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SUGIZAWA

PLANTATION OF SUGI, 46 YEARS OLD

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

REPORT NUMBER 113

18 September 1948

# REFORESTATION IN JAPAN

GENERAL HEADQUARTERS
SUPREME COMMANDER FOR THE ALLIED POWERS
Natural Resources Section

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725013

NATURAL RESOURCES SECTION
REPORT NUMBER 113
18 September 1948

# REFORESTATION IN JAPAN

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NATURAL RESOURCES SECTION
REPORT NUMBER 113.
18 September 1948

# REFORESTATION IN JAPAN

## SUMMARY

1. Few countries in the world are as dependent upon a complete and productive forest cover as is Japan; complete in order to prevent erosion and floods with all their miserable aftermath, and productive in order to meet the thousand needs of a people--needs that in other countries would be met partly with other materials. With two-thirds of their country classed as forest land, the Japanese have been aware for centuries of the importance of the forest, as witnessed by the age and size of some plantations and the forest history of the Tokugawa Period (1603-1867). When natural reforestation was unsatisfactory it was aided. When entire watersheds were bare, they were artifically reforested, usually with a coniferous species.

2. Artificial reforestation constantly increased through the centuries; not until it reached a high of 336,700 cho in 1942 did it begin to decline. Natural reforestation reached a peak of 361,500 cho in 1941. Prior to that time it had always greatly exceeded artificial reforestation. Beginning in 1942 and continuing to the present, cutting took place annually on more than 700,000 cho, the greater part of which has been clearcut. The proportion of clearcutting as compared to selection cutting increased from 67 percent in 1943 to 88 percent in 1946 and 1947. Total cutting reached a peak of 909,000 cho in 1946.

3. The Bureau of Forestry estimated that as of April 1947 nearly 2,500,000 cho were in need of reforestation, of which 786,000 cho were in the national forests and 1,705,000 cho in private and other ownerships. More than 60 percent of the total is in forests that primarily produced timber, nearly all of which will have to be artificially planted or seeded (as must the 323,000 cho of protection forests that require damage repair and prevention activities) or receive some aid to natural regeneration. One-fourth of the area in need of reforestation normally produced fuelwood, and only one-half of this is considered capable of reforesting naturally. Preliminary data for 1947 indicate that the area in need of reforestation has increased to nearly 2,900,000 cho. More than 2,000,000 cho are in private and other ownerships, while 877,000 cho belong to the national forests.

4. All phases of all reforestation plans in recent years have failed to achieve their original goals by wide margins. The latest national forest plan provides for artificially reforesting 276,000 cho and aiding natural reforestation on 597,000 cho during 1948-52. This is nearly adequate to reforest both the present national forest cutover lands and the areas likely to require only "aid to natural reforestation" after being cut during the program. It does not provide for the areas likely to be clearcut during the course of the program. Clearcutting in national forests has averaged 35,000 cho annually (including some coppice fuelwood stands that reforest naturally) in recent years. A separate "protection forest" five-yoar reforestation plan provides for only 21 percent of national forest requirements.

5. The 1948-52 private forest plan provides for artificially reforesting 1,433,000 cho and aiding natural reforestation on 545,000 cho. This is adequate to erase the present backlog of needs but does not provide for the areas likely to be cut during the program. The "protection forest" five-year reforestation plan provides for only 29 percent of the private forest requirements.

This report was initiated by 1st Lt Robert R. Gilbert; it was revised and completed by Mr Donald J. Haibach, scientific consultant, Forestry Division.

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6. It is encouraging that the trend of accrual of the area in need of reforestation will be halted and started downward by 1951 if the programs are completed as planned. It is recognized, and born out by past performances, that these are ambitious programs and that accomplishment is far from probable. Indications have already appeared that 1948 phases of the programs will be revised downward because of insufficient appropriations. However, the Bureau of Forestry has planned that, if the work falls behind schedule, reforestation will be increased during the latter years of the programs so that the five-year goals can still be achieved.

7. Problems of reforestation include:

a. Inflation causes budgets to be consumed before the fiscal year is well under way.

b. Rumors of forest land reform remove reforestation incentive and accelerate cutting.

c. Fear that the forest land will be purchased for land reclamation is producing effects similar to those resulting from forest land reform rumors.

d. Shortages are serious. The seed supply available for 1948 spring sowing is 88 percent of demand, with an even greater shortage in some of the principal species. Enough seedlings would be available to meet 1948 needs only by creating more serious shortages for the 1949-52 phases of programs. Fertilizer allocations are only 35 percent of requirements. Labor is in short supply because higher wages can be obtained elsewhere; the labor obtained is unskilled and inefficient. Transportation is slow, unreliable, and costly, resulting in high mortality rates when seedlings are shipped. Obtaining loans to finance reforestation is difficult.

## INTRODUCTION

### 1. Importance of Forest Cover

Japan, with its 78,600,000 inhabitants living in an area (37,154,000 cho 1/) about the size of the state of Montana, is more than ever before dependent upon the forests that cover two-thirds of the country. No prefecture has less than 36 percent of its area classed as forest land, and some prefectures are more than 80 percent forested (Figure 1). The rugged topography, unstable soils, extensive coastlines, and heavy precipitation create serious erosion and sand fixation problems. Torrential rainfalls and snowslides in the interior carry soil and debris from denuded slopes and deposit it in the stream beds and on valley floors. Wave and wind action along stretches of barren coast form sand dunes which march relentlessly inland. Field crops are subject to excessive wind damage in many portions of Japan, if not protected by windbreaks.

Trees in the form of forest cover or windbreaks offer the most practicable and economical solution to these problems. Denuded areas must be reforested; forested areas must be so managed that a forest cover is maintained; sand dunes must be planted to suitable tree species, and open fields exposed to high winds must be protected by rows of dense-foliaged trees.

### 2. Importance of Forest Products

The Japanese depend upon wood in a thousand ways in their everyday lives. For instance:

Firewood and charcoal made from wood are Japan's universal heating and cooking fuels. Two-thirds of all wood cut is for charcoal and firewood.

1/ One cho equals 2.451 acres or 0.992 hectares.

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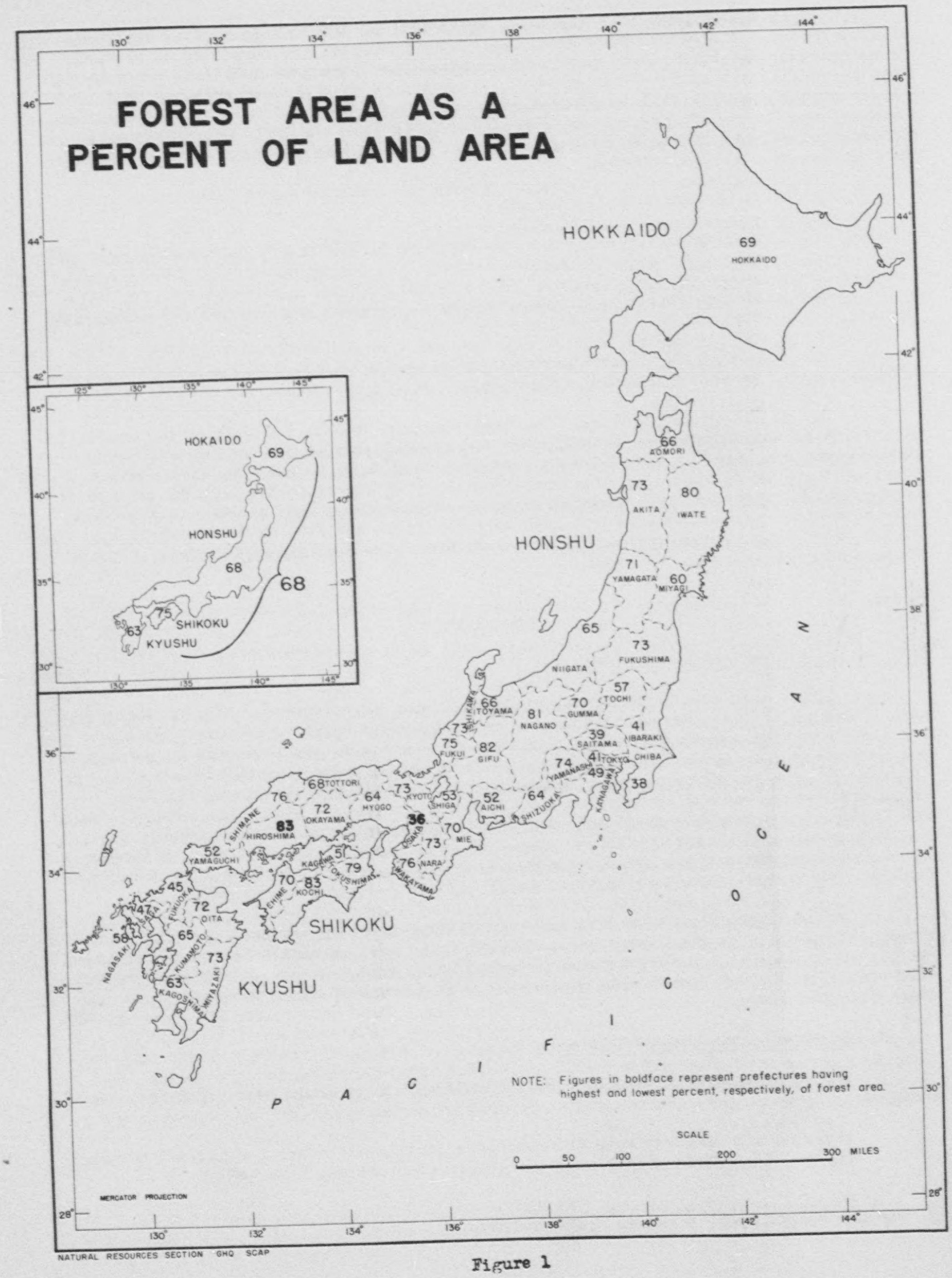


Figure 1

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Ninety-nine percent of the houses in Japan are made of wood.

Railroad lines cannot be built or maintained without wooden ties.

Mines cannot be operated without wooden mine props.

Nearly all native furniture is made of wood or bamboo.

Paper from wood fiber probably has more uses than in any other country.

None of these uses is adequately supplied.

Because Japan's need for wood in all forms is desperate, all areas capable of supporting forest growth but incapable of serving any higher usefulness (such as food production) must be devoted to the production of continuous crops of forest products.

## REFORESTATION PRACTICES

### 1. Natural Reforestation

Reforestation is accomplished by two methods, natural and artificial. Natural reforestation is the result of unaided biological processes. These processes are:

a. Coppicing, the sprouting of stumps of cut trees (Figure 2).

b. Root-suckering, the sprouting of roots of cut or standing trees.

c. Layering, the forming of new trunks by branches which have rooted after coming into contact with the soil through snow action or natural tendency.

d. Natural seeding, the germinating of seeds of the parent tree to produce new trees (Figure 3).

Until 1941 2/, natural reforestation outdistanced artificial reforestation two to one (Figure 4 and Table 1). Even in that year, it reached a peak of 361,500 cho. The majority of the natural reforestation has always occurred in the broadleaved and mixed types. This is mainly because of the large areas of broadleaved stands (and some mixed stands) that are managed under the "coppice" system, primarily to produce fuelwood (Figure 5 and 6). Not until these trees have been cut five or more times during a hundred-year period do they lose their vigor and have to be artifically replaced. Natural reforestation of conifers continued to increase until 1942. This was in line with the upward trend of selection cutting in coniferous stands that was occurring at the same time.

In order to insure satisfactory natural reforestation, particularly in timber stands 3/, it is necessary to follow such silvicultural practices as selection cutting or leaving seed trees in some form. Natural reforestation is often aided by such cultural treatments as clearing debris, scarifying the soil, thinning overdense reproduction, or cutting excess sprouts. When nature has failed to provide a complete stocking, it is also common practice to institute supplementary planting. These activities are known as "aid to natural reforestation". Private forest statistics, unlike those of the national and former imperial forests, report these activities as artificial reforestation. The reader should remember, when examining charts and tables involving private forest statistics, that artificial reforestation data represent more than hand-seeded and -planted areas. Often several years pass before natural reforestation has reached a satisfactory degree so that the Japanese record it as such.

2/ The Japanese fiscal year, 1 Apr-31 Mar, is used throughout this report.
3/ Used here to designate stands whose primary production is other than fuelwood.

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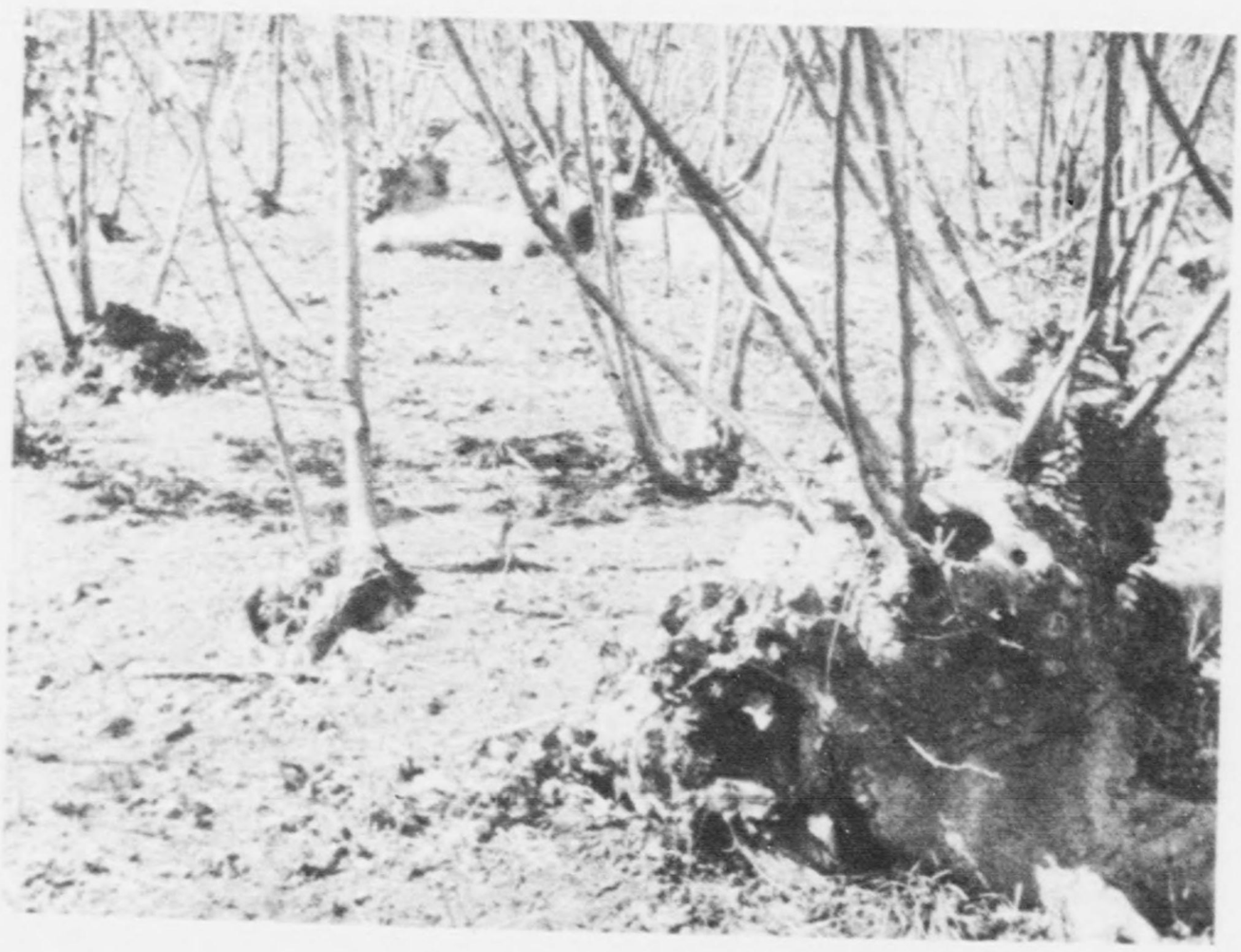

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Figure 2. - Coppice stand (Quercus sp.), from which the sprouts are cut periodically for fuel. Sprouts shown are approximately three years old. Tokyo Prefecture, 1946.

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Figure 3. - Natural reforestation. Kochi Prefecture, 1945.

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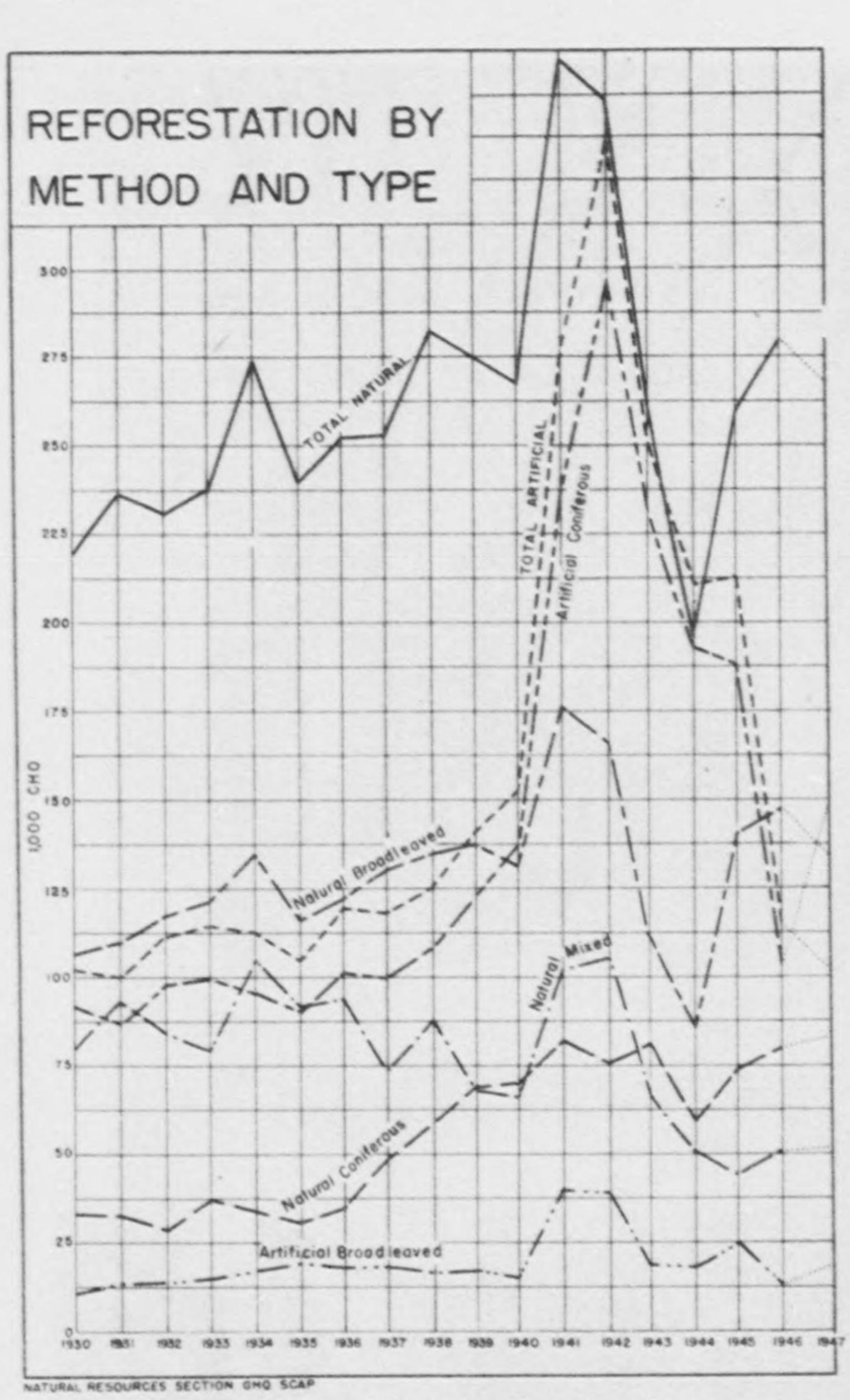


Figure 4

## 2. Artificial Reforestation

Artificial reforestation is the result of planting tree seedlings, transplants (Figure 7), or cuttings, or the hand sowing of tree seed. Until World War II, natural reforestation constantly surpassed artificial reforestation by large margins (Figure 4 and Table 1). However, artificial reforestation increased constantly and in 1942 reached a record 336,700 cho.

The most commonly planted trees are coniferous or needleleaved species (Table 2). The most important species used in Naichi 4/ are sugi (Japanese redwood, Cryptomeria japonica, Figure 8), hinoki (Japanese cedar, Chamaecyparis obtusa), akamatsu (red pine, Pinus densiflora), kuromatsu (black pine, Pinus thunbergii), and karamatsu (larch, Larix kaempferi). It is noteworthy that sugi and hinoki, the two species most extensively used, cannot be depended upon to reproduce naturally. In Hokkaido, the principal conifers planted are todomatsu (white fir, Abies mayriana), karamatsu, ezomatsu (spruce, Picea jezoensis), and European spruce (Picea excelsa). Yachidamo (ash, Fraxinus mandschurica, var. japonica) and kuri (chestnut, Castanea crenata) are the most common broadleaved species planted in Hokkaido, and for the rest of Japan, kunugi (red oak, Quercus acutissima) and, to a lesser extent, kuri and kusu (camphor, Cinnamomum camphora) predominate.

A mixture of species is rarely used in a plantation, although several species may be block planted on the same slope. Common practice in Naichi is to plant sugi on the best site - the valley or lower slope (Figure 9), hinoki on the middle or upper slope, and akamatsu on the ridge top or upper slope. In such a forest the sugi and hinoki are managed by clearcutting (Figure 10) or group selection followed by planting, while the pine is selectively cut and dependence is placed on natural seeding.

Spring planting is customary although in northern Japan autumn planting is common. Areas that require artificial reforestation are usually planted from one to three years after cutting. In private forests, food crops may replace trees for several years after cutting and before tree planting is attempted (Figure 11). This has led, in some areas, to attempts by tenant farmers to wrest from the forest owners this land which is best suited to forestry on a long-range basis.

Conifers are usually planted at the rate of 3,000 to 4,500 trees per cho, although in the Yoshino district in Nara Prefecture, which supplies most of Japan's rural areas with long, slender poles for rice-drying racks, as many as 8,000 (sugi) are planted. Kuri is planted at the rate of 1,500 per cho, because a branchy, nut-producing tree is desired. For most other broadleaves, 2,000 to 2,500 per cho are used. No attempt is made to keep more than an approximate spacing.

4/ Honshu, Shikoku, and Kyushu.

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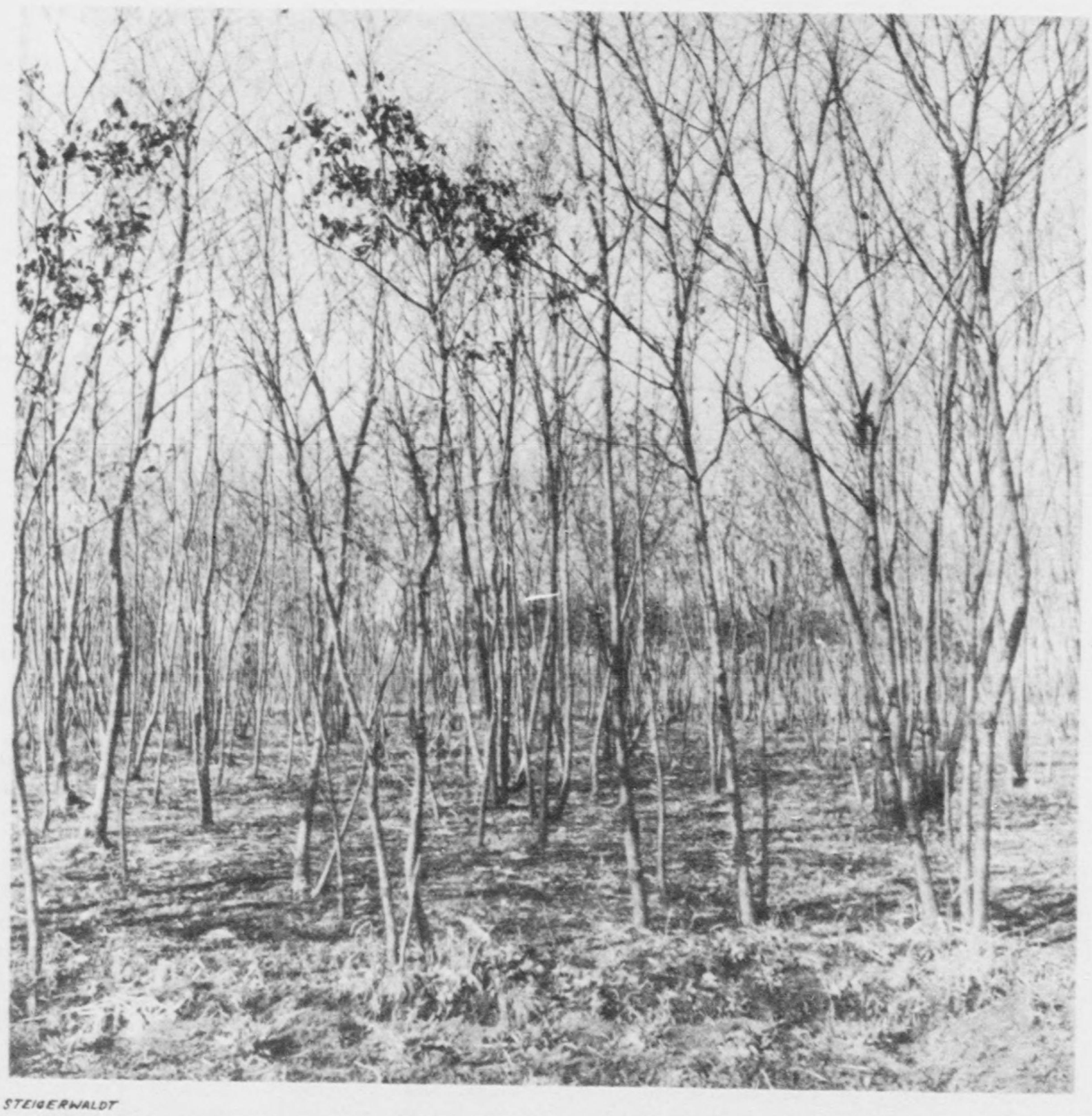

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Figure 5. - Typical oak coppice fuelwood stand that was cut for charcoal material six years earlier. Tokyo Prefecture, 1946.

Site preparation usually consists of clearing away grass, weeds, and debris from the planting spots. In some grassland sites, parallel strips 1 1/2 meters wide are cut through the grass (Figure 12). Fertilizer is rarely used in field planting. After-care in the form of cutting weed and grass competition from around the tree usually continues from two to five years after planting. Mortality at the end of the first year is about 20 percent in sugi and hinoki and five percent in pine. At this time fail spots are replanted, but losses in later years, unless covering considerable area, are not.

Direct seeding is not common throughout Japan. It has been practiced, however, on national forests in southern Japan since 1916. Some prefectures have also reforested by this method. About five seeds are sown in a spot or hole and covered with rice hulls or a sprinkling of soil. A 70 percent plant percentage 5/ is usually attained after one year.

5/ Percent of the number of clean seed sown that develops into utilizable one-year-old seedlings

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Figure 6. - Hardwood coppice area recently cut for fuelwood. A 27-year-old sugi-hinoki plantation is in the background. Tokyo Prefecture, 1946.

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Figure 7. - Planting seedlings on a national forest in Shikoku. Kochi Prefecture, 1945

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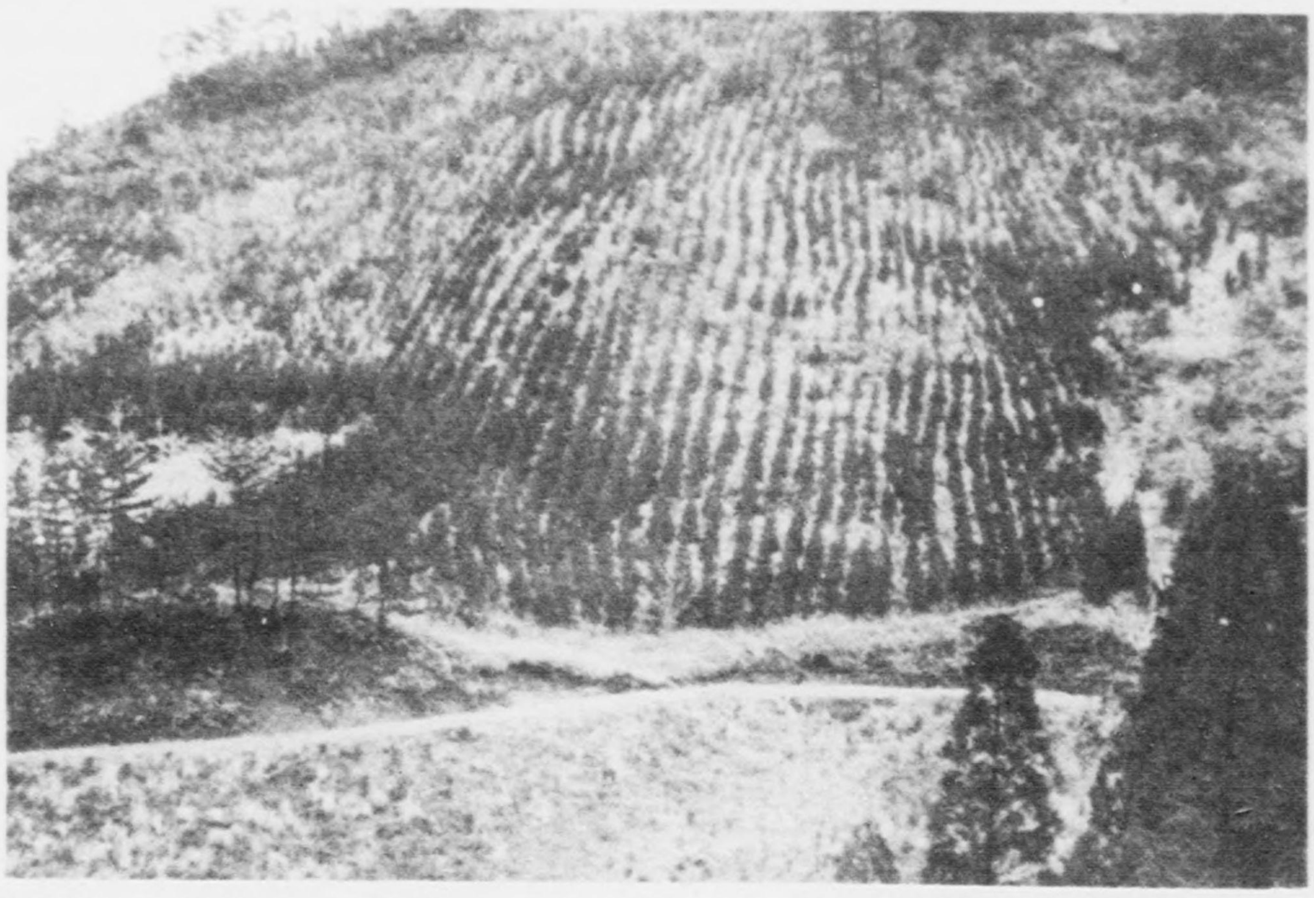
SUGIZAWA

Figure 8. - Sugi plantation, 200 years old, in northern Honshu. The height averages 40 meters, the volume 1,000 cubic meters per hectare. Akita Prefecture, 1935.



MARKELL

Figure 9. - Lower slopes planted to sugi. Miyazaki Prefecture, 1946.

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Figure 10. - Clearcutting a 50-year-old sugi stand. Miyagi Prefecture, 1946.

In southern Japan the planting of sugi cuttings has been practiced for some time. Hiba (Japanese cedar, Thujopsis dolabrata) and hinoki cuttings have been used to a limited extent in recent years. Freshly cut branches are nursery planted and allowed to take root (Figure 13). They are then field planted or transplanted for a year before field planting. This practice is at least 200 years old in some areas. It is being used more extensively this year because of planting stock shortages.

### 3. Nurseries

Production of nurseries naturally follows the same trends of "area planted by species". Since 1932, it has never fallen much below a half billion seedlings a year (Table 3). Private nurseries have accounted for the bulk of production, and sugi, hinoki, matsu, and karamatsu are the main species produced. Karamatsu has been finding more favor in recent years because of its fast growth. Todomatsu and ezomatsu are the principal species produced in Hokkaido. Kunugi is by far the most extensively produced broadleaved tree in Japanese nurseries.

Planting stock, by American standards, is large. One-year-old coniferous seedlings are seldom field planted except on some national forests where matsu has been used. Usually 1 - 1 6/ stock of this species is planted. Sugi is usually 1 - 1 or 1 - 1 - 1, while hinoki is 1 - 1 - 1. Broadleaved stock is usually 1 - 1, although sometimes 1 - 0.

In October 1946, about 3,000 nurseries were reported, well distributed throughout Japan, with a seedbed area of 2,100 cho. Most of these are extremely small by American standards, ranging in size from one tan 7/ to 3 1/2 cho. More than 75 percent of the nurseries, having a seedbed area of 990 cho, were operated by farmers, forest cooperatives 8/, or communities. At that time an increase in their seedbed area by 631 cho was planned. A total seedbed area of 5,550 cho, of which 3,800 cho will be privately owned is planned by mid-1948. Private forest owners also draw on the literally thousands of unreported nurseries in these same ownerships that range downward to one se 9/ in size. Those operated by farmers average five se and are always intermingled with rice paddies and other food and fiber crops. Records are not kept on their number nor area as their operation is a sideline to foodstuff production.

Prior to consolidation with national forests on 1 April 1947, 1,302,241 cho of forest land in Japan were owned and managed as imperial forests. The Imperial Forest and Estates Bureau maintained 255 nurseries which had a combined area of 840 cho (522 cho of seedbed area, nearly one-half of which was being used for food production in 1946). This

6/ Indicates class of planting stock. The first number indicates the number of growing seasons in the seedbed, and subsequent numbers indicate the number of growing seasons in different transplant beds.
7/ One tan equals 0.1 cho, or 0.245 acres.
8/ Forest cooperatives or forest owner associations (Shinrin Kumiai)
9/ One se equals 0.01 cho or 0.025 acres.

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GROBER

Figure 11. - Forest area cleared of timber and converted to "farm land" instead of being reforested. Nara Prefecture, April 1946.

was one cho of nursery per 1,550 cho of forest land. Generally, one cho of nursery is deemed necessary for each 2,000 cho (in Hokkaido 1,000 cho) of clearcut managed forest 10/. Selectively cut areas require about 20 percent of this amount for supplementary planting.

National forests' reforestation and nursery activities are decentralized through 14 forest regions. Each establishes and maintains sufficient nurseries to provide for its own national forest needs, and for part of the planting stock needed to fulfill its contracts to reforest community lands. In 1946, prior to absorbing the imperial forests, the Bureau of Forestry, through six regional offices, operated several hundred nurseries totaling 548 cho. The Bureau planned to increase this area by more than 500 cho to meet the great need for stock brought about by the increased cutting and decreased planting of the war years. In April 1948, the Bureau of Forestry reported the 1947 land usage of its 2,562 cho of nurseries as shown in Table A.

In order to implement its new five-year reforestation plan, the Bureau of Forestry has drawn up the plan in Table B on page 18 for expanding its nursery area. Note that a high percentage is constantly allocated to food production.

TABLE A. - LAND USE IN NATIONAL FOREST NURSERIES, 1947

| Land Use | Area | Land Use | Area |
|---|---|---|---|
| Seedbed and transplant bed area | | Other | |
| Area producing seedlings | 500 | Roads and paths | 159 |
| Area producing food | 971 | Windbreaks | 261 |
| Soiling crop (approximately half was available for seedling production) | 558 | Building sites | 113 |
| | | Subtotal | 533 |
| Subtotal | 2,029 | | |
| | | TOTAL | 2,562 |

10/ Based on one cho of nursery producing 100,000 seedlings (50,000 in Hokkaido) annually, the 2,000-cho forest being operated on a 100-year rotation and a one-year cutting cycle (clearcutting 20 cho annually), and planting 4,500 seedlings per cho.

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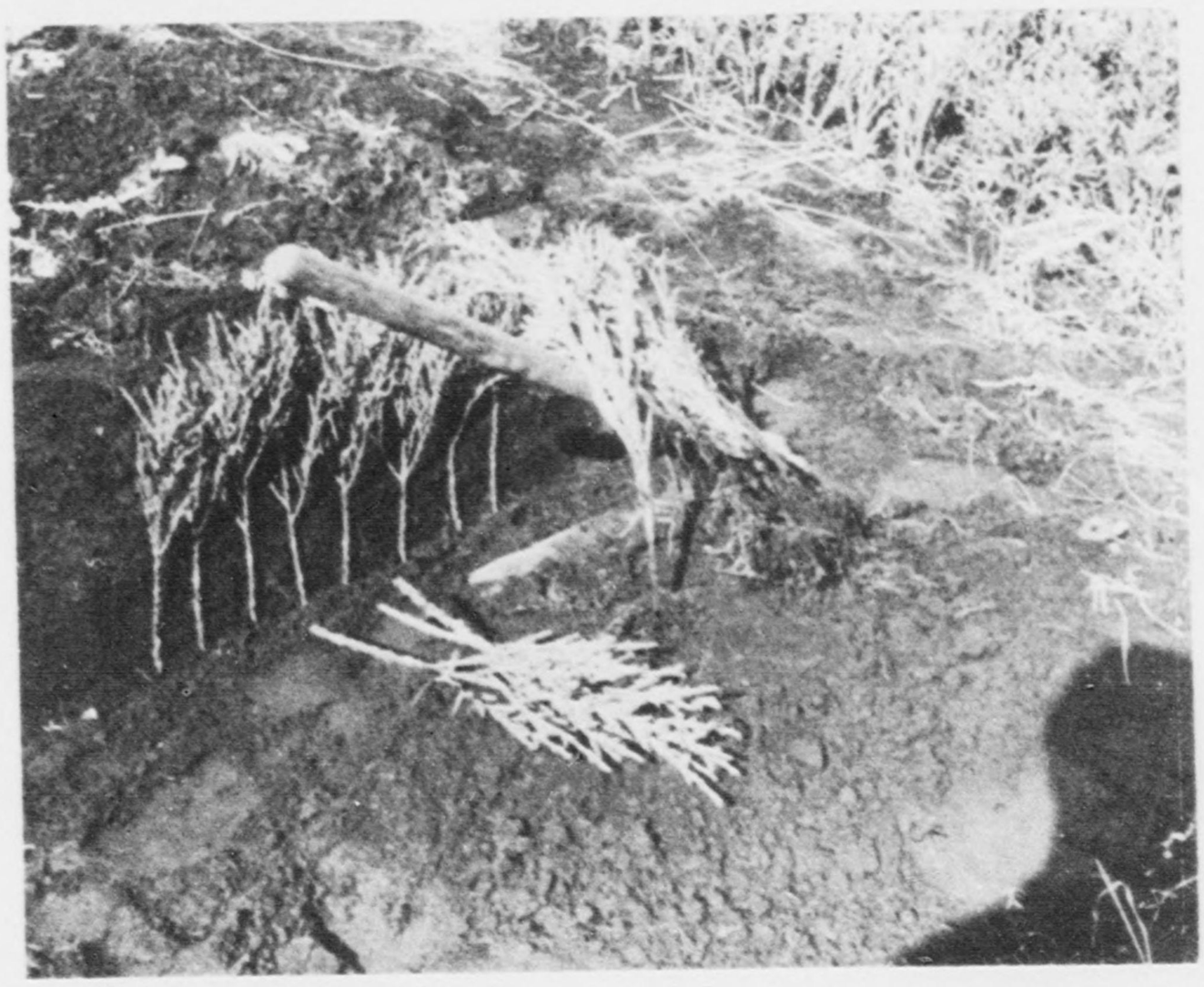
Figure 12. - Strips cut in shelterwood in preparation for reforestation. Strips are 1.5 meters wide. Hokkaido, June 1946.



HUBERMAN

Figure 13. - Sugi cuttings at nursery. Cuttings on left are ready for nursery planting. Cuttings on right have been in nursery bed one year and, having taken root, are now ready for field planting. Miyazaki Prefecture, February 1946.

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TABLE B. - EXPANSION PLAN OF NATIONAL FOREST NURSERIES, 1947-50
(cho)

| Year | For Seedlings | For Food | For Soiling Crops | For Building Sites | For Paths and Roads | For Windbreaks | Acquired and Readied a/ | Total |
|---|---|---|---|---|---|---|---|---|
| 1947 | 500 | 971 | 558 | 113 | 159 | 261 | 0 | 2,562 |
| 1948 | 832 | 493 | 416 | 130 | 184 | 301 | 585 | 2,941 |
| 1949 | 1,208 | 400 | 605 | 150 | 212 | 348 | 490 | 3,413 |
| 1950 | 1,395 | 350 | 697 | 166 | 234 | 385 | 515 | 3,742 |

a/ For use the following year

Although seedbeds of the smaller nurseries are intermingled with food crops, the transplant beds are apt to be some distance away on the less fertile hill slopes -- often adjacent to the forest area where the stock will be planted. Even the larger nurseries, owned by companies, prefectures, or the Bureau of Forestry and including seedbeds, transplant beds, and other nursery activities in one operational unit, frequently plant the stock in transplant beds in or adjacent to the final planting area for at least one growing season (Figure 14).

KOCHI REGIONAL FOREST OFFICE

Figure 14. - Women workers transplanting seedlings in a newly developed national forest nursery in Shikoku. Kochi Prefecture, 1945.

Because of the small size of nurseries, all work is done by hand. Hand work prevails even in the largest nurseries (Figure 15). Fertilizers are often used in the seedbeds, but their present scarcity precludes their use to any extent in transplant beds. This often means that the seedlings must remain in transplant beds an additional year.

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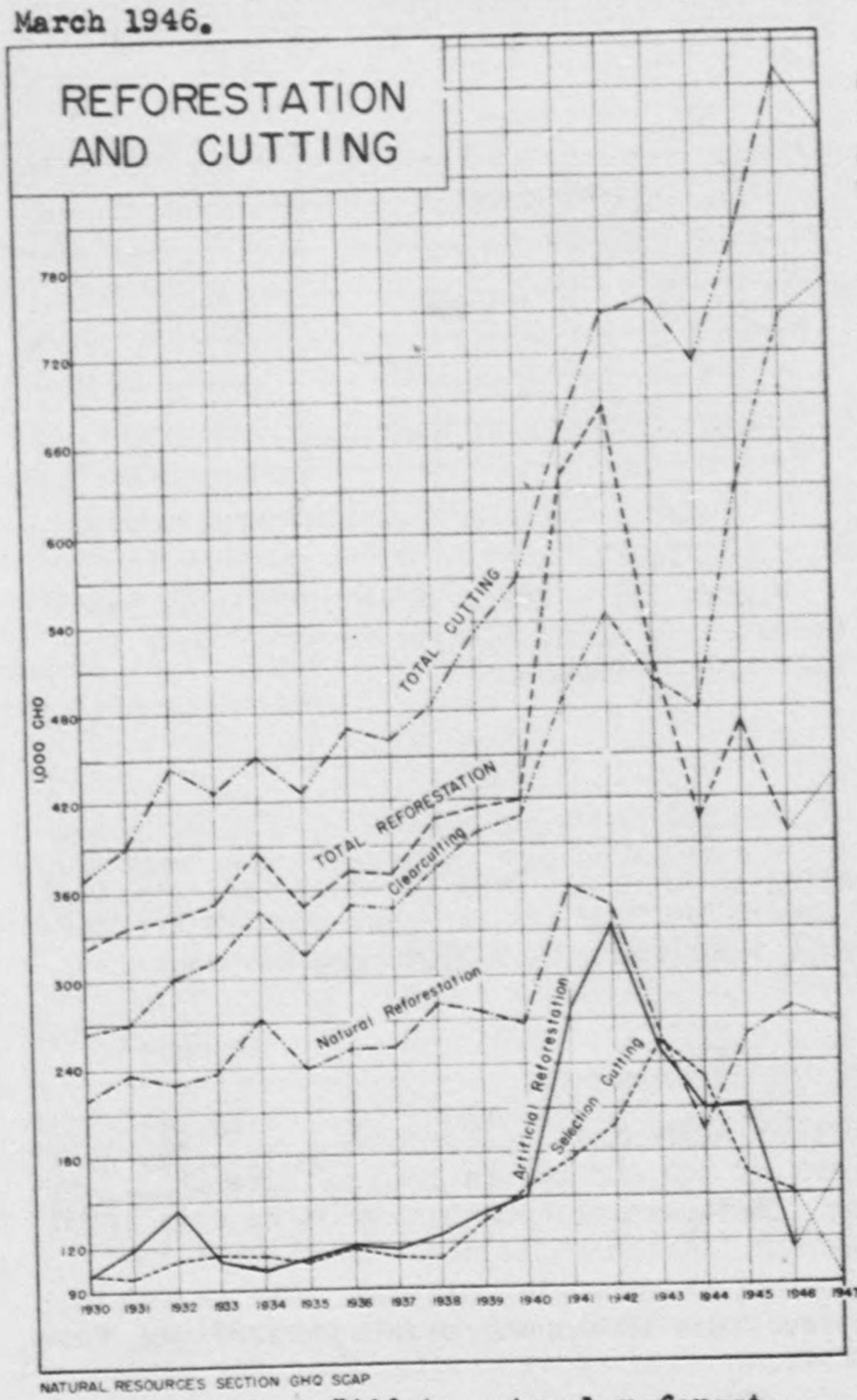
STEIGERWALDT

Figure 15. - Workers preparing seedbeds in national forest nursery in central Japan. Nagano Prefecture, March 1946.




NATURAL RESOURCES SECTION GHQ SCAP

Figure 16. - "Aid to natural reforestation" area is included in artificial reforestation in private forest data, and in natural reforestation in national and former imperial data. Data for 1947 are estimates.

Principal fertilizers are ammonium sulfate, superphosphate of lime, animal manure, wood ashes, and straw. Soybean and clover are used for soiling crops. Mortality in seedbeds is sometimes great because of sun scald, drought, insects, and disease. Straw mats are used for shade, irrigation is often practiced, and insecticides and fungicides are used when available.

## SITUATION AND PLANS

### 1. General

Beginning with the China Incident in 1937, Japan's need for forest products increased greatly. The rate of cutting was increased (Figure 16). For the first five years of this period, while the nation was confident of victory, conditions made it practical to keep reforestation nearly abreast of cutting. As the war progressed, shortages in materials and manpower developed. Overcutting continued; reforestation lagged. In 1943, reforestation dropped to 513,000 cho, of which 49 percent (including aid to natural reforestation on private forests) was by planting. The following year it declined to 407,000 cho, of which 52 percent was planted. Reforestation was nearly the same in 1946 (397,000 cho), but only 29 percent was planted. Meanwhile, cutting occurred on more than 700,000 cho each year, reaching 909,000 cho in 1946, most of which was clearcut. The proportion of clearcutting as compared to selection cutting also increased from 67 percent in 1943 to 98 percent in both 1946 and 1947.

Cutting has always exceeded reforestation in both the broadleaved and mixed types of forest (Figures 17 and 18). This condition did not prevail in the coniferous type until 1946 (Figure 19). The Bureau of Forestry estimated that, as of April 1947, nearly 2,500,000 cho were in need of reforestation (Figure 20 and Table 4). More than 60 percent of this is in forests that primarily produced timber. Nearly all of this will have to be artificially planted or seeded, as will the 323,000 cho of protection forest needing damage repair and prevention work, or will have to receive some aid to natural regeneration. Nearly one-fourth of the total area in need of reforestation (580,000 cho) normally produced fuelwood, and only one

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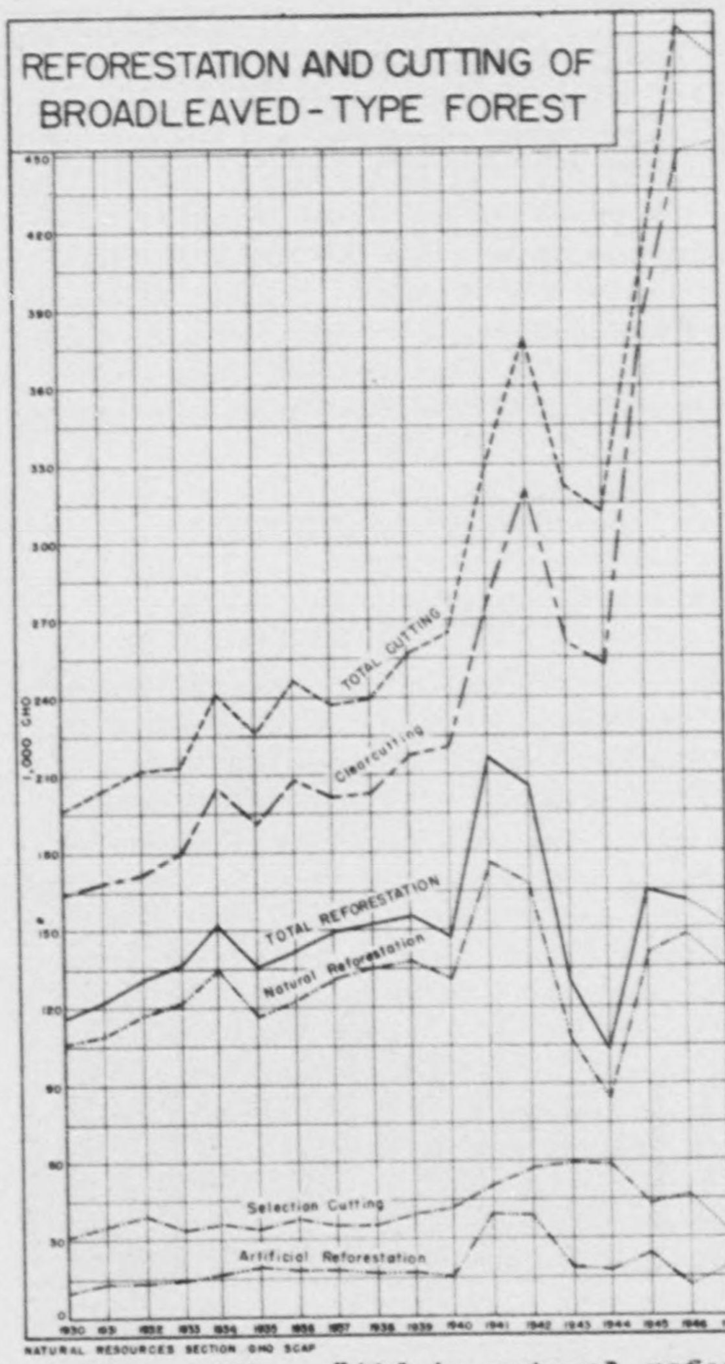


Figure 17. - "Aid to natural reforestation" area is included in artificial reforestation in private forest data and in natural reforestation in national and former imperial forest statistics. Data for 1947 are estimates.

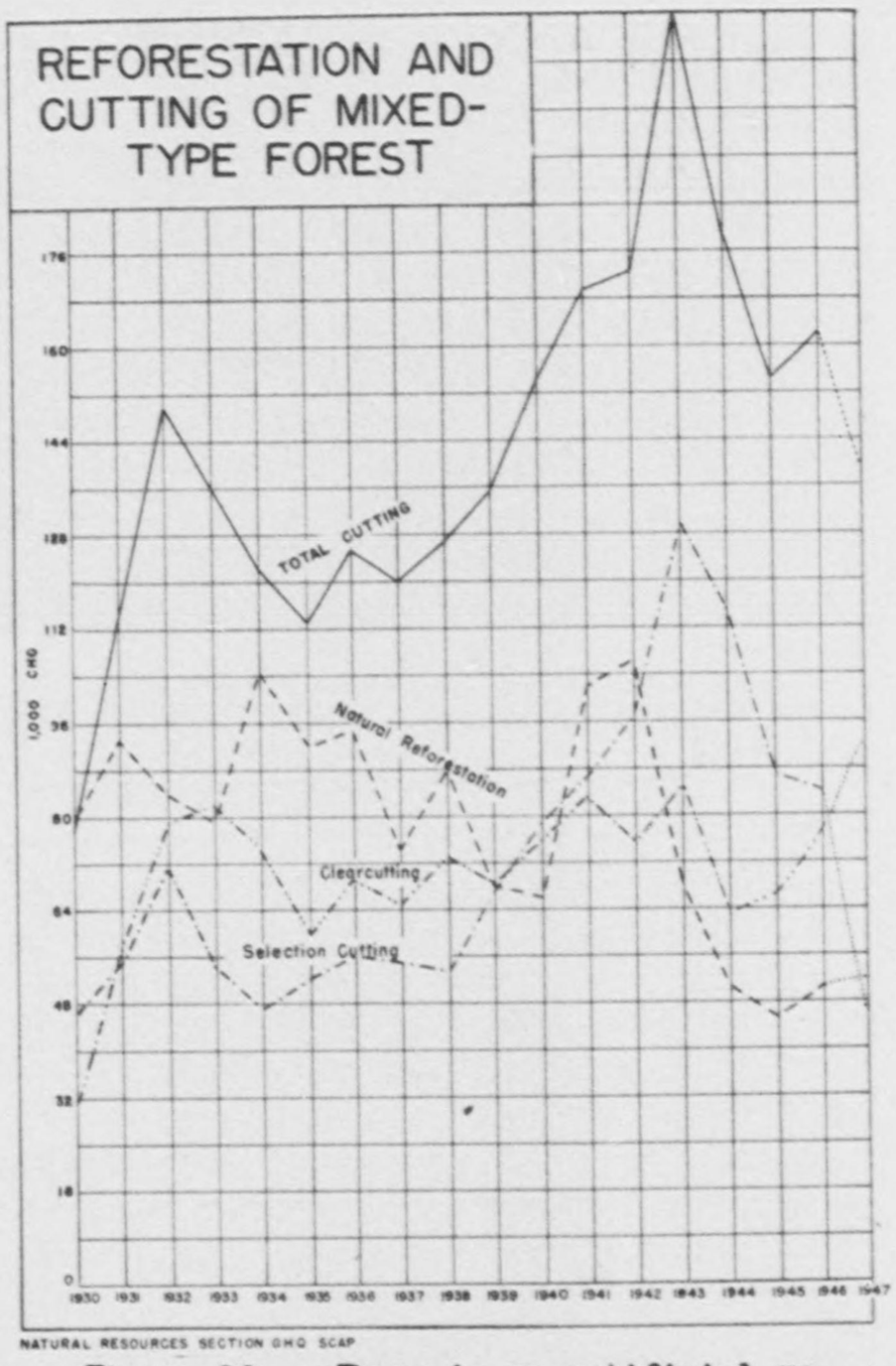


Figure 18. - There is no artificial reforestation in mixed-type forest. Data for 1947 are estimates.

half of this is considered capable of reforesting naturally. Data for 1947 indicate that the balance, or rather the lack of balance, between cutting and reforestation in all forest types has continued to date, with the result that nearly 2,900,000 cho now require reforestation.

## 2. National Forest

Even the national forests felt the effect of Japan's adoption of a warlike course, as cutting thereafter climbed steadily to a peak of 280,000 cho in 1943 (Figure 21). However, two-thirds of this was selection cutting. Reforestation continued on an even level (90,000 cho) until 1944, when it declined slightly. Although it might be thought that natural reforestation should follow the same trends as selection cutting, this is not always the case. An area that is reported as being selectively cut is not reported as being naturally reforested until an adequate degree of stocking is obtained. This may be several years after the final cut of a rotation has been made.

In March 1945 the Bureau of Forestry reported 184,000 cho of national forest in Honshu, Kyushu, and Shikoku in need of reforestation. To meet this situation and to provide in part for the reforestation of currently logged lands, the plan as shown in Table

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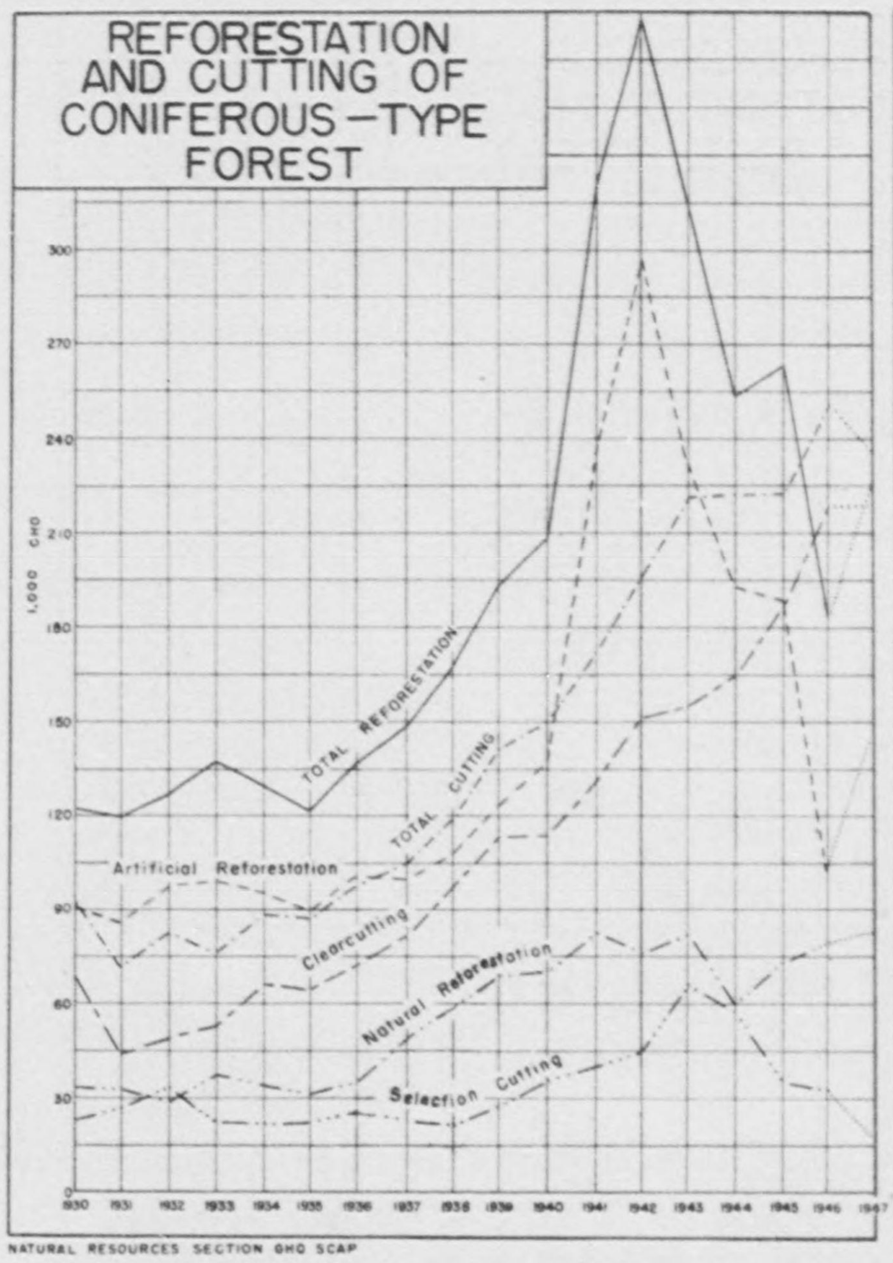


Figure 19. - "Aid to natural reforestation" area is included in artificial reforestation in private forest data, and in natural reforestation in national and former imperial forest statistics. Data for 1947 are estimates.

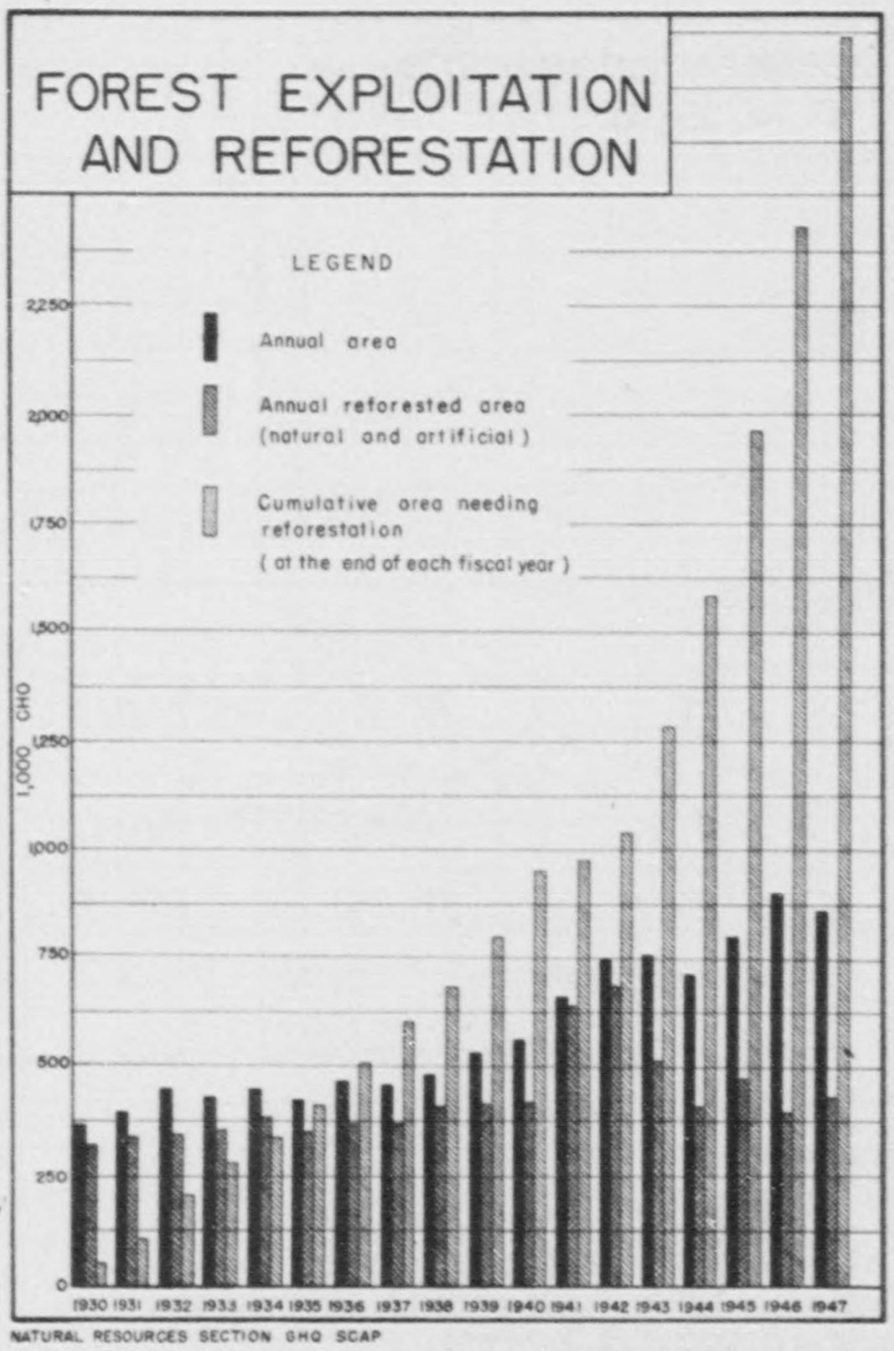


Figure 20. - This chart applies only to forest area and does not include sand dune area and areas requiring planting for damage prevention. Data for 1947 are estimates.

C was made. The plan also provided for the care of prior plantings, the care of plantations made under the plan, the collection of seed, and the operation of nurseries.

TABLE C. - NATIONAL FOREST REFORESTATION PLAN IN NAICHI a/, 1946-50
(cho)

| Project | 1946 | 1947 | 1948 | 1949 | 1950 | Total |
|---|---|---|---|---|---|---|
| Artificial planting | 17,422 | 30,366 | 24,579 | 24,579 | 24,579 | 121,525 |
| Aid to natural reforestation | 17,421 | 28,712 | 23,238 | 23,238 | 23,238 | 115,847 |
| TOTAL | 34,843 | 59,078 | 47,817 | 47,817 | 47,817 | 237,372 |

a/ Honshu, Shikoku, and Kyushu.

Prior to 1 April 1947, the national forests in Hokkaido were not under the jurisdiction of the Bureau of Forestry of the Ministry of Agriculture and Forestry. Instead, the Hokkaido Prefectural Forest Service managed them in conjunctinn with their extensive prefectural forests, for the Ministry of Home Affairs. The Ministry had planned to reforest more than 400,000 cho, of which 93,000 cho were barren land, 24,000 were sand dune

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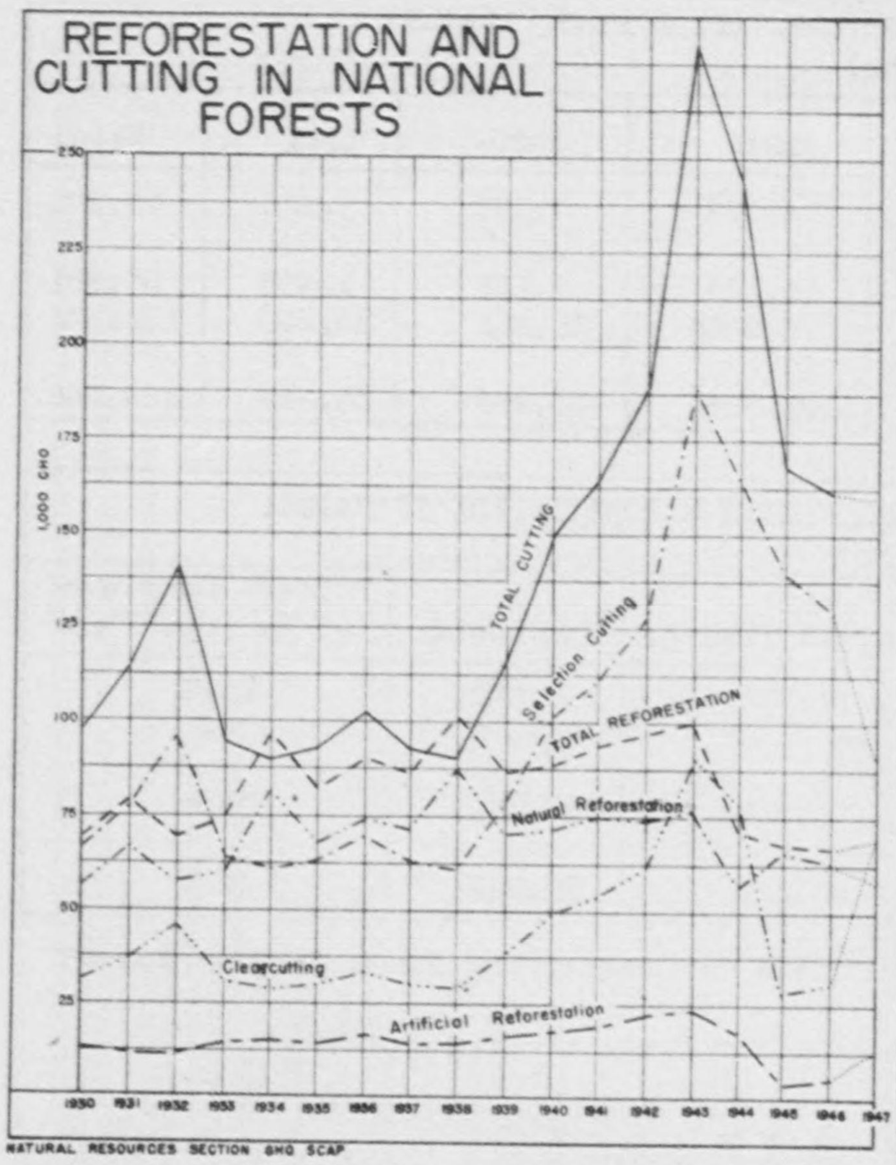


Figure 21. - "Aid to natural reforestation" is included in natural reforestation. Estimates for 1947 include the former imperial forests.

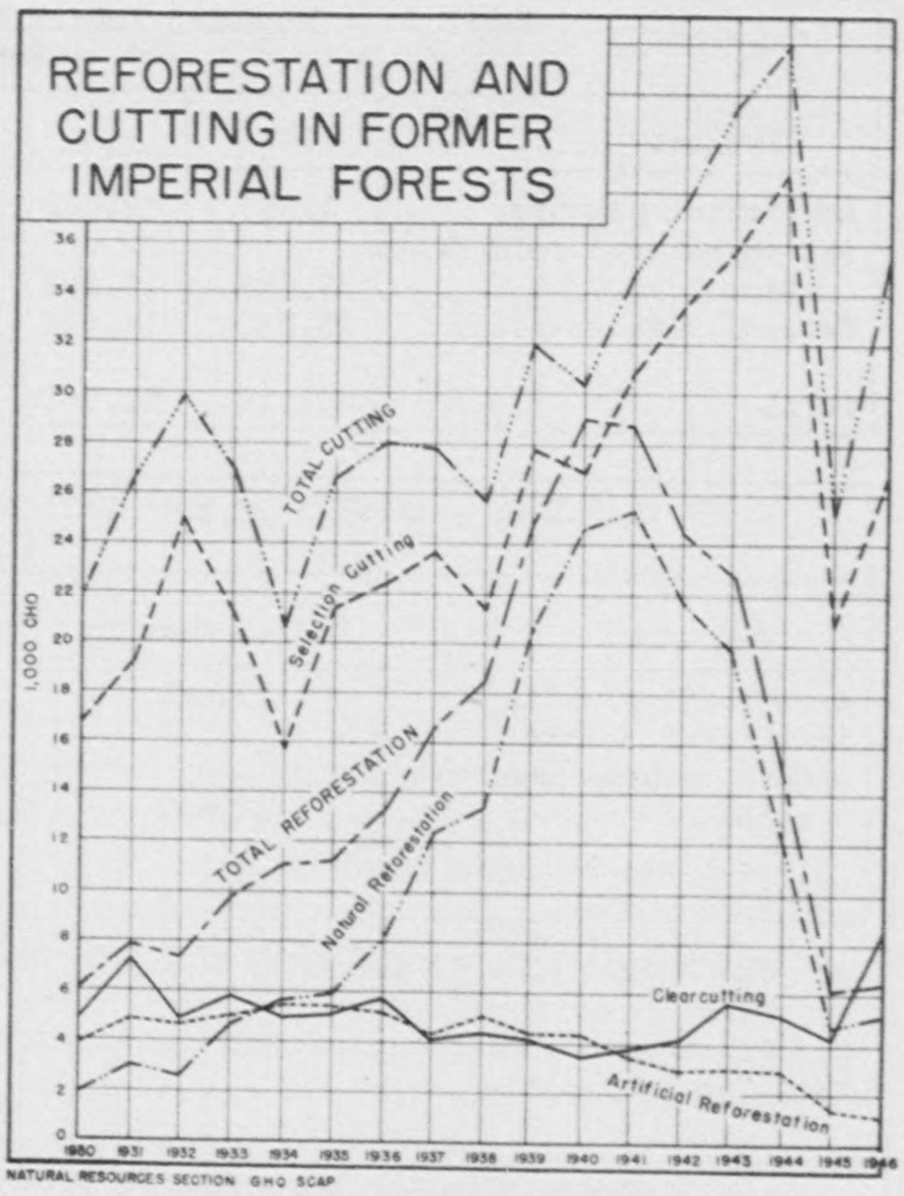


Figure 22. - "Aid to natural reforestation" is included in natural reforestation. No estimates are made for 1947 as these forests were absorbed by the national forests.

areas, 70,000 windbreak sites, 58,000 scrub hardwood areas, and 153,000 cutover lands and areas that had not naturally reforested. It was estimated in 1946 that it would be necessary to plant 50,000 cho a year for 20 years to bring reforestation in Hokkaido up to date and to balance cutting.

Prior to consolidation with national forests 1 April 1947, more than 1,302,000 cho of forest land in Honshu and Hokkaido were managed by the Imperial Forests and Estates Bureau of the Imperial Household Ministry. Beginning in the late 1930's, cutting followed the same upward trend that it did on other forest land, reaching a peak of 44,000 cho in 1944 (Figure 22). Practically all of this was selection cutting, however. Natural reforestation, which included supplementary planting as an aid to natural reforestation, was constantly increasing. By 1942, shortages brought about by the war had made themselves felt, and aid to natural reforestation was curtailed. By 1945, artificial reforestation had dropped below the level maintained during the war years of 1942, 1943, and 1944. About 85,000 cho were in need of reforestation at the time of the consolidation with the national forests in 1947. As an annual cut of 35,000 cho was contemplated--only 10 percent of it clearcut--a plan with the emphasis on natural reforestation had been outlined as shown in Table D, page 23.

The national forest 1946 reforestation plan, although revised downward, still fell far short of its goal as indicated in Table E, page 23.

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| TABLE D. - IMPERIAL FOREST REFORESTATION PLAN, 1947-51 (cho) | | | | | | |
|---|---|---|---|---|---|---|
| Project | 1947 | 1948 | 1949 | 1950 | 1951 | Total |
| Artificial planting | 1,652 | 2,042 | 3,093 | 3,077 | 3,336 | 13,200 |
| Aid to natural reforestation | 12,096 | 14,183 | 15,329 | 7,605 | 1,468 | 50,681 |
| Natural reforestation | 13,370 | 14,616 | 16,934 | 25,225 | 30,240 | 100,385 |
| TOTAL | 27,118 | 30,841 | 35,356 | 35,907 | 35,044 | 164,266 |

| TABLE E. - RESULTS OF 1946 NATIONAL FOREST REFORESTATION IN NAICHI (cho) | | | | |
|---|---|---|---|---|
| Project | Budget Plan a/ | Revised Plan b/ | Completed | Percent Completed of Revised Plan |
| Artificial planting | 17,422 | 17,608 | 3,642 | 20.7 |
| Artificial seeding | 0 | 0 | 7 | NA |
| Aid to natural reforestation | 17,421 | 11,927 | 11,393 | 95.5 |
| TOTAL | 34,843 | 29,535 | 15,042 | 50.9 |

a/ The budget plan is drawn up to serve as a basis for requesting funds for the fiscal year.

b/ Plans are usually revised one or more times after funds are received.

NA: Not applicable.

Reforestation on the national forests in Hokkaido was accomplished on only 7,028 cho, of which only 1,208 were artificially reforested. In the imperial forests, only 6,458 cho were reforested, 1,240 cho artificially. Even with reforestation during 1946 falling far short of the annual goal set for subsequent years, the reforestation problem on the former imperial forests is not serious, because of the high percentage of selection cutting. Experience has shown that only 20 percent of selectively cut areas need assistance to become satisfactorily reforested.

As the 1947 fiscal year was the first year in which the national forests in Hokkaido and the imperial forests were to be administered as national forests, the Bureau of Forestry combined the 1947 phases of the three plans. Following its revision in September 1947, the degree of completion of the plan was:

| TABLE F. - PROGRESS OF 1947 NATIONAL FOREST REFORESTATION (cho) | | | | | |
|---|---|---|---|---|---|
| Project | Budget Plan | Revised Plan | Completed Sep 47 (end of 2nd qtr) | Anticipated Completion | Anticipated Percent of Completion of Revised Plan |
| Artificial planting | 39,005 | 16,000 | 3,836 | 12,260 | 76.6 |
| Artificial seeding | 0 | 0 | 0 | 16 | NA |
| Aid to natural reforestation | 53,976 | 37,800 | 18,900 | 37,800 | 100 |
| TOTAL | 92,981 | 53,800 | 22,736 | 50,076 | 93.1 |

NA: Not applicable

In view of past estimates on completion of reforestation plans, it is doubtful if the degree of completion anticipated will be realized.

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The Bureau of Forestry formulated, in October 1947, a new five-year reforestation plan adapted to current economic conditions, the absorption of the national forests of Hokkaido and the imperial forests into its administration system, and a resurvey of reforestation needs. More than 786,000 cho of national forest lands were reported to be in need of reforestation as of April 1947. Sixty-six percent (518,000 cho) of it primarily produced timber, and 30 percent (231,000 cho) produced fuelwood. The remainder is protection forest and sand dune areas. Only 6 percent (33,000 cho) of the timber-producing area and 44 percent (101,000 cho) of the fuelwood-producing area can be expected to reforest naturally. Most of the artificial reforestation needed is in the form of aid to natural reforestation (348,000 cho), and only 266,000 cho will require planting. Data for 1947 indicate that the area in need of reforestation has increased to 877,000 cho. In March 1948, the Bureau of Forestry expected the national forest phase of the plan to be approved by the Japanese Diet as follows:

TABLE G. - NATIONAL FOREST REFORESTATION PLAN, 1948-52
(cho)

| Project | Area in Need a/ | 1948 | 1949 | 1950 | 1951 | 1952 | Total | Percent of Need b/ |
|---|---|---|---|---|---|---|---|---|
| Artificial planting | 253,641 | 20,408 | 34,095 | 47,000 | 79,000 | 95,374 | 275,877 | 108.8 |
| Aid to natural reforestation | 310,153 | 64,141 | 81,516 | 100,000 | 175,000 | 175,964 | 596,621 | 192.4 |
| TOTAL | 563,794 | 84,549 | 115,611 | 147,000 | 254,000 | 271,338 | 872,498 | 154.8 |

a/ Area in need of reforestation as shown by the 1947 survey minus area on which completion of reforestation is anticipated in 1947. Does not include the anticipated 64,644 cho of clearcutting and 95,389 cho of selection cutting for 1947, as the method and type of reforestation required on this additional area cannot be determined.
b/ In view of the preceding footnote, these percentages would be somewhat lower.

The plan provides for nearly all of the areas currently in need of reforestation and the areas that will probably require only aid to natural reforestation after being cut during 1948-52. It does not provide for the areas clearcut during the program. In recent years the clearcut area has approximated 35,000 cho annually, including some of the coppice fuelwood stands that, although clearcut, reforest naturally. In 1947 more than 64,000 cho were clearcut.

Since 1911, a separate program involving reforestation and engineering construction (terracing, check dams, retaining wall, etc) has been in effect on forest areas that have been declared "protection forests" (Figure 23). In 1947, there were 868,287 cho of

GROBER

Figure 23. - Badly eroded slopes which are being terraced and will be planted later. Shiga Prefecture, April 1946.

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national protection forests. Some areas have yet to be declared protection forests so that this program can be applied to them. Records are meager and incomplete. Like other reforestation plans, this one has been scaled downward in recent years, but the national forest phase has resulted in full completion of the 1946 revised plan as indicated:

TABLE H. - RESULTS OF 1946 NATIONAL PROTECTION FOREST REFORESTATION PLAN
(cho)

| Project | Budget Plan | Revised Plan | Completed | Percent of Revised Plan Completed |
|---|---|---|---|---|
| Damage repair | 240.0 | 240 | 240 | 100 |
| Damage prevention | 437.3 | 304 | 304 | 100 |
| Emergency damage repair | 100.0 | 100 | 100 | 100 |
| TOTAL | 777.3 | 644 | 644 | 100 |

The revised plan for 1947 is expected to be completed equally well, as indicated:

TABLE I. - EXPECTED RESULTS OF 1947 NATIONAL PROTECTION FOREST REFORESTATION PLAN
(cho)

| Project | Budget Plan | Revised Plan | Anticipated Completion | Anticipated Percent of Completion of Revised Plan |
|---|---|---|---|---|
| Damage repair | 720.0 | 372 | 372 | 100 |
| Damage prevention | 5,412.6 | 1,038 | 1,038 | 100 |
| Emergency damage repair | 254.0 | 0 | 0 | NA |
| TOTAL | 6,386.6 | 1,410 | 1,410 | 100 |

NA: Not applicable

At the completion in March 1947 of a survey of protection forest reforestation needs, the Bureau of Forestry made a new five-year plan for its protection forests shown in Table 5.

The survey of protection forest reforestation needs showed that: (a) 22,940 cho of forest land are in such poor condition that extensive engineering works are needed in addition to artificial reforestation; (b) 3,349 cho of land require these activities in order to prevent damage from the elements to this land and adjacent areas; and (c) 11,140 cho of coastal sand dune area require fixation. The plan provides for all of the area needing protection from the elements, but for only 14 and 12 percent, respectively, of the damaged forest and sand dune areas. Completion of the 1948 portion of this plan is not expected, because of inadequate appropriations.

### 3. Private Forests 11/

Considering the economic decrees and conditions imposed on the forests in private ownership (two-thirds of the forest area), it is not surprising that they contain the bulk of the reforestation problem. With the exception of a few well-managed forests operated on a sustained yield basis, exploitation during the past several years has been rapid, and clearcutting has been common (Figure 24). As this cutting was not followed by planting, especially in the five years prior to 1941 and since 1943, demudation has increased greatly.

In 1945, 1,400,000 cho in Naichi and an additional 390,000 cho in Hokkaido were reported in need of reforestation. A resurvey early in 1947 indicated that 1,420,000 cho, not including 232,000 cho of protection forests, needed reforesting in all Japan (Table 4). About three-fourths (1,062,000 cho) is in "timber-producing" forests; 90 percent of this will have to be artifically reforested or receive aid to natural reproduction. Of the

11/ Including community, prefectural, shrine, temple, and school forests.

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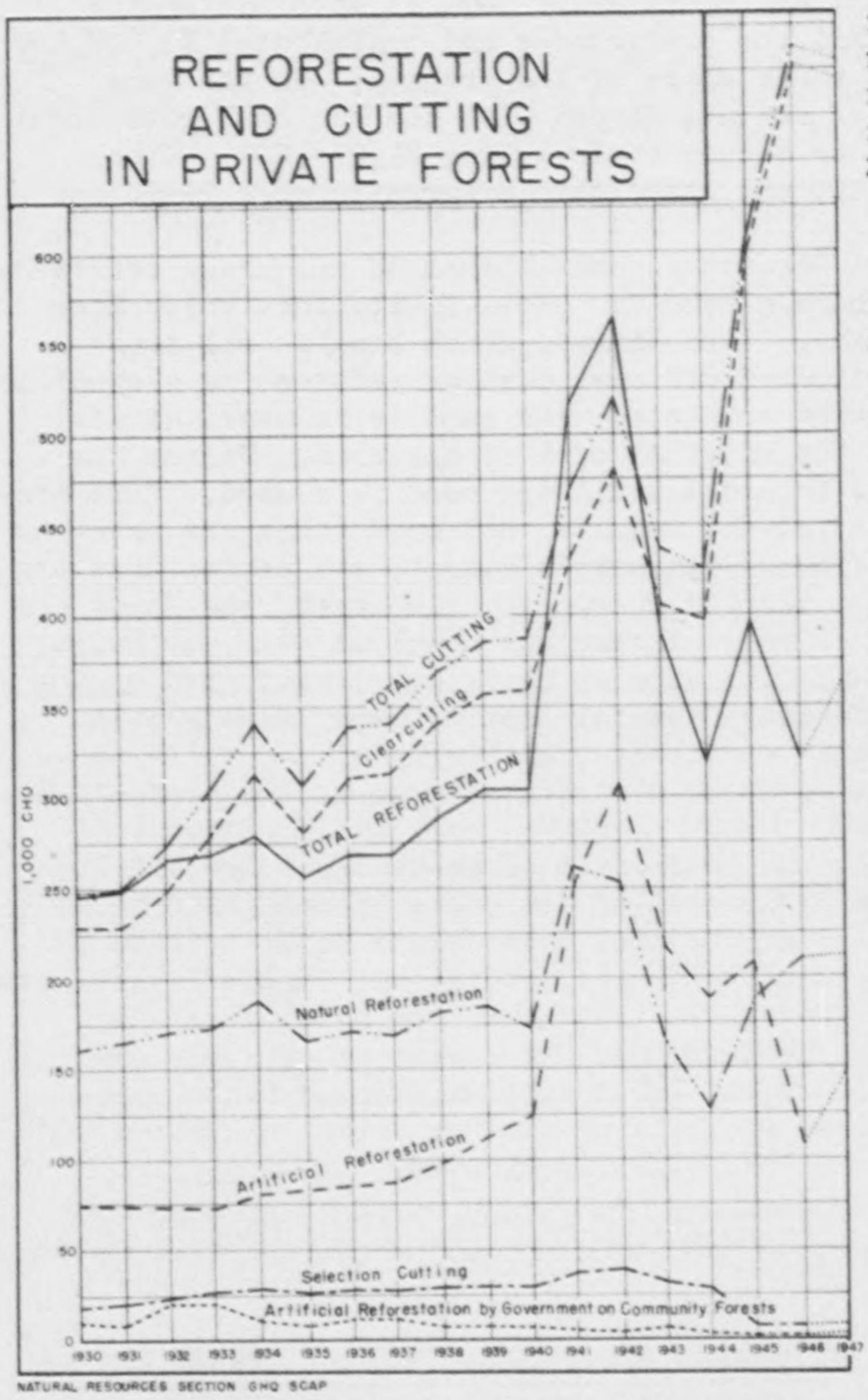


Figure 24. - "Aid to natural reforestation" area is included in artificial reforestation. Data for 1947 are estimates.

fuelwood-producing areas, 40 percent will require these activities. Addition of data for 1947 indicates that the area in need of reforestation as of April 1948 is more than 2,000,000 cho.

Most of the reforestation of private forests 12/ is done under one of two government subsidy programs, (a) the General Reforestation Subsidy (Ippan Zorin Hojo) and (b) the Law for Fostering Forest Resources (Shinrin Shigon Zosei Ho).

The General Reforestation Subsidy, initiated by the central government in 1929, pays up to approximately 50 percent of reforestation costs (based on official prices). This subsidy is carried as an item in the General Account Public Works budget administered by the Economic Stabilization Board. The national government contributes ¥4.00 for each ¥1.00 that the prefecture appropriates for this subsidy. However, the national government's contribution may not exceed 40 percent of the cost of reforesting an area. Thus, the prefecture must appropriate a minimum of 10 percent of the cost in order to obtain the maximum that the national government may contribute. Nothing prevents a prefecture from contributing more than the minimum 10 percent, but this has rarely been done. If the prefecture fails to appropriate the necessary matching funds or fails to accomplish the amount of the reforestation agreed on, the national government reduces its contribution proportionately.

Prefectures annually indicate to the Bureau of Forestry the area they desire to reforest under this program. The Bureau weighs the amount of reforestation desired by all prefectures against the subsidy appropriations it has or expects to receive and asks (not orders) each prefecture to revise its area figure. A prefecture which has agreed to reforest a certain area upon being assured of a certain amount of national government subsidy is responsible for reforesting this area. In some instances, the prefectures do the actual planting for the forest owner.

Normally, owners estimate the reforestation cost a year prior to doing the work. If reforestation is accomplished at less than the estimated cost, the owner receives only one-half of the actual cost. If the actual cost is greater than the estimated cost, he receives one-half the estimated cost. The subsidy is not paid to the forest owner 13/ by the prefecture until the planting has been inspected and pronounced satisfactory. Because of personnel shortages, prefectural forestry sections frequently delegate inspection responsibility, assigning funds for inspection expenses to the forestry associations (Shinrin Kumiai). Instances have been reported, in these inflationary times, where areas in excess of those actually reforested have been reported as being satisfactorily reforested, so that the owner could come nearer to realizing 50 percent of the actual cost.

12/ Includes community, prefectural, shrine, and temple forests.
13/ Private, community, shrine, and temple owners. Prefectures can also apply the national government's share of the subsidy to reforesting their own lands.

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Up to 1942, the national government had spent ¥9,077,000 in subsidizing the planting of 560,950 cho of private forest, and the prefectures had contributed ¥3,537,000 (Table 6). The owners spent ¥40,777,000 as their share of the program. In the same period, the prefectures planted 18,450 cho of private forest with the national government subsidizing the planting with ¥388,000 and the owners contributing ¥1,275,000. Thus, ¥55,055,000 had been spent in planting 579,480 cho under this program through 1941.

Under the Law for Fostering Forest Resources, established to encourage reforestation of forests cut since 1941, the owner buys a bond for one-half its face value from the Agriculture and Forestry Central Bank (Norin Chuo Kinko), which handles all transactions. The face value is equal to the estimated official cost of reforesting a specific area. When the reforestation is satisfactorily completed, the bond is redeemed at its maturity value plus 3.2 percent interest on the original cost of the bond. Unless the owner has additional funds he cannot pay his laborers until the bond is cashed. This disadvantage has prevented realization of the hoped-for results, and bond sales are never up to quotas. This subsidy is an item in the Finance Ministry's budget, and prefectures are not required to contribute to it. Unlike the subsidy previously discussed, the funds are appropriated to pay for the area reforested under it during the previous year, although administrative funds are for the current year. The subsidy funds are transferred by the Ministry of Finance to the Agriculture and Forestry Central Bank to repay what was in effect a loan by the bank. The bank also receives interest on its loan. Administrative funds are transferred to the Bureau of Forestry which distributes them to the prefectures.

The government has been subsidizing the production of seedlings since 1929. Originally the national government met up to 50 percent of the costs (based on official prices), but of late years it has required the prefectural governments to contribute in the ratio of 1:4 as under the General Reforestation Subsidy. Likewise, it has limited its contributions to 40 percent of the costs. Prefectures distribute the subsidy at rates they deem appropriate. If production is less than planned and a surplus of funds remains, a prefecture can transfer the surplus to its General Reforestation Subsidy fund. The national government expended ¥5,616,020 in 1946 subsidizing the production of 389,587,000 seedlings, and in 1947 it spent ¥21,107,755 on 368,033,000 seedlings.

The Bureau of Forestry advanced a five-year plan in 1945, in conjunction with its plan for national forests, to assist private owners in reforesting 2,433,000 cho by means of the two subsidy programs, as shown in Table J.

TABLE J. - PRIVATE FOREST REFORESTATION PLAN, 1946-50
(cho)

| Subsidy | 1946 | 1947 | 1948 | 1949 | 1950 | Total |
|---|---|---|---|---|---|---|
| By general subsidy | | | | | | |
| Artificial planting | 56,000 | 27,400 | 37,500 | 450,000 | 502,000 | 1,072,900 |
| Artificial seeding | 3,800 | 5,900 | 5,800 | 9,000 | 6,000 | 30,500 |
| Aid to natural reforestation | 87,000 | 114,200 | 119,300 | 129,000 | 86,000 | 535,500 |
| TOTAL | 146,800 | 147,500 | 160,600 | 588,000 | 594,000 | 1,638,900 |
| By bond subsidy | | | | | | |
| Artificial planting | 224,000 | 202,600 | 202,500 | 0 | 0 | 629,100 |
| Artificial seeding | 5,200 | 5,100 | 5,200 | 0 | 0 | 15,500 |
| Aid to natural reforestation | 50,000 | 49,800 | 49,700 | 0 | 0 | 149,500 |
| TOTAL | 279,200 | 257,500 | 257,400 | 0 | 0 | 794,100 |
| Total | | | | | | |
| Artificial planting | 280,000 | 230,000 | 240,000 | 450,000 | 502,000 | 1,702,000 |
| Artificial seeding | 9,000 | 11,000 | 11,000 | 9,000 | 6,000 | 46,000 |
| Aid to natural reforestation | 137,000 | 164,000 | 169,000 | 129,000 | 86,000 | 685,000 |
| TOTAL | 426,000 | 405,000 | 420,000 | 588,000 | 594,000 | 2,433,000 |

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A 15-year plan for governmental assistance to communities in establishing and maintaining forests was made in 1920. Planting began three years later when the first seedlings became of planting age. Later the plan, extended to 30 years, called for a total planting of 330,000 cho in units of not less than 50 cho. Usually the government suggests the development of such a forest, although occasionally a community takes the initiative. Under this program, which does not apply to Hokkaido, the national forests raise the seedlings, furnish the capital, and supervise all operations. The community provides the land, pays the taxes, and provides care and protection. Products obtained from the forests are shared in proportion to the contributions of each party.

As of April 1946, the national government had contracted with more than 1,400 villages since 1919 to reforest 271,000 cho of community land and had completed 220,000 cho. The progress of this program can be traced in Table 7. The Bureau of Forestry in 1945 established the plan for these forests as shown in Table K.

TABLE K. - PLAN FOR GOVERNMENT PLANTING OF COMMUNITY FORESTS, 1946-49
(cho)

| Project | 1946 | 1947 | 1948 | 1949 | Total |
|---|---|---|---|---|---|
| Artificial planting | 6,500 | 13,000 | 13,000 | 16,666 | 49,166 |

Before 1946 was well under way, economic conditions had forced a downward revision of the 1946 phases of all private forest reforestation plans. Even so, the programs fell far short of goals as shown in Table L. The 1947 phases of the plans were faring no better, as shown in Table M on page 29. Revision had not been attempted because of rapidly changing economic conditions.

TABLE L. - RESULTS OF 1946 REFORESTATION ON PRIVATE FORESTS
(cho)

| Program or Subsidy | Budget Plan | Revised Plan | Completed | Percent of Revised Plan Completed |
|---|---|---|---|---|
| General subsidy | | | | |
| Artificial planting | 56,000 | 29,962 | 24,238 | 80.9 |
| Artificial sowing | 3,800 | 790 | 548 | 69.4 |
| Aid to natural reforestation | 87,000 | 25,526 | 12,276 | 48.1 |
| TOTAL | 146,800 | 56,278 | 37,062 | 65.9 |
| Bond subsidy | | | | |
| Artificial planting | 224,000 | 90,309 | 38,791 | 43.0 |
| Artificial sowing | 5,200 | 8,729 | 120 | 1.4 |
| Aid to natural reforestation | 50,000 | 61,250 | 13,249 | 21.6 |
| TOTAL | 279,200 | 160,288 | 52,160 | 32.5 |
| Other a/ | | | | |
| Artificial planting | 0 | 0 | 17,282 | NA |
| Artificial sowing | 0 | 0 | 17 | NA |
| Aid to natural reforestation | 0 | 0 | 4,078 | NA |
| TOTAL | 0 | 0 | 21,377 | |
| Government-planted community forests | | | | |
| Artificial planting | 6,500 | 1,174 | 870 | 74.1 |
| Artificial sowing | 0 | 0 | 5 | NA |
| Aid to natural reforestation | 0 | 17 | 14 | 82.4 |
| TOTAL | 6,500 | 1,191 | 889 | 74.6 |

Continued

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TABLE L. - RESULTS OF 1946 REFORESTATION ON PRIVATE FORESTS (CONT'D)
(cho)

| Program of Subsidy | Budget Plan | Revised Plan | Completed | Percent of Revised Plan Completed |
|---|---|---|---|---|
| Total b/ | | | | |
| Artificial planting | 286,500 | 121,445 | 63,899 | 52.6 |
| Artificial sowing | 9,000 | 9,519 | 678 | 7.1 |
| Aid to natural reforestation | 137,000 | 86,793 | 25,534 | 29.4 |
| TOTAL | 432,500 | 217,757 | 90,111 | 41.4 |

a/ Done on the owner's initiative at his expense
b/ Excluding "Other"
NA: Not applicable

TABLE M. - PROGRESS OF 1947 PRIVATE FOREST REFORESTATION
(cho)

| Program or Subsidy | Budget Plan | Completed by 30 Sep 47 (end of 2nd qtr) | Anticipated Completion | Anticipated Percent of Completion |
|---|---|---|---|---|
| General subsidy | | | | |
| Artificial planting | 27,400 | 13,458 | 25,982 | 94.8 |
| Artificial sowing | 5,900 | 0 | 165 | 2.8 |
| Aid to natural reforestation | 114,200 | 8,631 | 22,304 | 19.5 |
| TOTAL | 147,500 | 22,089 | 48,451 | 32.8 |
| Bond subsidy | | | | |
| Artificial planting | 202,600 | 17,711 | 56,344 | 27.8 |
| Artificial sowing | 5,100 | 11 | 1,071 | 21.0 |
| Aid to natural reforestation | 49,800 | 6,335 | 33,344 | 67.0 |
| TOTAL | 257,500 | 24,057 | 90,759 | 35.2 |
| Other a/ | | | | |
| Artificial planting | 0 | 2,023 | 5,853 | NA |
| Artificial sowing | 0 | 17 | 23 | NA |
| Aid to natural reforestation | 0 | 1,303 | 1,975 | NA |
| TOTAL | 0 | 3,343 | 7,851 | |
| Government-planted community forests | | | | |
| Artificial planting | 13,000 | 476 | 2,623 | 20.2 |
| Aid to natural reforestation | 0 | 0 | 15 | NA |
| TOTAL | 13,000 | 476 | 2,638 | 20.3 |
| Total b/ | | | | |
| Artificial planting | 243,000 | 31,645 | 84,949 | 35.0 |
| Artificial sowing | 11,000 | 11 | 1,236 | 11.2 |
| Aid to natural reforestation | 164,000 | 14,966 | 55,663 | 33.9 |
| TOTAL | 418,000 | 46,622 | 141,848 | 33.9 |

a/ Done on the owner's initiative at his expense
b/ Excluding "Other"
NA: Not applicable

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The private forest phase of the new five-year plan advanced by the Bureau of Forestry in October 1947 is shown in Table 8. It appears adequate for current needs but for only a small part of the area likely to be cut during the period. This plan, not yet approved by the Diet as of April 1948, contains two major changes. The first is the abolition of the Bond Reforestation Subsidy (Shoken Zorin). Governmental budgetary conferences indicated in April 1948 that consolidation of the two subsidies would not be approved as the public works budget would not receive enough funds to finance it. It seemed probable at this time that this budget would provide for the reforestation of only 60,000 cho through the General Reforestation Subsidy while the Finance Ministry anticipated funds for 130,000 cho under a continued Bond Reforestation Subsidy. Thus, 190,000 cho instead of the 300,000 cho in the plan would be possible. In a series of regional meetings in March and April of 1948, prefectural officials reported their desires to reforest (see subsidies on page 26) as follows:

TABLE N. - PREFECTURAL REFORESTATION DESIRES FOR 1948 FISCAL YEAR
(cho)

| Method of Reforestation | General Reforestation Subsidy | Bond Reforestation Subsidy | Total |
|---|---|---|---|
| Artificial planting | 57,141 | 57,775 | 114,916 |
| Artificial seeding | 1,176 | 775 | 1,951 |
| Aid to natural reforestation | 40,612 | 32,687 | 73,299 |
| TOTAL | 98,929 | 91,237 | 190,166 |

That "total reforestation desires" coincide so closely with the total area for which the subsidies will probably be available, is only a happenstance. However, the prefectures request a greater amount of reforestation done under the more desirable (from the forest owners' standpoint) General Reforestation Subsidy than will probably be possible. Paradoxically, the greater the proportion of reforestation under the General Reforestation Subsidy, the greater is the share the prefectural governments must contribute. The Bureau of Forestry will request each prefecture to alter its figures when the final decision on appropriations is made. Table 9 indicates the total reforestation that will be done by each prefecture, although a greater proportion of it will be done under the Bond Reforestation Subsidy than is indicated.

The second change which the Bureau of Forestry feels has a good chance to be approved is a provision for government planting on private forests similar to the present program on community forests. The latter phase of the program is not scheduled to begin until 1950, as it will be two years before seedlings planted for it will be ready.

The protection forest reforestation program has been applied more extensively to private forests, mainly because they contain the bulk of the need. In 1947, there were 1,185,428 cho of privately owned protection forests. Some areas have yet to be declared protection forests so that the program can be applied to them. Records of this program on private forests are available only through 1941; because of war bombings, even these are only partial reports, so that it is impossible to obtain a complete picture of past activity. However, indications are that heavy expenditures have been made. The national government paid more than ¥24,000,000 to subsidize damage repair work on 45,000 cho through 1941, and prefectures contributed nearly ¥18,000,000. During the same period these agencies contributed ¥6,700,000 and ¥10,000,000, respectively, to reforest 457,986 cho of community and prefectural forests. Expenditures for sand dune fixation (Figure 25) on 4,264 cho were ¥1,815,000 by the national government, ¥828,000 by the prefectures, and ¥134,000 by the benefiting people.

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The program in recent years has been falling far short of goals as indicated:

TABLE 0. - EXPECTED RESULTS OF 1947 PRIVATE PROTECTION FOREST REFORESTATION PLAN
(cho)

| Project | Budget Plan | Revised Plan | Anticipated Completion | Anticipated Percent of Completion of Revised Plan |
|---|---|---|---|---|
| Damage repair | 9,391 | 4,112.0 | 1,956 | 47.6 |
| Damage prevention | 9,890 | 4,515.0 | 1,843 | 40.8 |
| Emergency damage repair | 6,786 | 1,929.4 | 1,416 | 73.4 |
| TOTAL | 26,067 | 10,556.4 | 5,215 | 49.4 |

Based on the 1947 survey of reforestation needs, the Bureau of Forestry outlined the plan of governmental subsidy and work to meet private protection forest needs, shown in Table 10.

The 1947 survey indicated that: (a) 232,133 cho of forest land are in such poor condition that extensive engineering works are needed in addition to artificial reforestation; (b) 22,452 cho of land require these activities to prevent damage from the elements to this land and adjacent areas; and (c) 30,950 cho of coastal sand dune area require fixation. The private phase of the protection forest reforestation program has all the shortcomings and expectations of the national forest phase (see page 25) except that provision is made for a slightly higher percentage of the damaged area and the sand dune area (22 and 27 percent respectivsly).

NAFATOMO

Figure 25. - Fixation of coastal sand dune area using black pine (Pinus thungbergii). Akita Prefecture, March 1938.

## PROBLEMS OF REFORESTATION

### 1. Inflation

Inflation in Japan is one of the biggest problems of reforestation. Government reforestation subsidies have become almost meaningless because of currency devaluation after budgets are approved. For example, the government authorized a subsidy of ¥6,120,000 to pay up to one-half the cost of producing 300,000,000 seedlings in 1946. This was an average of ¥2.04 per 100 seedlings. Actually an avcrage of only ¥1.10 per 100 was expended (see page 27) because of prefectural variations in production both up and down, as compared to goals. The selling price of sugi, the most commonly used species, rose from ¥9.00 per 100 in late 1945, when the budget was being planned, to ¥50.00 per 100 in November 1946. The selling price reflects increases in costs of production which were caused by the inflationary conditions. At the close of the fiscal year (March 1947) the official price was

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¥35.00 per 100 seedlings, while the black-market price averaged ¥150 and ranged from ¥50.00 to ¥500. The unofficial price continued upward to ¥500 in November 1947. In February 1948, the official price in the Tokyo region was ¥272.50 per hundred for three-year sugi, and unofficial prices of ¥1,200 to ¥1,300 were reported.

Although seed cost is a comparatively small part of the cost of seedling production, its increase has added to the acuteness of the situation. In the spring of 1947 the free market price per sho 14/ of karamatsu, sugi, and todomatsu was ¥150, ¥150, and ¥40 respectively. It was expected that these prices would be ¥500, ¥300, and ¥80, respectively, in the spring of 1948. However, prevailing wages and size of the crop can easily affect these estimates.

Although the official wage for forest labor is ¥35.00 per day, from ¥100 to ¥150 must be paid, and in some cases food and clothing must be furnished in order to obtain workers. Three to four times the official freight rates also are demanded.

All of this adds up to higher reforestation costs, which absorb all the revenue a forest owner receives when he cuts his timber. In April 1946 the cost of planting a cho of sugi or hinoki in Shikoku ranged from ¥220 to ¥600, while that for pine was ¥170 to ¥500. The cost throughout the country in August 1946 averaged ¥1,977 for sugi and hinoki and ¥1,410 for pine. At the same time, cost of artificial seeding was ¥885, and that for "aid to natural reforestation" was ¥750. Sugi reforestation cost ¥7,000 per cho in October 1947 and was reported at ¥15,000 in January 1948. The official cost based on official prices was ¥10,500. With such rapid rises, subsidies designed to pay 50 percent of costs pay only 10 to 15 percent by the time the reforestation is accomplished.

2. "Reform" Rumors and Land Reclamation

In addition to the uncertainty as to the future of costs and returns from forest operations, private forest landowners are greatly concerned that "reforms" may be adopted that will limit the amount of forest land they may own. This, in many instances, has not only induced rapid liquidation of forests by clearcutting, but in addition has removed all incentive to reforest such areas. The Bureau of Forestry, in an attempt to counteract the rumor, has publicized the fact that no such program is contemplated.

Similar effects of the Ministry of Agriculture and Forestry land reclamation program have become manifest. Optimistic estimates of the Ministry are that 1,967,000 cho can ultimately be made available for reclamation and sale under the Agricultural Land Reform Program. Most of this is now classed as forest land. It is expected that more than 1,000,000 cho will be acquired by the government during the 1948 fiscal year with the remainder subject to acquisition in later years.

3. Shortages

Tree Seed: the first of many shortages is tree seed. Only one year out of four or five is apt to be a good seed year in Japan. Both 1945 and 1946 were poor seed years and few seeds had been stored from previous years for nursery use. The supply available for 1947 spring sowing in private nurseries was less than 60 percent of demand, and, as indicated in Table P, page 33, national forest surpluses were not sufficient to make up the deficit.

The seed supply available for the 1948 spring sowing season is sufficient to produce approximately 926,671,000 seedlings of suitable size. However, this would include an excess of 142,731,000 seedlings of some species and leave a shortage of 262,493,000 seedlings in other species. This supply, while more favorable than that of the preceding year, is incapable of meeting the demand as indicated in Table Q, page 33.

Planting Stock: the planting stock situation leaves much to be desired. During the last few years, many nurseries were forced by food shortages to devote part or all of

14/ One sho equals 1.804 liters or 0.051 US bushel.

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TABLE P. - SEED SITUATION FOR 1947 SPRING SOWING a/
(kilograms)

| Nurseries | Demand | Supply | Difference | Supply as a Percent of Demand |
|---|---|---|---|---|
| National nurseries b/ | | | | |
| Coniferous | 14,483 | 16,754 | 2,271 | 115.7 |
| Broadleaved | 15,019 | 15,089 | 70 | 100.5 |
| TOTAL | 29,502 | 31,843 | 2,341 | 107.9 |
| Private nurseries | | | | |
| Coniferous | 32,904 | 23,114 | - 9,790 | 70.2 |
| Broadleaved | 73,439 | 37,582 | -35,857 | 51.2 |
| TOTAL | 106,343 | 60,696 | -45,647 | 57.1 |
| Total | | | | |
| Coniferous | 47,387 | 39,868 | - 7,519 | 84.1 |
| Broadleaved | 88,458 | 52,671 | -35,787 | 59.5 |
| TOTAL | 135,845 | 92,539 | -43,306 | 68.1 |

a/ Includes requirements for protection forest program
b/ Includes requirements for government planting on community forests

TABLE Q. - SEED SITUATION FOR 1948 SPRING SOWING
(kilograms)

| Nurseries | Demand | Supply | Difference | Supply as a Percent of Demand |
|---|---|---|---|---|
| National nurseries | | | | |
| Coniferous | 74,673 | 61,624 | -13,049 | 82.5 |
| Broadleaved | 11,754 | 11,754 | 0 | 100.0 |
| TOTAL | 86,427 | 73,378 | -13,049 | 84.9 |
| Private nurseries | | | | |
| Coniferous | 44,514 | 46,270 | 1,756 | 103.9 |
| Broadleaved | 60,830 | 49,355 | -11,475 | 81.1 |
| TOTAL | 105,344 | 95,625 | - 9,719 | 90.8 |
| Total | | | | |
| Coniferous | 119,187 | 107,894 | -11,293 | 90.5 |
| Broadleaved | 72,584 | 61,109 | -11,475 | 84.2 |
| TOTAL | 191,771 | 169,003 | -22,768 | 88.1 |

their facilities to meeting the food needs of nursery and forest workers. Farmers who normally produce small supplementary crops of seedlings intensified the shortage as they redirected their efforts toward production of the more profitable food crops. Others who visualized prohibitive labor costs which would halt reforestation and destroy the seedling market, likewise turned to food production.

Current data indicate that 540,397,000 seedlings would be available to meet the demand for 533,490,000 if stock is used that is younger than that normally used. There would be shortages, however, of kuromatsu, karamatsu, ezomatsu, and most broadleaved species (Table 11). By using the younger stock to meet the 1948 requirements, serious

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shortages would be created for the 1949-52 phases of the reforestation programs. Also, mortality rates would be greater, creating an additional demand the following year for replacements. Rather than hamper reforestation during future years of the program, the Bureau of Forestry is advocating the use of only those seedlings of suitable size. As not all of the present supply of planting stock is located in the areas of demand, lack of transportation and variations in adaptability of one region's planting stock to the environment of another are certain to create and intensify local shortages.

The Bureau of Forestry has been seeking approval of a ¥777,600,000 subsidy for the production of 720,000,000 seedlings. This plan is based on an upward revision of its contribution to 60 percent of the costs, which would require a 15 percent contribution by the prefectures (see page 27). Public works officials, whose budget includes this subsidy, want only 450,000,000 seedlings subsidized with ¥130,000,000, and a 25 percent limit on the national contribution. Maintaining the same ratio of contributions, the prefectures would have to contribute at least five percent. The Bureau has tendered a compromise proposal to subsidize 720,000,000 seedlings, but to observe the 25 percent limit on the national government contribution. This would require approximately ¥208,000,000. It is almost axiomatic that the amount of subsidy decided upon will have a proportionate effect on the entire reforestation program.

The effect that agricultural land reform will have on seedling production remains to be seen. Under this reform, nurseries are considered to be agricultural land, and a holding in excess of established ownership limits is subject to governmental purchase and resale to nonlandowners. An exception is made for newly cleared forest land on which nurseries are established, provided, however, that it is not diverted to food crop production at any time and that the total area of nurseries does not exceed the limit established for the prefecture, as indicated in Table R, page 35. This is likely to accelerate the movement of seedbeds and transplant areas onto less suitable areas.

Fertilizer: In the production of seedlings on good sites it is important that fertilizer be used. With poorer sites, it is even more important. Only five percent of the required ammonium sulfate was received in 1947. This meant that (a) seedlings had to stay in the nursery bed longer in order to reach required size; (b) mortality rates were higher in both nursery and field plantations; and (c) trees in plantations developed more slowly and were of poorer form.

In conjunction with its five-year reforestation plan, the Bureau of Forestry made these fertilizer estimates:

TABLE S. - FERTILIZER REQUIREMENTS FOR THE 1948-52 REFORESTATION PROGRAM a/
(metric tons)

| Year | Area of Artificial Planting | Planned Nursery Area (cho) | Ammonium Sulfate | Calcium Super-phosphate | Bean Cake | Oil Cake | Total |
|---|---|---|---|---|---|---|---|
| 1948 | 173,908 | 6,256 | 2,487 | 2,182 | 4,059 | 4,059 | 12,787 |
| 1949 | 248,595 | 7,976 | 3,204 | 2,782 | 5,174 | 5,174 | 16,334 |
| 1950 | 377,000 | 12,055 | 4,792 | 4,204 | 7,821 | 7,821 | 24,638 |
| 1951 | 421,339 | 14,071 | 5,593 | 4,907 | 9,129 | 9,129 | 28,758 |
| 1952 | 437,713 | 14,395 | 5,722 | 5,020 | 9,339 | 9,339 | 29,420 |
| TOTAL | 1,658,555 | 54,753 | 21,798 | 19,095 | 35,522 | 35,522 | 111,937 |

a/ Based on producing 100,000 seedlings per cho of nursery and field planting 3,000 trees per cho. Fertilizer requirements actually are two years previous to dates indicated.

This table is indicative only of needs, as little or no bean or oil cake will be available. However, the deficit will have to be made up with other fertilizers. These needs constitute only 0.3 percent of the amount needed for food crops.

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TABLE R. - ALLOWABLE NURSERY BED AREA a/
(cho)

| Prefecture | Area in 1948 b/ | Area in 1949 | Allowable Increase | Prefecture | Area in 1948 b/ | Area in 1949 | Allowable Increase |
|---|---|---|---|---|---|---|---|
| Hokkaido | 464 | 627 | 163 | Shiga | 20 | 40 | 20 |
| Aomori | 43 | 220 | 177 | Kyoto | 16 | 60 | 44 |
| Iwate | 64 | 200 | 136 | Osaka | 98 | 100 | 2 |
| Miyagi | 68 | 100 | 32 | Hyogo | 54 | 250 | 196 |
| Akita | 46 | 138 | 92 | Nara | 24 | 115 | 91 |
| Yamagata | 106 | 140 | 34 | Wakayama | 100 | 124 | 24 |
| Fukushima | 243 | 243 | 0 | Tottori | 27 | 34 | 7 |
| Ibaraki | 446 | 446 | 0 | Shimane | 24 | 92 | 68 |
| Tochigi | 97 | 100 | 3 | Okayama | 22 | 49 | 27 |
| Gumma | 78 | 78 | 0 | Hiroshima | 24 | 84 | 60 |
| Saitama | 62 | 70 | 8 | Yamaguchi | 93 | 98 | 5 |
| Chiba | 126 | 230 | 104 | Tokushima | 44 | 134 | 90 |
| Tokyo | 52 | 52 | 0 | Kagawa | 10 | 10 | 0 |
| Kanagawa | 61 | 61 | 0 | Ehime | 64 | 125 | 61 |
| Niigata | 55 | 80 | 25 | Kochi | 38 | 139 | 101 |
| Toyama | 29 | 40 | 11 | Fukuoka | 184 | 230 | 46 |
| Ishikawa | 43 | 81 | 38 | Saga | 20 | 54 | 34 |
| Fukui | 25 | 83 | 58 | Nagasaki | 58 | 58 | 0 |
| Yamanashi | 31 | 31 | 0 | Kumamoto | 42 | 109 | 67 |
| Nagano | 151 | 253 | 102 | Oita | 44 | 150 | 106 |
| Gifu | 74 | 132 | 58 | Miyazaki | 71 | 116 | 45 |
| Shizuoka | 116 | 180 | 64 | Kagoshima | 68 | 83 | 15 |
| Aichi | 26 | 86 | 60 | | | | |
| Mie | 157 | 158 | 1 | TOTAL | 3,808 | 6,083 | 2,275 |

a/ The following letter of instructions was dispatched with this table:

"Subject: On the treatment of lands employed as nursery-beds.

From: Director of Agricultural Administration Bureau, Director of Forestry Bureau, Ministry of Agriculture and Forestry

To: Director of agricultural land district offices and Metropolitan, Hokkaido, prefectural governors.

"Request is hereby made to you through this notification to deal with the purchase of lands employed as nursery-beds, according to the following lines.

"Purchase of the existing nursery-beds shall be made exactly as in the case of ordinary agricultural lands. In view of the need, however, of increasing the area of nursery-beds in order to achieve the five-year afforestation plan, the lands (other than agricultural lands) which will be converted, from now onward, into nursery-beds, shall not be subjected to purchase until and unless the total area on the schedule is secured in the Metropolis, Hokkaido, or a prefecture. In case the land other than agricultural lands in your administrative district is converted into nursery-beds whose area, together with the area in 1948, exceeds the specified area (that is, the area in 1949), the excessive part of it shall be purchased. The designation of nursery-beds to be purchased shall be made by the governor concerned, after consulting with the Federation of Forestry Associations."

b/ Estimated area in seedbeds by the end of the spring 1948 planting season
SOURCE: Ministry of Agriculture and Forestry

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When allocations of ammonium sulfate and calcium superphosphate were made in February 1948, the Bureau of Forestry estimated the amount of compost (to substitute for bean and oil cake) and wood ash the nurseries would be able tc obtain through their own efforts. These are:

TABLE T. - FERTILIZER AVAILABLE FOR THE 1948 REFORESTATION PROGRAM
(metric tons)

| Nurseries | Ammonium Sulfate | Calcium Superphosphate | Compost | Wood Ash |
|---|---|---|---|---|
| National | 468 | 184 | 13,618 | 539 |
| Private | 728 | 286 | 42,840 | 819 |
| TOTAL | 1,196 | 470 | 56,458 | 1,358 |

The allocation of ammonium sulfate and calcium superphosphate is well below requirements. The gap will probably be even wider, as past experience has shown that the full allocation is rarely delivered.

Labor: The labor supply is far from satisfactory in any phase of reforestation. Men can find employment at other work for better wages. Labor that is obtained is well below the standards of skill and efficiency of former days.

Food and clothing shortages adversely affect the labor supply. Workers must spend their meager wages in the black market or roam the rural areas in order to obtain sufficient food. Clothing soon wears out when subject to rough forestry work.

Transportation: Nurseries that must ship seedlings to distant points are handicapped by slow and unreliable transportation. Many seedlings die en route or are in such poor condition when received that mortality is high after planting and growth is unsatisfactory.

Funds: In addition to the problem of inflation, forest owners possessing "frozen funds" can obtain release of only enough to meet costs that are based on official prices. Thus they require additional funds when unofficial prices are paid. Banks are unwilling to make long-term loans, particularly in these inflationary times.

## MEETING THE PROBLEMS

Many of the problems, particularly inflation, the shortages and unreliability of labor and transportation, and the lack of funds, food, and fertilizer are not confined to reforestation. Actions being taken by the Japanese Government to lessen their effect on the economic life of the country will facilitate reforestation.

Actions being taken by the Bureau of Forestry and other public and private agencies reflect a recognition of the importance of reforestation at this time and the necessity of completing the five-year reforestation plans. A publicity program being conducted by means of press, radio, posters, public addresses, and planting ceremonies is an example of what is being done to acquaint the public with the importance of renewing their forest resources.

The fulfillment of the plans is dependent upon the availability of sufficient seed and seedlings. An all-out effort is planned to collect seed at harvest time. Private forest owners are being encouraged through national and prefectural forest offices to increase the area of forest tree nurseries so they may obtain their requirements from local sources.

The tendency of private owners to liquidate their forest holdings through clear-cutting their timber stands is being counteracted by official statements by the Minister of Agriculture and Forestry and the Director of the Bureau of Forestry that a forest land reform program to limit the size of forest ownership is neither contemplated nor

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desired. The adverse effect of the land reclamation program, resulting from designating questionable forest areas for reclamation, is being corrected by Agriculture and Forestry Ministerial Instructions, which require the full use of qualified technical advisers, including foresters, to assist agricultural land commissions in the determination of areas suitable for reclamation.

## CONCLUSION

Japan is faced with the specter of even more rapid cutting of her depleted forests to meet rehabilitation and reconstruction demands. Meanwhile, economic conditions hold artificial reforestation almost to a standstill.

It is encouraging that if the reforestation plans are completed, they will have the effect of halting the accrual of area in need of reforestation, as shown in Figure 20. Figure 26 indicates that by 1951, the first decrease in 25 years of the cumulative area in need of reforestation will occur. If cutting takes place at less than the 1947 rate, the downward trend will start sooner. Even two-thirds completion of the plans will reduce the rate of accrual. If the execution of the plans falls behind schedule during the early years, the Bureau of Forestry plans to increase reforestation during later years so that the five-year goal can still be achieved.

An analysis of the reforestation situation in Japan reveals that the need is great, but the prospects of fulfilling it are small. There is a general realization that the problem is national in scope and acute in intensity. A long and difficult road lies ahead.

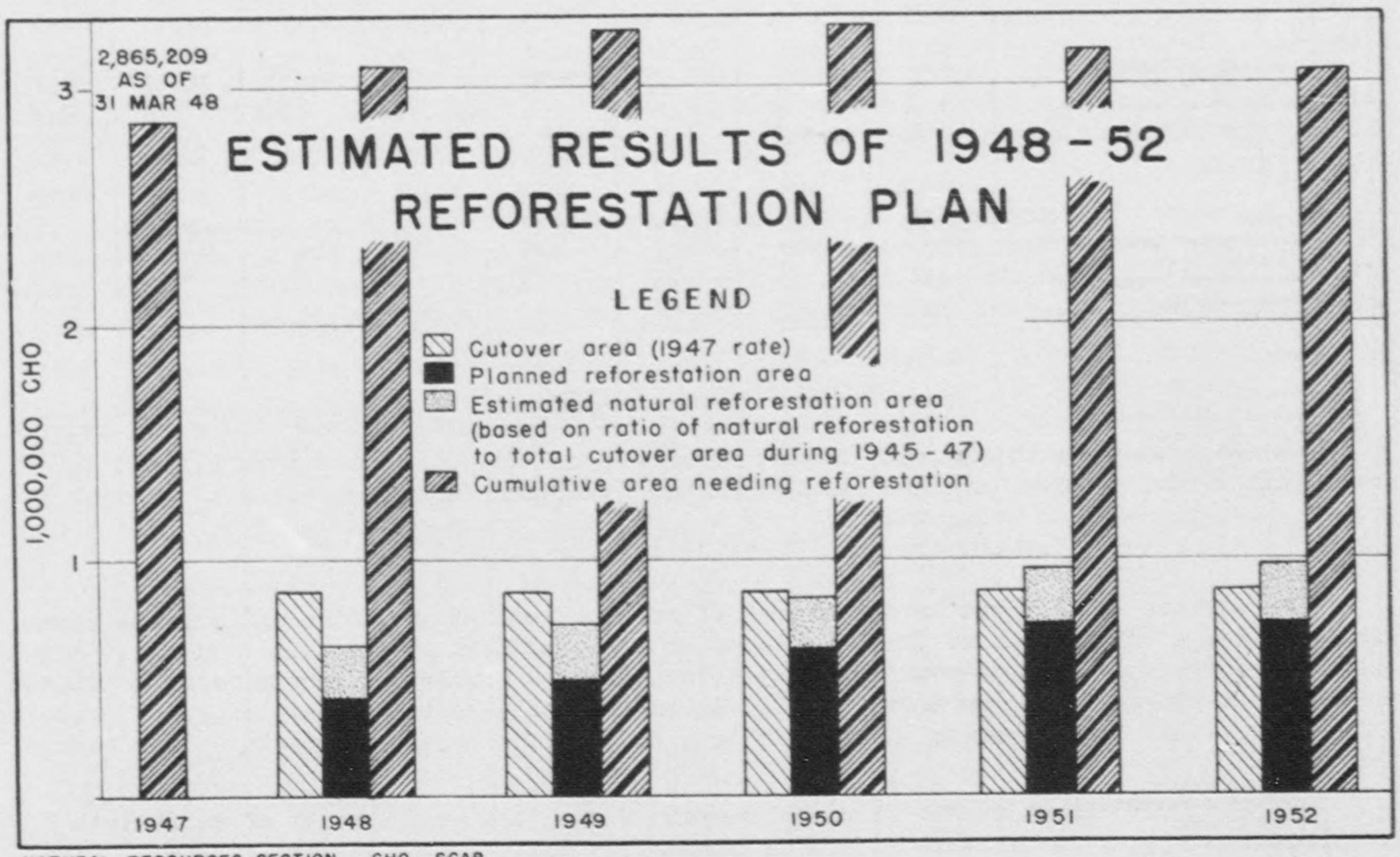


Figure 26

Photographs by Mr Shuzo Sugizawa, Capt Donald J. Haibach, Kochi Regional Forest Office, 1st Lt Edward F. Steigerwaldt, 1st Lt Marley L. Markell, Jr., Capt Samuel Grober, Mr Morris A. Huberman, and Mr M. Nafatomo.

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TABLE I - REFORESTATION BY METHOD a/, TYPE, AND OWNERSHIP, 1922 - 47
(CHO b/)

| Year | Ownership | Artificial Method | | | Natural Method | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | | Coniferous | Broadleaved | Total | Coniferous | Broadleaved | Mixed | Total | |
| 1922 | Private | 49,208 | 3,129 | 52,337 | 35,657 | 83,806 | 56,881 | 176,344 | 228,681 |
| | Community and Prefecture | 17,969 | 1,485 | 19,454 | 11,112 | 23,223 | 17,195 | 51,530 | 70,984 |
| | Shrine and Temple | 433 | 19 | 452 | 439 | 637 | 496 | 1,572 | 2,024 |
| | Government on Community c/ | 8,435 | 7 | 8,442 | 0 | 0 | 0 | 0 | 8,442 |
| | Former Imperial | 4,158 | 49 | 4,207 | ND | ND | ND | ND | 4,207 |
| | National | 15,977 | 991 | 16,968 | 1,758 | 13,583 | 27,875 | 43,216 | 59,184 |
| | TOTAL | 96,180 | 5,680 | 101,860 | 48,966 | 121,249 | 102,447 | 272,662 | 373,522 |
| 1923 | Private | 51,240 | 3,558 | 54,798 | 29,094 | 69,466 | 47,869 | 146,429 | 201,227 |
| | Community and Prefecture | 18,513 | 1,668 | 20,181 | 10,981 | 20,025 | 12,711 | 43,717 | 63,898 |
| | Shrine and Temple | 358 | 15 | 373 | 401 | 361 | 322 | 1,084 | 1,457 |
| | Government on Community c/ | 12,655 | 13 | 12,668 | 0 | 0 | 0 | 0 | 12,668 |
| | Former Imperial | 3,822 | 32 | 3,854 | ND | ND | ND | ND | 3,854 |
| | National | 15,157 | 840 | 15,997 | 2,180 | 13,931 | 25,016 | 41,127 | 57,124 |
| | TOTAL | 101,745 | 6,126 | 107,871 | 42,656 | 103,783 | 85,918 | 232,357 | 340,228 |
| 1924 | Private | 51,767 | 3,503 | 55,270 | 30,939 | 71,053 | 52,838 | 154,830 | 210,100 |
| | Community and Prefecture | 19,296 | 1,384 | 20,680 | 10,891 | 23,368 | 15,836 | 50,095 | 70,775 |
| | Shrine and Temple | 422 | 14 | 436 | 334 | 464 | 328 | 1,126 | 1,562 |
| | Government on Community c/ | 10,710 | 95 | 10,805 | 0 | 0 | 0 | 0 | 10,805 |
| | Former Imperial | 3,265 | 25 | 3,290 | ND | ND | ND | ND | 3,290 |
| | National | 14,582 | 734 | 15,316 | 2,088 | 12,386 | 19,781 | 34,255 | 49,571 |
| | TOTAL | 100,042 | 5,755 | 105,797 | 44,252 | 107,271 | 88,783 | 240,306 | 346,103 |
| 1925 | Private | 49,580 | 3,754 | 53,334 | 23,077 | 72,582 | 45,009 | 140,668 | 194,002 |
| | Community and Prefecture | 18,837 | 1,472 | 20,309 | 8,988 | 39,206 | 16,368 | 64,562 | 84,871 |
| | Shrine and Temple | 374 | 28 | 402 | 216 | 325 | 242 | 813 | 1,215 |
| | Government on Community c/ | 9,041 | 26 | 9,067 | 0 | 0 | 0 | 0 | 9,067 |
| | Former Imperial | 3,529 | 29 | 3,558 | ND | ND | ND | ND | 3,558 |
| | National | 12,846 | 736 | 13,582 | 2,420 | 12,982 | 19,734 | 35,136 | 48,718 |
| | TOTAL | 94,207 | 6,045 | 100,252 | 34,731 | 125,095 | 81,353 | 241,179 | 341,431 |
| 1926 | Private | 50,727 | 5,424 | 56,151 | 30,091 | 80,754 | 42,064 | 152,909 | 209,060 |
| | Community and Prefecture | 19,587 | 1,711 | 21,298 | 9,565 | 42,027 | 15,146 | 66,738 | 88,036 |
| | Shrine and Temple | 522 | 28 | 550 | 412 | 464 | 397 | 1,273 | 1,823 |
| | Government on Community c/ | 8,298 | 31 | 8,329 | 0 | 0 | 0 | 0 | 8,329 |
| | Former Imperial | 3,508 | 0 | 3,508 | ND | ND | ND | ND | 3,508 |
| | National | 12,781 | 572 | 13,353 | 2,185 | 14,091 | 27,913 | 44,189 | 57,542 |
| | TOTAL | 95,423 | 7,766 | 103,189 | 42,253 | 137,336 | 85,520 | 265,109 | 368,298 |
| 1927 | Private | 53,169 | 5,821 | 58,990 | 27,177 | 83,679 | 45,145 | 156,001 | 214,991 |
| | Community and Prefecture | 20,336 | 2,349 | 22,685 | 7,581 | 42,230 | 13,048 | 62,859 | 85,544 |
| | Shrine and Temple | 580 | 31 | 611 | 246 | 575 | 386 | 1,207 | 1,818 |
| | Government on Community c/ | 8,835 | 52 | 8,887 | 0 | 0 | 0 | 0 | 8,887 |
| | Former Imperial | 3,453 | 0 | 3,453 | ND | ND | ND | ND | 3,453 |
| | National | 12,450 | 1,014 | 13,464 | 3,066 | 13,858 | 31,924 | 48,848 | 62,312 |
| | TOTAL | 98,823 | 9,267 | 108,090 | 38,070 | 140,342 | 90,503 | 268,915 | 377,005 |
| 1928 | Private | 53,371 | 6,530 | 59,901 | 21,673 | 77,427 | 40,836 | 139,936 | 199,837 |
| | Community and Prefecture | 20,186 | 2,136 | 22,322 | 8,180 | 27,133 | 12,922 | 48,235 | 70,557 |
| | Shrine and Temple | 780 | 51 | 841 | 303 | 532 | 382 | 1,217 | 2,058 |
| | Government on Community c/ | 10,388 | 169 | 10,557 | 0 | 0 | 0 | 0 | 10,557 |
| | Former Imperial | 4,404 | 29 | 4,433 | 2,302 | ND | ND | 2,302 | 6,735 |
| | National | 12,728 | 766 | 13,494 | 2,377 | 14,571 | 25,607 | 42,555 | 56,049 |
| | TOTAL | 101,857 | 9,691 | 111,548 | 34,835 | 119,663 | 79,747 | 234,245 | 345,793 |
| 1929 | Private | 50,580 | 6,666 | 57,246 | 19,412 | 73,877 | 36,957 | 130,246 | 187,492 |
| | Community and Prefecture | 19,274 | 1,890 | 21,164 | 6,374 | 19,881 | 12,412 | 38,667 | 59,831 |
| | Shrine and Temple | 540 | 78 | 618 | 258 | 571 | 318 | 1,147 | 1,765 |
| | Government on Community c/ | 15,365 | 158 | 15,523 | 0 | 0 | 0 | 0 | 15,523 |
| | Former Imperial | 4,122 | 41 | 4,163 | 2,075 | ND | ND | 2,075 | 6,238 |
| | National | 12,273 | 852 | 13,125 | 3,764 | 15,329 | 26,706 | 45,799 | 58,924 |
| | TOTAL | 102,154 | 9,685 | 111,839 | 31,883 | 109,658 | 76,393 | 217,934 | 329,773 |
| 1930 | Private | 47,574 | 7,325 | 54,899 | 20,328 | 70,131 | 33,905 | 124,364 | 179,263 |
| | Community and Prefecture | 17,204 | 2,091 | 19,295 | 6,366 | 18,835 | 10,150 | 35,351 | 54,646 |
| | Shrine and Temple | 361 | 55 | 416 | 248 | 514 | 289 | 1,051 | 1,467 |
| | Government on Community c/ | 10,515 | 103 | 10,618 | 0 | 0 | 0 | 0 | 10,618 |
| | Former Imperial | 4,134 | 36 | 4,170 | 2,092 | 24 | ND | 2,116 | 6,286 |
| | National | 11,852 | 832 | 12,684 | 4,945 | 16,400 | 35,451 | 56,696 | 69,380 |
| | TOTAL | 91,640 | 10,442 | 102,082 | 33,979 | 105,904 | 79,795 | 219,578 | 321,660 |
| 1931 | Private | 45,034 | 9,024 | 54,058 | 19,518 | 73,769 | 33,169 | 126,456 | 180,514 |
| | Community and Prefecture | 16,679 | 3,074 | 19,753 | 5,485 | 19,804 | 12,964 | 38,253 | 58,006 |
| | Shrine and Temple | 521 | 62 | 583 | 194 | 443 | 295 | 932 | 1,515 |
| | Government on Community c/ | 8,547 | 86 | 8,633 | 0 | 0 | 0 | 0 | 8,633 |
| | Former Imperial | 4,934 | 43 | 4,977 | 2,987 | 24 | ND | 3,011 | 7,988 |
| | National | 11,162 | 841 | 12,003 | 4,773 | 15,690 | 46,777 | 67,240 | 79,243 |
| | TOTAL | 86,877 | 13,130 | 100,007 | 32,957 | 109,730 | 93,205 | 235,892 | 335,899 |

Continued

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TABLE I. - REFORESTATION BY METHOD a/, TYPE, AND OWNERSHIP, 1922 - 47 (CONT'D)
(CHO b/)

| Year | Ownership | Artificial Method | | | Natural Method | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | | Coniferous | Broadleaved | Total | Coniferous | Broadleaved | Mixed | Total | |
| 1932 | Private | 45,619 | 9,469 | 55,088 | 17,446 | 80,282 | 31,493 | 129,221 | 184,309 |
| | Community and Prefecture | 15,737 | 2,753 | 18,490 | 5,020 | 19,369 | 15,479 | 39,868 | 58,358 |
| | Shrine and Temple | 411 | 106 | 517 | 209 | 601 | 297 | 1,107 | 1,624 |
| | Government on Community c/ | 20,487 | 319 | 20,806 | 0 | 0 | 0 | 0 | 20,806 |
| | Former Imperial | 4,776 | 44 | 4,820 | 2,720 | 24 | ND | 2,744 | 7,564 |
| | National | 10,953 | 690 | 11,643 | 3,473 | 17,018 | 36,989 | 57,480 | 69,123 |
| | TOTAL | 97,983 | 13,381 | 111,364 | 28,868 | 117,294 | 84,258 | 230,420 | 341,784 |
| 1933 | Private | 44,520 | 10,750 | 55,270 | 18,371 | 82,335 | 30,265 | 130,971 | 186,241 |
| | Community and Prefecture | 15,362 | 2,971 | 18,333 | 10,277 | 21,107 | 9,743 | 41,127 | 59,460 |
| | Shrine and Temple | 508 | 60 | 568 | 185 | 567 | 356 | 1,108 | 1,676 |
| | Government on Community c/ | 20,454 | 346 | 20,800 | 0 | 0 | 0 | 0 | 20,800 |
| | Former Imperial | 5,011 | 46 | 5,057 | 4,759 | 70 | ND | 4,829 | 9,886 |
| | National | 13,685 | 818 | 14,503 | 3,915 | 17,139 | 38,787 | 59,841 | 74,344 |
| | TOTAL | 99,540 | 14,945 | 114,531 | 37,507 | 121,218 | 79,151 | 237,876 | 352,407 |
| 1934 | Private | 48,465 | 12,597 | 61,062 | 19,906 | 94,864 | 33,333 | 148,103 | 209,165 |
| | Community and Prefecture | 15,849 | 3,294 | 19,143 | 5,085 | 21,312 | 11,485 | 37,882 | 57,025 |
| | Shrine and Temple | 452 | 49 | 501 | 142 | 631 | 197 | 970 | 1,471 |
| | Government on Community c/ | 10,930 | 183 | 11,113 | 0 | 0 | 0 | 0 | 11,113 |
| | Former Imperial | 5,528 | 49 | 5,577 | 5,551 | 70 | ND | 5,621 | 11,198 |
| | National | 14,369 | 985 | 15,354 | 3,478 | 17,756 | 59,919 | 81,153 | 96,507 |
| | TOTAL | 95,593 | 17,157 | 112,750 | 34,162 | 134,633 | 104,934 | 273,729 | 386,479 |
| 1935 | Private | 49,694 | 13,702 | 63,396 | 16,999 | 77,388 | 33,061 | 127,448 | 190,844 |
| | Community and Prefecture | 14,843 | 4,208 | 19,051 | 5,452 | 20,535 | 11,508 | 37,495 | 56,546 |
| | Shrine and Temple | 427 | 60 | 487 | 170 | 636 | 328 | 1,134 | 1,621 |
| | Government on Community c/ | 6,949 | 201 | 7,150 | 0 | 0 | 0 | 0 | 7,150 |
| | Former Imperial | 5,387 | 49 | 5,436 | 5,869 | 70 | ND | 5,939 | 11,375 |
| | National | 13,055 | 1,139 | 14,194 | 2,625 | 17,791 | 47,074 | 67,490 | 81,684 |
| | TOTAL | 90,355 | 19,359 | 109,714 | 31,115 | 116,420 | 91,971 | 239,506 | 349,220 |
| 1936 | Private | 53,145 | 13,203 | 66,348 | 18,974 | 80,086 | 30,714 | 129,774 | 196,122 |
| | Community and Prefecture | 15,558 | 3,427 | 18,985 | 4,717 | 22,143 | 13,589 | 40,449 | 59,434 |
| | Shrine and Temple | 499 | 61 | 560 | 188 | 536 | 208 | 932 | 1,492 |
| | Government on Community c/ | 11,238 | 413 | 11,651 | 0 | 0 | 0 | 0 | 11,651 |
| | Former Imperial | 5,179 | 47 | 5,226 | 8,143 | 71 | ND | 8,214 | 13,440 |
| | National | 15,494 | 1,333 | 16,827 | 3,279 | 19,913 | 50,130 | 73,322 | 90,149 |
| | TOTAL | 101,113 | 18,484 | 119,597 | 35,309 | 122,749 | 94,641 | 252,691 | 372,288 |
| 1937 | Private | 56,039 | 12,687 | 68,726 | 21,385 | 78,757 | 30,375 | 130,517 | 199,243 |
| | Community and Prefecture | 15,709 | 3,676 | 19,385 | 4,820 | 20,856 | 12,021 | 37,697 | 57,082 |
| | Shrine and Temple | 411 | 77 | 488 | 186 | 529 | 207 | 922 | 1,410 |
| | Government on Community c/ | 10,526 | 641 | 11,167 | 0 | 0 | 0 | 0 | 11,167 |
| | Former Imperial | 4,238 | 46 | 4,284 | 12,468 | 71 | ND | 12,539 | 16,823 |
| | National | 12,966 | 1,123 | 14,089 | 9,935 | 30,296 | 31,454 | 71,685 | 85,774 |
| | TOTAL | 99,889 | 18,250 | 118,139 | 48,794 | 130,509 | 74,057 | 253,360 | 371,499 |
| 1938 | Private | 65,805 | 11,802 | 77,607 | 26,734 | 80,279 | 30,627 | 137,640 | 215,247 |
| | Community and Prefecture | 16,515 | 3,708 | 20,223 | 4,405 | 20,275 | 18,199 | 42,879 | 63,102 |
| | Shrine and Temple | 659 | 72 | 731 | 225 | 648 | 241 | 1,114 | 1,845 |
| | Government on Community c/ | 7,205 | 414 | 7,619 | 0 | 0 | 0 | 0 | 7,619 |
| | Former Imperial | 5,020 | 47 | 5,067 | 13,600 | 17 | ND | 13,617 | 18,684 |
| | National | 13,117 | 1,160 | 14,277 | 14,402 | 33,873 | 38,851 | 87,126 | 101,403 |
| | TOTAL | 108,321 | 17,203 | 125,524 | 59,366 | 135,092 | 87,918 | 282,376 | 407,900 |
| 1939 | Private | 78,122 | 12,048 | 90,170 | 29,293 | 82,758 | 30,236 | 142,287 | 232,457 |
| | Community and Prefecture | 18,955 | 3,635 | 22,590 | 5,917 | 20,188 | 14,826 | 40,931 | 63,521 |
| | Shrine and Temple | 640 | 85 | 725 | 268 | 614 | 232 | 1,114 | 1,839 |
| | Government on Community c/ | 6,410 | 421 | 6,831 | 0 | 0 | 0 | 0 | 6,831 |
| | Former Imperial | 4,360 | 45 | 4,405 | 20,597 | 17 | ND | 20,614 | 25,019 |
| | National | 15,143 | 1,225 | 16,368 | 13,401 | 33,972 | 22,824 | 70,197 | 86,565 |
| | TOTAL | 123,630 | 17,459 | 141,089 | 69,476 | 137,549 | 68,118 | 275,143 | 416,232 |
| 1940 | Private | 85,417 | 10,494 | 95,911 | 26,208 | 77,125 | 28,005 | 131,338 | 227,249 |
| | Community and Prefecture | 24,852 | 3,156 | 28,008 | 5,307 | 18,337 | 16,176 | 39,820 | 67,828 |
| | Shrine and Temple | 756 | 85 | 841 | 300 | 549 | 324 | 1,173 | 2,014 |
| | Government on Community c/ | 6,210 | 350 | 6,560 | 0 | 0 | 0 | 0 | 6,560 |
| | Former Imperial | 4,373 | 48 | 4,421 | 24,825 | 17 | ND | 24,842 | 29,263 |
| | National | 15,991 | 1,279 | 17,270 | 14,126 | 35,361 | 21,681 | 71,168 | 88,438 |
| | TOTAL | 137,599 | 15,412 | 153,011 | 70,766 | 131,389 | 66,186 | 268,341 | 421,352 |
| 1941 | Private | 164,182 | 32,337 | 196,519 | 33,471 | 92,379 | 56,389 | 182,239 | 378,758 |
| | Community and Prefecture | 44,499 | 5,440 | 49,939 | 11,179 | 48,201 | 16,497 | 75,877 | 125,816 |
| | Shrine and Temple | 3,369 | 456 | 3,825 | 591 | 1,236 | 1,112 | 2,939 | 6,764 |
| | Government on Community c/ | 4,944 | 283 | 5,227 | 0 | 0 | 0 | 0 | 5,227 |
| | Former Imperial | 3,406 | 31 | 3,437 | 25,569 | 17 | ND | 25,586 | 29,023 |
| | National | 17,251 | 1,503 | 18,754 | 12,244 | 34,498 | 28,068 | 74,810 | 93,564 |
| | TOTAL | 237,651 | 40,050 | 277,701 | 83,054 | 176,331 | 102,066 | 361,451 | 639,152 |

Continued

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

TABLE I. - REFORESTATION BY METHOD a/, TYPE, AND OWNERSHIP, 1922 - 47 (CONT'D)
(CHO b/)

| Year | Ownership | Artificial Method | | | Natural Method | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | | Coniferous | Broadleaved | Total | Coniferous | Broadleaved | Mixed | Total | |
| 1942 | Private | 226,390 | 28,808 | 255,198 | 33,752 | 93,939 | 67,448 | 195,139 | 450,337 |
| | Community and Prefecture | 42,681 | 7,281 | 49,762 | 8,071 | 32,822 | 14,351 | 55,244 | 105,006 |
| | Shrine and Temple | 1,774 | 311 | 2,085 | 510 | 832 | 1,490 | 2,832 | 4,917 |
| | Government on Community c/ | 3,943 | 634 | 4,577 | 6 | 0 | 0 | 6 | 4,583 |
| | Former Imperial | 2,876 | 31 | 2,907 | 21,869 | 17 | ND | 21,886 | 24,793 |
| | National | 19,988 | 2,179 | 22,167 | 12,400 | 38,734 | 23,109 | 74,243 | 96,410 |
| | TOTAL | 297,452 | 39,244 | 336,696 | 76,608 | 166,344 | 106,398 | 349,350 | 686,046 |
| 1943 | Private | 162,804 | 14,567 | 177,371 | 38,633 | 59,741 | 30,102 | 128,476 | 305,847 |
| | Community and Prefecture | 36,895 | 2,729 | 39,624 | 8,001 | 12,652 | 14,126 | 34,779 | 74,403 |
| | Shrine and Temple | 1,393 | 136 | 1,529 | 542 | 454 | 422 | 1,418 | 2,947 |
| | Government on Community c/ | 6,549 | 168 | 6,717 | 0 | 0 | 0 | 0 | 6,717 |
| | Former Imperial | 2,945 | 31 | 2,976 | 20,003 | 17 | ND | 20,020 | 22,996 |
| | National | 21,549 | 1,558 | 23,107 | 15,376 | 38,439 | 23,063 | 76,878 | 99,985 |
| | TOTAL | 232,135 | 19,189 | 251,324 | 82,555 | 111,303 | 67,713 | 261,571 | 512,895 |
| 1944 | Private | 173,960 | 15,886 | 189,846 | 36,854 | 56,556 | 34,060 | 127,470 | 317,316 |
| | Community and Prefecture | d/ | d/ | d/ | d/ | d/ | d/ | d/ | d/ |
| | Shrine and Temple | d/ | d/ | d/ | d/ | d/ | d/ | d/ | d/ |
| | Government on Community c/ | 2,973 | 330 | 3,303 | 0 | 0 | 0 | 0 | 3,303 |
| | Former Imperial | 2,865 | 31 | 2,896 | 12,171 | 17 | ND | 12,188 | 15,084 |
| | National | 13,461 | 1,892 | 15,353 | 11,263 | 28,199 | 16,895 | 56,317 | 71,670 |
| | TOTAL | 193,259 | 18,139 | 211,398 | 60,288 | 84,732 | 50,955 | 195,975 | 407,373 |
| 1945 | Private | 153,661 | 20,124 | 173,785 | 35,921 | 77,086 | 32,538 | 145,545 | 319,330 |
| | Community and Prefecture | 28,686 | 3,974 | 32,660 | 11,498 | 22,000 | 8,272 | 41,770 | 74,430 |
| | Shrine and Temple | 1,507 | 283 | 1,790 | 536 | 1,029 | 540 | 2,105 | 3,895 |
| | Government on Community c/ | 879 | 13 | 892 | 0 | 0 | 0 | 0 | 892 |
| | Former Imperial | 1,308 | 213 | 1,521 | 4,677 | 45 | 124 | 4,846 | 6,367 |
| | National | 2,943 | 328 | 3,271 | 21,252 | 40,317 | 3,866 | 65,435 | 68,706 |
| | TOTAL | 188,984 | 24,935 | 213,919 | 73,884 | 140,477 | 45,340 | 259,701 | 473,620 |
| 1946 | Private | 81,743 | 10,330 | 92,073 | 42,114 | 81,934 | 37,558 | 161,606 | 253,679 |
| | Community and Prefecture | 14,874 | 2,039 | 16,913 | 13,299 | 24,916 | 9,501 | 47,716 | 64,629 |
| | Shrine and Temple | 734 | 197 | 931 | 590 | 1,203 | 610 | 2,403 | 3,334 |
| | Government on Community c/ | 870 | 4 | 874 | 0 | 15 | 0 | 15 | 889 |
| | Former Imperial | 1,068 | 172 | 1,240 | 4,920 | 149 | 149 | 5,218 | 6,458 |
| | National | 4,384 | 473 | 4,857 | 19,561 | 40,174 | 3,048 | 62,783 | 67,640 |
| | TOTAL | 103,673 | 13,215 | 116,888 | 80,484 | 148,391 | 50,866 | 279,741 | 396,629 |
| 1947 | Private | 130,353 | 16,708 | 147,061 | 56,219 | 108,469 | 47,852 | 212,540 | 359,601 |
| | Community and Prefecture | d/ | d/ | d/ | d/ | d/ | d/ | d/ | d/ |
| | Shrine and Temple | d/ | d/ | d/ | d/ | d/ | d/ | d/ | d/ |
| | Government on Community c/ | 2,623 | e/ | 2,623 | 0 | 15 | 0 | 15 | 2,638 |
| | Former Imperial | f/ | f/ | f/ | f/ | f/ | f/ | f/ | f/ |
| | National | 10,726 | 1,550 | 12,276 | 26,455 | 25,312 | 4,028 | 56,295 | 68,571 |
| | TOTAL | 143,702 | 18,258 | 161,960 | 82,674 | 134,296 | 51,880 | 268,850 | 430,810 |

a/ Area on which "aid to natural reforestation" has been accomplished is included in artificial reforestation in the private, community and prefectural, and shrine and temple ownerships. It is included in natural reforestation in all others.
b/ One cho equals 0.992 hectare or 2.451 acres.
c/ A program in which the National Government contracts to reforest and in some instances to manage certain areas of community land
d/ Included in private
e/ Included in artificial coniferous
f/ Included in national
ND: No data available
SOURCE: Bureau of Forestry

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725413

## TABLE 2. - ARTIFICIAL REFORESTATION BY SPECIES a/, 1932 - 43

(CHO)

| Year | Ownership | Coniferous b/ | | | | | | | | Broadleaved c/ | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sugi | Hinoki | Matsu | Karamatsu | Hiba | Sawara | Other Coniferous | Total | Kunugi | Kuri | Keyaki | Kusu | Kashiwa | Other Broadleaved | Total |
| 1932 | Private | 23,684 | 9,434 | 6,962 | 2,001 | 89 | d/ | 243 | 42,413 | 6,535 | 656 | 51 | 186 | d/ | 1,597 | 9,025 |
| | Community and Prefecture | 5,103 | 4,858 | 3,592 | 929 | 30 | d/ | 325 | 14,837 | 1,539 | 67 | 5 | 79 | d/ | 844 | 2,534 |
| | Shrine and Temple | 200 | 107 | 69 | 8 | 0 | d/ | 5 | 389 | 58 | 3 | 5 | 0 | d/ | 39 | 105 |
| | Government on Community | 6,224 | 5,644 | 7,509 | 1,006 | 36 | d/ | 68 | 20,487 | 133 | 0 | 0 | 0 | d/ | 186 | 319 |
| | Former Imperial | 260 | 1,558 | 1,278 | 186 | 0 | d/ | 66 | 3,648 | 0 | 10 | 9 | 0 | d/ | 65 | 84 |
| | National | 4,128 | 418 | 126 | 187 | 129 | d/ | 3,754 | 8,742 | 79 | 20 | 74 | 17 | d/ | 1,146 | 1,636 |
| | TOTAL | 39,533 | 22,019 | 19,536 | 4,617 | 284 | d/ | 4,461 | 90,450 | 8,344 | 756 | 144 | 282 | d/ | 4,177 | 13,703 |
| 1933 | Private | 23,161 | 9,266 | 6,796 | 1,653 | 110 | d/ | 374 | 41,660 | 7,594 | 914 | 62 | 152 | d/ | 1,681 | 10,403 |
| | Community and Prefecture | 5,087 | 4,375 | 3,498 | 984 | 39 | d/ | 234 | 14,217 | 1,832 | 81 | 12 | 74 | d/ | 771 | 2,770 |
| | Shrine and Temple | 208 | 149 | 107 | 17 | 0 | d/ | 2 | 483 | 14 | 3 | 5 | 1 | d/ | 36 | 59 |
| | Government on Community | 6,064 | 5,553 | 7,541 | 1,117 | 27 | d/ | 152 | 20,454 | 164 | 0 | 0 | 0 | d/ | 182 | 346 |
| | Former Imperial | 278 | 1,586 | 467 | 1,587 | 0 | d/ | 20 | 3,938 | 0 | 2 | 10 | 0 | d/ | 20 | 32 |
| | National | 4,358 | 489 | 147 | 112 | 89 | d/ | 4,538 | 9,763 | 97 | 36 | 45 | 1 | d/ | 1,650 | 1,829 |
| | TOTAL | 39,456 | 21,418 | 18,556 | 5,500 | 265 | d/ | 5,320 | 90,515 | 9,701 | 1,036 | 134 | 228 | d/ | 4,340 | 15,439 |
| 1934 | Private | 25,757 | 10,841 | 7,366 | 1,190 | 131 | d/ | 108 | 45,693 | 8,780 | 924 | 65 | 246 | d/ | 2,093 | 12,108 |
| | Community and Prefecture | 4,790 | 4,038 | 4,361 | 1,055 | 39 | d/ | 321 | 14,604 | 1,869 | 123 | 3 | 61 | d/ | 1,006 | 3,062 |
| | Shrine and Temple | 176 | 109 | 126 | 22 | 0 | d/ | 5 | 438 | 23 | 4 | 0 | 3 | d/ | 18 | 48 |
| | Government on Community | 3,168 | 2,956 | 3,742 | 694 | 37 | d/ | 33 | 10,930 | 87 | 0 | 0 | 0 | d/ | 96 | 183 |
| | Former Imperial | 292 | 1,451 | 1,354 | 348 | 3 | d/ | 48 | 3,896 | 0 | 2 | 25 | 0 | d/ | 29 | 56 |
| | National | 4,208 | 314 | 211 | 165 | 82 | d/ | 4,508 | 9,488 | 104 | 24 | 31 | 10 | d/ | 1,786 | 1,955 |
| | TOTAL | 38,491 | 20,109 | 17,160 | 3,474 | 292 | d/ | 5,323 | 84,849 | 10,863 | 1,077 | 124 | 320 | d/ | 5,028 | 17,412 |
| 1935 | Private | 27,477 | 10,614 | 7,061 | 1,247 | 129 | 66 | 360 | 46,954 | 9,678 | 1,027 | 104 | 227 | 112 | 2,072 | 13,220 |
| | Community and Prefecture | 4,480 | 3,993 | 3,580 | 700 | 38 | 82 | 227 | 13,100 | 2,497 | 108 | 18 | 98 | 71 | 979 | 3,771 |
| | Shrine and Temple | 173 | 104 | 82 | 16 | 0 | 2 | 5 | 382 | 27 | 7 | 0 | 2 | 0 | 13 | 49 |
| | Government on Community | 2,142 | 1,905 | 2,389 | 439 | 23 | 0 | 51 | 6,949 | 53 | 0 | 0 | 0 | 0 | 148 | 201 |
| | Former Imperial | 397 | 1,710 | 1,028 | 285 | 1 | 21 | 11 | 3,453 | 0 | 0 | 23 | 0 | 0 | 6 | 29 |
| | National | 5,609 | 2,333 | 683 | 347 | 218 | 118 | 99 | 9,407 | 197 | 51 | 185 | 41 | 134 | 198 | 806 |
| | TOTAL | 40,278 | 20,659 | 14,823 | 3,034 | 409 | 289 | 753 | 80,245 | 12,452 | 1,193 | 330 | 368 | 317 | 3,416 | 18,076 |
| 1936 | Private | 29,798 | 10,656 | 7,163 | 1,172 | 143 | 70 | 400 | 49,702 | 9,170 | 885 | 92 | 333 | 74 | 2,154 | 12,708 |
| | Community and Prefecture | 5,066 | 4,274 | 3,481 | 781 | 41 | 64 | 135 | 13,842 | 2,259 | 145 | 59 | 70 | 7 | 739 | 3,279 |
| | Shrine and Temple | 215 | 135 | 97 | 8 | 0 | 1 | 3 | 459 | 38 | 2 | 2 | 2 | 4 | 9 | 57 |
| | Government on Community | 3,788 | 3,072 | 3,638 | 587 | 40 | 0 | 113 | 11,238 | 187 | 0 | 0 | 0 | 0 | 226 | 413 |
| | Former Imperial | 506 | 1,621 | 871 | 344 | 14 | 17 | 22 | 3,395 | 2 | 4 | 33 | 0 | 1 | 26 | 66 |
| | National | 5,723 | 2,131 | 626 | 413 | 245 | 125 | 19 | 9,282 | 179 | 83 | 166 | 50 | 168 | 368 | 1,014 |
| | TOTAL | 45,096 | 21,889 | 16,176 | 3,305 | 483 | 277 | 692 | 87,918 | 11,835 | 1,119 | 352 | 455 | 254 | 3,522 | 17,537 |
| 1937 | Private | 32,506 | 11,035 | 7,636 | 1,130 | 99 | 83 | 348 | 52,837 | 8,887 | 724 | 59 | 350 | 46 | 2,174 | 12,240 |
| | Community and Prefecture | 5,242 | 3,845 | 3,293 | 879 | 40 | 28 | 198 | 13,525 | 2,159 | 141 | 32 | 79 | 4 | 845 | 3,260 |
| | Shrine and Temple | 184 | 123 | 65 | 6 | 0 | 0 | 1 | 379 | 49 | 0 | 1 | 5 | 2 | 16 | 73 |
| | Government on Community | 4,066 | 2,714 | 2,936 | 513 | 32 | 0 | 265 | 10,526 | 412 | 0 | 0 | 0 | 0 | 229 | 641 |
| | Former Imperial | 1,176 | 1,309 | 31 | 104 | 0 | 0 | 120 | 2,740 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| | National | 5,154 | 1,679 | 391 | 161 | 218 | 74 | 163 | 8,140 | 165 | 57 | 166 | 82 | 184 | 241 | 895 |
| | TOTAL | 48,328 | 20,705 | 14,352 | 3,093 | 389 | 185 | 1,095 | 88,147 | 11,672 | 922 | 258 | 516 | 236 | 3,506 | 17,110 |
| 1938 | Private | 37,268 | 12,796 | 8,540 | 1,592 | 120 | 77 | 162 | 60,895 | 8,058 | 995 | 66 | 152 | 59 | 1,793 | 11,023 |
| | Community and Prefecture | 5,629 | 4,214 | 3,172 | 996 | 35 | 21 | 231 | 14,628 | 1,884 | 131 | 31 | 77 | 7 | 750 | 2,880 |
| | Shrine and Temple | 243 | 269 | 107 | 8 | 1 | 0 | 6 | 634 | 40 | 1 | 2 | 3 | 4 | 21 | 71 |
| | Government on Community | 2,674 | 1,981 | 1,890 | 545 | 25 | 0 | 90 | 7,205 | 255 | 0 | 0 | 0 | 0 | 159 | 414 |
| | Former Imperial | 1,502 | 1,580 | 150 | 91 | 0 | 0 | 41 | 3,364 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | National | 5,092 | 1,696 | 276 | 562 | 335 | 57 | 179 | 8,197 | 214 | 34 | 155 | 105 | 205 | 276 | 989 |
| | TOTAL | 52,408 | 22,566 | 14,475 | 3,794 | 516 | 155 | 1,009 | 94,923 | 10,451 | 761 | 254 | 637 | 275 | 2,999 | 15,377 |

Continued

TABLE 2. - ARTIFICIAL REFORESTATION BY SPECIES a/, 1932 - 43 (CONT'D)
(CHO)

| Year | Ownership | Coniferous b/ | | | | | | | | Broadleaved c/ | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sugi | Hinoki | Matsu | Karamatsu | Hiba | Sawara | Other Coniferous | Total | Kunugi | Kuri | Keyaki | Kusu | Kashiwa | Other Broadleaved | Total |
| 1939 | Private | 44,716 | 13,847 | 11,001 | 1,739 | 116 | 78 | 499 | 71,996 | 7,224 | 672 | 86 | 533 | 49 | 1,755 | 10,319 |
| | Community and Prefecture | 7,047 | 4,566 | 3,766 | 1,110 | 33 | 27 | 312 | 16,861 | 1,996 | 28 | 15 | 182 | 16 | 723 | 2,960 |
| | Shrine and Temple | 325 | 153 | 104 | 34 | 0 | 1 | 1 | 618 | 49 | 11 | 0 | 4 | 2 | 14 | 80 |
| | Government on Community | 2,513 | 1,612 | 1,603 | 586 | 18 | 0 | 118 | 6,410 | 256 | 0 | 0 | 0 | 0 | 165 | 421 |
| | Former Imperial | 1,088 | 1,734 | 146 | 76 | 0 | 0 | 91 | 3,135 | 0 | 0 | 1 | 0 | 0 | 3 | 4 |
| | National | 4,907 | 1,716 | 278 | 164 | 365 | 64 | 112 | 7,966 | 197 | 10 | 115 | 114 | 327 | 207 | 1,000 |
| | TOTAL | 60,596 | 23,658 | 16,898 | 3,969 | 532 | 170 | 1,163 | 106,986 | 9,722 | 721 | 217 | 863 | 394 | 2,867 | 14,784 |
| 1940 | Private | 46,122 | 14,345 | 11,909 | 2,873 | 100 | 119 | 182 | 76,250 | 6,261 | 352 | 74 | 437 | 106 | 1,549 | 8,779 |
| | Community and Prefecture | 9,125 | 5,252 | 4,418 | 2,160 | 35 | 78 | 406 | 21,473 | 1,407 | 34 | 21 | 100 | 59 | 745 | 2,366 |
| | Shrine and Temple | 365 | 159 | 111 | 71 | 0 | 5 | 0 | 711 | 46 | 1 | 1 | 5 | 17 | 10 | 80 |
| | Government on Community | 2,378 | 1,664 | 1,429 | 604 | 16 | 0 | 119 | 6,210 | 230 | 0 | 0 | 0 | 0 | 120 | 350 |
| | Former Imperial | 899 | 1,631 | 188 | 126 | 0 | 0 | 122 | 2,966 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | National | 4,963 | 1,503 | 284 | 731 | 271 | 68 | 161 | 7,981 | 114 | 22 | 128 | 191 | 413 | 219 | 1,087 |
| | TOTAL | 64,152 | 24,554 | 18,339 | 6,565 | 422 | 270 | 1,289 | 115,591 | 8,058 | 409 | 224 | 733 | 595 | 2,643 | 12,662 |
| 1941 | Private | 83,798 | 25,616 | 30,690 | d/ | d/ | d/ | 7,131 | 147,235 | 15,080 | 1,676 | 364 | 775 | 815 | 10,503 | 29,213 |
| | Community and Prefecture | 18,609 | 8,687 | 9,801 | d/ | d/ | d/ | 3,748 | 40,915 | 2,533 | 103 | 28 | 69 | 248 | 2,047 | 5,028 |
| | Shrine and Temple | 1,563 | 1,028 | 577 | d/ | d/ | d/ | 167 | 3,335 | 190 | 12 | 7 | 11 | 9 | 223 | 452 |
| | Government on Community | 1,913 | 1,180 | 1,105 | d/ | d/ | d/ | 746 | 4,944 | 185 | 8 | 0 | 5 | 0 | 85 | 283 |
| | Former Imperial | 799 | 1,127 | 59 | 0 | 0 | 0 | 54 | 2,399 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | National | 5,740 | 1,877 | 380 | d/ | d/ | d/ | 1,295 | 9,292 | 173 | 10 | 153 | 298 | 581 | 231 | 1,446 |
| | TOTAL | 112,422 | 39,475 | 42,612 | 0 | 0 | 0 | 13,141 | 208,050 | 18,161 | 1,809 | 552 | 1,158 | 1,653 | 13,089 | 36,422 |
| 1942 | Private | 117,745 | 43,979 | 38,430 | d/ | d/ | d/ | 9,771 | 209,925 | 12,330 | 750 | 133 | 364 | 337 | 13,943 | 27,857 |
| | Community and Prefecture | 17,272 | 8,241 | 10,460 | d/ | d/ | d/ | 3,084 | 39,057 | 1,929 | 32 | 28 | 86 | 210 | 4,824 | 7,109 |
| | Shrine and Temple | 668 | 347 | 552 | d/ | d/ | d/ | 132 | 1,699 | 61 | 16 | 3 | 3 | 6 | 222 | 311 |
| | Government on Community | 1,879 | 1,036 | 923 | d/ | d/ | d/ | 105 | 3,943 | 48 | 0 | 6 | 4 | 8 | 568 | 634 |
| | Former Imperial | 655 | 995 | 106 | 153 | 0 | 0 | 19 | 1,928 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | National | 5,886 | 1,919 | 411 | d/ | d/ | d/ | 1,214 | 9,460 | 158 | 14 | 148 | 510 | 745 | 315 | 1,890 |
| | TOTAL | 144,105 | 56,517 | 50,882 | 153 | 0 | 0 | 14,355 | 266,012 | 14,526 | 812 | 318 | 967 | 1,306 | 19,872 | 37,801 |
| 1943 | Private | 81,258 | 24,357 | 27,501 | d/ | d/ | d/ | 9,113 | 145,229 | 8,969 | 431 | 116 | 195 | 205 | 4,061 | 13,977 |
| | Community and Prefecture | 14,685 | 7,061 | 7,140 | d/ | d/ | d/ | 3,235 | 32,421 | 1,185 | 56 | 7 | 60 | 30 | 826 | 2,164 |
| | Shrine and Temple | 608 | 217 | 338 | d/ | d/ | d/ | 160 | 1,320 | 84 | 8 | 1 | 4 | 8 | 31 | 136 |
| | Government on Community | 2,520 | 1,334 | 2,673 | d/ | d/ | d/ | 22 | 6,549 | 122 | 0 | 0 | 3 | 0 | 43 | 168 |
| | Former Imperial | 615 | 930 | 114 | 176 | 0 | 0 | 65 | 1,900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | National | 5,396 | 1,459 | 1,117 | d/ | d/ | d/ | 361 | 8,823 | 113 | 8 | 69 | 283 | 433 | 236 | 1,142 |
| | TOTAL | 108,569 | 35,358 | 39,183 | 176 | 0 | 0 | 12,956 | 196,242 | 10,773 | 503 | 193 | 545 | 676 | 5,197 | 17,887 |

a/ Excluding Hokkaido
b/ Coniferous:
Sugi, Japanese redwood or cedar, Cryptomeria japonica
Hinoki, Japanese cedar or cypress, Chamaecyparis obtusa
Matsu, pine, Pinus sp.
Karamatsu, larch, Larix kaempferi
Hiba, Japanese cedar, Thujopsis dolabrata
Sawara, Sawara cedar or cypress, Chamaecyparis pisifera
c/ Broadleaved:
Kunugi, red oak, Quercus acutissima
Kuri, chestnut, Castanea crenata
Keyaki, zelkova, Zelkova serrata
Kusu, camphor, Cinnamomum camphora
Kashiwa, red oak, Quercus dentata
d/ Included in "Others".
SOURCE: Bureau of Forestry

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725113

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725413

## TABLE 3. - SEEDLING PRODUCTION a/, 1932 - 47

(1,000 SEEDLINGS)

| Year | Forest Ownership | Nursery Area (cho) | Coniferous b/ | | | | | | | Broadleaved c/ | | | | Other Coniferous and Broadleaved d/ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sugi | Hinoki | Matsu | Karamatsu | Sawara | Hiba | Total | Keyaki | Kuri | Kunugi | Total | | |
| 1932 | Former Imperial | 287 | 2,008 | 7,019 | 14,117 | 1,683 | 198 | 174 | 25,199 | 56 | 0 | 0 | 56 | 3,809 | 29,064 |
| | National | 395 | 20,428 | 10,709 | 3,978 | 1,179 | 437 | 1,380 | 38,111 | 936 | 97 | 390 | 1,423 | 7,932 | 47,466 |
| | Government on Community e/ | 201 | 9,399 | 8,691 | 16,042 | 1,313 | 149 | 125 | 35,749 | 0 | 0 | 110 | 110 | 122 | 35,981 |
| | Private, etc f/ | 2,678 | 128,127 | 86,634 | 67,267 | 19,612 | 3,838 | 1,319 | 306,827 | 1,407 | 8 | 30,151 | 31,566 | 35,642 | 374,035 |
| | TOTAL | 3,561 | 159,962 | 113,053 | 101,404 | 23,817 | 4,622 | 3,028 | 405,886 | 2,399 | 105 | 30,651 | 33,155 | 47,505 | 486,506 |
| 1933 | Former Imperial | 288 | 1,077 | 7,064 | 6,253 | 947 | 153 | 115 | 15,609 | 83 | 0 | 0 | 83 | 6,191 | 21,883 |
| | National | 424 | 22,260 | 11,078 | 4,768 | 2,754 | 500 | 1,132 | 42,492 | 692 | 0 | 514 | 1,206 | 12,286 | 55,984 |
| | Government on Community e/ | 284 | 15,447 | 16,028 | 24,253 | 1,585 | 201 | 82 | 57,596 | 0 | 0 | 341 | 341 | 315 | 58,252 |
| | Private, etc f/ | 2,272 | 124,799 | 80,338 | 70,333 | 18,701 | 6,306 | 1,348 | 301,825 | 433 | 31 | 37,019 | 37,483 | 47,811 | 387,119 |
| | TOTAL | 3,268 | 163,583 | 114,508 | 105,607 | 23,987 | 7,160 | 2,677 | 417,522 | 1,208 | 31 | 37,874 | 39,113 | 66,603 | 523,238 |
| 1934 | Former Imperial | 296 | 1,907 | 6,312 | 14,278 | 1,457 | 93 | 108 | 14,185 | 92 | 0 | 0 | 92 | 9,011 | 23,288 |
| | National | 431 | 21,368 | 10,168 | 5,160 | 2,170 | 580 | 1,562 | 41,608 | 909 | 125 | 420 | 1,454 | 14,917 | 57,979 |
| | Government on Community e/ | 214 | 10,719 | 8,894 | 11,809 | 1,365 | 104 | 67 | 32,958 | 0 | 0 | 126 | 126 | 235 | 33,319 |
| | Private, etc f/ | 2,904 | 120,156 | 76,962 | 72,912 | 22,380 | 1,857 | 1,326 | 295,593 | 508 | 2,428 | 38,427 | 41,363 | 45,001 | 381,957 |
| | TOTAL | 3,845 | 154,150 | 102,666 | 94,159 | 27,372 | 2,634 | 3,063 | 374,344 | 1,509 | 2,553 | 38,973 | 43,035 | 114,165 | 496,543 |
| 1935 | Former Imperial | 321 | 2,099 | 5,905 | 3,057 | 1,574 | 19 | 189 | 13,743 | 125 | 22 | 0 | 147 | 4,773 | 18,663 |
| | National | 542 | 22,250 | 11,109 | 3,791 | 2,220 | 606 | 1,160 | 41,126 | 766 | 75 | 380 | 1,221 | 14,412 | 57,059 |
| | Government on Community e/ | 215 | 10,981 | 7,790 | 10,769 | 1,375 | 129 | 86 | 31,130 | 0 | 0 | 228 | 228 | 495 | 31,853 |
| | Private, etc f/ | 2,344 | 131,191 | 77,535 | 75,940 | 18,299 | 1,462 | 1,629 | 306,056 | 1,161 | 2,712 | 36,382 | 40,255 | 41,897 | 388,208 |
| | TOTAL | 3,422 | 166,521 | 102,339 | 94,147 | 23,768 | 2,216 | 3,064 | 392,355 | 2,052 | 2,809 | 36,990 | 41,851 | 61,577 | 495,783 |
| 1936 | Former Imperial | 389 | 1,724 | 6,369 | 1,171 | 1,073 | 15 | 226 | 10,578 | 129 | 50 | 0 | 179 | 7,251 | 18,008 |
| | National | 409 | 21,867 | 10,413 | 3,160 | 2,219 | 532 | 1,195 | 39,716 | 766 | 183 | 654 | 1,603 | 16,581 | 57,900 |
| | Government on Community e/ | 237 | 12,268 | 9,541 | 11,598 | 1,326 | 141 | 105 | 34,979 | 0 | 0 | 499 | 499 | 580 | 36,058 |
| | Private, etc f/ | 2,701 | 146,133 | 87,870 | 75,037 | 20,993 | 1,629 | 2,207 | 333,869 | 1,046 | 2,747 | 39,139 | 42,932 | 42,803 | 419,604 |
| | TOTAL | 3,736 | 181,992 | 114,193 | 91,266 | 25,611 | 2,317 | 3,733 | 419,142 | 1,941 | 2,980 | 40,292 | 45,213 | 67,215 | 531,570 |
| 1937 | Former Imperial | 319 | 1,987 | 6,680 | 1,180 | 806 | 0 | 0 | 10,343 | 0 | 0 | 0 | 0 | 7,315 | 17,658 |
| | National | 501 | 17,691 | 7,220 | 3,036 | 1,992 | 213 | 1,538 | 31,690 | 702 | 88 | 626 | 1,416 | 14,957 | 48,063 |
| | Government on Community e/ | 227 | 11,977 | 9,691 | 10,945 | 1,377 | 86 | 91 | 34,167 | 0 | 0 | 530 | 530 | 489 | 35,186 |
| | Private, etc f/ | 2,711 | 151,609 | 90,301 | 58,667 | 22,656 | 1,367 | 2,044 | 327,047 | 990 | 2,084 | 37,727 | 40,801 | 40,283 | 408,131 |
| | TOTAL | 3,754 | 182,864 | 113,805 | 73,828 | 26,821 | 2,166 | 3,673 | 403,247 | 1,692 | 2,172 | 38,883 | 42,747 | 63,044 | 509,038 |
| 1938 | Former Imperial | 382 | 1,315 | 7,259 | 1,568 | 1,516 | 0 | 0 | 12,158 | 0 | 0 | 0 | 0 | 8,375 | 20,533 |
| | National | 417 | 19,102 | 7,461 | 2,333 | 1,303 | 359 | 1,776 | 32,339 | 415 | 119 | 639 | 1,203 | 19,255 | 52,797 |
| | Government on Community e/ | 203 | 11,120 | 7,447 | 7,268 | 1,146 | 141 | 58 | 27,183 | 0 | 0 | 738 | 738 | 341 | 28,562 |
| | Private, etc f/ | 2,688 | 152,295 | 88,036 | 56,061 | 32,749 | 1,533 | 1,531 | 333,105 | 961 | 1,849 | 33,899 | 36,699 | 38,351 | 408,155 |
| | TOTAL | 3,695 | 184,332 | 111,103 | 67,235 | 37,014 | 2,036 | 3,365 | 405,085 | 1,376 | 1,968 | 35,266 | 38,640 | 66,322 | 510,047 |
| 1939 | Former Imperial | 430 | 1,941 | 6,798 | 2,094 | 1,185 | 0 | 0 | 12,321 | 0 | 0 | 0 | 0 | 7,067 | 19,388 |
| | National | 418 | 19,439 | 6,792 | 1,815 | 2,837 | 266 | 1,672 | 32,821 | 183 | 30 | 451 | 864 | 22,210 | 55,895 |
| | Government on Community e/ | 183 | 8,854 | 6,715 | 5,925 | 1,488 | 223 | 40 | 23,185 | 0 | 0 | 1,033 | 1,033 | 393 | 24,611 |
| | Private, etc f/ | 3,474 | 179,691 | 90,533 | 64,504 | 47,754 | 1,645 | 1,062 | 386,129 | 1,837 | 2,004 | 33,347 | 37,188 | 53,041 | 476,358 |
| | TOTAL | 4,505 | 209,928 | 110,838 | 74,378 | 53,504 | 2,134 | 3,674 | 454,456 | 2,220 | 2,034 | 34,831 | 39,085 | 82,711 | 576,252 |
| 1940 | Former Imperial | 486 | 2,216 | 6,715 | 2,197 | 1,369 | 0 | 0 | 12,497 | 0 | 0 | 0 | 0 | 7,296 | 19,793 |
| | National | 381 | 17,496 | 5,423 | 2,492 | 3,046 | 230 | 1,306 | 30,033 | 420 | 46 | 468 | 934 | 21,321 | 52,288 |
| | Government on Community e/ | 117 | 6,988 | 4,618 | 4,555 | 1,239 | 165 | 53 | 17,618 | 0 | 0 | 711 | 711 | 301 | 18,630 |
| | Private, etc f/ | 3,591 | 201,586 | 106,947 | 85,812 | 102,564 | 1,655 | 1,288 | 499,882 | 869 | 1,891 | 35,437 | 38,187 | 40,602 | 578,671 |
| | TOTAL | 3,667 | 228,286 | 123,703 | 95,086 | 108,258 | 2,050 | 2,647 | 560,030 | 1,289 | 1,937 | 36,616 | 39,832 | 69,520 | 669,382 |

Continued

TABLE 3 - SEEDLING PRODUCTION a/, 1932-47 (CONT'D)
(1,000 SEEDLINGS)

| Year | Forest Ownership | Nursery Area (cho) | Coniferous b/ | | | | | | | Broadleaved c/ | | | | Other Coniferous and Broadleaved d/ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sugi | Hinoki | Matsu | Karamatsu | Sawara | Hiba | Total | Keyaki | Kuri | Kunugi | Total | | |
| 1941 | Former Imperial | 542 | 1,664 | 8,069 | 1,341 | 1,765 | 0 | 143 | 12,982 | 0 | 0 | 0 | 0 | 9,001 | 21,983 |
| | National | 816 | 19,011 | 5,878 | 1,884 | 1,995 | 215 | 998 | 29,981 | 390 | 36 | 461 | 887 | 23,465 | 54,333 |
| | Government on Community e/ | 163 | 5,801 | 4,187 | 3,180 | 21 | 94 | 63 | 13,346 | 0 | 20 | 344 | 364 | 1,460 | 15,170 |
| | Private, etc f/ | 4,689 | 350,633 | 188,743 | 120,097 | 87,504 | 6,905 | 921 | 754,843 | 2,487 | 1,320 | 34,438 | 38,255 | 33,710 | 826,808 |
| | TOTAL | 6,210 | 377,109 | 206,917 | 126,502 | 91,285 | 7,214 | 2,125 | 811,152 | 2,877 | 1,376 | 35,253 | 39,506 | 67,635 | 918,293 |
| 1942 | Former Imperial | 704 | 1,689 | 6,667 | 1,387 | 1,877 | 0 | 0 | 11,620 | 0 | 0 | 0 | 0 | 11,301 | 22,921 |
| | National | 796 | 17,555 | 5,338 | 1,891 | 3,060 | 146 | 751 | 28,741 | 346 | 26 | 464 | 836 | 36,288 | 65,865 |
| | Government on Community e/ | 133 | 5,180 | 2,924 | 3,096 | 622 | 14 | 25 | 11,861 | 0 | 8 | 259 | 267 | 265 | 12,393 |
| | Private, etc f/ | 3,308 | 261,150 | 132,008 | 110,172 | 98,300 | 2,948 | 581 | 605,659 | 3,060 | 2,035 | 31,493 | 36,588 | 30,575 | 672,822 |
| | TOTAL | 4,941 | 285,574 | 146,937 | 116,546 | 104,359 | 3,108 | 1,357 | 657,881 | 3,406 | 2,069 | 32,216 | 37,691 | 78,429 | 774,001 |
| 1943 | Former Imperial | 732 | 1,801 | 6,507 | 1,209 | 2,580 | 0 | 0 | 12,097 | 0 | 0 | 0 | 0 | 16,538 | 28,635 |
| | National | 527 | 10,376 | 2,954 | 281 | 2,606 | 18 | 46 | 16,281 | 88 | 0 | 18 | 106 | 41,030 | 57,417 |
| | Government on Community e/ | 97 | 3,159 | 2,042 | 0 | 601 | 1 | 24 | 5,827 | 0 | 0 | 196 | 196 | 2,775 | 8,798 |
| | Private, etc f/ | 3,153 | 224,327 | 100,564 | 88,780 | 142,150 | 2,575 | 362 | 558,767 | 2,108 | 1,294 | 23,202 | 26,904 | 33,771 | 619,442 |
| | TOTAL | 4,509 | 239,663 | 112,067 | 90,279 | 147,937 | 2,594 | 432 | 592,972 | 2,196 | 1,294 | 23,416 | 27,206 | 94,114 | 714,292 |
| 1944 | Former Imperial | ND | 1,100 | 4,437 | 1,438 | 2,539 | 0 | 0 | 9,514 | 0 | 0 | 0 | 0 | 10,359 | 19,873 |
| | National | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Government on Community e/ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Private, etc f/ | ND | 194,602 | 110,462 | 98,502 | 90,788 | 1,608 | 598 | 496,560 | 1,172 | 1,433 | 13,965 | 16,570 | 18,189 | 531,319 |
| | TOTAL | ND | 195,702 | 114,899 | 99,940 | 93,327 | 1,608 | 598 | 506,074 | 1,172 | 1,433 | 13,965 | 16,570 | 28,548 | 551,192 |
| 1945 | Former Imperial | ND | 419 | 3,584 | 468 | 1,367 | 0 | 0 | 5,838 | 0 | 0 | 0 | 0 | 4,940 | 10,778 |
| | National | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Government on Community e/ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Private, etc f/ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | TOTAL | ND | 419 | 3,584 | 468 | 1,367 | 0 | 0 | 5,838 | 0 | 0 | 0 | 0 | 4,940 | 10,778 |
| 1946 | Former Imperial | 522 | 1,043 | 3,281 | 821 | 1,141 | 0 | 0 | 6,286 | 0 | 0 | 0 | 0 | 7,533 | 13,819 |
| | National | 548 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Government on Community e/ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Private, etc f/ | 990 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | TOTAL | 2,060 | 1,043 | 3,281 | 821 | 1,141 | 0 | 0 | 6,286 | 0 | 0 | 0 | 0 | 7,533 | 13,819 |
| 1947 | Former Imperial | ND | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ |
| | National | 2,029 | 103,340 | 32,014 | 31,970 | 34,161 | 0 | 0 | 191,825 | 0 | 0 | 223 | 223 | 64,083 | 259,131 |
| | Government on Community e/ | ND | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ |
| | Private, etc f/ | ND | 299,685 | 148,621 | 144,154 | 19,132 | 0 | 0 | 611,592 | 0 | 0 | 19,143 | 19,143 | 73,321 | 704,056 |
| | TOTAL | 2,029 | 403,065 | 180,635 | 169,134 | 53,293 | 0 | 0 | 806,417 | 0 | 0 | 19,366 | 19,366 | 137,404 | 963,187 |

a/ Prior to 1941 figures represent the results of an annual inventory of seedlings of suitable size for planting. As all of these were not always planted, some seedlings may be counted two or more times.

b/ Coniferous:
Sugi, Japanese redwood or cedar, Cryptomeria japonica
Hinoki, Japanese cedar or cypress, Chamaecyparis obtusa
Karamatsu, larch, Larix kaempferi
Sawara, Sawara cedar or cypress, Chamaecyparis pisifera
Hiba, Japanese cedar, Thujopsis dolabrata

c/ Broadleaved:
Keyaki, zelkova, Zelkova serrata
Kuri, chestnut, Castanea crenata
Kunugi, red oak, Quercus dentata

d/ Largely todomatsu (white fir), Abies mayriana, and ezomatsu (spruce), Picea jezoensis

e/ Seedlings are produced by national forest nurseries, but they are designated for use on community land which the national government has contracted to reforest.

f/ Includes community, prefectural, shrine and temple forests.

g/ Included in National

ND: No data available

SOURCE: Bureau of Forestry

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725413

## TABLE 3 - SEEDLING PRODUCTION a/ 1932-47 (CONT'D)

(1,000 SEEDLINGS)

| Year | Forest Ownership | Nursery Area (cho) | Coniferous b/ | | | | | | | Broadleaved c/ | | | | Other Coniferous and Broadleaved d/ | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sugi | Hinoki | Matsu | Karamatsu | Sawara | Hiba | Total | Keyaki | Kuri | Kunugi | Total | | |
| 1941 | Former Imperial | 542 | 1,664 | 8,069 | 1,341 | 1,765 | 0 | 143 | 12,982 | 0 | 0 | 0 | 0 | 9,001 | 21,983 |
| | National | 816 | 19,011 | 5,878 | 1,894 | 1,995 | 215 | 998 | 29,981 | 390 | 36 | 461 | 887 | 23,465 | 54,333 |
| | Government on Community e/ | 163 | 5,801 | 4,187 | 3,180 | 21 | 94 | 63 | 13,346 | 0 | 20 | 344 | 364 | 1,460 | 15,170 |
| | Private, etc f/ | 4,689 | 350,633 | 188,763 | 120,097 | 87,594 | 6,905 | 921 | 754,913 | 2,487 | 1,320 | 34,448 | 38,255 | 33,710 | 826,808 |
| | TOTAL | 6,210 | 377,109 | 206,917 | 126,502 | 91,285 | 7,214 | 2,125 | 811,152 | 2,877 | 1,376 | 35,253 | 39,506 | 67,635 | 918,293 |
| 1942 | Former Imperial | 704 | 1,689 | 6,667 | 1,387 | 1,877 | 0 | 0 | 11,620 | 0 | 0 | 0 | 0 | 11,301 | 22,921 |
| | National | 796 | 17,555 | 5,338 | 1,891 | 3,060 | 146 | 751 | 28,741 | 346 | 26 | 464 | 836 | 36,288 | 65,865 |
| | Government on Community e/ | 133 | 5,180 | 2,924 | 3,066 | 622 | 14 | 25 | 11,861 | 0 | 8 | 259 | 267 | 265 | 12,393 |
| | Private, etc f/ | 3,308 | 261,150 | 132,008 | 110,172 | 98,400 | 2,948 | 581 | 605,659 | 3,060 | 2,035 | 31,493 | 36,588 | 30,575 | 672,822 |
| | TOTAL | 4,941 | 285,574 | 146,937 | 116,516 | 104,359 | 3,108 | 1,357 | 657,881 | 3,406 | 2,069 | 32,216 | 37,691 | 78,429 | 774,001 |
| 1943 | Former Imperial | 732 | 1,801 | 6,507 | 1,209 | 2,560 | 0 | 0 | 12,097 | 0 | 0 | 0 | 0 | 16,538 | 28,635 |
| | National | 527 | 10,376 | 2,954 | 281 | 2,606 | 18 | 46 | 16,281 | 88 | 0 | 18 | 106 | 41,030 | 57,417 |
| | Government on Community e/ | 97 | 3,159 | 2,042 | 0 | 601 | 1 | 24 | 5,827 | 0 | 0 | 196 | 196 | 2,775 | 8,798 |
| | Private, etc f/ | 3,153 | 224,327 | 100,564 | 88,749 | 112,150 | 2,575 | 362 | 558,767 | 2,408 | 1,294 | 23,202 | 26,904 | 33,771 | 619,442 |
| | TOTAL | 4,509 | 239,663 | 112,067 | 90,279 | 117,937 | 2,594 | 432 | 592,972 | 2,496 | 1,294 | 23,416 | 27,206 | 94,114 | 714,292 |
| 1944 | Former Imperial | ND | 1,100 | 4,437 | 1,438 | 2,539 | 0 | 0 | 9,514 | 0 | 0 | 0 | 0 | 10,359 | 19,873 |
| | National | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Government on Community e/ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Private, etc f/ | ND | 194,602 | 110,462 | 98,502 | 90,788 | 1,608 | 598 | 496,560 | 1,172 | 1,433 | 13,965 | 16,570 | 18,189 | 531,319 |
| | TOTAL | ND | 195,702 | 114,899 | 99,940 | 93,327 | 1,608 | 598 | 506,074 | 1,172 | 1,433 | 13,965 | 16,570 | 28,548 | 551,192 |
| 1945 | Former Imperial | ND | 419 | 3,584 | 168 | 1,367 | 0 | 0 | 5,838 | 0 | 0 | 0 | 0 | 4,940 | 10,778 |
| | National | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Government on Community e/ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Private, etc f/ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | TOTAL | ND | 419 | 3,584 | 168 | 1,367 | 0 | 0 | 5,838 | 0 | 0 | 0 | 0 | 4,940 | 10,778 |
| 1946 | Former Imperial | 522 | 1,043 | 3,281 | 821 | 1,141 | 0 | 0 | 6,286 | 0 | 0 | 0 | 0 | 7,533 | 13,819 |
| | National | 548 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Government on Community e/ | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | Private, etc f/ | 990 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | TOTAL | 2,060 | 1,043 | 3,281 | 821 | 1,141 | 0 | 0 | 6,286 | 0 | 0 | 0 | 0 | 7,533 | 13,819 |
| 1947 | Former Imperial | ND | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ |
| | National | 2,029 | 103,340 | 32,014 | 21,970 | 34,461 | 0 | 0 | 191,825 | 0 | 0 | 223 | 223 | 64,083 | 259,131 |
| | Government on Community e/ | ND | g/ | c/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ | g/ |
| | Private, etc f/ | ND | 299,685 | 148,621 | 144,154 | 19,132 | 0 | 0 | 611,592 | 0 | 0 | 19,143 | 19,143 | 73,321 | 704,056 |
| | TOTAL | 2,029 | 403,065 | 180,635 | 169,134 | 53,593 | 0 | 0 | 806,417 | 0 | 0 | 19,366 | 19,366 | 137,404 | 963,187 |

a/ Prior to 1941 figures represent the results of an annual inventory of seedlings of suitable size for planting. As all of these were not always planted, some seedlings may be counted two or more times.

b/ Coniferous:
Sugi, Japanese redwood or cedar, Cryptomeria japonica
Hinoki, Japanese cedar or cypress, Chamaecyparis obtusa
Karamatsu, larch, Larix kaempferi
Sawara, Sawara cedar or cypress, Chamaecyparis pisifera
Hiba, Japanese cedar, Thujopsis dolabrata

c/ Broadleaved:
Keyaki, zelkova, Zelkova serrata
Kuri, chestnut, Castanea crenata
Kunugi, red oak, Quercus dentata

d/ Largely todomatsu (white fir), Abies mayriana, and ezomatsu (spruce), Picea jesoensis

e/ Seedlings are produced by national forest nurseries, but they are designated for use on community land which the national government has contracted to reforest.

f/ Includes community, prefectural, shrine and temple forests.

g/ Included in National

ND: No data available

SOURCE: Bureau of Forestry

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725113

## TABLE 4. - AREA IN NEED OF REFORESTATION
(AS OF 1 APRIL 1947)
(CHO)

A. Area Excluding Protection Forests

| Method of Reforestation Required | Type of Reforestation Required | Type Forest | Ownership: National a/ | Private | Community and Prefectural | Government on Community b/ | Shrine and Temple | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Artificial | Planting | Timber | 212,714 | 425,368 | 174,693 | 40,544 | 10,750 | 864,069 |
| | | Fuelwood | 53,183 | 106,342 | 20,203 | 2,134 | 0 | 181,862 |
| | | Bamboo | 40 | 400 | 0 | 0 | 0 | 440 |
| | | Total | 265,937 | 532,110 | 194,896 | 42,678 | 10,750 | 1,046,371 |
| | Seeding | Timber | 0 | 10,960 | 3,471 | 0 | 0 | 14,431 |
| | | Fuelwood | 0 | 2,740 | 0 | 0 | 0 | 2,740 |
| | | Total | 0 | 13,700 | 3,471 | 0 | 0 | 17,171 |
| | Aid to natural reforestation | Timber | 271,964 | 248,567 | 59,626 | 0 | 0 | 580,157 |
| | | Fuelwood | 75,989 | 11,853 | 0 | 0 | 0 | 87,842 |
| | | Total | 347,953 | 260,420 | 59,626 | 0 | 0 | 667,999 |
| | Total | Timber | 484,678 | 684,895 | 237,790 | 40,544 | 10,750 | 1,458,657 |
| | | Fuelwood | 129,172 | 120,935 | 20,203 | 2,134 | 0 | 272,444 |
| | | Bamboo | 40 | 400 | 0 | 0 | 0 | 440 |
| | | Total | 613,890 | 806,230 | 257,993 | 42,678 | 10,750 | 1,731,541 |
| Natural | NA | Timber | 33,280 | 66,010 | 21,122 | 0 | 880 | 121,292 |
| | | Fuelwood | 101,448 | 178,712 | 24,650 | 0 | 2,054 | 306,864 |
| | | Bamboo | 32 | 8,567 | 360 | 0 | 90 | 9,049 |
| | | Total | 134,760 | 253,289 | 46,132 | 0 | 3,024 | 437,205 |
| TOTAL | NA | Timber | 517,958 | 750,905 | 258,912 | 40,544 | 11,630 | 1,579,949 |
| | | Fuelwood | 230,620 | 299,647 | 44,853 | 2,134 | 2,054 | 579,308 |
| | | Bamboo | 72 | 8,967 | 360 | 0 | 90 | 9,489 |
| | | Total | 748,650 | 1,059,519 | 304,125 | 42,678 | 13,774 | 2,168,746 |

B. Potential and Actual Protection Forests

| Ownership | Damaged Forest Area | Sand Dune Area | Nonforest Damage Prevention Area | Total |
|---|---|---|---|---|
| National | 22,940 | 11,140 | 3,349 | 37,429 |
| Private and other | 232,123 | 30,950 | 22,452 | 285,525 |
| TOTAL | 255,063 | 42,090 | 25,801 | 322,954 |

C. Total Area in Need of Reforestation

| Area | Total |
|---|---|
| Forest area needing reforestation excluding protection forests | 2,168,746 |
| Damaged forest area | 255,063 |
| Total forest area requiring reforestation | 2,423,809 c/ |
| Sand dune area | 42,090 |
| Nonforest damaged prevention area | 25,801 |
| Total area requiring reforestation | 2,491,700 |

a/ Includes former imperial forests
b/ National government contracts to reforest community land in return for a share of the yield.
c/ In spite of the nature of Japanese forest statistics, this figure is only an insignificant 6,045 cho less than the 2,429,849 cho figure given in Figure 19. This figure is the result of a survey completed by the Bureau of Forestry in April 1947. The figure in Figure 19 is the difference between cutting and reforestation as reported annually by the Bureau since 1930.
NA: Not applicable
SOURCE: Bureau of Forestry

## TABLE 5. - NATIONAL PROTECTION FOREST REFORESTATION PLAN, 1948 - 52
(CHO)

| Project | Area in Need a/ (Mar 47) | 1948 | 1949 | 1950 | 1951 | 1952 | Total | Percent of Need |
|---|---|---|---|---|---|---|---|---|
| Forest protection works (damage repair) | | | | | | | | |
| Restoration of eroded land (severe erosion) | 14,871 | 316 | 316 | 421 | 464 | 590 | 2,107 | 14.2 |
| Restoration of denuded land (light erosion) | 7,282 | 147 | 147 | 196 | 215 | 274 | 979 | 13.4 |
| Fixation of landslides | 787 | 19 | 19 | 25 | 27 | 35 | 125 | 15.9 |
| Prevention of erosion | b/ | 165 | 165 | 221 | 243 | 309 | 1,103 | NA |
| Total | 22,940 | 647 | 647 | 863 | 949 | 1,208 | 4,314 | 14.0 c/ |
| Sand dune fixation | 11,140 | 202 | 202 | 269 | 296 | 376 | 1,345 | 12.1 |
| Damage prevention works | | | | | | | | |
| Inland windbreaks | 2,550 | 382 | 383 | 510 | 561 | 714 | 2,550 | 100 |
| Coastal windbreaks | 271 | 40 | 41 | 54 | 60 | 76 | 271 | 100 |
| Tidal wave protection | 113 | 17 | 17 | 22 | 25 | 32 | 113 | 100 |
| Avalanche prevention | 346 | 52 | 52 | 69 | 76 | 97 | 346 | 100 |
| Flood prevention | 69 | 10 | 11 | 14 | 15 | 19 | 69 | 100 |
| Total | 3,349 | 501 | 504 | 669 | 737 | 938 | 3,349 | 100 |
| GRAND TOTAL | 37,429 | 1,350 | 1,353 | 1,801 | 1,982 | 2,522 | 9,008 | 21.1 c/ |

a/ Should be altered by the difference between the area on which work was completed and the area newly requiring these activities in 1947, in order to give a corrected figure as of the beginning of this plan.
b/ This work is done on areas not yet in the poor condition of the land included in the other items, so no definite "area in need" could be established. The item was included in the program to provide for areas that will in time require reforestation if they are to be prevented from deteriorating.
c/ Does not include work planned for "prevention of erosion"
NA: Not applicable
SOURCE: Bureau of Forestry



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725118

## TABLE 4. - AREA IN NEED OF REFORESTATION
(AS OF 1 APRIL 1947)
(CHO)

A. Area Excluding Protection Forests

| Method of Reforestation Required | Type of Reforestation Required | Type Forest | Ownership: National a/ | Private | Community and Prefectural | Government on Community b/ | Shrine and Temple | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Artificial | Planting | Timber | 212,714 | 425,368 | 174,693 | 40,544 | 10,750 | 864,069 |
| | | Fuelwood | 53,183 | 106,342 | 20,203 | 2,134 | 0 | 181,862 |
| | | Bamboo | 40 | 400 | 0 | 0 | 0 | 440 |
| | | Total | 265,937 | 532,110 | 194,896 | 42,678 | 10,750 | 1,046,371 |
| | Seeding | Timber | 0 | 10,960 | 3,471 | 0 | 0 | 14,431 |
| | | Fuelwood | 0 | 2,740 | 0 | 0 | 0 | 2,740 |
| | | Total | 0 | 13,700 | 3,471 | 0 | 0 | 17,171 |
| | Aid to natural reforestation | Timber | 271,964 | 248,567 | 59,626 | 0 | 0 | 580,157 |
| | | Fuelwood | 75,989 | 11,853 | 0 | 0 | 0 | 87,842 |
| | | Total | 347,953 | 260,420 | 59,626 | 0 | 0 | 667,999 |
| | Total | Timber | 484,678 | 684,895 | 237,790 | 40,544 | 10,750 | 1,458,657 |
| | | Fuelwood | 129,172 | 120,935 | 20,203 | 2,134 | 0 | 272,444 |
| | | Bamboo | 40 | 400 | 0 | 0 | 0 | 440 |
| | | Total | 613,890 | 806,230 | 257,993 | 42,678 | 10,750 | 1,731,541 |
| Natural | NA | Timber | 33,280 | 66,010 | 21,122 | 0 | 880 | 121,292 |
| | | Fuelwood | 101,448 | 178,712 | 24,650 | 0 | 2,054 | 306,864 |
| | | Bamboo | 32 | 8,567 | 360 | 0 | 90 | 9,049 |
| | | Total | 134,760 | 253,289 | 46,132 | 0 | 3,024 | 437,205 |
| TOTAL | NA | Timber | 517,958 | 750,905 | 258,912 | 40,544 | 11,630 | 1,579,949 |
| | | Fuelwood | 230,620 | 299,647 | 44,853 | 2,134 | 2,054 | 579,308 |
| | | Bamboo | 72 | 8,967 | 360 | 0 | 90 | 9,489 |
| | | Total | 748,650 | 1,059,519 | 304,125 | 42,678 | 13,774 | 2,168,746 |

B. Potential and Actual Protection Forests

| Ownership | Damaged Forest Area | Sand Dune Area | Nonforest Damage Prevention Area | Total |
|---|---|---|---|---|
| National | 22,940 | 11,140 | 3,349 | 37,429 |
| Private and other | 232,123 | 30,950 | 22,452 | 285,525 |
| TOTAL | 255,063 | 42,090 | 25,801 | 322,954 |

C. Total Area in Need of Reforestation

| Area | Total |
|---|---|
| Forest area needing reforestation excluding protection forests | 2,168,746 |
| Damaged forest area | 255,063 |
| Total forest area requiring reforestation | 2,423,809 c/ |
| Sand dune area | 42,090 |
| Nonforest damaged prevention area | 25,801 |
| Total area requiring reforestation | 2,491,700 |

a/ Includes former imperial forests
b/ National government contracts to reforest community land in return for a share of the yield.
c/ In spite of the nature of Japanese forest statistics, this figure is only an insignificant 6,045 cho less than the 2,429,849 cho figure given in Figure 19. This figure is the result of a survey completed by the Bureau of Forestry in April 1947. The figure in Figure 19 is the difference between cutting and reforestation as reported annually by the Bureau since 1930.
NA: Not applicable
SOURCE: Bureau of Forestry

## TABLE 5. - NATIONAL PROTECTION FOREST REFORESTATION PLAN, 1948 - 52
(CHO)

| Project | Area in Need a/ (Mar 47) | 1948 | 1949 | 1950 | 1951 | 1952 | Total | Percent of Need |
|---|---|---|---|---|---|---|---|---|
| Forest protection works (damage repair) | | | | | | | | |
| Restoration of eroded land (severe erosion) | 14,871 | 316 | 316 | 421 | 464 | 590 | 2,107 | 14.2 |
| Restoration of denuded land (light erosion) | 7,282 | 147 | 147 | 196 | 215 | 274 | 979 | 13.4 |
| Fixation of landslides | 787 | 19 | 19 | 25 | 27 | 35 | 125 | 15.9 |
| Prevention of erosion | b/ | 165 | 165 | 221 | 243 | 309 | 1,103 | NA |
| Total | 22,940 | 647 | 647 | 863 | 949 | 1,208 | 4,314 | 14.0 c/ |
| Sand dune fixation | 11,140 | 202 | 202 | 269 | 296 | 376 | 1,345 | 12.1 |
| Damage prevention works | | | | | | | | |
| Inland windbreaks | 2,550 | 382 | 383 | 510 | 561 | 714 | 2,550 | 100 |
| Coastal windbreaks | 271 | 40 | 41 | 54 | 60 | 76 | 271 | 100 |
| Tidal wave protection | 113 | 17 | 17 | 22 | 25 | 32 | 113 | 100 |
| Avalanche prevention | 346 | 52 | 52 | 69 | 76 | 97 | 346 | 100 |
| Flood prevention | 69 | 10 | 11 | 14 | 15 | 19 | 69 | 100 |
| Total | 3,349 | 501 | 504 | 669 | 737 | 938 | 3,349 | 100 |
| GRAND TOTAL | 37,429 | 1,350 | 1,353 | 1,801 | 1,982 | 2,522 | 9,008 | 21.1 c/ |

a/ Should be altered by the difference between the area on which work was completed and the area newly requiring these activities in 1947, in order to give a corrected figure as of the beginning of this plan.
b/ This work is done on areas not yet in the poor condition of the land included in the other items, so no definite "area in need" could be established. The item was included in the program to provide for areas that will in time require reforestation if they are to be prevented from deteriorating.
c/ Does not include work planned for "prevention of erosion"
NA: Not applicable
SOURCE: Bureau of Forestry



DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725178

## TABLE 6. - GOVERNMENTAL REFORESTATION ASSISTANCE TO PRIVATE FOREST OWNERS a/

| Year | Prefectural Contribution | Prefectures Involved | Reforestation Area (cho) | Financial Contributions | | | |
|---|---|---|---|---|---|---|---|
| | | | | National Subsidy (yen) | Prefectural Subsidy (yen) | Owner's Share (yen) | Total (yen) |
| Up to 1933 | Planting | ND | 4,688 | 80,222 | b/ | 276,559 | 356,781 |
| | Subsidy | ND | 137,260 | 1,797,039 | 809,000 | 7,838,624 | 10,444,663 |
| | Total | NA | 141,948 | 1,877,261 | 809,000 | 8,115,183 | 10,801,444 |
| 1934 | Planting | 11 | 1,097 | 22,324 | b/ | 67,198 | 89,522 |
| | Subsidy | 46 | 31,890 | 380,711 | 152,009 | 1,742,713 | 2,275,433 |
| | Total | NA | 32,987 | 403,035 | 152,009 | 1,809,911 | 2,364,955 |
| 1935 | Planting | 14 | 1,170 | 22,043 | b/ | 77,180 | 99,223 |
| | Subsidy | 45 | 34,418 | 334,296 | 142,698 | 1,932,184 | 2,409,178 |
| | Total | NA | 35,588 | 356,339 | 142,698 | 2,009,364 | 2,508,401 |
| 1936 | Planting | 13 | 1,292 | 23,962 | b/ | 72,987 | 96,949 |
| | Subsidy | 45 | 33,372 | 359,107 | 133,313 | 2,051,428 | 2,543,878 |
| | Total | NA | 34,664 | 383,069 | 133,313 | 2,124,415 | 2,640,827 |
| 1937 | Planting | 16 | 1,416 | 25,364 | b/ | 76,590 | 101,954 |
| | Subsidy | 45 | 35,137 | 389,268 | 157,974 | 2,163,352 | 2,711,594 |
| | Total | NA | 36,553 | 415,632 | 157,974 | 2,239,942 | 2,813,548 |
| 1938 | Planting | 19 | 1,592 | 30,416 | b/ | 97,731 | 128,147 |
| | Subsidy | 45 | 48,844 | 541,709 | 231,271 | 3,349,492 | 4,122,472 |
| | Total | NA | 49,796 | 572,125 | 231,271 | 3,447,223 | 4,250,619 |
| 1939 | Planting | 17 | 1,027 | 20,684 | b/ | 67,112 | 87,796 |
| | Subsidy | 45 | 61,876 | 1,202,629 | 425,087 | 4,866,237 | 6,493,953 |
| | Total | NA | 62,903 | 1,223,313 | 425,087 | 4,933,349 | 6,581,749 |
| 1940 | Planting | 26 | 2,383 | 59,054 | b/ | 197,588 | 256,642 |
| | Subsidy | 45 | 65,610 | 1,178,515 | 444,136 | 6,592,403 | 8,215,054 |
| | Total | NA | 67,993 | 1,237,569 | 444,136 | 6,789,991 | 8,471,696 |
| 1941 | Planting | 35 | 3,427 | 103,634 | b/ | 342,225 | 445,859 |
| | Subsidy | 46 | 113,160 | 2,893,216 | 1,041,900 | 10,240,477 | 14,175,593 |
| | Total | NA | 116,987 | 2,996,850 | 1,041,900 | 10,582,702 | 14,621,452 |
| TOTAL | Planting | NA | 18,453 | 387,703 | b/ | 1,275,170 | 1,662,873 |
| | Subsidy | NA | 560,967 | 9,077,490 | 3,537,418 | 40,776,910 | 53,391,818 |
| | Total | NA | 579,420 | 9,465,193 | 3,537,418 | 42,052,080 | 55,054,691 |

a/ Includes private, community, prefectural, shrine, and temple forests.
b/ Prefecture did the planting, hence no planting subsidy was necessary.
NA: Not applicable
ND: No data available
SOURCE: Bureau of Forestry, 1943 Annual Report, p 199

## TABLE 7. - REFORESTATION OF COMMUNITY FORESTS BY NATIONAL GOVERNMENT a/

(CHO)

| Year | Contracts Made | | | Area Reforested | Area on which Reforestation Impossible or Impractical | Area Not Completed | Completion Planned | |
|---|---|---|---|---|---|---|---|---|
| | Towns | Units | Area | | | | Towns | Area |
| Up to 1926 | 696 | 1,316 | 151,551 | 49,298 | 102,232 | | ND | ND |
| 1927 | 758 | 1,550 | 162,418 | 58,184 | 104,235 | | ND | ND |
| 1928 | 835 | 1,697 | 173,895 | 68,737 | 105,159 | | ND | ND |
| 1929 | 922 | 1,878 | 184,750 | 84,255 | 100,497 | | ND | ND |
| 1930 | 969 | 1,951 | 189,621 | 94,869 | 94,752 | | ND | ND |
| 1931 | 992 | 2,073 | 198,177 | 103,498 | 94,678 | | ND | ND |
| 1932 | 1,044 | 2,195 | 204,981 | 124,300 | 80,682 | | ND | ND |
| 1933 | 1,089 | 2,337 | 215,122 | 145,092 | 70,031 | | ND | ND |
| 1934 | 1,122 | 2,400 | 220,236 | 153,870 | 15,823 | 50,543 | ND | ND |
| 1935 | 1,174 | 2,515 | 229,402 | 160,783 | 16,194 | 52,426 | ND | ND |
| 1936 | 1,225 | 2,672 | 239,438 | 172,102 | 16,294 | 51,043 | 732 | 87,637 |
| 1937 | 1,280 | 2,802 | 249,656 | 182,924 | 16,788 | 49,944 | 657 | 77,545 |
| 1938 | 1,320 | 2,907 | 255,779 | 190,195 | 16,705 | 48,879 | 621 | 75,316 |
| 1939 | 1,338 | 2,965 | 260,699 | 195,768 | 16,959 | 47,973 | 599 | 70,927 |
| 1940 | 1,355 | 3,004 | 262,500 | 200,835 | 17,165 | 44,500 | 556 | 66,597 |
| 1941 | 1,376 | 3,037 | 263,816 | 205,455 | 16,991 | 41,371 | 262 | 28,552 |
| 1942 | ND | ND | 267,424 | 209,612 | 5,444 b/ | 52,669 | ND | ND |
| 1943 | ND | ND | 270,674 | 216,104 | 5,402 | 49,168 | ND | ND |
| 1944 | ND | ND | 270,922 | 219,239 | 5,556 | 46,127 | ND | ND |
| 1945 | ND | ND | 270,922 | 220,157 | 5,609 | 45,156 | ND | ND |

a/ Figures are cumulative
b/ Definition changed this year so as to exclude paths, trails, small roads, timber yards, and temporary logging camps.

ND: No data available
SOURCE: Bureau of Forestry

## TABLE 8 - PRIVATE FOREST REFORESTATION PLAN, 1948 - 52

(CHO)

| Program or Subsidy | Area in Need a/ | 1948 | 1949 | 1950 | 1951 | 1952 | Total | Percent of Need b/ |
|---|---|---|---|---|---|---|---|---|
| General subsidy | | | | | | | | |
| Artificial planting | NA | 150,000 | 210,000 | 305,000 | 309,000 | 298,000 | 1,272,000 | NA |
| Artificial sowing | NA | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 50,000 | NA |
| Aid to natural reforestation | NA | 140,000 | 140,000 | 100,000 | 90,000 | 74,973 | 544,973 | NA |
| Total | | 300,000 | 360,000 | 415,000 | 409,000 | 382,973 | 1,866,973 | |
| Government-planted community forests | | | | | | | | |
| Artificial planting | NA | 3,500 | 4,500 | 10,000 | 12,339 | 12,339 | 42,678 | NA |
| Government-planted private forests | | | | | | | | |
| Artificial planting | NA | 0 | 0 | 15,000 | 21,000 | 32,000 | 68,000 | NA |
| Total | | | | | | | | |
| Artificial planting | 689,067 | 153,500 | 214,500 | 330,000 | 342,339 | 342,339 | 1,382,678 | 200.7 |
| Artificial sowing | 36,541 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 50,000 | 136.8 |
| Aid to natural reforestation | 262,423 | 140,000 | 140,000 | 100,000 | 90,000 | 74,973 | 544,973 | 207.7 |
| Total | 988,031 | 303,500 c/ | 364,500 | 440,000 | 442,339 | 427,312 | 1,977,651 | 200.2 |

a/ Area in need of reforestation as shown by the 1947 survey minus area on which completion of reforestation is anticipated in 1947. Does not add the anticipated 699,076 cho of clearcutting and 7,061 cho of selection cutting for 1947 as the method and type of reforestation required on this additional area cannot be determined.
b/ In view of the preceding footnote these percentages would be somewhat lower.
c/ An additional 10,000 cho will be reforested in 1948 by owners outside of these programs as follows: planting, 8,000 cho; sowing, 20 cho; aid to natural reforestation, 1,980 cho.

NA: Not applicable
SOURCE: Bureau of Forestry

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725018

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725013

## TABLE 9 - PRIVATE FOREST REFORESTATION DESIRES FOR 1948 FISCAL YEAR a/

(CHO)

| Prefecture | General Reforestation Subsidy | | | | Bond Reforestation Subsidy | | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Artificial Planting | Artificial Seeding | Aid to Natural Reforestation | Total | Artificial Planting | Artificial Seeding | Aid to Natural Reforestation | Total | Artificial Planting | Artificial Seeding | Aid to Natural Reforestation | Total |
| Hokkaido | 3,000 | 18 | 3,744 | 6,762 | 5,970 | 0 | 3,706 | 9,676 | 8,970 | 18 | 7,450 | 16,438 |
| Aomori | 920 | 50 | 1,030 | 2,000 | 0 | 0 | 0 | 0 | 920 | 50 | 1,030 | 2,000 |
| Iwate | 1,400 | 15 | 1,085 | 2,500 | 600 | 0 | 400 | 1,000 | 2,000 | 15 | 1,485 | 3,500 |
| Miyagi | 1,000 | 0 | 1,000 | 2,000 | 0 | 0 | 0 | 0 | 1,000 | 0 | 1,000 | 2,000 |
| Akita | 1,637 | 0 | 200 | 1,837 | 0 | 0 | 0 | 0 | 1,637 | 0 | 200 | 1,837 |
| Yamagata | 1,045 | 0 | 0 | 1,045 | 2,207 | 0 | 178 | 2,385 | 3,252 | 0 | 178 | 3,430 |
| Fukushima | 1,425 | 0 | 1,375 | 2,800 | 75 | 0 | 25 | 100 | 1,500 | 0 | 1,400 | 2,900 |
| Ibaraki | 2,700 | 0 | 3,000 | 5,700 | 4,300 | 0 | 0 | 4,300 | 7,000 | 0 | 3,000 | 10,000 |
| Tochigi | 450 | 0 | 170 | 620 | 160 | 0 | 160 | 320 | 610 | 0 | 330 | 940 |
| Gumma | 620 | 0 | 0 | 620 | 1,080 | 100 | 550 | 1,730 | 1,700 | 100 | 550 | 2,350 |
| Saitama | 200 | 0 | 100 | 300 | 1,200 | 0 | 200 | 1,400 | 1,400 | 0 | 300 | 1,700 |
| Chiba | 2,912 | 0 | 0 | 2,912 | 0 | 0 | 0 | 0 | 2,912 | 0 | 0 | 2,912 |
| Tokyo | 300 | 0 | 0 | 300 | 800 | 0 | 0 | 800 | 1,100 | 0 | 0 | 1,100 |
| Kanagawa | 350 | 0 | 460 | 810 | 305 | 0 | 527 | 832 | 665 | 0 | 987 | 1,642 |
| Niigata | 470 | 0 | 250 | 720 | 1,760 | 0 | 3,371 | 5,131 | 2,230 | 0 | 3,621 | 5,851 |
| Yamanashi | 924 | 0 | 401 | 1,325 | 1,957 | 35 | 596 | 2,588 | 2,881 | 35 | 997 | 3,913 |
| Nagano | 2,564 | 43 | 5,955 | 8,562 | 6,544 | 0 | 0 | 6,544 | 9,108 | 43 | 5,955 | 15,106 |
| Shizuoka | 610 | 0 | 68 | 678 | 1,132 | 0 | 0 | 1,132 | 1,742 | 0 | 68 | 1,810 |
| Toyama | 520 | 0 | 0 | 520 | 0 | 0 | 0 | 0 | 520 | 0 | 0 | 520 |
| Ishikawa | 240 | 0 | 60 | 300 | 960 | 0 | 240 | 1,200 | 1,200 | 0 | 300 | 1,500 |
| Fukui | 885 | 0 | 440 | 1,325 | 0 | 0 | 0 | 0 | 885 | 0 | 440 | 1,325 |
| Gifu | 658 | 0 | 104 | 762 | 2,550 | 50 | 1,300 | 3,900 | 3,208 | 50 | 1,404 | 4,662 |
| Aichi | 1,682 | 0 | 30 | 1,712 | 60 | 0 | 0 | 60 | 1,742 | 0 | 30 | 1,772 |
| Mie | 1,550 | 0 | 0 | 1,550 | 0 | 0 | 0 | 0 | 1,550 | 0 | 0 | 1,550 |
| Shiga | 280 | 0 | 270 | 550 | 100 | 0 | 2,110 | 2,210 | 380 | 0 | 2,380 | 2,760 |
| Kyoto | 600 | 0 | 800 | 1,400 | 0 | 0 | 600 | 600 | 600 | 0 | 1,400 | 2,000 |
| Osaka | 440 | 0 | 60 | 500 | 460 | 0 | 240 | 700 | 900 | 0 | 300 | 1,200 |
| Hyogo | 1,091 | 150 | 1,000 | 2,241 | 0 | 0 | 0 | 0 | 1,091 | 150 | 1,000 | 2,241 |
| Nara | 320 | 0 | 80 | 400 | 240 | 0 | 160 | 400 | 560 | 0 | 240 | 800 |
| Wakayama | 635 | 100 | 305 | 1,040 | 2,425 | 500 | 1,800 | 4,725 | 3,060 | 600 | 2,105 | 5,765 |
| Tottori | 620 | 0 | 200 | 820 | 400 | 0 | 300 | 700 | 1,020 | 0 | 500 | 1,520 |
| Shimane | 830 | 20 | 400 | 1,250 | 650 | 0 | 2,600 | 3,250 | 1,480 | 20 | 3,000 | 4,500 |
| Okayama | 1,047 | 0 | 5,000 | 6,047 | 0 | 0 | 0 | 0 | 1,047 | 0 | 5,000 | 6,047 |
| Hiroshima | 217 | 0 | 4,000 | 4,217 | 136 | 0 | 4,900 | 5,036 | 353 | 0 | 8,900 | 9,253 |
| Yamaguchi | 1,530 | 60 | 2,920 | 4,510 | 1,470 | 40 | 4,280 | 5,790 | 3,000 | 100 | 7,200 | 10,300 |
| Tokushima | 5,000 | 700 | 3,800 | 9,500 | 0 | 0 | 0 | 0 | 5,000 | 700 | 3,800 | 9,500 |
| Kagawa | 300 | 0 | 150 | 450 | 170 | 0 | 750 | 920 | 470 | 0 | 900 | 1,370 |
| Ehime | 1,769 | 0 | 0 | 1,769 | 1,731 | 0 | 1,000 | 2,731 | 3,500 | 0 | 1,000 | 4,500 |
| Kochi | 780 | 20 | 200 | 1,000 | 7,225 | 0 | 1,275 | 8,500 | 8,005 | 20 | 1,475 | 9,500 |
| Fukuoka | 3,400 | 0 | 600 | 4,000 | 0 | 0 | 0 | 0 | 3,400 | 0 | 600 | 4,000 |
| Saga | 845 | 0 | 0 | 845 | 0 | 0 | 370 | 370 | 845 | 0 | 370 | 1,215 |
| Nagasaki | 1,110 | 0 | 200 | 1,310 | 430 | 50 | 100 | 580 | 1,540 | 50 | 300 | 1,890 |
| Kumamoto | 2,340 | 0 | 255 | 2,595 | 2,526 | 0 | 279 | 2,805 | 4,866 | 0 | 534 | 5,400 |
| Oita | 900 | 0 | 0 | 900 | 3,630 | 0 | 370 | 4,000 | 4,530 | 0 | 370 | 4,900 |
| Miyazaki | 1,000 | 0 | 0 | 1,000 | 4,522 | 0 | 300 | 4,822 | 5,522 | 0 | 300 | 5,822 |
| Kagoshima | 4,025 | 0 | 900 | 4,925 | 0 | 0 | 0 | 0 | 4,025 | 0 | 900 | 4,925 |
| TOTAL | 57,141 | 1,176 | 40,612 | 98,929 | 57,775 | 775 | 32,687 | 91,237 | 114,916 | 1,951 | 73,299 | 190,166 |

a/ Includes prefectural, community, shrine, and temple forests.
SOURCE: Bureau of Forestry

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 775013

TABLE 10. - PRIVATE PROTECTION FOREST REFORESTATION PLAN, 1948-52

(CHO)

| Project | Area in Need (Mar 47) a/ | 1948 | 1949 | 1950 | 1951 | 1952 | Total | Percent in Need |
|---|---|---|---|---|---|---|---|---|
| Forest Protection Works (damage repair) | | | | | | | | |
| By subsidy | | | | | | | | |
| Reforestation of eroded land (severe erosion) | NA | 3,925 | 3,925 | 5,233 | 5,757 | 7,328 | 26,168 | NA |
| Reforestation of denuded land (light erosion) | NA | 1,386 | 1,386 | 1,848 | 2,032 | 2,586 | 9,238 | NA |
| Fixation of landslides | NA | 673 | 673 | 897 | 987 | 1,256 | 4,486 | NA |
| Prevention of erosion | NA | 3,617 | 3,617 | 4,824 | 5,306 | 6,754 | 24,118 | NA |
| Total | NA | 9,601 | 9,601 | 12,802 | 14,082 | 17,924 | 64,010 | NA |
| By government work | | | | | | | | |
| Restoration of eroded land (severe erosion) | NA | 975 | 975 | 1,300 | 1,430 | 1,820 | 6,500 | NA |
| Restoration of denuded land (light erosion) | NA | 345 | 345 | 460 | 506 | 644 | 2,300 | NA |
| Fixation of landslides | NA | 336 | 336 | 448 | 493 | 627 | 2,240 | NA |
| Prevention of erosion | NA | 0 | 0 | 0 | 0 | 0 | 0 | NA |
| Total | NA | 1,656 | 1,656 | 2,208 | 2,429 | 3,091 | 11,040 | NA |
| Total | | | | | | | | |
| Restoration of eroded land (severe erosion) | 183,284 | 4,900 | 4,900 | 6,533 | 7,187 | 9,148 | 32,668 | 17.8 |
| Reforestation of denuded land (light erosion) | 28,831 | 1,731 | 1,731 | 2,308 | 2,538 | 3,230 | 11,538 | 40.0 |
| Fixation of landslides | 20,008 | 1,009 | 1,009 | 1,345 | 1,480 | 1,883 | 6,726 | 33.6 |
| Prevention of erosion | b/ | 3,617 | 3,617 | 4,824 | 5,306 | 6,754 | 24,118 | NA |
| Total | 232,123 | 11,257 | 11,257 | 15,010 | 16,511 | 21,015 | 75,050 | 22.0 c/ |
| Sand Dune Fixation (subsidy) | 30,950 | 1,652 | 1,652 | 1,652 | 1,652 | 1,653 | 8,261 | 26.7 |
| Damage Prevention Works (subsidy) | | | | | | | | |
| Inland windbreaks | 9,012 | 2,880 | 1,082 | 1,443 | 1,587 | 2,020 | 9,012 | 100 |
| Coastal windbreaks | 2,976 | 446 | 446 | 595 | 655 | 834 | 2,976 | 100 |
| Tidal wave protection | 1,457 | 219 | 219 | 292 | 320 | 407 | 1,457 | 100 |
| Avalanche prevention | 7,491 | 1,124 | 1,124 | 1,498 | 1,648 | 2,097 | 7,491 | 100 |
| Flood prevention | 1,516 | 227 | 227 | 304 | 333 | 425 | 1,516 | 100 |
| Total | 22,452 | 4,896 | 3,098 | 4,132 | 4,543 | 5,783 | 22,452 | 100 |
| TOTAL | 285,525 | 17,805 | 16,007 | 20,794 | 22,706 | 28,451 | 105,763 | 28.6 c/ |

a/ Should be altered by the difference between the area on which work was completed in 1947, and the area newly requiring these activities in 1947, in order to give a corrected figure as of the beginning of this plan.

b/ This work is on areas not yet in the poor condition of the land included in the other items so no definite "area in need" could be established. The item was included in the program to provide for areas that will in time require reforestation if they are to be prevented from deteriorating.

c/ Does not include work planned for "prevention of erosion".

NA: Not applicable

SOURCE: Bureau of Forestry

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 725713

## TABLE II. - 1948 SEEDLING SITUATION
(1,000 SEEDLINGS)

| Species a/ and Ownership of Nurseries b/ | Age of Seedlings: 1 year | | 2 years | | 3 years | | 4 years | | 5 years | | Over 5 years | | Total | | Requirement e/ | Difference | Adjusted Difference f/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Inventory c/ | Available d/ | Inventory | Available | Inventory | Available | Inventory | Available | Inventory | Available | Inventory | Available | Inventory | Available | | | |
| Sugi | | | | | | | | | | | | | | | | | |
| National | 85,333 | 36,906 | 16,652 | 14,373 | 1,263 | 898 | 132 | 132 | 0 | 0 | 0 | 0 | 103,380 | 52,309 | 14,240 | + 8,069 | No change |
| Private | 128,997 | 41,190 | 101,107 | 50,563 | 68,959 | 68,959 | 622 | 622 | 0 | 0 | 0 | 0 | 299,685 | 161,624 | 210,000 | - 48,376 | + 5,427 |
| Total | 214,330 | 78,396 | 117,759 | 64,936 | 70,222 | 69,857 | 754 | 754 | 0 | 0 | 0 | 0 | 403,065 | 213,993 | 254,240 | - 40,307 | + 13,496 |
| Hinoki | | | | | | | | | | | | | | | | | |
| National | 16,568 | 8,834 | 11,856 | 10,356 | 2,720 | 2,654 | 839 | 839 | 32 | 32 | 0 | 0 | 32,014 | 22,615 | 5,830 | + 16,785 | No change |
| Private | 61,658 | 0 | 54,214 | 27,100 | 31,007 | 31,007 | 1,742 | 1,742 | 0 | 0 | 0 | 0 | 148,621 | 59,849 | 81,000 | - 21,151 | - 15,203 |
| Total | 78,226 | 8,834 | 66,069 | 37,456 | 33,727 | 33,661 | 2,581 | 2,581 | 32 | 32 | 0 | 0 | 180,635 | 82,464 | 86,830 | - 4,366 | + 1,582 |
| Akamatsu | | | | | | | | | | | | | | | | | |
| National | 14,091 | 3,676 | 1,695 | 914 | 832 | 740 | 18 | 8 | 0 | 0 | 0 | 0 | 16,686 | 5,338 | 8,770 | - 3,432 | No change |
| Private | 60,936 | 24,374 | 11,151 | 8,921 | 2,121 | 2,124 | 544 | 544 | 0 | 0 | 0 | 0 | 75,055 | 36,263 | 22,500 | + 13,763 | + 23,576 |
| Total | 75,027 | 28,050 | 12,846 | 9,835 | 3,306 | 3,164 | 562 | 552 | 0 | 0 | 0 | 0 | 91,741 | 41,601 | 31,270 | + 10,331 | + 20,146 |
| Kuromatsu | | | | | | | | | | | | | | | | | |
| National | 7,436 | 2,458 | 729 | 35 | 60 | 57 | 9 | 9 | 0 | 0 | 0 | 0 | 8,284 | 2,959 | 7,090 | - 4,131 | No change |
| Private | 49,933 | 19,973 | 15,212 | 9,127 | 3,939 | 3,939 | 15 | 15 | 0 | 0 | 0 | 0 | 69,099 | 33,054 | 45,000 | - 11,946 | - 3,970 |
| Total | 57,419 | 22,831 | 15,941 | 9,162 | 3,999 | 3,996 | 24 | 24 | 0 | 0 | 0 | 0 | 77,383 | 36,013 | 52,090 | - 16,077 | - 8,101 |
| Karamatsu | | | | | | | | | | | | | | | | | |
| National | 26,520 | 576 | 6,677 | 4,497 | 700 | 313 | 564 | 70 | 0 | 0 | 0 | 0 | 34,461 | 5,456 | 29,150 | - 23,694 | No change |
| Private | 7,527 | 2,258 | 7,130 | 7,130 | 4,323 | 4,323 | 141 | 141 | 11 | 0 | 0 | 0 | 19,132 | 13,852 | 18,750 | - 4,898 | + 18,361 |
| Total | 34,047 | 2,834 | 13,807 | 11,627 | 5,023 | 4,636 | 705 | 211 | 11 | 0 | 0 | 0 | 53,593 | 19,308 | 47,900 | - 28,592 | - 5,333 |
| Todomatsu | | | | | | | | | | | | | | | | | |
| National | 19,104 | 0 | 9,037 | 39 | 6,046 | 715 | 6,072 | 3,384 | 6,416 | 3,447 | 2,326 | 1,501 | 49,001 | 9,186 | 6,310 | + 2,876 | No change |
| Private | 2,540 | 0 | 1,545 | 0 | 3,550 | 355 | 3,081 | 205 | 8,205 | 8,205 | 0 | 0 | 18,921 | 8,765 | 4,500 | + 4,265 | + 6,782 |
| Total | 21,644 | 0 | 10,582 | 39 | 9,596 | 1,070 | 9,153 | 3,589 | 14,621 | 11,652 | 2,326 | 1,501 | 67,922 | 17,951 | 10,810 | + 7,141 | + 9,658 |
| Ezomatsu | | | | | | | | | | | | | | | | | |
| National | 1,916 | 0 | 2,227 | 0 | 201 | 0 | 564 | 297 | 2,356 | 1,828 | 292 | 259 | 7,556 | 2,384 | 5,180 | - 2,796 | No change |
| Private | 706 | 0 | 132 | 0 | 158 | 16 | 327 | 164 | 891 | 891 | 0 | 0 | 2,214 | 1,071 | 1,080 | - 9 | - 8 |
| Total | 2,622 | 0 | 2,359 | 0 | 359 | 16 | 891 | 461 | 3,247 | 2,719 | 292 | 259 | 9,770 | 3,455 | 6,260 | - 2,805 | - 2,804 |
| Other Coniferous | | | | | | | | | | | | | | | | | |
| National | 51 | 0 | 12 | 0 | 154 | 8/ | 151 | 8/ | 220 | 138 | 163 | 163 | 751 | 301 | 144 | + 157 | No change |
| Private | 37,642 | 0 | 785 | 0 | 3,627 | 218 | 584 | 584 | 182 | 182 | 0 | 0 | 42,820 | 984 | 900 | + 84 | + 989 |
| Total | 37,693 | 0 | 797 | 0 | 3,781 | 218 | 735 | 584 | 402 | 320 | 163 | 163 | 43,571 | 1,285 | 1,044 | + 241 | + 1,146 |
| Total conifers | | | | | | | | | | | | | | | | | |
| National | 171,069 | 52,850 | 48,884 | 30,214 | 12,026 | 5,277 | 8,349 | 4,739 | 9,024 | 5,445 | 2,781 | 2,023 | 252,133 | 100,548 | 106,714 | - 6,166 | No change |
| Private | 349,939 | 88,095 | 191,276 | 102,831 | 117,987 | 111,241 | 7,056 | 4,017 | 9,289 | 9,278 | 0 | 0 | 675,547 | 315,462 | 383,730 | - 68,268 | + 35,956 |
| Total | 521,008 | 140,945 | 240,160 | 133,045 | 130,013 | 116,518 | 15,405 | 8,756 | 18,313 | 14,723 | 2,781 | 2,023 | 927,680 | 416,010 | 490,444 | - 74,434 | + 29,790 |

Continued

## TABLE II. - 1948 SEEDLING SITUATION (CONT'D)

(1,000 SEEDLINGS)

| Species a/ and Ownership of Nurseries b/ | Age of Seedlings: 1 year | | 2 years | | 3 years | | 4 years | | 5 years | | Over 5 years | | Total | | Requirement e/ | Difference | Adjusted Difference f/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Inventory c/ | Available d/ | Inventory | Available | Inventory | Available | Inventory | Available | Inventory | Available | Inventory | Available | Inventory | Available | | | |
| Kunugi | | | | | | | | | | | | | | | | | |
| National | 74 | g/ | 145 | g/ | 4 | g/ | 0 | 0 | 0 | 0 | 0 | 0 | 223 | g/ | 0 | 0 | No change |
| Private | 13,021 | 5,210 | 3,679 | 3,679 | 2,169 | 2,169 | 274 | 274 | 0 | 0 | 0 | 0 | 19,143 | 11,332 | 28,600 | -17,268 | - 16,987 |
| Total | 13,095 | 5,210 | 3,824 | 3,679 | 2,173 | 2,169 | 274 | 274 | 0 | 0 | 0 | 0 | 19,366 | 11,332 | 28,600 | -17,268 | - 16,987 |
| Yachidamo | | | | | | | | | | | | | | | | | |
| National | 140 | 5 | 547 | 192 | 269 | 210 | 156 | 119 | 106 | 106 | 0 | 0 | 1,518 | 692 | 710 | - 18 | No change |
| Private | 120 | 12 | 238 | 143 | 594 | 594 | 56 | 56 | 671 | 671 | 0 | 0 | 1,679 | 1,476 | 1,400 | + 76 | + 210 |
| Total | 560 | 17 | 785 | 335 | 863 | 834 | 212 | 205 | 777 | 777 | 0 | 0 | 3,197 | 2,168 | 2,110 | + 58 | + 192 |
| Other Broad-leaved | | | | | | | | | | | | | | | | | |
| National | 3,534 | 830 | 922 | 684 | 554 | 233 | 247 | 261 | 0 | 0 | 0 | 0 | 5,257 | 2,008 | 656 | + 1,352 | No change |
| Private | 4,953 | 1,486 | 1,705 | 1,364 | 652 | 652 | 225 | 225 | 152 | 152 | 0 | 0 | 7,687 | 3,779 | 11,680 | - 7,801 | - 7,141 |
| Total | 8,487 | 2,316 | 2,627 | 2,048 | 1,206 | 885 | 472 | 486 | 152 | 152 | 0 | 0 | 12,944 | 5,787 | 12,336 | - 6,449 | - 6,089 |
| Total Broad-leaved | | | | | | | | | | | | | | | | | |
| National | 4,048 | 835 | 1,614 | 876 | 827 | 473 | 403 | 410 | 106 | 106 | 0 | 0 | 6,998 | 2,700 | 1,366 | + 1,334 | No change |
| Private | 18,094 | 6,708 | 5,622 | 5,186 | 3,415 | 3,415 | 555 | 595 | 823 | 823 | 0 | 0 | 28,509 | 16,687 | 41,680 | - 24,993 | - 24,217 |
| Total | 22,142 | 7,543 | 7,236 | 6,062 | 4,242 | 3,888 | 958 | 965 | 929 | 929 | 0 | 0 | 35,507 | 19,387 | 43,046 | - 23,659 | - 22,883 |
| Total | | | | | | | | | | | | | | | | | |
| National | 175,117 | 53,685 | 50,498 | 31,090 | 12,853 | 5,750 | 8,752 | 5,149 | 9,130 | 5,651 | 2,781 | 2,023 | 259,131 | 103,248 | 108,080 | - 4,832 | No change |
| Private | 368,033 | 94,803 | 196,898 | 108,017 | 121,402 | 114,656 | 7,611 | 4,572 | 10,112 | 10,101 | 0 | 0 | 704,056 | 332,149 | 425,410 | - 93,261 | + 11,739 |
| Total | 543,150 | 148,488 | 247,396 | 139,107 | 134,255 | 120,406 | 16,363 | 9,721 | 19,242 | 15,652 | 2,781 | 2,023 | 963,187 | 435,397 | 533,490 | - 98,093 | + 6,907 |

| Adjusted Totals | | | |
|---|---|---|---|
| 188,199 | No change | No change | No change |
| 854,056 | 437,149 | No change | - 11,739 |
| 1,042,255 | 540,397 | No change | + 6,907 |

a/ Sugi, Japanese redwood or cedar, Cryptomeria japonica.
Hinoki, Japanese cedar or cypress, Chamaecyparis obtusa.
Akamatsu, red pine, Pinus densiflora.
Kuromatsu, black pine. Pinus thunbergii.
Karamatsu, larch, Larix kaempferi
Todomatsu, white fir, Abies mayriana
Ezomatsu, spruce, Picea iezoensis
Kunugi, red oak, Quercus dentata
Yachidamo, ash, Fraxinus mandshurica

b/ National nurseries include former imperial nurseries; private nurseries include all other nurseries except the extremely small ones.

c/ National as of 31 Dec 47; private as of 1 Sep 47.

d/ Age and small size (and in the case of some old stock, geographical location) preclude the use of some seedlings.

e/ For all phases of all programs

f/ During the interval between the inventories in private (1 Sep 47) and national (31 Dec 47) nurseries, the national nurseries sold 79,068,000 1-year-old seedlings at cost to private nurseries. Thus this sum does not appear in either inventory. An additional 70,932,000 seedlings (included in the national nursery inventory) are being sold during the spring of 1948. Of the 150,000,000 seedlings, it is estimated that 105,000,000 will be of sufficient size so as to be available for the 1948 private planting program.

g/ Included in other broadleaved

SOURCE: Bureau of Forestry

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