

A Summary Of The Forest Situation
In Japan

by

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Oct. 1953



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Forest Resources

Land Area. Contrary to popular belief, Japan has one of the largest ratios of forest land to total land area in the world. Finland which has about 65% of its land covered by forest is ahead of Japan. Japan proper has about 53% of its land or 52 million acres forested. The reason for this high figure is that so much of her mountainous terrain can be used for little else. The figure for forested land could be even higher, possibly up to 58% if the "genya" of waste lands were included. These figures are only estimates though. Dr. Nasu¹ makes the statement, "As a matter of fact, forests and prairies are rarely surveyed."

The fact that much of the forest land is unsurveyed is due mostly to one important factor. Because of the dense population, forest ownership is broken up into very small units. Even the government forests, with the exception of imperial holdings, are relatively small. As mentioned before, Japan has a large percent of its land in forest, yet per capita forest area is only .3 hectare (about .8 acre) compared to the U.S. 1.6 hectare per capita.

Timber Types. Timber in Japan can be classified into three major types: softwoods which occupy about 28% of the land area, hardwoods about 51%, and mixed stands the other 21%.² Of course this is a generalization and does not include such species as bamboo,

which is not of minor importance. It has been said that Japan is richer in species than any other area outside of the tropics.

The softwood type is the most important. It occupies just 28% of the forest area but it produces about 80% of the forest products by volume. The five most important trees of this type probably are: Sugi (Cryptomeria of the family Toxodiaceae), Tusga, Hiba (Thujopsis, a monotypic genus of the family Cupressaceae) Aka matsu (Red Pine) and Momi (Fir).

The hardwood timber, though it occupies the greatest area and probably exceeds softwoods in volume, is of secondary importance. The leading producing hardwoods are the white oaks (Nara) with ash ranking second. Some of the other species include Buna (Beech). Which is quite plentiful, Huri (Chestnut), Kaede (Maple) and Kanba (Birches). A host of other species are unmentioned for the lack of space.

The mixed hardwood-softwood type comprised about 21% of the forest area in 1945. This figure has been decreasing quite steadily for two reasons; (1) The increase in plantations of pure softwoods and (2) the cutting of softwoods in mixed stands.

Lastly the bamboo type, though this does'nt fit in with the afore-mentioned broad classifications of type, (in fact it's a grass) should be mentioned. It occupies less than one percent of the total forest area yet it constitutes an essential part of Japan's wood material. There does not seem to be much that can

not be made from it. Furniture framing, mats, screens, roots for food, and a countless number of novelty items for export, can all be made from bamboo. In fact it might be called the one totally utilized "tree" in the world.

Ownerships. Less than half of Japan's forest area is government owned, and over half is privately or community owned. The breakdown is roughly like this:³ Of the government lands 57% is crown owned and 36% is state owned. Of the private lands 16% of the forest area is community or temple and shrine owned. The rest belongs to private individuals or companies.

The government lands are in fairly large holdings making it possible to tabulate and manage fairly satisfactorily. It is the small private holdings that give the most trouble. Many of the private holdings are less than 1 Cho (2.45 acres) and only one percent of the properties (about 34% of total private area) are holdings of 50 acres or more.

There has been a noticeable trend toward more privately owned forests in the last 75 years since the Meiji restoration, following the over-throw of the Tokugawa regime. The policy of granting wild lands to private interests with the stipulation that they will reforest it, has lent much toward this trend.

Wood Requirements of Japan

It has often been said, the economy of the Far East depends entirely on rice. This is, for the most part, true, but in Japan wood is equally important. No other nation depends so much on wood as does Japan.³ It is said that 99% of the people, even in the cities, live in wooden houses. This is not due entirely to the lack of other materials. The people have a love for wood that puts its value to them beyond material use. In nearly all their home construction they use a natural finish so as to not obscure the beauty of the wood.

Lumber requirements. As was mentioned, lumber is used in nearly all home construction. This forms a large part of the lumber market, but not all of it. Japan depends heavily upon the fishing industry for food and their fishing boats are all made from wood. Even a large part of the cargo fleet is of wood construction. After the end of World War II they ^{had} practically no steel vessels of any kind.

Before 1920 they exported more lumber than they imported, but since the earthquake and fire of 1923 the imports have exceeded exports. This attributed greatly to their economic slump because this was a important source of foreign income.

Railroad Ties. Except for coastal shipping, railroads form the bulk of transportation in Japan. The amount of traveling done in motor vehicles is almost negligible. The most important means of transportation would probably be hand of ox drawn carts.

The extensive use of railroads calls for an enormous amount of ties. In this same use, because of the extreme mountainous terrain, there are many tunnels and bridges, all of which require wood in their construction.

Fuel. Practically all of the fuel for heat and cooking comes from either wood or charcoal burners. A familiar sight in Japan are the habashit pots which burn charcoal. ^{The} industry is a very important follow up of logging operations. Here they can use all of the waste by gathering and putting it into kilns or pits where they burn it to produce charcoal. This also resulted in the coppice method of wood growing where they cut on an average of a seven-year rotation.

Pulpwood. It seems that no matter what in the way of wood products is mentioned, Japan is an important user. The pulp industry too is of major importance. In prewar years about 150³ million cu. ft. of wood annually was used for pulp alone. This doesn't include pulp made from straw, which is the chief raw material for cardboard and paper board.

Miscellaneous Products. Mine timbers, used mostly in mining coal, take about 100 million cu. ft. of wood annually. Some of the other products include furniture, cooperage, boxes and a multitude of items made from bamboo.

Forest Management

General Forest Policy. A little has been said about Japan's resources and its wood requirements. This brings us to the big

question of how she has managed and how she will manage her forests. It is understood that she has a very grave problem now, more so than in the past. At the present her economy is so that she can afford to import only a very little amount of forest products, yet her own supply is rapidly depleting because of her dense population.

It was not until the late 1800's and early 1900's that Japan made any major efforts to control forest exploitation in her public forests.³ In 1890 a law was passed to survey and classify all public forests to see what lands were suited to forests and what to agriculture. Such lands as were found suited to agriculture were to be sold, and the money received was to go into a special fund to be used for the improvement of state forests.

At this time it would be well to again state that this paper is summarizing only very general policy. Although good forest practices began less than a century ago, there are instances of private management practicing good forestry for the last 400 years. Some of the forests of the Yashino district in southern Honshu are good examples of this. These forests are predominately Sugi and Hinoki, managed on fairly long rotations for large timber.

In 1897 a law, which was revised in 1911, directed local governors to require public corporations, shrines, temples and community forests to prepare and follow a working plan

that must be approved. Afforestation of previously cut-over lands could be enforced by this same law.

Thus we have somewhat of a beginning of good forest legislation in Japan. These policies were carried out, and as mentioned before, Japan grew enough timber and could even export some up to 1923, when the earth-quake caused a major disaster. She had just recovered, for the most part, from when World War II came up and caused a serious depletion in her timber resources.

Rebuilding in the years following World War II resulted in still more devastation of their forests.² In 1947 it was estimated that the drain was 2.5 times the growth. In 1951 the Diet passed on some very stringent forest legislature, some of it built around the advice of American experts. If the policies laid out then are followed carefully, the forest situation should greatly improve in Japan.

Some Cutting and Follow-through Practices. Clear Cutting is common practice in Sugi forests which form Japan's most important source of timber.² Here they plant immediately after cutting at the rate of about 3000 trees per acre. After that the stand is weeded twice a year for three years and then annually up to 10 years. At about the 14th year the stand is pruned and then repruned every fifth year after that. The sale of the branches for wood actually pays for pruning. The cutting rotation in this type of timber is anywhere from 80 to 130 years.

The pine forests are usually harvested on a selective-cut, or shelterwood system, depending on what kind of wood is wanted. In many areas great care is taken in cutting pine, as it is a common species used to check soil erosion. Black pine is found to a great extent on the sandy coastal regions. Fir and hemlock is generally cut selectively and allowed to produce naturally.

The hardwood forests are not so extensively managed. Much of it is selectively cut in the sense that the best trees are taken leaving the poorer ones. In the case of fuelwood, clear cutting is a common practice followed by an intensive coppice harvesting system with a very short rotation.

Planting. Planting dates back over 1200 years; but these are just special cases. Actually it wasn't until 1875 before any large-scale planting went on. One system that went on then was the yield-sharing plan by which the government allotted areas of "genya" to private interests to restock. They would then share part of the profits. In about 1900 legislation was passed exempting afforested land from taxes for a specified period.

It is estimated that about 10 million acres of land was planted in Japan between the years 1888-1939. This amounts to about $\frac{1}{4}$ of the total forested land in all Japan in 1939.

Forest Fires. Forest fires are one thing that is not a major problem in Japan, especially in recent years. This is due partly to the abundant rainfall and partly to the present very

intensive management and small timber blocks. Fire damage is greater in Hokkaido than in Japan proper because of the drier climate and less intensive management.

As a whole, damage by windstorm and heavy snow takes a much greater toll than does fire. Insect damage is relatively light, though there has been some damage in spruce and hemlock in recent years.

Watershed Protection. Though this phase of forestry is covered last it certainly is not the least important. Because of heavy rainfall and very mountainous topography, there is always danger of heavy erosion. In much of their forest lands only extremely careful selective cutting can be allowed. In some areas what timber crop they have must be left unmolested because of the danger of exposing the soil to erosion.

The control of run-off is especially important in this country for a number of reasons. First because of the dense population and mountainous terrain there is very little agricultural land (.2 acres compared to our 25) per capita. They simply can not afford a crop failure. Then too, their major crop is rice which requires much water at regulated times.

Conclusion

It can be said that the forest situation in Japan is at least critical. Their forest resources are low compared to the population and how much they depend on wood. They have done a great deal to improve the situation but they are by no means in complete command. This paper may give the im-

pression that Japanese forestry is of a very high caliber. In some ways it is, but much of it is due to dire necessity. They have shown a lack of foresight in many instances and certainly are still capable of many mistakes. They have a few ideas we can learn something from, but their forestry as a whole does not stand out as a shining example of the best management.

The thing that does stand out is their complete utilization of wood products; but here again its because of necessity.

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