

INSTITUTE OF CURRENT WORLD AFFAIRS

GSH-2

IMPROVED UTILIZATION OF TROPICAL FORESTS

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An international conference on Improved Utilization of Tropical Forests was held May 21-26, 1978 in Madison, Wisconsin. Co-sponsored by the Forest Products Laboratory of the U. S. Forest Service and the Agency for International Development of the U. S. Department of State, the conference attracted 135 registered participants. Nearly half of the participants came from outside the United States, with 35 coming from tropical or subtropical countries. Curiously, no one was present from Africa.

The primary conference objective was to provide an international forum for the public presentation of the results of AID supported research by the Forest Products Laboratory (FPL) on the technological suitability of mixed tropical hardwoods for reconstituted wood-fiber products (e.g. paper, particleboard, fiberboard, linerboard). Thirty-two papers were presented in seven sessions:

- I. The Tropical Forest Resource (2 papers)
- II. Environment and Silviculture (7 papers)
- III. Harvesting, Transportation, and Storage (4 papers)
- IV & V. Wood Fiber and Reconstituted Products Research (8 papers)
- VI. Industrial Plans and Practice (4 papers)
- VII. Investment Considerations (4 papers)
- VIII. Summations (3 papers)

Before continuing, some necessary clarification of terminology is apropos. Foresters have traditionally called conifers (e.g. pine) softwoods and broad-leaved trees (angiosperms, e.g. oak, balsa, mahogany) hardwoods, so when the FPL initiated the AID project on mixed tropical hardwoods, only softwoods (i.e. conifers) were excluded from the study. Thus many of the so-called tropical hardwoods tested by the FPL actually have softer or lighter wood than pine.

Trees sampled came from three tropical countries, the Philippines, Ghana and Colombia. A potential pool of species was preselected based on wood specific gravity, silica content and extractives--all known to be important factors affecting paper quality. The 90 tree species sampled (50 from the Philippines, 22 in Ghana, and 18 in Colombia) had wood specific gravity ranging from 0.14 to 0.86 and a range in silica content from less than 0.01% to 4.55%. The wood samples of each species were chipped and stored separately, allowing the FPL to make reconstituted wood-fiber products from a variety of mixes. For each country, three mixes of wood specific gravities were used: (a) preponderance of heavy woods; (b) evenly distributed; and (c) preponderance of light woods. Wood density was used as a first-order segregate because Chudnoff of the FPL had earlier found an interesting correlation of wood specific gravity

distribution with Holdridge life zones in tropical America. If wood specific gravities are reasonably constant within a life zone, as suggested by Chudnoff, such patterns will greatly facilitate improved utilization of tropical forests.

As one might expect from this international conference, the reconstituted wood-fiber products made from mixed tropical hardwoods were generally of very good to excellent quality. Some products were better than those made from temperate hardwoods. Of some surprise to me--not being a pulp and paper forester--was the considerable number of both experimental and commercial successes by others in making reconstituted wood-fiber products, especially paper, from mixed tropical hardwoods. Research organizations such as CSIRO in Australia, Tropical Products Institute in England, Pulp and Paper Research Institute of Canada and the Centre Technique Forestier Tropical in France have all done significant research on mixed tropical hardwoods pulp. Even more impressive is the success of companies like Paper Industries Corporation of the Philippines and Carton de Colombia in making an assortment of products, including paper, from mixed tropical hardwoods.

It is quite obvious from this conference that it is technologically feasible to use virtually all the wood of the very heterogeneous tropical forests to make reconstituted wood-fiber products. Thus the "any-species harvest" concept--which is a euphemism for "clear-cutting"--has the potential for revolutionizing the utilization of tropical forests. More nearly complete utilization of the timber of the humid tropical forests could greatly reduce the area of forest needed to supply the demand for wood and wood products. On the other hand, clear-cutting tropical forests could impoverish the infertile tropical soils, destroy gene pools, extirpate species, etc. This international conference addressed these and other aspects of improved utilization of tropical woods.

Session I on The Tropical Forest Resource was the most disappointing to me. Pringle from the Forestry Department of FAO, gave an overview of the lack of information available on the quantity and quality of tropical forests. Some interesting points made by Pringle are: (1) Brazil, Indonesia and Zaire account for more than two-thirds of the area in tropical forests; (2) moist closed forest is estimated to occupy 1,000,000,000 hectares, of which more than half is in Latin America; (3) in the closed forest (as opposed to woodland) of Latin America, only 31% is of "currently merchantable species" and only 60% when combined with other "potentially commercial species;" (4) in Latin America only 19% of the total volume of timber is estimated to be of presently commercial species in accessible forests; (5) 85% of the wood removed from tropical forests is used as fuel. Perhaps it is of some use to have these general estimates, but I am skeptical that they are even "in the ballpark." FAO's estimates of closed forest do not distinguish between undisturbed forest and selectively-logged forest, thus the actual volume of timber may be appreciably below normal. The occasional misinterpretation of tree-shaded plantations (e.g. cacao, coffee) for forest makes the areal estimates suspect as well.

Granted the necessity, as in Pringle's paper, of generalizing on a regional basis, I feel it leads to broad generalizations that are simply not valid when looked at on a larger scale. Due to the integrity of the Amazon basin, Latin America has the largest area of humid tropical forests, but that fact doesn't mean much to small countries like El Salvador, Costa Rica or Panama. The apparent inability of the FAO Forestry Department or any other international group to monitor gross rates of tropical forest utilization, deforestation, reforestation, etc. is disconcerting and makes me question if we will ever have realistic estimates of these increasingly rapid processes in the tropics.

Environmental considerations of improved utilization of tropical forests were dealt with in two papers. In reviewing the values of tropical forest areas, Poore stressed that "if we wish to realize all the values of the forest land in a balanced manner, those uses which require the forest to be left untouched or little modified must be selected and land allocated to them before those that need extensive modification or transformation." In emphasizing that many tropical countries "are carelessly sacrificing the possibility of future production for present gain," Poore concluded that "the onus of proving their case should be with those who wish to remove the forest, rather than those who wish to retain it."

Ewel characterized present exploitation of tropical forests as a mining operation and that "in the hands of the greedy, the technical capability to utilize any and all species could lead to unprecedented destruction of tropical forests. Used wisely, however, it could provide us with ecologically beneficial silvicultural tools which could be used to maintain tropical forests as highly productive, diverse, renewable ecosystems." Ewel indicated that nutrient loss through harvest can be 2 to 10 times greater in tropical than in temperate forests and questioned the ability of nutrient-poor tropical soils to sustain their productive capacity with repetitive removal of most of the biomass.

The above-mentioned papers on environmental implications were followed by a description of the Jari project in Para, Brazil. Owned by the world's richest man, Daniel Ludwig, Jari has one million hectares in the Amazon basin and they are actively clear-cutting and burning the native forest to convert it to plantations of Gmelina arborea and Caribbean pine. This example of forest destruction in the Amazon stimulated considerable comment from a few preservationists in the audience. Session moderator Wadsworth made what I consider to be the best statement of the conference. He said that the Jari "experiment" is good for the preservationist for if it fails it will substantially delay other attempts to clear-cut Amazon forest, and if successful it means much more wood can be grown on small areas which would greatly reduce the pressure on native tropical forests. Time will tell! Briscoe's open description of the Jari project and his candid willingness for discussion contrasted markedly with the cryptic presentation of the Weyerhaeuser operations in Indonesia.

As is generally true of conferences, the most fruitful aspect is the opportunity to meet people and exchange ideas and viewpoints. I found this conference especially useful because of its international flavor, which more than compensated for the above average number of rather mediocre papers. I should hasten to point out that the papers presented by participants from tropical countries were generally excellent. It is unfortunate that this conference did not view improved utilization of tropical forests from a broader perspective. Renewable forest resources can and do provide much more than just wood or reconstituted wood products. Presentation and discussion of several other potential ways of improving the utilization of tropical forests would, I think, have been well-received by the participants. Aspects needing attention are: (1) the urgency for land use capability classification to ensure the rational use of renewable forest resources; (2) socio-cultural interactions with indigenous populations and shifting cultivators; (3) dual or multi-use of the forest resources, such as agro-silviculture; (4) sustainable production of fuelwood; and (5) alternative uses of wood, such as for the production of organic compounds now derived from petroleum or the partial hydrolysis of wood for use as cattle fodder.