Eucalyptus Progress in Latin America

FRANK H. WADSWORTH
Regional Coordinator

Reports on national progress, requested from throughout the region by FAO, were received from Argentina, Bolivia, Brazil, Chile, Cuba, Dominican Republic, Honduras, Mexico, Panamá, Puerto Rico and the West Indies. Of the countries not represented at least Uruguay, Colombia, and Ecuador have planted eucalyptus extensively. Nevertheless, reports received cover about 85 % of the area of the entire region.

The reports generally follow an outline submitted by FAO, although they vary in length from a single page, to twenty or more, including photographs and extensive tabulations. They are synthetised here.

Five countries, Brazil Argentine, Chile, Peru and Cuba, have established extensive forest plantations of eucalyptus, the total area ranging from 18,000 to 560,000 hectares. Less extensive forest plantings, ranging in total area from 300 to 1,500 hectares, are to be found in Mexico, Puerto Rico, Bolivia and Jamaica. Limited plantings of eucalyptus as windbreaks or ornamentals have been made in Venezuela and the Dominican Republic. Virtually no planting of these species has been undertaken in Honduras, Panama, Trinidad and the Windward and the Leeward Islands.

Increasing interest in eucalyptus is evident in plans for expanded planting in many countries, notably Brazil, Argentina, Cuba, Bolivia, Peru, Mexico, Venezuela, and the Dominican Republic.

Only one natural working team was reported from the region. This is the Comisión Argentina del Eucalipto, a group of technicians organized to foment the study and cultivation of eucalyptus. Several industrial groups concerned with the production and utilization of eucalyptus are also carrying out studies of the species. Outstanding among these are the Serviço Florestal of the Companhia Paulista de Estradas de Ferro

at Rio Claro, Brazil, Sociedad Agrícola y Forestal Colcura, of Lota, Chile, and Celulosa Argentina, S. A. of Buenos Aires.

Recognition of the social and economic value of eucalyptus is becoming more general in the region. Even in areas such as Venezuela and the Dominicana Republic, where utilization of the wood is currently not important the tree is planted for ornament, shade, protection from the wind, or for soil protection. Great strides have been made in increased utilization of the wood, primarily for cellulose products. The employment value of such use is reported from Mexico where a hardboard factory was cited as supporting 100 employers full time. Other larger sources of employment from eucalyptus production and utilization exist in the region. Utilization of eucalyptus as roundwood for piles, ties, mine timbers, and post, continues to be possibly the chief outlet for eucalyptus. Parquet flooring is a relatively new use for the wood. Use as fuelwood appears to be declining due to the substitution of others fuels. Possibly the outstanding indication of the importance of eucalyptus in the minds of Latin Americans is to be found in the fact that 1.8% of the State of São Paulo, Brazil, is now covered with eucalyptus plantations.

The species of eucalyptus under cultivation in Latin American are many. The variety is primarily a result of differences in the adaptability of the many species to the different environments in the region. Particularly important appear to be frost hardness, capacity to withstand adverse sites, and growth rates. Wood quality has been of minor importance in the selecting species for the chief purposes for which eucalyptus has been used in the region.

Most countries have limited extensive eucalyptus planting to one or a very few species. In Chile, for example, 99 % of the plantations are reported to be *globulus*. The same species is the most common also in Bolivia, Peru, Mexico, and Venezuela. In Cuba, on the other hand, most of the planting is with *saligna*. *E. saligna* also appears to be the most important species planted in Brazil (32 % of the area planted) and Argentina. *E. robusta* and *E. kirtoniana* are the most important in Jamaica and Puerto Rico. In Brazil a number of other species are prominent, including *alba, citriodora, tereticornis, grandis* and *paniculata.* In Argentina others are *camaldulensis, tereticornis* and *viminalis.*

Test plantings of large number of additional species of eucalyptus have been undertaken in a number of areas within the region. Notable among these are the Horto Florestal at Rio Claro, São Paulo, Brazil, the Estación Forestal Castelar, Moron, Argentina and the Vivero Fiscal at Ilico, Chile. More than 100 species have been tested at these centers, and they serve as sources of seed for the more promising species.

Outstanding results have been obtained from tests of *E. maideni, botrioides, propinqua, rudis, naudiana, resinifera, microcorys* and *ovata.* Confusion exists as to the identity of eucalyptus species in many areas, a circumstance which is adverse to the development of production and utilization of the timber.

The area planted to eucalyptus in the countries reporting is estimated at 736,000 hectares. For all of Latin America the total is possibly 800,000 hectares. Outstanding is Brazil, with 560,000 or 70 % of the total. Of Brazil's planted area, 447,000 hectares or 80 % lies within the State of São Paulo. Brazil is followed by Argentina, with a estimated plantation area of 84,000 hectares; Chile, with 51,000; Peru, with 20,000 and Cuba, with 18,000 hectares.

The volume of growing stock was estimated in the reports of only a few countries. Brazil alone reported 73,150,000 m3. A recent survey of 98 eucalyptus plantations in the region, made by the Latin American Forestry Commission, indicates that unthinned stands 5 years old should contain 100 m3/ha. Assuming an average age of 5 years, for the estimated 240,000 hectares outside of Brazil would mean 24,000,000 m3, or a total of 97,000,000 m3 for all of Latin America.

Growth rates were estimated at 15 m3/ha./yr. in Chile; 20 in Cuba, 25 in Brasil, and 32 in Argentina. These lead to estimates of annual yields of 760,000 m3 in Chile, 36,000 m3 in Cuba, 13,750,000 m3 in Brazil, and 2,688,000 in Argentina. If it is assumed that the remaining 87,000 ha of eucalyptus plantations elsewhere in Latin America are growing at an average rate of 20 m3/ha./yr. The increment for this area is estimated 1,740,000 m3. Thus a total estimate for Latin America would be 19,000,000 m3.

The area currently planted each year was estimated at 37,000 ha. in Brazil; 30,000 ha. in Argentina; 21,000 ha. in Cuba; 2,500 ha. in Bolivia; 800 ha. in Peru; 400 ha. in Chile; 350 ha. in Mexico; and lesser areas reported elsewhere, the total for all areas reported being 63,700 hectares. If the rate of planting elsewhere in the region is proportional to the estimated areas of plantations, the total area planted in Latin America as a whole can be estimated at 69,400 hectares annually.

Current nursery output was estimated at 270,400,000 in Brazil; 45,000,000 in Cuba; 10,000,000 in Argentina; 4,500,000 in Bolivia; 2,000,000 in Peru; 1,000,000 in Chile; 730,000 in Mexico; and lesser quantities reported elsewhere, the total for all reported areas being 333,730,000. Il nursery production elsewhere in the region is assumed to be proportional to the estimated area of plantations, the total production

of nursery stock for Latin America as a whole can be estimated at 360,000,000 trees annually.

The number of trees planted per hectare varies from area to area. Brazil and Argentina reported 2,000; Bolivia, Chile, Peru, and Puerto Rico, 2,500; Cuba, 1,400; Mexico 500 to 2,000; and Jamaica, 1,700. Seed requirements reported totalled 11,800 kilos for Brazil, Argentina, Cuba, Bolivia, and Mexico. If requirements in other areas in the region not reported are proportional to these listed, the total seed requirements for Latin America as a whole can be estimated at 12,400 kilos annually.

Programs reported for the period 1961-64 show an aggregate rate of planting of about 91,000 hectares per year. Large increases in planting rates over 1960 are anticipated in Mexico (400%) and Brazil (33%). Continuation at least at the current rate is expected in Argentina, Cuba, and Bolivia. The future planting rate in Chile, which has declined in recent years, is reported uncertain and dependent upon the testing of superior species.

Costs of production cannot be approximated for the region on the basis of the reports received. Data were lacking from most countries, and even those presented are not comparable. Argentina cites costs of establishment of plantations during the first three years as ranging (for the entire period) from approximately 15 to US$ 26 per hectare. The Chile report cites costs of plantations at approximately US$ 255 per hectare at 15 years and US$ 1,010 per hectare at 35 year.

Stumpage values were cited for Chile, where sawtimber is worth about US$ 6,30 per m3 and mine timbers, US$ 5,95. At these rates, final yields after 40 years are worth US$ 3,000 per hectare. Peru subitted estimates of US$ 3,000 per m3 depending upon local demand and logging conditions. Other data submitted appear to have little regional interest.

It is clear that eucalyptus is today generally recognized as a plantation tree of major present and prospective importance to Latin America. Its rapid growth and high productivity appear to assure it an increasingly important role in the forestry of the region, in spite of an evident need for more information on species, adaptability, management, wood properties utilization, and the economies of its production.

PROGRÈS DES EUCALYPTUS EN AMÉRIQUE LATINE

Resumé

Ce rapport est consolidé par ceux reçus d'Argentine, de Bolivie, du Brésil, du Chili, de Cuba, de la République Dominicaine, de Honduras, du Mexique, de Panama, de Porto Rico, du Venezuela et des Indes Néerlandaises.

Une seule équipe a été signalée la "Comisión Argentina del Eucalypto", fondée en 1958 pour continuer la culture et l'étude de l'espèce.

La plus grande partie des autres travaux techniques signalés est faite soit directement par les gouvernements, soit par de grandes compagnies privées.

Un grand nombre de valeurs sociales et économiques de l'eucalyptus est reconnu dans la région, comprenant bois de chauffage, poteaux, pilots bois de mines, traverses, parquetets, bois de sciage, bois à pâte, et des valeurs indirectes comme brise-vents, pour la conservation du sol et de l'eau, et comme plantes ornemantales ou de routes. L'emploi de l'eucalyptus comme bois de chauffage décline avec l'apparition d'autres combustibles. Son emploi comme bois à pâte, "harboard" et pour le parquetage augmente rapidement. Au Mexique, une seule usine de "harboard" basée sur l'eucalyptus fournit un emploi pendant toute l'année à 100 ouvriers.

Les principales espèces en culture dans la région sont : *globulus, saligna, viminalis, alba, citriodora, tereticornis* et *camaldulensis.*

La surface totale plantée d'eucalyptus dans les pays mentionnés totalise 736.000 hectares, desquels 447.000 sont dans l'État de Saint Paul, Brésil, couvrant presque 1,8 % de la surface du sol de l'État. Le bois sur pied est moins bien connu mais le Brésil mentionne 73.150.000 m3. Les degrés de croissance moyenne se situent entre 15 et 25 m3/ha/an.

Les semences requises, totalisent environ 6.000 kilos et la production courante des pépinières dépasse 330.000.000 d'arbres annuellement d'eucalyptus en 1960. Une partie n'est pas employée pour la plantation de forêts, mais au moins 62.800 ha furont plantés. Le nombre d'arbres par hectare s'élève à une moyenne d'environ 2.500 mais se situe entre 1.300 et 2.500. Les programmes courants prévoient une augmentation rapide dans la plantation dans la période entre 1961 et 1964, particulièrement au Mexique (400%), au Brésil (33%) et en Bolivie (25%). Le Chili propose d'arrêter un récent déclin dans la plantation en examinant de meilleures espèces.

Les données présentées sur le coût et les rentrées des plantations d'eucalyptus, sont inadéquates dans la plupart des cas pour des conclusions clairement définies, apparément, en partie à cause d'un manque de telles données, mais aussi à cause de leur très grande variabilité.

De récente progrès dans la culture de l'eucalyptus en Amérique Latine, ne laissement pas de doute que l'espèce continue à attirer d'intérêt pour des raisons économiques et autres, et que sa place dans la sylviculture future semble ici assurée malgré le grand besoin de plus de connaissances relatives à ses virtualités et à sa culture.

ADELANTO DE LOS EUCALIPTOS EN AMÉRICA LATINA

Resumen

Este relatório ha sido conpilado entre todos los informes recibidos de Argentina, Bolívia, Brasil, Chile, Cuba, República Dominicana, Honduras, México, Panamá, Puerto Rico, Venezuela e Indias Occidentales.

Fué indicado solamente un Grupo de Trabajo Nacional, la Comisión Argentina del Eucalipto, formada en 1958 para estimular el cultivo y estudio de este género.

La mayor parte del trabajo técnico reportado se está haciendo directamente por los gobiernos o por grandes firmas particulares.

Se le acredita al eucalipto, en esta región, un gran número de valores económicos y sociales, incluyendo la madera para combustible, postes, postes largos, maderas para minas, durmientes, parquets, madera para asensor, madera para pulpa, y valores indirectos como cortinas rompeviento, para conservación del suelo y água, y también como valor ornamental, e para árboles de carreteras. La utilización del eucalipto para combustible está disminuyendo por el uso de otros combustibles. Su utilización todavía, como madera para pulpa, y para parquet, aumenta rapidamente. En Mexico, una sola industria de chapa dura empleando principalmente el eucalipto, proporciona durante todo el año, empleo para 100 obreros.

Las principales especies en cultivo en la región son *E. globulus, saligna, viminalis, alba, citriodora, tereticornis* y *camaldulensis.*

El área total plantada con eucaliptos en los países reportados es actualmente de 736.000 hectáreas, de las cuales 447.000 hectáreas se indican para el Estado de São Paulo, Brasil, cubriendo cerca de 1,8 % de la superficie del Estado. El volumén en pié no es bien conocido todavía, pero Brasil indica la cifra de 73.150.000 m3.

Las necesidades de semilla se estiman en 6.000 kilos con una producción anual corriente en los viveros de más de 330.000.000 plántulas. Parte de esta producción no se utiliza para plantación de montes, pero por lo menos 62.800 has. fueron plantados con eucaliptos en 1960. El número de árboles plantados por hectárea es, en termino medio, 2.000, pero puede variar de 1.300 a 2.500. Los programas actuales antecipan un rápido aumento en plantación para el período 1961-64, particularmente en México (400 %), Brasil (33 %) y Bolivia (25 %). Chile se propone sobreponerse de la reciente disminución en las plantaciones, experimentando mejores especies.

Los datos sometidos sobre costos y rendimientos de plantaciones de eucaliptos son en su mayoría inadecuados, para llegar a conclusiones definitivas, en parte, aparentemente, por la falta de tales datos y también por su extrema variabilidad.

El reciente progreso en el cultivo de eucaliptos en América Latina no deja duda de que el género continua siendo muy atractivo, por razones económicas y por otras, y su lugar en la forestación futura está asegurado, aunque hay necesidad apremiante de conocer más su potencial y ordecaión.

PROGRESSO DA EUCALIPTOCULTURA NA AMÉRICA LATINA

Resumo

Êste relatório foi compilado dos recebidos da Argentina, Bolívia, Brasil, Chile, Cuba, República Dominicana, Honduras, México, Panamá, Pôrto Rico e Índias Ocidentais.

Sòmente um Grupo de Trabalho Nacional foi criado, a Comissão Argentina de Eucalipto, fundado em 1958, para incentivar a cultura e o estudo do gênero.

A maior parte do trabalho técnico relatado está sendo feita diretamente pelos governos ou por grandes companhias particulares.

Foi reconhecido nesta região um amplo grupo de valôres econômicos e sociais do eucalipto, incluindo lenha, postes, esteios, madeira para minas, dormentes, tacos, tábuas, madeira para polpa, e valores indiretos, como quebra-ventos, conservação do solo e da água, e valor ornamental, e árvores para margem de estradas. O uso do eucalipto para lenha está diminuindo com o aparecimento de outros combustíveis. Seu uso, porém, como madeira para polpa, chapas prensadas e tacos para pisos, está ràpidamente aumentando. No México, sòmente uma única indústria de chapas prensadas, baseada no eucalipto, proporciona emprêgo durante o ano todo para 100 trabalhadores.

As espécies principais em cultura na região são *globulus, saligna, viminalis, alba, citriodora, tereticornis e camaldulensis.*

A área total plantada com eucalipto nos países acima mencionados totaliza atualmente 736.000 hectares, 447.000 hectares dos quais no Estado de São Paulo, Brasil, cobrindo cêrca de 1,8 % da superfície do Estado. O volume em pé é menos conhecido, mas o Brasil apresenta 73.000.000 m3; a Argentina 2.688.000 m3); o Chile 440.000 m3. As médias de crescimento são de 15 a 25 m3/ha/ano.

Os relatórios indicam as necessidades de sementes como sendo no total de 6.000 quilos e a produção atual dos viveiros, de mais de 330.000.000 de mudas, anualmente. Uma parte não é utilizada para plantio, mas pelo menos 62.800 ha fôram plantados com eucaliptos em 1960. O número de árvores plantadas por hectare é em média 2.500, mas varia de 1.300 a 2.500. Os programas atuais indicam um rápido aumento de plantio no período 1961-64, principalmente no México (400 %), no Brasil (33 %) e na Bolívia (25 %). O Chile propõe-se a enfrentar o declínio recentemente verificado, experimentando espécies melhores.

Os dados fornecidos sôbre custo e rendimento das plantações de eucaliptos são na maioria dos casos insuficientes para conclusões definitivas, em parte, ao que parece, devido à falta de tais dados, mas, também, devido à sua enorme variação.

O recente progresso sôbre a cultura do eucalipto na América Latina não deixa dúvida de que o gênero continua a exercer atração, por motivos econômicos, além de outros, e seu lugar nas futuras florestas parece estar assegurado apesar da necessidade marcante de maiores conhecimentos sôbre seu potencial e manêjo.