

# Are We Overcutting Our Forests?<sup>1</sup>

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Authorities agree that once upon a time all the islands of our Archipelago, with few exceptions were covered with dense vegetation. From the sea coasts up to the high mountain tops, stretched unbroken virgin forests of various types with members of the lauan family (Dipterocarpeae) predominating in the low and middle elevations. With primitive tools, the first settlers must have toiled hard to make the clearings they needed for their settlement and places to plant crops. Except for the fish and game found in them, the forests were more of a liability than an asset. By cutting the trees down and letting the grasses grow, not only attracted deer, but they also found that burning the grass helped them push back the forest. This practice continued for hundreds of years, it has not stopped to this day!

Increase in population and subsequent waves of immigration have required new clearings and so more trees were cut down in order to meet the demands of agriculture and primitive economy. Years of shifting method of cultivation and uncontrolled timber cutting have reduced the area and volume of our timber stands. The barren mountains of Rizal, Cavite, Batangas, Zambales, Cebu, Bohol as well as most of the grass lands throughout the Nation are the result of primitive system of cultivation known as "kaingin." It is disheartening to think that all these mountains were, once upon a time, covered with virgin timber, and now, whether we like it or not, a certain portion of these must be reforested at

high cost to the Nation, in order to keep them under vegetation to serve as reservoirs for irrigation and soil protection. Verily, stripping the mountains of trees invariably results in dry rivers. Needless to say "kaiñgin" making must be stopped and discouraged even in second growth forests.

Besides "kaiñgin" making, we have during the last twenty-five to thirty years another factor which threatens the forest of the future. I have reference to uncontrolled timber cutting. Every forester, at one time or another, has been asked the question: "Are we over-cutting our forests?" Alarmed at the rate at which the forests are being cut down, namely: about 1,200 million board feet a year, people continually ask this question of us foresters, who are trained in the science and art of managing forests. Indeed, examples are many of countries that discovered too late the evil effects of over-cutting. China is a classical example of such a country and even America in one generation has cut down her "inexhaustible" forests of the Lake States, then those of the Gulf States and are now logging the remaining stands in the Northwest. Several large American companies have already moved to Canada, where some of the most active logging operations are in progress. But in the Philippines, where will we go after cutting down the remaining virgin stands? Where will our children and their children secure the timber for their homes, and for the wood-using industries that must be supplied with raw materials?

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<sup>1</sup> Based on an address delivered at the Forestry Day Celebration held in the College of Forestry, Los Baños, Laguna on November 29, 1953.

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One of the basis upon which foresters determine future timber supply is a knowledge of growth of trees under different sets of conditions. Brown and Mathews,<sup>1</sup> who were the first to study dipterocarps and dipterocarp forests, have discovered valuable information on growth. For example, they found that young trees of lauan up to 60 cm. in diameter are fast growers and put on as much as 3.10 cu.m. (1,314 bd. ft.) of growth per hectare per year. Those above 60 cm. make relatively slower growth amounting only to 0.7 cu.m. (297 bd.ft.), indicating that those that have reached a diameter of 60 cm. may be considered as having reached merchantable size although they are still capable of growing to larger diameters, until finally trees stop to grow and die of old age or of some other causes. Brown and Mathews also found that "the total growth of 3.9 cu.m. (per hectare) is equal to the annual growth on capital of 203.9 cu.m. (86,454 bd. ft.) and is therefore a growth of 1.91%. Assuming that the percentage of growth as shown by the forest is approximately normal for equal volume of timber throughout the Philippines, we are in a position to make an approximation of the total production of our timber in the forest." I quote further, "Whitford estimates the total stands of timber of the Philippine Islands at 822,584,000 cu. m. By applying our percentage growth of 1.91%, we can estimate that the total annual production of timber in the Philippine Islands amounts to 15,711,000 cu.m." *This growth amounts to 6,711 million board feet per year.*

It is apparent that the conclusion arrived at by Brown and Mathews to the effect that our forests are putting on a yearly growth of about 6,711 million board feet has been taken as the basis of official estimates on growth for years. *It is high time therefore that we should call attention to the fallacy of these figures, which took into account only the growth of individual trees without at the*

*same time deducting the mortality due to old age or by some other causes.* We should realize that our forests are old: they have been in existence for thousands of years. As proof of old age we find petrified trunks of big dipterocarps and other forest trees in many islands of the Philippines; E. D. Merrill, formerly Director of the Philippine Bureau of Science, also showed me an imprint on a rock of a leaf of tangile, *Shorea polysperma* Dyer, which he assured me was thousands of years old. Besides these, many of our mountains which were once upon a time active volcanoes could not have been covered with mature forest except after a lapse of thousands of years! *It can therefore be presumed that our forests have already attained their maximum volume capacity and that no appreciable increase could be expected in them even in ten, fifty or one hundred years from now.* In other words, our forests have reached a state of equilibrium insofar as volume growth is concerned. While young trees are growing, yet the old ones are dying and this cycle continued uninterruptedly for centuries. *It is erroneous, therefore to say "that our total annual cut of both logs and sawn lumber is still far below the estimated annual yield of our timber stock."*<sup>2</sup> Because if it were true that the total cut is far below the annual yield of our forest, then through the years the volume of our timber stands would have increased; it would have been much greater than it was say thirty years ago when more serious attention was given to the exploitation of our lauan forests. True enough, there is growth taking place in logged-over areas, but this is only a replacement of what has been cut down; furthermore, many of these lands are being settled for agricultural purpose being suitable for growing crops or else converted into "kai-ñgin." It is improper therefore, that we should rest in the illusion "that we could still increase our present cut, at least three times without affecting our timber capital." Great

<sup>1</sup> W. H. Brown and D. N. Mathews. Philippine Dipterocarp Forests. Phil. Journal of Science, Vol. XI, No. 6, p. 524, Nov. 1914.

<sup>2</sup> Florencio Tamesis—"Lumber Trade Problems"—Manila Daily Bulletin, August 25, 1953.

harm has already been caused to our forests by this mistaken belief. But now the time has come when we must face the bitter truth once and for all. **WE DO NOT HAVE MUCH VIRGIN TIMBER LEFT.** The choice tracks of easily accessible timber in Bataan, Tayabas, Camarines, Negros and in many places throughout the country have already been cut down, and what virgin timber is available are found in remote, broken terrain, expensive to log and require high transportation expenses to bring them to the market.

On the basis of these facts it seems *imperative that a revision of our forest policy should be made* insofar as it pertains to the administration of timber licensees. This is a matter that needs our immediate attention now when our timber production is assuming ever increasing proportions. Foresters know that there is a way by which forests could be managed whereby it would yield the maximum benefit possible, at the same time insuring continuity of timber supply. Good forestry practice calls for harvesting of mature trees upon reaching merchantable size, but adequate protection should be given young trees. It is certainly not the present system with almost no limit set as to the amount that can be cut from timber concessions, and with little or no regard made to save young trees that would take the place of those cut down. The logged-over areas in most operations are left so denuded of young trees and the land exposed to direct sunshine that fast second growth species, of little value from the standpoint of timber production, quickly take hold of the open spaces. No harm is done on lands which are more suitable for agriculture than for growing timber crop, but in absolute forest lands much more attention should be given to the protection of young trees than is given at present. A more optimistic note can be made here to the effect that the *Bureau of Forestry*, realizing the great harm that certain system of mechanical logging has done and is doing our forests, *has started to limit*

*the allowable annual cut in some districts and this is a step in the right direction. It should be applied in all forest lands where active logging operations are in progress.*

Lastly, in the revision of rules and regulations concerning the operation of timber licenses, it is important that the government should consider not only the protection of the forests, but also the heavy investments in the industry consisting of logging and milling equipment together with costly improvements—all made in good faith with the advice and encouragement of the Government. It will not be an easy problem to solve, but it is our earnest hope that a happy solution would be found that will be fair to all parties concerned. In the first place *a reduction of the annual cut is in order, while at the same time we should take determined steps towards the protection of young trees in absolute forest lands.* These, coupled with a more vigorous program of reforestation throughout the Island would enable us to put back into the forest what we have taken away from it, thus insuring to posterity ample timber supply, at the same time making available to them forests that will prevent soil erosion, and act as reservoirs of rain water indispensable to agriculture.

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#### HOW MUCH DOES IT COST TO REFOREST THE ENTIRE PHILIPPINES

The total area of *cogon lands* in the Philippines is approximately 5,073,300 hectares. Allowing 60 percent of these lands for agricultural and pasture purposes and as unplantable area, it remains for us *to reforest a total area of 2,029,320 hectares.*

If the goal is to reforest 50,000 hectares annually, it will take about 41 years to plant 2,029,320 hectares.

It is also the plan to produce no less than 1,500 trees uniformly distributed in a hectare of ground. This would require about 3,750 seedlings to a hectare at the start, allowing a survival of 40 percent, which is a very conservative estimate.

With 50,000 hectares to be planted yearly, we will need no less than 187,500,000 (3,750 x 50,000) seedlings every planting season of the year. The average cost of raising seedlings in our nurseries is ₱3.00 per thousand or ₱0.003 per seedling. Raising 187,500,000 seedlings would necessitate an outlay of ₱562,500 (.003 x 187,500,000, annually. In actual nursery practice, the cost of raising seedlings alone, represents about 80 percent of the entire cost of nursery operation (cost of planting the seedlings in the field not included). Therefore, including expenses for improvement of water system, maintenance of nursery office and laborer bunk houses, supervision, collection of seeds and wildings, purchase and repairs of tools and equipment, preparation of seedlings for planting in the field, etc., we need approximately ₱703,125.00 to maintain the nurseries capable of supplying the seedlings needed annually to reforest 50,000 hectares.

It is planned to pay ₱0.23 for every surviving seedling (3-year old) by "pakiao" or contract system of planting. To reforest 50,000 hectares, we need to grow at least

75,000,000 seedlings (1,500 seedlings to a hectare). At ₱0.23 per seedling, we need approximately ₱17,250,000.00 to pay for the trees needed to reforest 50,000 hectares annually.

#### SUMMARY OF EXPENSES FOR ONE YEAR

For maintenance of nursery to produce 187,500,000 seedlings for planting by the contractors . . . . .	₱ 703,125.00
For payment to contractors for 75,000,000 3-year seedlings at ₱0.23 . . . . .	17,250,000.00

Total expenses, annually . ₱17,953,125.00

Therefore, it needs about ₱736,078,125.00 (17,953,125 x 41) to reforest the entire area of 2,020,320 hectares of cogon land (1,500 trees to a hectare).

If the goal is to grow 2,000 trees to a hectare, the yearly cost will amount to ₱23,937,500.00 and to reforest our entire cogon land will need a total outlay of ₱981,437,500.00.

#### THE PHILIPPINE . . .

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is probable, however, that they will account for only a small percentage of the Laboratory's financial support during the next five of ten years.

The Laboratory needs the advice and counsel of the wood industries in developing its research and development program, as well as its support of the financial program. The wood industries need also to maintain close contact with the Laboratory in order to keep informed on the progress of the investigations under way and to understand and take early advantage of the results obtained. An excellent method of providing this two-way exchange of ideas and information is through one or more wood industry advisory committees which would meet with the Laboratory staff for discussion several times a year. Possibly a start has already been made

toward the formation of one or more committees of this kind. If not, it is not too early to begin.

Finally, gentlemen, I ask you to keep strongly before you the idea that the Forest Products Laboratory will be most useful to you and to the country if you, as individuals keep well informed on what it is doing. Give it friendly constructive criticism when you think it is wrong and give it praise when you find something praiseworthy. Get acquainted with the individual staff members so that you can call them by name. Teach them the things you have learned in your business. Your knowledge added to their knowledge amounts to more than the knowledge of either one alone. Above all, give your hearty and continuing support to the development of a thoroughly scientific organization and the prosecution of a well-considered research program.