build houses. The price of timbers was rapidly increasing. Japanese government planted trees around

Japan. But now demand of timbers is lost and forest is left with no management.

4. Japanese famous forestry

4.1 Yoshino forestry

When planting trees, it is usual that 3000 trees are planted by a hectare, but in Yoshino, 8000~10000trees. Annual rings are almost perfect circle and dense because growing speed is slow.

4.2 Kitayama forestry

High stand density, 5200-7000trees by a hectare, are adopted for the forest management. Kitayama forestry cuts most branches but top of trees in order to produce knotless timbers and to suppress growing speed.

One of the unique characteristic of Kitayama forestry is propagation using Dai-sugi, a sprouting regeneration system.

IPB(Indonesia)

TROPICAL PEAT SWAMP FORESTS ECOSYSTEM PRESERVATION IN BORNEO: SEBANGAU NATIONAL PARK

Borneo is the third largest island in the world that almost 73 % of its region is in Indonesia territory (Kalimantan). Borneo is located in tropical zone and one of island with rich biodiversity in the world. The important eco-region is tropical lowland rain forests and there is tropical peat swamp forest. Based from Wetlands Internationals' data, the size of tropical peat swamp forests in Borneo is almost reach 50 % of tropical peat swamp forests in the world, and 35% from its total size is in Kalimantan (Borneo Island) . Tropical peat swamp forests ecosystem is grown on tropical peat land. Tropical peat land formed in between wetland zone and mainland zone.

One of the widest natural tropical peat swamp forests area in Indonesia can be found in south of Borneo island specifically in Sebangau Forests. It's constituted as Sebangau National Park, a conservation area that has priority to protect and preserve tropical peat swamp forests ecosystem to keep its role. The Sebangau

Forests are in the Indonesian province of Central Kalimantan. The black water Sebangau River is the center of this area and bounded by the Katingan River to the west, Kahayan River to the east, the Java Sea to the south and the main Palangkaraya-Sampit road to the north. The total areas of Sebangau National Park are approximately 568.700 Ha. The ecosystem covers an area of 9000 km^2 of tropical peatland and about 6300 km^2 remains forested.

Sebangau peat swamp forests land is cover by tropical peat land. Tropical peat land formed by organic material from yield of slowly decomposition of biomass from tropical forests that deposit in waterlogged condition. The tropical peat swamp forests has unique characteristic. Its unusual ecosystems, with trees up to 70 m high that different with peat lands of the north temperate and boreal zones which are dominated by mosses, grasses, sedges and shrubs. The spongy, unstable, waterlogged, anaerobic beds of peat can be up to 20 m deep with low pH (pH2.9 – 4) and low nutrients, and the forest floor is seasonally flooded. The water is stained dark brown by the tannins from the biomass.

The tropical peat swamp forests ecosystem play important role in environment balances. Tropical peat swamp forests with this high water holding capacity make it as a water reservoir that work like a sponge. The peat can absorb water when it rain, and can release water surrounding when it dries. But it excuse why this ecosystems very fragile. When degradation happen it will cause the peat land has no more water holding capacity and subsidence will happen. The lowering land surface will occur, and also the floods happen because the land has no capacity to

absorb and save the water. When degradation happens in dry season, irreversible drying will occur on peat. The drying peat is very vulnerable to be burned. High organic material that contained in the peat formed mainly by carbon material, so when it burned the effect is emission of large amount of carbon to the atmosphere. It's the role of peat swamp forests as carbon sink.

Sebangau National Park protecting and preserving the beautiful natural landscape and another ecosystem include in Sebangau tropical peat swamp forests like the black water ecosystem in Sebangau River. The unique characteristics of these forests also conceive the unique habitat and its biodiversity. Sebangau forests are habitat for 14 populations of Borneo Orangutan (*Pongo pgymaeus)* which is endemic species that has endangered status from IUCN. The Orangutan population is decreasing more because of the forest degradation. Sebangau forests also being habitat of rare flora, especially commercial wood species like Ramin (*Gonystylus spp*), Jelutung (*Dyera costulata*) and Nyatoh (*Palaquium* spp) that the existence is threatened by illegal logging.

NTUFSA(Taiwan)

Taiwanese Forestry

It was as if it was yesterday, when the Portuguese sailed down the coasts of Taiwan. The flocks of wild deer, the gigantic trees along the coast line, made them feel as if it was paradise on earth. And from the bottom of their hearts they shouted "Formosa!" Taiwan, so-called Formosa by the Portuguese, meaning the beautiful island is located in the tropical and subtropical area of Asia. Taiwan has high mountains, short and rushing rivers, large areas of forests, abundant marine resources and special wetland habitat. And due to tectonic plate movements and effects of the early glaciers, a long mountain range with a network of river valleys spans across the entire island. Taiwan's subtropical climate is moderate and bestows abundant rainfall. The factors above have created a distinctive and complex geographical landscape that fosters a proliferation of elaborate plant and animal resources. Such conditions have not only preserved species that have survived the ice age, but

have also given rise to diverse ecosystems

Due to the unique topography and geographical location of Taiwan, and its abundant rainfall, the island is extremely rich in forest resources. Taiwan's diversity of ecological habitats and separation from the main land by the Taiwan strait has resulted in genetic isolation, and a division from Asian species to the formation of entirely new species. Taiwan is a hot bed for biological diversity, and a profusion of endemic species. A fourth of Taiwan's plant resources are endemic to Taiwan, of which 4,000 species are vascular plants, 1,500 are mosses and lichens, and 5,500 are fungi. As for animal resources, it is estimated that Taiwan has 150,000 species, a third of which are endemic to Taiwan. Animal species discovered so far include 71 mammal species, 500 bird species, 90 reptiles, 30 amphibians, 2,500 fish, and around 18,000 named insect species, well known for being one of the largest amount and species of butterflies per area in the world. Numbers of recorded species are continually increasing as more research is carried out.

In this presentation, we will focus on the topographic complexities of Taiwan's terrains and climatic variability which have together produced a war and moist environment, giving rise to a many varieties of vegetation classes. Moreover, based on the influence of climate, humidity, and altitude, forests in Taiwan can be classified within altitude as tropical forests, sub-tropical forests, temperate forests, and alpine forests, and we will be following the increase of altitude as a basis of our presentation . As we had indicated above that one fourth on Taiwan's plants are endemic, we will also introduce special endemic plant in different forest types specifically as well as endemic animals as we go through this presentation.

2nd Day

Field Work: "Observation of the natural forest in Asuiu and the Impact of Wildlife"

Ashiu is located in Nantan city, which is the northern part of Kyoto prefecture, surrounded with mountains. It has the headwaters of the Yura river. Kyoto University's forest research station is in Ashiu. This area is approximately 4200 ha, the altitude is 355m-959m above sea level, and the altitude of about 2/3 area is more than 600m above sea level. The average annual temperature and rainfall around station's office are 11.9 degrees Celsius and 2,298mm, respectively. In winter, it has snow about 1m deep. The climatic division is just between the Sea of Japan pattern and the Pacific pattern, and then the vegetation division is also just between the warm-temperate forest and cool-temperate forest. Therefore, various plants and trees are distributed in Ashiu.

Presentation and Discussion2

Salehi Maryam (Iran)

Nutrient re-translocation in a relict population of the Persian ironwood (Parrotia Persica C. A. Meyer)

In the northern Iran

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Abstract: The plant litter production and decomposition rate are the two important processes, which provide the main input of organic matter in soil, Nutrient re-translocation was studied in a relict population of the Persian ironwood (*Parrotia persica*) in the Caspian Forest, north of Iran. The most nutrient elements were measured within pure and mixed stands of *P. persica*. 60 plots with at least 0.5 ha area were chosen in both stands and these plots were studied from July to December 2010.

The results showed that the nitrogen concentration was higher in the mixed stand but the other macronutrient (C, N, K, and Mg) didn't show significant differences (P>0.05). All of macro- elements except carbon and potassium showed significant differences (p<0.05) between two seasons. The amount of litter fall varied from 8.9 to 10.8 t ha $^{-1}$year^{-1} in pure and 4.3 to 10.8 t ha^{-1}year^{-1} in mixed stand , respectively , which is indicated significant differences among pure and mixed stands .Also nutrient percent re- translocation didn't show significant difference. The results indicated that litter fall production, nutrient concentration and re-translocation are higher and faster in the mixed stand than pure stand of *P. persica*.

Key words: mixed stand, nutrient, *Parrotia persica*, pure stand, re-translocation]

Kamareh Feyzi Touran (Iran)

Arbuscular mycorrhizal fungi of endemic and native tree species, Pyrus glabra and Acer cinerascens in Zagros forests, Iran

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Abstract : Arbuscular mycorrhizal fungi (AMF) have one of the most important symbiosis with many plant species. The arbuscular mycorrhizal potential (fungal diversity, root colonization and sporulation) of Pyrus glabra and Acer cinerascens were analyzed in a semi-arid area in two wet and dry seasons. Measurements were recorded

from September, 2009 to April, 2010. In addition, the nutrient status of their rhizosphere was studied. Roots were stained with Trypan blue and fungal structures quantified using magnified intersections method and AMF spores in the rhizosphere soils of these species were extracted by wet-sieving and decanting. A total of 12 AM fungal taxa belonging to two genera were found based on spores isolated within two species identified. Seven species of AM fungi were observed in the rhizosphere of P. glabra and 5 species isolated from rhizosphere of

A. cinerascens. Three species belonged to Acaulospora and 9 to Glomus. The mean spore density and organic matter percentage increased and colonization and phosphorous (P) decreased in dry season (autumn). In A. cinerascens, AMF colonization had no correlation with available P.

Maryam (Iran)

IRAN Forests

Forests of Iran with an area about 12.4 million hectares comprise 7.4% of the whole country area. While the forest cover of Iran is considered poor as compared with other countries, it is a unique country regarding plant diversity and genetic reserves.

Approximately 8000 plant species have been identified in Iran. Climatic diversity especially from the land structure viewpoint is such that geographers have called Iran the global climates bridge. This climatic diversity has given rise to at least five distinct forest zones: Hyrcanian forest zone which has encompassed humid commercial and industrial forests, Arasbaran zone with semi-humid forests which has been canonized as a global biosphere reserve due to its plant diversity, Zagrose forest zone with semi-arid to temperate forest and a rich collection of oak species, Irano-Touranian forest zone, and arid forest with Juniper, wild pistachio and almond and finally the Khalijo-Omanian vegetation zone which makes up arid tropical forests and has a different appearance from the others.

Key words: IRAN, Hyrcanian, Arasbaran, Zagros, Irano-Touranian, Khalijo-Omanian

Philippines

Forest Based Industries in the Philippines

The Philippines has total land area of 30 million hectares. Two general land classifications are used in the country namely forestland/timberland and alienable and

disposable lands (A&D). Based on 2003 statistics, 15.9 M ha or 52.9% of the total land area is considered as forestlands and timberlands while the remaining 14.1 M ha or 47.1% are A&D. Forest cover can be found in both forestlands and A&D and account for 7.2 M ha. This is further subdivided to open forests (4.03 M ha), closed forests (2.56 M ha), plantations (0.33 M ha) and mangrove forests (0.25 M ha).

The Philippines used to be a major exporter of logs during the mid 20th century. The timber industry was the highest contributor in terms of foreign exchange income. However, the unsustainable extractions of prime timber species lead to the decline of the timber industry during the 1980s. The decrease in forest cover continued and the ineffectiveness of the government to address the problem has not enabled the industry to recover. Currently, the country is a net importer of wood products.

Tenurial instruments are used by the government in the utilization of the forestlands. These are Timber Licensing Agreements (TLA) covering 495,588 ha; Integrated Forest Management Agreement covering 816,466 ha; Socialized Industrial Forest Management Agreement (SIFMA) covering 40,175 ha; Forestland Grazing Management Agreement covering 111,005 ha; Special Land Use Permit covering 1,615 ha and Community Based Forest Management Agreement (CBFMA) covering 1,622,129 ha.

The forest based industries of the country can be classified into wood based and non-wood based. As the term implies, wood-based industries are those relying on timber for products. Under the wood based forest industries are logging, sawmilling, veneer and plywood manufacture, secondary and tertiary wood processing, and pulp and paper manufacture. The non-wood based industries include producers of various non-timber forest products (NTFPs) such as rattan, bamboo, various resins and latexes, beeswax

and variety of medicinal plants.

Wood based industries are vital to the Philippine economy not only because of their products but also of the employment it generates for the local people. Based on the 1994 statistics, the industry produced 1.66 M cubic meter of wood products, excluding products derived from secondary and tertiary wood processors and pulp and paper manufacturers. It also generated 46,000 employment, excluding pulp and paper manufacturers. The industry generated $ 468,585,000 in exports in that year.

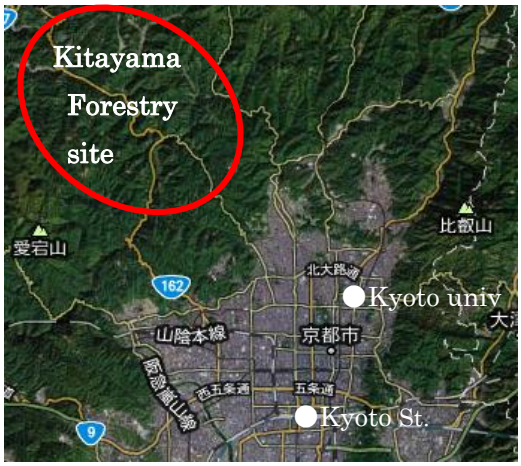
Non-wood based industries also contributed to the national economy. The most important NTFPs were rattan and bamboo. Other NTFPs that are commercially harvested include almaciga resin, anahaw leaves and nipa shingles. Based on the 1994 statistics, the following amounts of NTFPs were produced: 19.09 lineal meters of rattan; 1.20 M kilograms of almaciga resin; 10,000 pieces of anahaw leaves; 360,000 pieces of bamboo and 6,280 pieces of nipa shingles. The industry also provided employment no. The industry also provided employment not for lowland dwellers but also for upland dwellers and indigenous peoples.

Currently, the Philippine government is doing massive reforestation activities to help revive the forest based activities. Various tenurial instruments such as Timber Licensing Agreements (TLA), Integrated Forest Management Agreement (IFMA), Socialized Industrial Forest Management Agreement (SIFMA), Forestland Grazing Management Agreement and Community Based Forest Management Agreement (CBFMA) are used by the government to ensure sustainable and equitable utilization of the forest resources. It is in the success of these efforts that the forest based industries in the country will be revived and significantly contribute to the national economy.

3rd day

Field Work: "Traditional Forestry & Man-made Forest in Kitayama"

1. Basic Information



Kitayama forestry is performed in northern mountains of KyotoCity, and it is one of the most famous forestry regions in Japan. Kitayama forestry specializes to produce thin, straight and knotless timbers of Sugi(Japanese ceder:*Cryptomeria japonica*). Accordingly, high stand density (Initial planting density is 5200-7200 trees per hectare, 1.2-1.4m spacing) and short rotation time (30-40years) and careful treatment are adopted for the forest management. High stand density prevents sunshine from reaching each tree and italso doesn't give each tree sufficient space to grow horizontally. It results in thin and straight timber. Furthermore, Kitayama forestry cuts most branches but top of trees and produces knotless timber. This branch-cutting also contributes to reduce photosynthetic capacity, and conseqently makes Sugi trees thinner. Such trees raised by these methods have tight tree rings and they are strong.

Kitayama forestry has some unique characteristics. They are its beautiful landscape, Migaki-Maruta, Shibori-Maruta, Daisugi and cutting method and so on. Above all, differently from other forestry such as Yoshino forestry, cutting method is adopted to reproduction. Branches of 30-50cm length are cut from trees bearing exellent traits. Then they are planted and cultivated for two years in pots.These young trees are transplanted to the field and are intensively cared such as weeding and branch-cutting.

Sugi broken by snow

The climate of Kitayama region is generally moderate and suitable for forestry. However, in winter, it has a lot of snow. Recently, snow becomes wet and heavy perhaps due to the global warming. For this, many Sugi trees are bended or, when severe, are broken or fall down by thier roots. Especially, heavy snowfall enormously damaged many Sugi trees this year.

2. History

tea-ceremony house

Kitayama in Kyoto prefecture is one of the most famous forestry regions in Japan. It is said that people began to grow cedars in the Muromati period during 1394~1427, about 600 years ago. At that time, Senno-Rikyu promote Chanoyu, which is Japanese tea ceremony, so Kitayama cedar was mainly used for building tea-ceremony houses. Especially, Migaki-maruta was valued for its attractive grain, and often used for alcove post(*Tokobashira*) in tea-ceremony houses and sometimes presented to the imperial palace.

In the middle of Edo period(1603-1867), artificial plantation as it like today had been formed and its unique way of production was established. After cutting down, logs were processed in the region, and sold them in the whole western area in Japan including Kyoto, of course. In Meiji period, Kitayama forestry dealt with not only Migaki-mareta, but also other forest products. However, in the process of recovery after WWⅡ, they instantly changed to produce only polished log.

making artificially Sibori by attaching lods

From middle of 1950's, they had started to produce artificially wrinkled log(artificially Shibori), and in around 1965, these logs became very popular. Moreover, in the high economic growth rate period, people competed in the effort to build their own house. Kitayama forestry reached

full bloom at that time.

But recently, demand for Migaki-maruta have been decreased because of increased timber import from overseas and decrease of buildings which have alcove post. Accompanied with the trend, Kitayama forestry has gone into a decline. Today, forestry companies make hard effort to compete with imported timber, for example, adding value by product branding.

3. Feature

Landscape

Kitayamaforestry adopts very intensive management system, so the scenery is different from general forestry managed in harmony with nature.The scenery, in which branch-cut trees lie in tiers according to age, is so beautiful that it is one of the tourism resources. However, this beautiful landscapeis lapidly decreasingdue to depression ofthe forestry.

beautiful scenery

To protect this beautiful scenary, Kitayama region is recognized as the cultural landscape conservation establishment. This establishment is defined as landscape, which is not only formed by the livelihood, jobs and climate of the local people, but also absolutely necessary for understanding our life and work.

Daisugi

Daisugi is the sustainable system to harvest lots of logs on the steep hillside of Kitayama and it is said "symbol of Kitayama". It developed specific style by limiting the uses of produced logs to rafter.

Daisugi

Daisugi is made by using germination of Sugi. One *Daisugi* produces multiple logs by repeatedly growing from stump after cutting from parents tree. The specific shape

reaching multiple coppice shoots from one thick stem deeply moves viewers. However, to keep their specific shape, we needs complex technique; pruning etc. The style is declining by decreasing demand for rafter and dificulty of the management. Now, *Daisugi* is mainly raised for garden trees.

MigakiMaruta / ShiboriMaruta

Kitayama forestry is famous for its distinctive timber, MigakiMaruta and Shibori-Maruta. Migaki-Maruta is mainly used for alcove post (*Tokobashira)* and rafter (*Taruki)*, Shibori-Maruta is for alcove post. Both of them are high-priced because of the difficulty of their processes, but they play so important role in Japanese-style rooms such as tea-ceremony houses.

Migaki-Maruta means polished log. Harvested logs are debarked and enough dried. After that, the surface of them are carefully polished with fine sand and water. Through these processes, the surface of them becomes smooth and glossy. Now, debarking is conducted by an machine spouting water, but the polishing process is conducted by women with soft hands.

Migaki-Maruta

ShiboriMaruta have mysteriously wavy surface. (Shibori means to squeeze.) Their extremely waving annual rings make thier distinctive surface. The very best natural Shibori specimen can be 1 in 10,000 trees. Natural ShiboriMaruta are produced by selecting such excellent trees and cutting them. Moreover, they are also produced artificially by attaching plastic (or bamboo) rods on the surface of trees for 2 or 3 years. Nowadays, this method is the main current.

Shibori-Maruta

4. Reference

Rafter (*Taruki*)

rafter and alcove post

Rafter is a type of beam, which supports the roof of a building. In Japanese home construction, rafters are typically made of wood. Exposed rafters are a feature of traditional roof styles. Very thin logs are used as a rafter, especially in tea-ceremony houses. This is the most efficient use of Kitayama Sugi, which is thin and strong.

Alcove post *(Tokobashira)*

Alcove post is a self-explanatory a post placed in an alcove (*Tokonoma*). Many kinds of logs are used for it, for example, Migaki, Shibori, Sabi(named from its color like "rust"), and Magari(named from its "curving" shape in natural condition). It must integrate atmosphere and play a role to keep its balance in the room. Alcove post is essential to Japanese style rooms in both structural and apparent mean.

4th day

Field Work: Traditional Japanese Architecture and Tea culture @ Seifusou

Seifusou was built as leisure house by Kinmochi Saionji, who had served as the prime minister of Japan twice. There is tyasitsu (tea room), which is late Edo-period style construction, and some buildings in the style of a tea-ceremony house, which is Taisho-period style construction. And they create quiet and serene space with the beautiful garden. The architecture is one of the national cultural heritages, and the garden is registered as the pace of scenic beauty spot. This garden was made by Jihei Ogawa in 1916, and it took about 5 years to complete it.

Field Work: Sightseeing of Wooden Cultural Heritage @ Nara Park

NARA is the ancient capital city of Japan, celebrates the 1300th anniversary of its founding at 2010. Being located 40km south of Kyoto, a lot of historical buildings, items and cultures have been preserved and many of them are registered as national treasure. We visit the World Heritage sites of center of Nara city such as Kofukuji temple, Todaiji temple and Kasuga-taisha shrine.

東大寺(Todaiji)

Todaiji Temple was built in 758 (the Nara period). The Great Buddha Hall was burned twice and the current building is actually the third generation structure, which was built in 1691 (the Edo period). The width of the current building is about 33% smaller than that of the original structure, however it still ranks as the largest wooden structure in the world. It is 57.5 meters wide, 50.5

meters deep, and 49.1 meters tall. The original width was about 86 meters.

In order to remove a feeling of unrest caused by successive revolts, and to secure the protection and welfare of the nation with the help of Buddhism, Emperor Shomu promoted the construction of a provincial temple in each province and made a decision to build Birushana Butsu at Todaiji Temple. The Great Buddha is made of bronze.

The timbers are mainly Hinoki (*Chamaecyparis obtusa*). It is because the hinoki is stronger than other woods and has good endurance. The largest timbers are *Pinus densiflora* which have 23.6 meters tall and 1 meter in diameter. They are used for beams called Koryo which is the principal horizontal timbers of the building. Engineered woods are used for pillars. This is because there were a few thick *hinoki* which have enough strength alone when Todaiji temple was rebuilt. The engineered woods are made from Keyaki(*Zelkova serrata*), Hinoki, sugi(*Cryptomeria japonica*).The timbers were gathered from all over Japan.

Dimensions of the Daibutsu

Height: 14.98 m (49.1 ft)
Face: 5.33 m (17.5 ft)
Eyes: 1.02 m (3.3 ft)
Nose: 0.5 m (1.6 ft)
Ears: 2.54 m (8.3 ft)

The statue weighs 500 tonnes (550 short tons)

興福寺(Kofukuji)

Chukondo is the central hall of Kofukuji temple. Now it is under reconstruction. It is 23m long, 36m wide and 21m high. The original building was constructed in 714 and had double roofs called 'Yosemune (this means that a roof slopes down to the outside in the for directions)' and the caves to prevent itself from raining. However it often had been damaged. So, it has been reconstructed several times. The ordinal one was constructed using a zelkova. It was reconstructed in 1811, but it was seriously damaged because of using inexpensive pine.

Now it is under reconstructing again, and a Afzelia Africana from Kenya is used for the pillar. That is because it is difficult to get big logs in Japan. Additionally, a hinoki(Japanese cypress), pine and hiba are used to reconstruct the parts except the pillar. Hiba has not only strength but antibacterial characteristic.

When carpenters construct a building having some floors, they pile up the floors one after another. First, they combined lumbers to form the center of the first floor. Second, they construct the eaves and then combined lumber again to form the second floor.

Miya-daiku's skill

This architectural style is called 'Tsumiage-housiki(Tsumiage style) '. Tsumiage means to pile up something. They have been taking over this style for about 1400 years. Moreover, they reconstruct it not only in the same architectural style but also with the same method and tools of construction as constructing ordinal one with.

It is able to support the weight of the building as a balance does. The building can stand earthquakes partly thanks to this architectural style.

Moreover, each timber is using for a different part depending of character. It is the knowledge which is passed on among the carpenters for a very long time.

The carpenters called 'miya-daiku' are essential to reconstruct it. Miya means temples and shrines and daiku means carpenters. They have been taken handed down the traditional unique technique to build temples and shrimps. The technique is passed only by the words spoken by men of experience. There is no manual. Regrettably, 'miya-daiku' tend to be getting older and decreasing in number.

春日大社(Kasuga Taisha)

Kasuga-taisya(Kasuga shrine) was also constructed by the Fujiwara family. From the 8th century to the middle of the 19th century, Kasuga-taisya and Kofukuji had great authority thanks to s yncretization of Shinto(神道)(Japanese unique religion) with Buddhism. The current building dates from 768. It has been repaired once in 20

years. The traditional architectural style “ Kasuga-zukuri” was named after Kasuga-taisya. The vermillion-lacquered pillars and warped roof are affected by architecture of Buddhism. The floor is above the ground in order to keep good ventilation. In addition, there is a Kasugayama Primeval Forest around this shrine.

International Night

This night, we held the International night. Each country made a good performance and everyone enjoyed and shared this time.

5th day

Field Work: The most ancient man-made forest in Japan & to Visit Forestry Museum

Feature of Yoshino Forestry

Yoshino has a lot of rain and the climate is suitable for growth of trees. Annual amount of rainfall in Yoshino is more than 2000mm, and annual mean air temperature is 14℃. Furthermore, mountain ranges around Yoshino guard trees from typhoon. And the land is water- retentive and permeable. In winter, snow cover is less than 30cm. In short, all of these good conditions help to develop Yoshino Forestry.

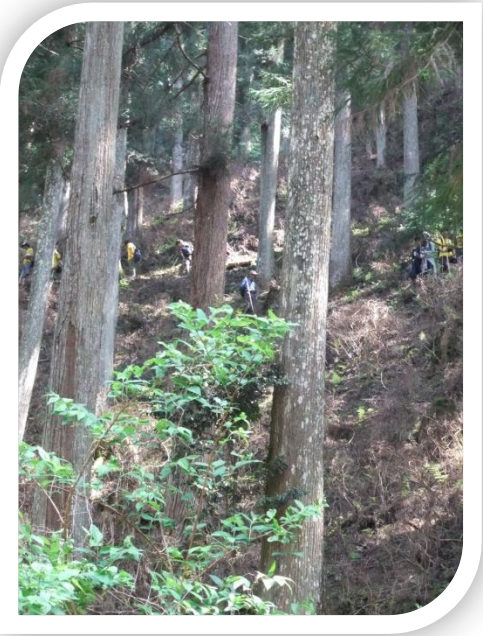
The system of Yoshino forestry is the most primary way in Japan. It spread around Japan and was arranged in each region. However, there are some distinctive characteristics in Yoshino. First, when planting trees, it is usual that 3000~6000 trees are planted by a hectare, but in Yoshino, 8000~12000 trees. Foresters plant saplings closely to progress down the speed of growth. In consequence (For this), the annual rings are contiguous (closely, thick, dense). If you measure them with a ruler, it would contain more than 8 rings in 1cm. Second, forestry technicians trim (cut down) the branches of trees carefully to make timbers without knots. It is also useful to get straight wood because trimming lower branch lead sun light to forest floor. Foresters repeat this work several times. Then, 70~180years old woods are cut down by foresters. Lastly, after cutting down trees, the lumbers are left in the mountain about four months. This process is necessary to get softly-colored stem. This work is called hagarashi in Japanese.

Lumbers of Yoshino Forestry have several unique qualities (as mentioned previously). First, the width between annual rings is very narrow. Second, annual rings are almost perfect circle. Third, Thickness is almost same from top to bottom. Lastly, they have few knots. These features are useful to make casks.

The view of the woods in Yoshino is also characteristics. Thick and straight cedars are compactly arranged. Years of care by foresters, such as trimming or thinning, makes this attractive and interesting landscape. If you see the woods like Yoshino, it means there are high quality trees and much effort by foresters.

History

Forestry in *Yoshino district* has a long history and people began to grow trees in the 16th century. There is a record that logs yield in this area was used to build Osaka castle in 1583. It was also used to build Edo castle too. This means that logs produced in *Yoshino area* was famous for its quality. By the way, the trees in *Shimotakomura* village forest was planted in about 1615 and it is over 400 years old.



In 17th century, wood demand expanded because of rapid population grows and development of cities. Stimulated by this demands more farmers started to plant trees in their lands. In the 18th century, products made in *Yoshino*, was used to make *Sakadaru* (barrel used to make *Sake*) and this brought more prosperity to wood products industry in *Yoshino*. On the other hand, the quality of the products was suitable for structural material. Because of this from about 1900 people began to focus on making logs for structural material. In 1950's *Yamamori* (explained latter) entered materials industry (marketing of logs). From these years, it can be said that people in Yoshino began to think about enlarging the market for Yoshino products. In the 1970's Yoshino products was branded for its good quality. In the 1980's, Yoshino area began to produce laminated wood. This reflects the shift of demands from huge rectangular lumber to laminated wood. Until now even Japanese forestry industry hold many problems, Yoshino area is continuing traditional way of its forestry.

・Two distinctive systems; Shakutirin and Yamamori・

As a characteristics of Yoshino forestry, 2 system can be mentioned. In the 18th century Yoshino area attracted people as a good industry to invest. As a result, this movement divided the ownership of the land and right to carry out wood producing industry. Investors bought the right to conduct forestry and selling the produced logs. On the other hand people living in Yoshino area kept on owning their land. This is called *Shakutirinn* system (leased(rented) forest system) and this is one of the characteristic system.

Even though investors bought the land, they didn't have any knowledge about forest management. So, Investors entrusted the management of their forests to a reliable person living in the village. We call this entrustment of management *Yamamori* system. (Forest Management Entrusting System) People who is responsible for the management is called *Yamamori*. *Yamamori* not only employed people to manage the forest but also had full power concerned to wood producing. Plus, Yamamori also take part in the product distribution industry. *Yamamori* system played an important role in developing forestry industry in Yoshino area. These days, Investors own both the land and the right to carry out wood producing industry, and *Shakutirinn* system is almost obsolete.

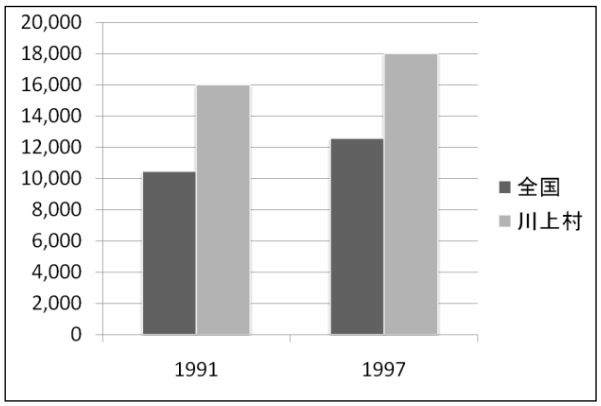


Figure 1: Pay comparison between Yoshino and whole of country (Cite from http://www.minnanomori.com)

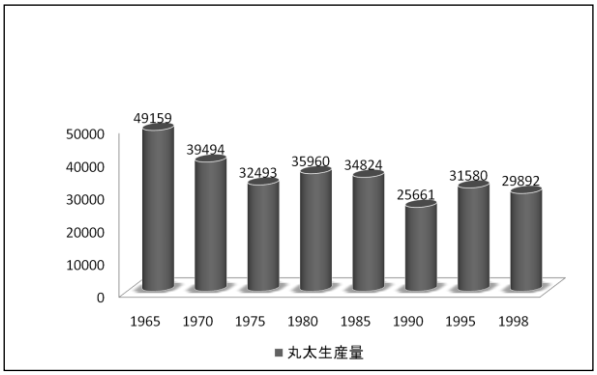


Figure 2: Amount of lumber production in Yoshino(Cite from http://www.minnanomori.com)

3. The management process in Yoshino Forestry

1. 種取(Tanetori)

Picking seed：The first step of this process is selecting mother trees, which are cedar over 80 years old and Chamaecyparis obtuse over 60 years old. Then people pick seeds from mother trees.

2. 育苗(Ikunae)

Raising seedling：The second step is seeding in a field in the late March to the early April. One year after budding, people change young bud to another field. The most of two-year-old buds are planted in a mountain. The remaining buds are shipped out as three-year-old buds in the next year.

3. 地ごしらえ(Jigoshirae)

Setting soil：Before planting buds, people weed brushes and change them to fertilizers by leaving them to rot. This setting makes it easier to plant buds.

4. 植え付け(Uetsuke)

Planting：Planting young buds in a mountainin is mainly done in the mid February to March. It is also done in June or autumn. The number of planting Cedar and Chamaecyparis are 8000~10000 per hector and 7000~8000 respectively.

5. 下刈り(Shitagari)

Cutting weed：People cut weeds which prevent trees growing. Until the third year since the trees were planted, they cut two times a year, between fourth and sixth year they cut only once a year.

6. 蔓きり(Tsurukiri)

Cutting vine：The seven-year-old trees are as strong as other weeds or stronger than weeds, but people have to cut vine instead. Until approximately fifteen-year-old, this process has to be done every year.

7. 除伐(Jobatsu)

Improvement cutting：About seven to eight year after the trees was planted, they are so big and large that they stand tightly. And so people cut winding trees, poorly trees and strange-shaped trees until about twenty-year-old.

8. 紐打ち(Himouchi)

Pruning 1：In order to make forest be airy well, dead branches about 1~1.5m above from ground are cut down once by approximately twenty-year-old.

9. 枝打ち(Edauchi)

Pruning 2：This work is pruning slight branches by an ax. This is very important to avoid getting knots. Cedar needs this process twice between seven- and twelve-year-old, on the other hand, Chamaecyparis need this five times between ten- and thirty seven-year-old.

10. 間伐(Kanbatsu)

Tree thinning：Some good and beautiful trees are selected, then others are pruned, because trees compete with each other for light and nutrition.

11. 主伐(Shubatsu)

Logging：When trees achieve enough large to take to market, the trees are cut down. The age depends on tree species.

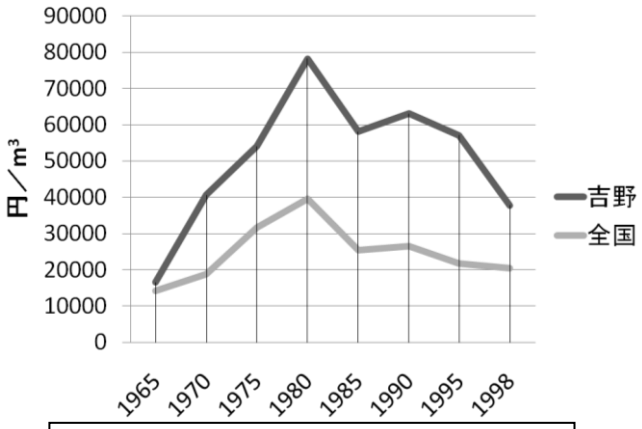


Figure 3: Price comparison between Yoshino and whole of country

4. The Problems of Yoshino Forestry

Although Yoshino forestry is one of the most famous forestry regions in Japan, there are a lot of problems. The problems are divided into two reasons: A slump of the price of domestic wood, and lack of wood's demand.

First, the price of domestic woods sharply slumped about 1950's because of liberalization of wood's imports. Domestic woods, which has tend to raise the price, completely lost economic competition to import woods which were inexpensive and attained a lot easily.

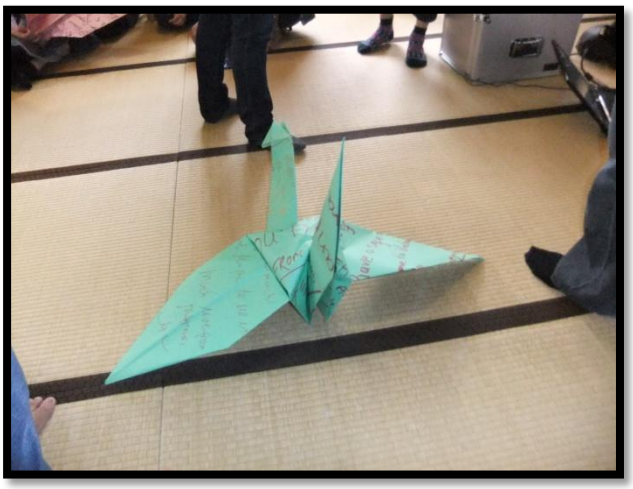
Second, the need of domestic woods dropped because people changed their used lifestyle and the number of wooden houses decreased. Japanese people came to live in apartments or concrete buildings.

Due to those two factors, the cost of management woodland and transportation timbers is much higher than total profits from all sales. Consequently, forestry companies are operating in the red. When forestry has no demand and does bad business, many land owners got up managing and monitoring their forest. And no men want to become forester.

6th day

Closing Ceremony

At last, we closed this event with big claps.



Good Luck in SARM!!