IMCC

INCREASING THE VALUE OF MEXICO'S FOREST RESOURCES THROUGH PRIVATE SECTOR INITIATIVES

Submitted to:
The United States Agency for International Development
Mexico

April 1993

IMCC, Corporate Offices
30 W. Mashta Drive
Suite 405
Key Biscayne, Florida 33149

IMCC, Washington Operations
2101 Wilson Boulevard
Suite 900
Arlington, Virginia 22201

TABLE OF CONTENTS

Annex II-6 Atlas Ejidal de Quintana Roo

Annex II-7 Organización de Ejidos Productores Forestal de la Zona Maya, S.C.

Annex II-8 Productos Interno Bruto Nacional, Serie Historica de Superficie Sembrada, Serie Histórica de Producción Forestal

Annex II-9 List of Existing Forest Industry in Quintana Roo

Annex II-10 List of Species in the PPF Forests

Annex II-11 Disponibilidad Anual de Madera Propicia para la Producción de Pisos en Quintana Roo

Annex II-12 Technical Support in Product Development

Annex II-13 Honey Opportunities

Annex III-1 Gobierno de Campeche - Mapa Forestal

Annex IV-1 Principales Tipos de Climas en el Estado de Chiapas

Annex IV-2 Tipos de Vegetacion en el Estado de Chiapas

Annex IV-3 Area de Distribución Geográfica de los Pinos en el Estado de Chiapas

Annex IV-4 Inventario Forestal del Estado de Chiapas 1991
Participación de las Superficies de los Tipos de Cubierta Forestal del Estado de Chiapas, en Relación al Total Nacional

Annex IV-5 Inventario Forestal del Estado de Chiapas 1975, Delimitación de Zonas de Trabajo, Superficie Forestal Estudiada en las Zonas 2 y 3 Serranía Central y Sierra Madre

Annex IV-6 Incremento Volumétrico Basado en Inventario 1975

EXECUTIVE SUMMARY

This study was funded by the United States Agency for International Development (USAID/R&D/ENR) through its Forest Resources Management II Project (FRM II) and carried out by consultants from the Interamerican Management Consulting Corporation (IMCC) under a buy-in to the Market and Technology Access Project (MTAP). The Scope of Work for the activity was prepared by Dr. Carl M. Gallegos, FRM II Project Manager, in conjunction with USAID/Mexico, USAID/Washington's Latin America Bureau, and IMCC.

This study was prepared as part of a Phase I diagnostic effort. The purpose of the activity was to identify opportunities for increasing the value of Mexico's forest resources through private sector initiatives and to present findings and recommendations for Phase II activities. This executive summary highlights the report prepared after a ten day visit, in October 1992, to three states in southern Mexico: Quintana Roo, Chiapas and Campeche. The report was prepared by two of IMCC's senior staff, Mr. Vicente Molinos (sustainable forestry specialist) and Mr. Ray Manoff (product development specialist).

Quintana Roo

Because of limited resources, an early decision was made to concentrate the limited time available to the consultants on Quintana Roo, where outstanding community-based natural forest management work has been conducted by the "Plan Piloto Forestal" (PPF) with support from the Acuerdo México-Alemania (AMA). Studies conducted by others had indicated possible marketing and product development weaknesses in the program.

With regard to forest management, the consultants observed that Plan Piloto's forest management practices do not extract enough common and lesser known species to open the forest canopy and allow for sufficient mahogany regeneration. More critically, this selective logging is so costly that it has priced PPF's delivered logs and local private manufacturers who depend on them, out of the market, and in some cases, out of business. Those private wood products firms still operating rely heavily on less expensive imported pine and oak lumber from the U.S. or mahogany from Guatemala and Belize. Because of these log supply problems, two firms were planning to relocate to Belize.

Increased economic benefits to the communities derived from better and more sustainable management of the forests for a wider range of products and services are urgently needed. Special opportunities exist to emphasize non-timber products (honey, chicle, spices, herbs), nature and archeological tourism and related handcrafts, food and lodging services. Otherwise, the growing "ejido" population, immigration and competing land uses will accelerate the destruction of existing organizations and forests. A much better understanding of the individual survival strategies and preferences of "ejido" members and farmers will be needed as a basis for establishing socially sustainable programs which will effectively increase their income levels.

Comprehensive state-wide technical assistance, product development and personnel training

programs targeting private wood products firms and "Plan Piloto Forestal" "ejido" sawmill operations are needed. Without such programs, harvest volumes, value-added manufacturing and employment will not reach economic or ecological sustainability levels in time for the forests to survive.

In the case of the "ejido" sawmills , pilot hands-on efforts are needed to strengthen their business and production management skills. Those efforts must be complemented with market-driven product development assistance to achieve self-sustainability.

Of particular concern are recent changes to Mexican agrarian laws and the adoption of the North American Free Trade Agreement (NAFTA). The effect of these two developments will be to activate México's agricultural sector which has languished under rigid collective land tenure schemes. The net result will undoubtedly be accelerating pressures to clear forests near the populated areas for domestic and export agricultural production.

Chiapas

In Chiapas, well-meaning, but misguided policies, have resulted in a tree-cutting ban on all forests in the State. The ban inadvertently assigns forests a negative value for rural people and the local economy. These mismanaged forests are at high risk of forest fires from two sources: landowners wishing to clear their land for crops which can be sold, and from dried pine trees killed standing by bark beetle attacks on individuals weakened by the competition within overdense forests.

A similar kind of planning process as the "Programa de Acción Forestal Tropical" PROAFT, initiated for conserving and developing the lowland forests is warranted for conserving and developing the forests of Chiapas and other populated highland regions. If this is not done, and highland forests are eliminated and soils eroded, the lowland forests designated as protected areas today may well become the colonization lands twenty years from now.

The problems in Chiapas will require a series of technical interventions to provide the basis for development of a modified PPF program. Initially, additional diagnostic studies will be needed to stimulate a change in current policies. This assistance is urgent. Subsequently, technical support for forest management practices, production, and product development will be needed through pilot demonstration and training projects executed by community groups and private firms to sustainably manage forests and create employment.

Campeche

In the State of Campeche, great levels of interest in natural resources and forestry projects were expressed at the highest levels of government. Their industrial forestry plantation projects and agroforestry projects need immediate technical forestry support and early connection to markets. Opportunities for pilot projects managing natural forests in the buffer zones to Calakmul should be determined.

An important lesson from the PPF experiences at Quintana Roo is that both in Campeche and Chiapas the implementation strategies should include, from the start, private firms in some appropriate role. One way is to incorporate selected firms to jointly participate in project-funded training and product development. It will not be easy, but early efforts to incorporate entrepreneurial energies and profit motives into the. conservation and resource management cause will provide the market-driven production which is currently lacking at the PPF.

RESUMEN EJECUTIVO

Este estudio fué financiado por la Agencia de los Estados Unidos Para el Desarrollo Internacional (USAID/R&D/ENR), a través de su projecto "Manejo de Recursos Forestales II" (FRM II). Fué realizado por consultores de la Interamerican Management Consulting Corporation (IMCC) contratados por el Projecto "Acceso a Tecnologías y Mercados" (MTAP). Los Términos de Referencia para esta actividad fueron preparados por el Dr. Carl Gallegos, gerente del Projecto FRM II, en conjunto con USAID/México, la Oficina de USAID para América Latina en Washington e IMCC.

Este estudio fué preparado como un diagnóstico de Fase I. Su propósito fué identificar oportunidades para valorizar los recursos forestales de México mediante la iniciativa privada, presentar conclusiones y recomendar actividades para una Fase II.

Este resumen ejecutivo cubre los puntos sobresalientes del reporte que fué preparado después de una visita de diez días, en Octubre de 1992, a tres estados del Sur de México: Quintana Roo, Chiapas y Campeche. El reporte fué preparado por dos miembros del senior staff de IMCC, el Sr. Vicente Molinos (especialista en manejo sustentable de recursos forestales) y el Sr Ray Manoff (especialista en desarrollo de productos y mercados).

Quintana Roo

Para aprovechar mejor los limitados recursos se decidió concentrar el tiempo disponible de los consultores en Quintana Roo. Allí el Plan Piloto Forestal (PPF) ha realizado un trabajo sobresaliente de Manejo del Bosque Natural con Comunidades a través del apoyo del Acuerdo México-Alemania (AMA). Estudios recientes habían detectado posibles debilidades en los aspectos de comercialización del PPF.

Respecto a manejo forestal, los consultores observaron que las prácticas silvícolas del PPF no extraen suficiente cantidad de las especies comunes y otras menos conocidas. Al no abrir el dosel lo suficiente, no existe la iluminación mínima que requieren las plantitas de especies buscadoras de luz, como la caoba, para crecer y regenerarse naturalmente. Aún más crítico es que esta explotación leve y selectiva resulta tan costosa que las industrias privadas vecinas, sin otras alternativas que consumir la madera rolliza del PPF, no pueden competir ni sobrevivir. Las industrias madereras privadas de la península que han logrado sobrevivir, importan madera aserrada de pino y encino de USA ó de caoba de Guatemala y Belize. Debido a estos problemas de abastecimiento de trozas, dos de las firmas visitadas estaban planeando mudarse a Belize.

Es urgente aumentar los beneficios económicos que las comunidades reciben por un mejor manejo de sus bosques y por la comercialización de un rango más amplio de productos y servicios derivados del bosque. Existen buenas oportunidades para enfatizar productos no maderables (miel, chicles especiales, especias y hierbas), turismo orientado a la naturaleza y cultura, servicios y artesanías para turistas.
Sin esta valorización adicional de los bosques, estos y las organizaciones sociales del PPF serán

progresivamente destruídas por la creciente población de ejidatarios, las migraciones internas y el avance de las fronteras agrícolas y urbanas.

Será necesario comprender mucho mejor las estrategias de sobrevivencia económica de los grupos familiares y las preferencias individuales de los ejidatarios y campesinos residentes. Este entendimiento es requisito previo para diseñar programas que, además de ser socialmente aceptables, mejoren sus ingresos y sean económicamente auto-sustentables.

Un programa amplio de asistencia técnica, desarrollo de productos y entremiento de personal, en todo el Estado, será necesario. Los aserraderos del Plan Piloto Forestal y las industrias madereras privadas de sus alrededores deberán recibir atención especial. Sin estos programas, ni los volumenes de madera cosechada ni el valor agregado por la industria alcanzarán a tiempo los niveles mínimos de sustentabilidad económica y ecológica necesarios para salvar los bosques de producción de Quintana Roo.

Programas pilotos prácticos y en terreno con los aserraderos de los ejidos son necesarios para fortalecer su capacidad administrativa y de negocios. Esos programas deberán ser complementados con asistencia en el desarrollo de productos para alcanzar la autonomía económica.

Un motivo de especial preocupación son los recientes cambios a las leyes agrarias mexicanas y la posible creación de una zona de libre comercio en Norte América. Estas medidas activarán al sector agrícola mexicano, estancado por esquemas rígidos de tenencia colectiva. Los bosques de producción sólo podrán resistir el creciente avance de la frontera agrícola si el manejo forestal sustentable está respaldado por una industria forestal eficiente y competitiva, con amplia participación económica de la población rural.

Chiapas

En Chiapas, políticas bien intencionadas pero sin base han derivado en una prohibición total de corta de arboles en el estado. Esta prohibición logra, sin querer, que los bosques tengan un valor negativo para la población rural y la economía del estado. Estos bosques, sin manejo y abandonados, están expuestos a doble riesgo de incendio. Por un lado, campesinos necesitando rozar sus terrenos para sembrar cultivos que pueden ser vendidos, y por otro, pinos resecos muertos en pie por ataques de gorgojo sobre arboles debilitados por la falta de manejo del bosque.

Un proceso de planificación similar al iniciado por el Programa de Acción Forestal Tropical (PROAFT) para conservar y desarrollar los bosques latifoliados de las zonas bajas es necesario para conservar y desarrollar los bosques de Chiapas y otras regiones pobladas en altura. Sin este proceso, los bosques de producción de las zonas altas desaparecerán, los suelos se erosionarán y las zonas bajas designadas hoy como protegidas, serán las tierras a colonizar de aquí a veinte años.

Los problemas de políticas y administración forestal de Chiapas requerirán una serie de intervenciones técnicas antes que pueda considerarse un programa tipo PPF con las adaptaciones del caso. Se necesita con urgencia diagnósticos adicionales para estimular el cambio de las actuales políticas.

Una vez que las políticas lo permitan, será deseable el apoyo técnico en prácticas de manejo forestal sustentable, industrialización y comercialización a través de programas pilotos con comunidades y firmas privadas. La valorización del bosque y los empleos sustentables así creados, serán la mejor proteción para los bosques de produción en Chiapas.

Campeche

Gran interés por projectos forestales y de recursos naturales fué manifestado por los más altos niveles del gobierno estatatal. Sus proyectos de plantaciones agroforestales e industriales necesitan apoyo técnico immediato y una temprana identificación, evaluación y orientación hacia los mercados que comprarán la madera rolliza.
Además, debe estudiarse con detención las posibilidades para impulsar proyectos pilotos de manejo de bosques naturales en las zonas de amortiguamiento de la Reserva Calakmul.

Hay una lección importante de las experiencias del Plan Piloto Forestal de Quintana Roo que debe ser aprovechada. En Campeche y Chiapas las políticas y estrategias de implementación deben incluír, desde el comienzo y en forma integral, a firmas privadas en roles apropiados. Un camino es incorporando a firmas selectas para participar en programas conjuntos de asistencia técnica y desarrollo de productos.

No será fácil, pero debe invertirse temprano esfuerzos para incorporar la energía empresarial y la ambición de lucro detrás de la conservación y buen manejo de los bosques de producción. Así se logrará la sustentabilidad económica que hoy amenaza los logros del PPF.

LIST OF ACRONYMS USED

USAID	The United States Agency for International Development
AID/Mexico	USAID Office in Mexico
AMA	Acuerdo México-Alemania
CIQRO	Centro de Investigaciones de Quintana Roo, in Chetumal
CUPROFOR	Centro de Utilización de Productos Forestales, San Pedro Sula.
ENR	Environment and Natural Resources
IMCC	The Interamerican Management Consulting Corporation
INEGI	Instituto Nacional de Estadistica, Geografía e Informatica
INIFAP	Instituto Nacional de Investigaciones Forestales y Agropecuarias de México.
MIQRO	Maderas Industrializadas de Quintana Roo,(Plywood mill).
MTAP	Market and Technology Access Project,AID.
PPF	Plan Piloto Forestal de Quintana Roo
PROAFT	Programa de Acción Forestal Tropical para las Areas Bajas de México (previously known as TFAP).
ROCAP	AID Regional Office for Central America and Panama
SARH	Secretaría de Agricultura y Recursos hidraulicos
SEDUE	Secretaría de Desarrollo Urbano y Ecología

ACKNOWLEDGEMENTS

The consultants would like to express special thanks to numerous individuals contacted during the field visits for their time, interest and contributions to this report. Of particular note are the members of the PPF and AMA technical teams. They would also like to give special recognition to the scheduling support and guidance provided by Guillermo Castillejas of WWF, Patricia Negreros of INIFAP, Hugo Galletti of PPF, Silvia del Amo of PROAFT and Frank Zadroga of USAID/Mexico.

The opinions contained in the report are the sole responsibility of IMCC and do not necessarily reflect those of USAID or the U.S. Government.

I. APPROACH AND STRATEGY

A. TERMS OF REFERENCE

This effort is part of the United States Agency for International Development's (USAID/R&D/ENR) Forest Resources Management II (FRM II) Project buy-in to USAID/PRE's Market and Technology Access Project (MTAP). The report was prepared by the Interamerican Management Consulting Corporation (IMCC) under the direction of two of IMCC's senior staff, Mr. Vicente Molinos (sustainable forestry specialist) and Mr. Ray Manoff (product development specialist).

The Scope of Work developed for this activity (Annex I-1) was prepared by Dr. Carl M. Gallegos, FRM II Project Manager, in conjunction with USAID/Mexico, USAID/Washington's Latin America Bureau, and IMCC. The Scope of Work anticipates a multi-phased effort focused on identifying opportunities for increasing the value of Mexico's forest resources through private sector initiatives. Phase I of the effort was designed to diagnose the current status of sustainable forestry efforts in three states in southern Mexico, Quintana Roo, Chiapas and Campeche, and to present findings and recommendations for Phase II activities. The report was prepared based on a ten day visit to those states to identify selected area production resources and related domestic and international market windows that may be accessed through follow-on product and market development actions and identify area commercial production opportunities that will increase the local manufacture of value-added products as a means to support the sustainable management and conservation of local production forests.

A follow-on Phase II effort, when programmed, will identify specific domestic and U.S. company market demand for timber and non-timber products that may be produced in the area in ways which will facilitate and promote sustainable resource management.

B. ALLOCATION OF FIELD TIME

The budget for this effort allowed five days of preparation, including review of literature and phone contacts and four days for analysis and report writing. A maximum of twelve days were available for the field visits and had to be stretched among the three states to serve the needs of AID/M. Eight days were utilized in analysis and report writing.

Initial preparations uncovered previous studies completed by Argüelles, Snook and Macaffrey in 1991-92, indicating the need for improved product development efforts to improve the forest management activities of Plan Piloto Forestal (PPF) in Quintana Roo. Efforts in the other two states appeared to be considerably less developed.

For the above reasons, the field time was allocated as follows: seven days in Quintana Roo, two days in Campeche, two days in Chiapas and one day in Mexico City for meetings and debriefing.

In retrospect, in depth coverage of Quintan Roo was a wise decision. Additional field time in Campeche would have been useful given the relatively small body of available published information and the limited amount of data we were able to gather before and during the visit.

C. FINAL TRIP SCHEDULE

The consultants executed the trip schedule as planned. The team benefitted immensely from advance work, suggestions, contacts and scheduling assistance from Patricia Negreros of INIFAP, Hugo Galletti of PPF, Guillermo Castillejas of WWF and Frank Zadroga of USAID/México. A copy of the team's itinerary is found in Annex I-1.

II. CHALLENGES AND OPPORTUNITIES IN THE STATE OF QUINTANA ROO

A. BACKGROUND

1. *Population Growth*

Historically, Quintana Roo has been one of Mexico's most sparsely populated states. However, since 1980 its population has almost doubled to a 1990 level of nearly 435,000. Population growth is increasing at an annual rate 6.8%, more than three times Mexico's national rate of 2.1% (INEGI,1990). Most of Quintana Roo's growth has been concentrated in large cities like Chetumal and tourist boom areas such as Cancún. (See Annex II-1 for an excellent graphic description of population pressure evolution.) The majority of Quintana Roo's growth has come from immigration from other states; the percentage of inhabitants born outside Quintana Roo increased from 29% in 1921 to about 60% in 1990 (CIQRO, 1984; INEGI, 1990).

2. *Present Distribution of Land, Forests and People*

Quintana Roo has a total land area of 5 million há. Data collected during the 1970's classified 3.2 million há or 64% as forested areas.

Between 1935 and 1946, over 1.5 million há were assigned to "ejidatarios" as part of the agrarian reform (INEGI 1990). By 1988, 2.7 million há. or 54% of the state's land area had been distributed into 270 "ejidos" and 27,444 "ejidatarios"; (INEGI,1991).

Today, about 500,000 há of production forests with good commercial potential remain. About 400,000 há of these have been designated as permanent forest areas by the "ejidos" which own them (see Annex II-2). In addition, the Sian Ka'an Biosphere Reserve with 528,000 há along the central coastal area of the state was established in 1986 (see Annex II-3 for location).

3. *Economic Activities in Quintana Roo*

In 1990 about 20% of the population was employed in the service and commerce sector and about 30% in agriculture and forestry. With the acceleration of tourism the service sector continues to expand quickly. Citrus plantations and other agro-industries for local consumption are also a driving force in the northern areas of the state.

Chicle production income to producers in the PPF area is about U$S 1 million per year. Large margins and commissions are absorbed by in-country brokers, sourcing agents and union organizations and management. Present production levels are several times below the sustainable chicle production potential of the forests.

4. *Origins of "Plan Piloto Forestal"*

a. Historical Basis for Surviving Forests in Quintana Roo

A combination of factors accounts for the fact that large tracts of natural dry tropical forests still exist in Quintana Roo. The expansion of the agricultural frontier and population growth was limited by the relatively poor quality of soils for agricultural crops, the lack of water for irrigation (with a 5-7 month long dry season and 1,200 mm rainfall), (see, Annexes II-4 and II-5). Another factor was the continued resistance of indigenous populations to the invaders, well into the 19th century.

A fortuitous circumstance was the presence of the latex producing tree Manilkara zapota, which created an economic reason for preserving the forests. Commonly called "chicozapote", the tree was found throughout the area and was tapped by immigrants in the rainy season (August-January) to extract chicle for sale to local buyers working for a major U.S. chewing gum producer.

In 1935, because of the chicle trade, Mexico granted special exceptions in its land reform legislation which greatly increased the size of the land plots that could be assigned to the "ejidatarios" who settled in these forests. "Ejidatario" plots in Quintana Roo were about 400 há per family -over ten times the national average. It was judged that this plot size was the minimum needed to maintain a chicle-producing family. The conservation impact of this single decision is apparent.

In recent years, low chicle prices and a growing population with increased subsistence needs have helped push the agricultural and urban frontiers into the forests. By 1988, Quintana Roo had converted about 38% of the "ejido"-controlled lands into pastures (26%) and agriculture (12%).

According to the 1988 agricultural "ejido" census, 62% of the "ejido" lands were recorded as "selvas" or jungles (INEGI,1988; see, Annex II-6). To be sure, this category includes a variety of vegetation types including high and low dense forests and abandoned or resting "milpa" lands (see distribution map Annex II-4).

b. The "Plan Piloto Forestal"

The Mexican government has given short term logging concessions to U.S. and European firms in the region since the early 20th century. In the 1930's, the establishment of the "ejidos" gave each "ejidatario" the right to use his land, but not to sell it or the timber growing on it.

The Federation continued to grant concessions of the "ejido's" forest resources to logging and processing companies. Since most of the timber generated from these concessions was exported as logs, few benefits accrued to the local population. In 1954, the Federation built a large

veneer and plywood mill, Maderas Industrializadas de Quintana Roo (MIQRO) near Chetumal and granted it a 25 year logging concession over 550,000 há of the "ejido"-owned forests.

Under the terms of this government-imposed arrangement, the prices at which "ejidos" could sell to MIQRO were set by the government. Stumpage prices paid by MIQRO were relatively low (U$S 5 per cubic meter in 1983). A few local dwellers were employed in the logging and manufacturing operations. This arrangement did not make for good working relations between "ejidos" and MIQRO, nor did it help timber supply security for the firm or motivate the "ejidos" to effectively manage "their" forests.

Fig. II-1 New Forest "Ejido": Still a Company Town

In 1983, when the MIQRO concession was ending, Pedro Joaquín Coldwell, Governor of Quintana Roo for 1982-87, and Dr. Helmut Janka, the Director of the GTZ-financed Acuerdo México-Alemania, started the "Plan Piloto Forestal" (PPF) to conserve area forests through community-based forest management and utilization.

Taking full advantage of the governor's political support, the Acuerdo México-Alemania (AMA) technical and extension team was built by supporting selected technicians within the Secretaría

de Agricultura y Recursos Hidráulicos (SARH), the official Mexican forestry agency, combined with foreign technicians resident in Mexico.

The PPF team started in 1983 by assisting and organizing ten of the "ejidos" around Chetumal which control 290,000 há of land with 41%, or 119,000 há, now declared as permanent forest area. With the support of the governor, the "ejidos" obtained credit and purchased heavy logging equipment including several yarders, loaders and trucks so they could perform their own logging operations and stop selling stumpage to the MIQRO plant. By selling logs delivered to the plant (U$S 100-150 per m3 in 1984), the "ejidos" generated employment for their members and the opportunity to capture value added.

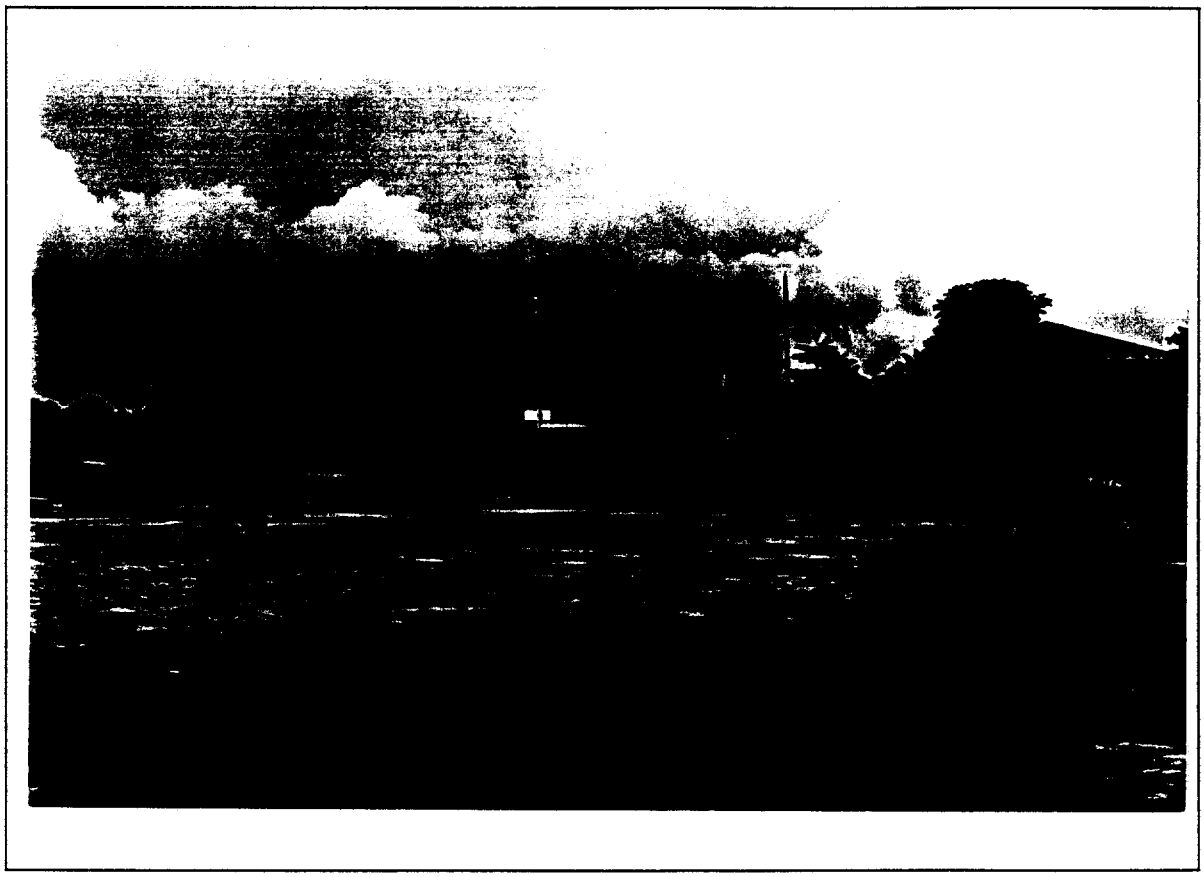


Fig. II-2 Older Forest "Ejido"

In 1985 a second group of "ejidos" located in the north central part of the state was organized by SARH to form the "Organización de Ejidos Productores Forestales de la Zona Maya S.C." with its Dirección Tecnica based in the town of Felipe Carrillo Puerto.

An organizational chart showing the relationship between the "ejidos" in this Sociedad Civil and their Technical Directorate is included in Annex II-7.

By 1986 these two groups of "ejidos" were legally incorporated as the Sociedad de Productores Forestales Ejidales de Quintana Roo. In accordance with Mexican forestry laws, the teams of foresters which had assisted the "ejidos" could then be officially authorized by SARH to manage the forests. Since then, two other groups of "ejidos", smaller and with smaller forest areas remaining, have created technical assistance units with help from PPF.

A complete analytical description of the history and some of the silvicultural issues facing PPF can be found in Laura Snook's article: "Opportunities and Constraints for Sustainable Tropical Forestry: Lessons from the Plan Piloto Forestal, Quintana Roo, Mexico".

Continued technical and strategic support, timely political leverage over long periods of time--not large amounts of money--have been the hallmark of AMA's approach to the PPF. A patient, flexible, goal-oriented (not process-oriented) approach has allowed PPF to promote, influence and support the organization of the "ejidos" towards getting increased income from their remaining forests so they would not be turned into pastures.

5. *Status of Plan Piloto Forestal in 1992*

A positive response by the "ejidos", SARH and State officials has prompted PPF to extend their technical assistance and extension model to other groups further away from the AMA headquarters in Chetumal. Today the PPF has influence over the management of about 400 thousand há of production forests or about 80% of the total commercial forests still remaining in the state of Quintana Roo.

Table II-1 shows a summary of the groups which are receiving assistance:

Table II-1 GROUPS WORKING WITH PPF IN 1992

SOCIEDAD CIVIL	TOTAL AREA 000há	FOREST AREA 000 há	Number of "Ejidos"	Number of "Ejidatarios"	Total Pop 000
Productores Forestales Ejidales de QR	289	119	10	1909	12
Organización de "ejidos" Productores Forestales de la Zona Maya	387	152	19	2840	16
Soc. de Pueblos Indigenas de QR,"Tumben Cuxtal"	283	39	16	468	52
Organización de "ejidos" Productores Forestales de QR "Chaktemal"	296	94	14	na	na
TOTAL	1255	404	59	5217	80

The above table shows how the PPF, in only nine years, has been able to interest and assist fifty nine "ejidos", over five thousand "ejidatarios" and more than eighty thousand people in planning the sustained use of their forests (See Annex II-3 for geographical coverage). Now, as result of its phenomenal success at planning and organizing, PPF has the daunting task of helping this wide range of communities prove to themselves that the remaining production forests are valued economic assets worth conserving.

B. FINDINGS AND CONCLUSIONS

1. *"Plan Piloto Forestal" is the Best Available Example of Natural Forest Management with Communities and Needs Support for Continued Success*

Much has been said and written about the PPF. Because it is clearly one of the most promising examples of community-based forest management in the American tropics (Dickinson,1991), it has attracted an endless stream of attention and visitors.

Many specific technical areas of PPF's work, particularly on the silviculture front, have been criticized. The mere fact that there are still large tracts of forest there to study, however, may the best testimony of the remarkable achievements of the AMA, the PPF technicians and the visionary politicians that have supported them.

Social and economic sustainability is an urgent concern

While many of the detailed silvicultural criticisms appear to be well founded, it is clear that the major and most immediate threats to sustainability come from the social and economic, not the biological front.

The PPF team is aware of the urgency of increasing net incomes, and therefore, the economic value of the forest to the local community. It was surprising to see that they continue to spend a considerable amount of time and effort on their own, rather theoretical, mahogany growth studies, rather than more practical concerns. Partly some of these studies may be a reaction to outside criticism although it appears that PPF is genuinely interested in biological sustainability as well.

Fig. II-3 Ethics of Replenishment at Work

Over U$S 150,000 of depreciation reserves for equipment are being distributed annually as profits to the "ejidos"

After working for the first week with the consulting team, the PPF team consented to release the internal cost and operational reports and studies from their efforts. Then, it became evident that a majority of the key issues and problem areas observed by the consulting team had already been identified. Mechanisms for faster response to support economic activities of the "ejidos" are needed and are discussed later in this report.

The new Agrarian Law is a double edged sword for conservation of forests

A detailed legal analysis of the recent policy and legal changes introduced by the new Ley Agraria of February 26, 1992 goes beyond the scope of this study. However, after a careful reading of the new law it appears that it could be either a very positive or a very negative effect over the conservation and management of forests which have been held together by the old, very limiting, "ejido" laws and regulations.

For those "ejidos" which have true interest in sustainable forestry coupled with the technical and negotiating ability, the law will provide new options for increase their sustained income from the forest.

But, despite language wording prohibiting the subdivision of forests, the new law which intends to revitalize a stagnant Mexican agricultural sector (See, statistics in Annex II-8) is likely to facilitate the advance of the agricultural frontier further into forest areas. Hardest hit will be natural forests close to fast growing, populated areas in northern Quintana Roo. Particularly where "ejidatarios" have lacked capital and are free to create additional agricultural lands or pastures from forest lands.

In Quintana Roo the PPF has built a good organizational and extension basis for community forest management. It has taken advantage of a very favorable combination of soils, topography, existing road infrastructure, rich species mix and awareness of the potential for increase income from the forest by the local population.

There is a need for faster and better action on operational front

To preserve the positive cash flow needs of the initial "ejidos" and to keep from being totally overrun, PPF will have to quicken the pace of technical assistance and add specific programs designed to strengthen production and business management and marketing. Alliances and contracts with private entrepreneurs, such as one an ejido currently has with an independent beehive manufacturer, should be actively pursued. Chicle, honey, other non-timber products, crafts and eco-tourism merit special attention.

PPF has zeal for independence

Having recently managed field forestry projects with heavy policy undertones, the consultants understand PPF's cautious approach to sharing information and their tendency to be self-sufficient. In fact, given the nature of the interests and forces involved, it is highly unlikely that PPF would have gotten as far in their organizing, planning and promotion with a different, more open approach. The real question is not whether, but how the PPF will adjust their strategy to assist the "ejidos" as they move from planning to execution.

2. *Modern Business Practices, Production Management and Respect for Market Forces and Competition are Sorely Lacking at the "Ejido" Operations.*

Lack of qualified business managers

Field visits to several of the "ejido" manufacturing plants and examination of "ejido" production records reveals a very low level of capacity utilization for logging and manufacturing equipment.

Fig. II-4 "Ejidos" Lack Production Management Skills

High levels of residue, scattered piles of unsold lumber and rejects were commonplace at production sites. Machinery, especially sawmill equipment, often lay abandoned or unused. A standard explanation from our PPF hosts was it was impossible to organize or improve manufacturing efforts without markets for their products.

Many sawmill operations were down because the mahogany logging and sawing season is over. Little activity was observed in the few remanufacturing, millwork and furniture shops operated by the ejidos. Of the supervisors we met, none appeared well-qualified as production managers. It was also apparent that operating decisions, including personnel, marketing and purchases, are not delegated by the "ejido" committee to the operating supervisor. In the wood products business, lack of such autonomy is the recipe for disaster.

Although some jobs can be used to employ farmers idled by their crop cycles, cost effective, safe and quality-oriented wood products operations require stable, well trained teams.

Lack of management reporting systems precludes delegation to managers.

Year-around operations with full time business and production managers and specialized workers must be developed and delegated the authority to do their jobs. Very detailed financial and reporting systems and procedures seen at the "ejidos" are not oriented to track performance but rather to prevent abuse. Accounting audits would be more effective and would allow "ejido" commissioners to concentrate in monitoring the progress of hired managers against set goals and forecasts.

High production costs and artificially set margins by PPF are eliminating local industry and fomenting imported wood products.

Since the establishment of PPF, when "ejidos" agreed to sell logs instead of stumpage, PPF set up to reverse the low share "ejidos" had gotten from timber harvests from their lands under the concession regimes. PPF helped "ejidos" to set-up and agree to tabulated costs or fixed prices which would be charged to log buyers. Today's tabulated fixed profit margins are calculated as mark up on costs. They range from 14% for hard species to 82% for mahogany and cedar. This means that a sawmill wanting to buy mahogany logs will pay U$S 200 per m3 of logs delivered at its plant. At 60% lumber recovery this means a log cost of U$S 0.80 per finished board foot before any manufacturing costs or profits are added.

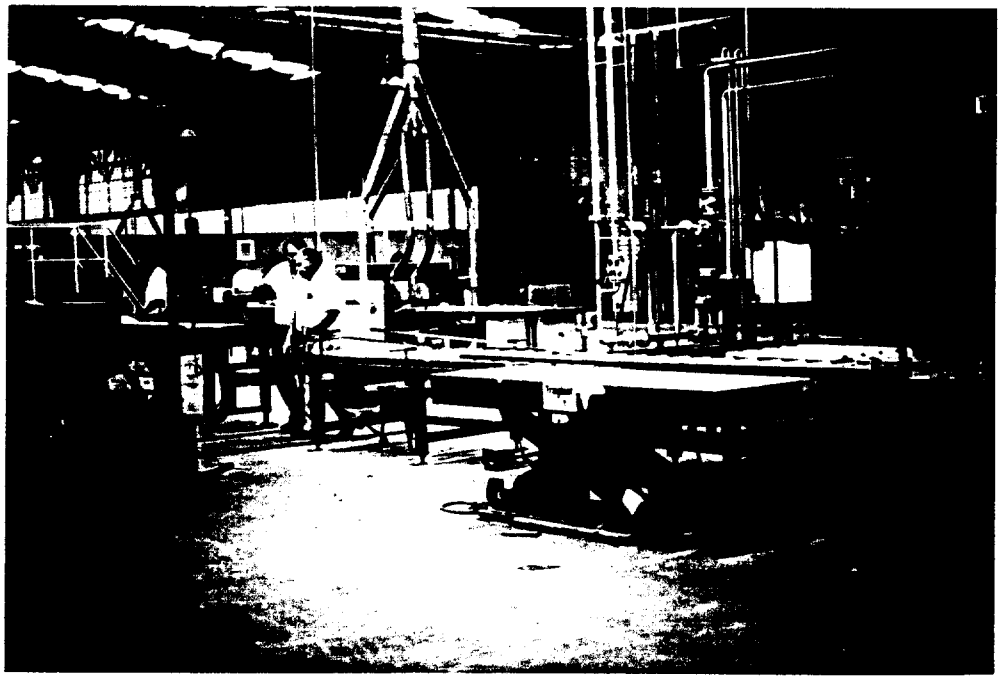


Fig. II-5 Local Industries Need Wood Supply at Competitive Prices

Reportedly, Quintana Roo millwork producers can secure legal mahogany, well-sawn by private mills, in Petén, Guatemala for about U$S 1.25/BF delivered (includes duties). Large cants, presumably chainsawn and contrabanded out of Peten or Belize arrive at a lower price. Current annual production of mahogany lumber in Quintana Roo is 9,000 m3. It is estimated that imports to Quintana Roo from Guatemala and Belize total 19,000 m3.

The situation is more serious with Quintana Roo plywood mills. They buy logs of common and hard species at U$S 87-100/m3 and mahogany at U$S 200/m3. Just the log cost component in a 6mm sheet was calculated at U$S 6 and by the time manufacturing, transport and distribution costs are added, they cannot compete with Indonesian plywood retailing in México City for about U$S 10 a sheet.

A similar analysis explains why Mérida furniture producers cannot afford to use locally grown species or why flooring plants in Qintana Roo are beginning to import oak and pine lumber from the U.S..

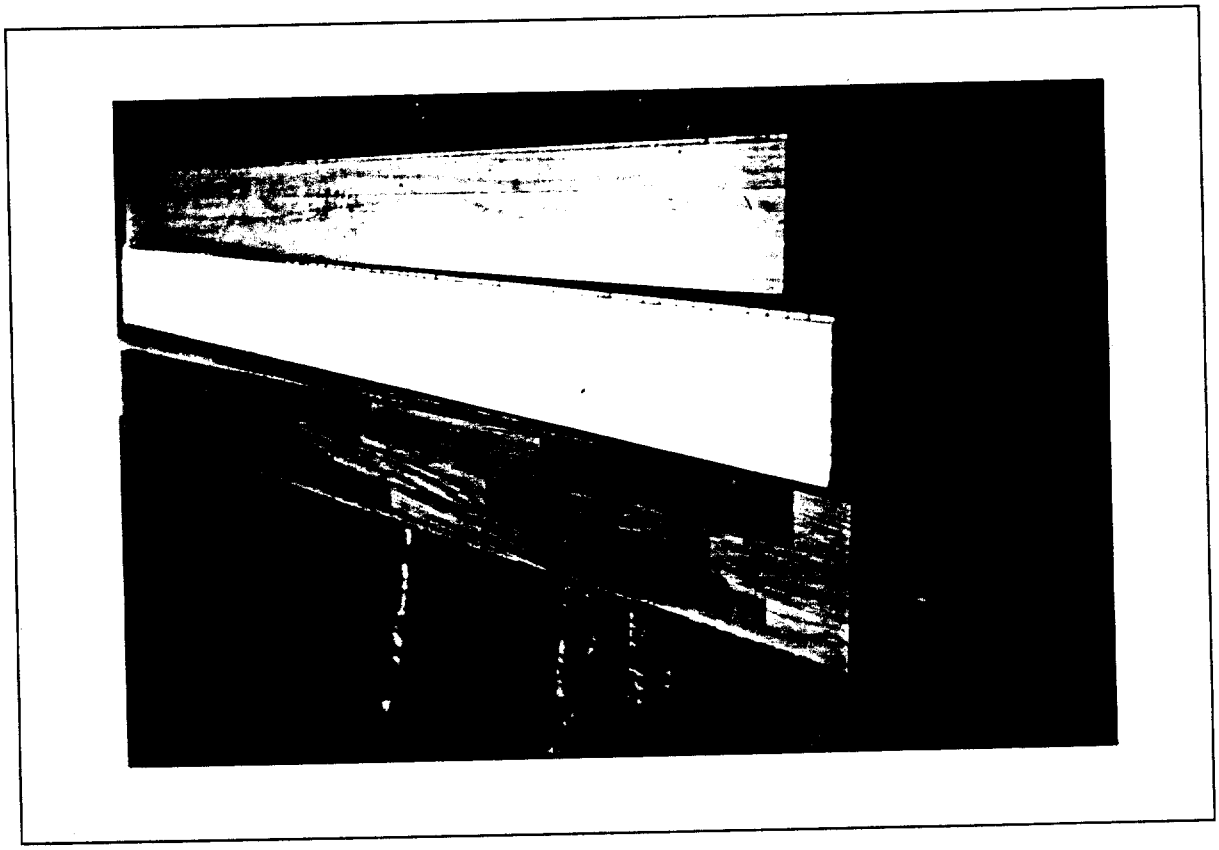


Fig. II-6 Parquet Factories in S.E. Mexico Buying Pine and Oak from U.S.

3. *Insufficient Harvesting and Marketing of Common and Harder Broad Leaved Tropical Species has Reached a Critical Point*

Long-term decrease in mahogany regeneration and forest value.

Creating larger scale openings of the forest canopy in a systematic way throughout the area is crucial for the regeneration of mahogany, a light seeking species. These openings are created by felling several species in clusters, preferably before the season when mahogany seeds mature and disperse (March-April), so seeds from trees being cut can originate viable seedlings.

The traditional "cut and get out" approach used by loggers, the world over, is to make a first pass for the more valuable species and then, if weather and time permit, log less valuable species or have others do it, if at all. This is not sustainable and also very costly as valuable species become scarce.

Extraordinarily high logging costs and artificially set political prices will render Quintana Roo forests non-competitive.

Current "ejido" logging practices hunt mahogany first in the areas slated for the annual mahogany extraction. When orders arrive for common tropical species, the stand which optimizes that order is chosen. Frequently, this means going into a completely different area with all the road and cost implications of a low density logging operation.

Although practical, given the apparent unavailability of waiting buyers for many common species, in the long run this practice has increased "ejido" logging costs exponentially which, further reduces the cost-competitiveness of all species. Finally, and most importantly, reduced volume of mahogany from future harvests means reduction in the present value of the forest.

An excellent field cost study by PPF staff at the Noh Bec "ejido", shows that by increasing the logged volume by five, the total logging cost would drop to a third of present level.

Processing capacity in Quintana Roo is well below levels required for sustainable management of PPF forests.

Not even if all industries of Quintana Roo were working at full capacity would they be able to absorb today's sustainable harvest levels of all the different species combined (see Annex II-9 for list of industries). Since many are closed or use mainly mahogany, this automatically forces logging costs up and forest incomes down. As older mahogany stocks are used, the only economic rent "ejidos" will get from the forest is chicle. Will the forest be economically valuable to them then?

Table II-2 ALLOWABLE HARVEST FOR 200,000 Há,9 SPS.*

SPECIES	INVENTORY	GROWTH	ALLOWABLE ANNUAL CUT	PRESENT CUT
	m3/há	%	000 m3/yr	000 m3/yr
CAOBA (Swietenia macrophylla)	8	2.4	32 000	8 000
RAMON (Brosimum alicastrum)	24	1	48 000	500
TZALAM (Lysiloma bahamensis)	11	1	22 000	3 000
CHECHEM (Metopium brownei)	8	1	16 000	2 500
CHAKTE KOK (Sickingia salvadorensis)	6	1	12 000	-
SAC CHACA (Dendropanax arboreus)	4	2	16 000	5 000
AMAPOLA (Pseudobombax ellipticum)	6	2	24 000	3 000
TOTAL	67		170 000	22 000

* Note: Chicozapote trees have been excluded intentionally.

Fig. II-7 Use of Additional Species Can Increase Income

4. *Trade and Cooperation with Local, Regional and Neighbor Country Firms and Institutions Needed.*

Although the above table includes only a few species and very rough growth estimates, it is clear that the level of harvests needed for achieving a silviculturally balanced forest are about eight times higher than present. Given the heavy mix of lesser known and common species involved, placing all this roundwood is a major challenge over the next several years (see Annex II-10 for complete list of species).

Executing a silviculturally balanced harvest will involve using all existing primary and secondary wood products facilities in the Peninsula and neighboring states. It will require opening new facilities oriented to export and local markets for value-added wood products. In these products, total quality, cost and exporter performance are much more important than the species used.

Much of PPF's early success with the "ejidos" was based on organizing them against larger existing plants and to unilaterally raise the raw material prices forcing some of these plants to close.

Today, there seems to be a better relationship between some PPF teams and some plants. However, the fact that PPF ejidos are the sole supply sources for logs, at a prohibitive high price, continues to force private industries to close, relocate out of Quintana Roo or use imported lumber from abroad.

All the larger plants visited by the team were either down or operating under survival scenarios. It is clearly in the best interest of the ejidos, if they want to conserve their forests, to develop entirely new partnerships with entrepreneurs capable of operating these plants at a profit. Annex II-11 shows an effort by PPF aimed at existing flooring plants in the region.

Given the history of confrontations and present weaknesses in "ejido" administration, it will take time and patience from all sides, undoubtedly several years, to build a cooperative relationship. PPF's credibility and experience among the "ejidos" could be an asset in this process.

The already vast network of legal trade and contraband of logs, cants and lumber between Mexico, Guatemala and Belize and the veneer transfers between Quintana Roo, Campeche and Belize illustrates some of the possibilities for integration.

Personnel training is another area where major efforts need to be made before the local economies can take full advantage of the employment opportunities which can derive from a forest-based economy. At present, there are virtually no craft products based on forest products sold at the tourist markets and relatively few carpentry shops were observed. Given the heavy immigration currents and mix there should be a good response to vocational training courses at State level.

Fig. II-8 Improved Utilization of Wood Resource Through Small Crafts Production

5. *Product Development Assistance Needed for Selected "Ejido" Manufacturing Operations.*

Many hopes have been placed by the "ejidos" in the vertical integration of their sawmill operations with lumber drying operations and carpentry shops. As explained earlier, not even under the best conditions could these operations by themselves absorb the mix and volume of harvest which will bring both economic and ecological sustainability. These operations, however, provide a good opportunity for on-the-job training to gradually remove the following obstacles affecting the overall "ejido" operations:

Lack of Entrepreneurial Skills

Entrepreneurial skills and well designed business and manufacturing structures must be in place in the area if commercially disciplined enterprise is to develop and prosper. More of this enterprise is needed in the area to effectively utilize area forest resources to the advantage of area residents living within the forest communities of Quintana Roo and other Yucatan States.

"El Mercado No Perdona" (the market does not pardon) is a basic tenet of commerce. There is an absolute need for well managed, cost-effective and market responsive operations if there are to be adequate returns and commercial survival. Commercial and technical behavior that is less than demanded by the competitive market-place is simply rejected by the same market-place. Successful forest based enterprises are, in fact, evident in Quintana Roo and other States visited. In all cases these operations were managed by a well prepared private sector management that understood the positive and negatives of the technology in current use by their firms. These managers tended to be wholly led by market-demand for production decisions and were generally aware of the need for quality-controlled production and timely delivery. These managers were also cognizant of the competitive costing and pricing practices needed for successful response to market opportunity.

Fig. II-9 Learning Precise Buyer Needs

Lack of Market Driven Enterprises

A necessary first step for the development of sustainable forest-based enterprises is the discovery and qualification of serious national and international market interests for products that may be usefully produced in Mexico and specifically in the areas visited.

The search for these markets is generally an on-going effort that is conducted in the market-place itself and not in the proposed production area. For example the information that a U.S. firm offers a long-term, purchase-interest for a specific type of garden furniture is generally discovered through ongoing commercial contact with the interested company. A local decision to actually pursue this opportunity involves such considerations as wood species to be used and forest management impact, investment and returns indicated by the operation and optional sources of investment capital, anticipated levels and quality of employment to be generated, indicated production volumes needed and likely duration of the market window.

Need for Product Development Support

Market opportunity information cam be accessed through internationally practiced product development and marketing specialists. Once a market opportunity is discovered and evaluated, and the decision taken to commercially respond to identified opportunity, there arises a need for product development support.

Product development involves the attention of production site-active specialists who are aware of the precise needs of the proposed buyer and who are practiced to technically support a producer to effectively meet those needs. It should be clear that product developers are primarily focused on the needs of the buyer.
Technical support in product development involves the following activities:

- Producer/Buyer Interface
- Costing and Pricing
- Materials Identification and Environmental Impact
- Production Planning and Producer Training
- Producer Performance Monitoring
- Export Process Payment and Disputes

A detailed explanation of these functions can be seen in Annex II-12.

Fig. II-10 Initial Indicators of Product Development Potential

6. *Opportunities to Develop Non-Timber Enterprises*

Chicle

Despite a drop in the demand for natural chicle caused by competition from synthetics, this continues to be one of the most important sources of net income for "ejidos". For example in the "Sociedad Civil de la Zona Maya" the 150 ton. annual chicle sales volume represents about 16% of total income. Because of its extractive nature and low capital requirements, chicle accounts for over half of the net income of this "Sociedad". The 100 tons per year production of the Sociedad de Pueblos Indigenas accounts for 50% of total sales and represents annual income of about U$S 40 per family.

The closed nature of the sourcing and distribution network makes it difficult to get additional information. It appears that the best option for restoring chicle incomes is through development of special products in smaller scale and catering to specialized markets.

Honey

Honey is an especially important resource for some of the smaller groups of "ejidos" with little forest remaining. For the Zona Maya group of "ejidos" for example, honey income represents under 5% of total income. The Sociedad de Pueblos Indigenas, the largest honey producer, sells US$ 3000 per year. Some efforts are being made by Mexican companies to market honey to the ecological market, but the bulk of the area production goes through well established marketing channels which export a total of U$S 40 million annually (SARH 1992, Annex II-13).

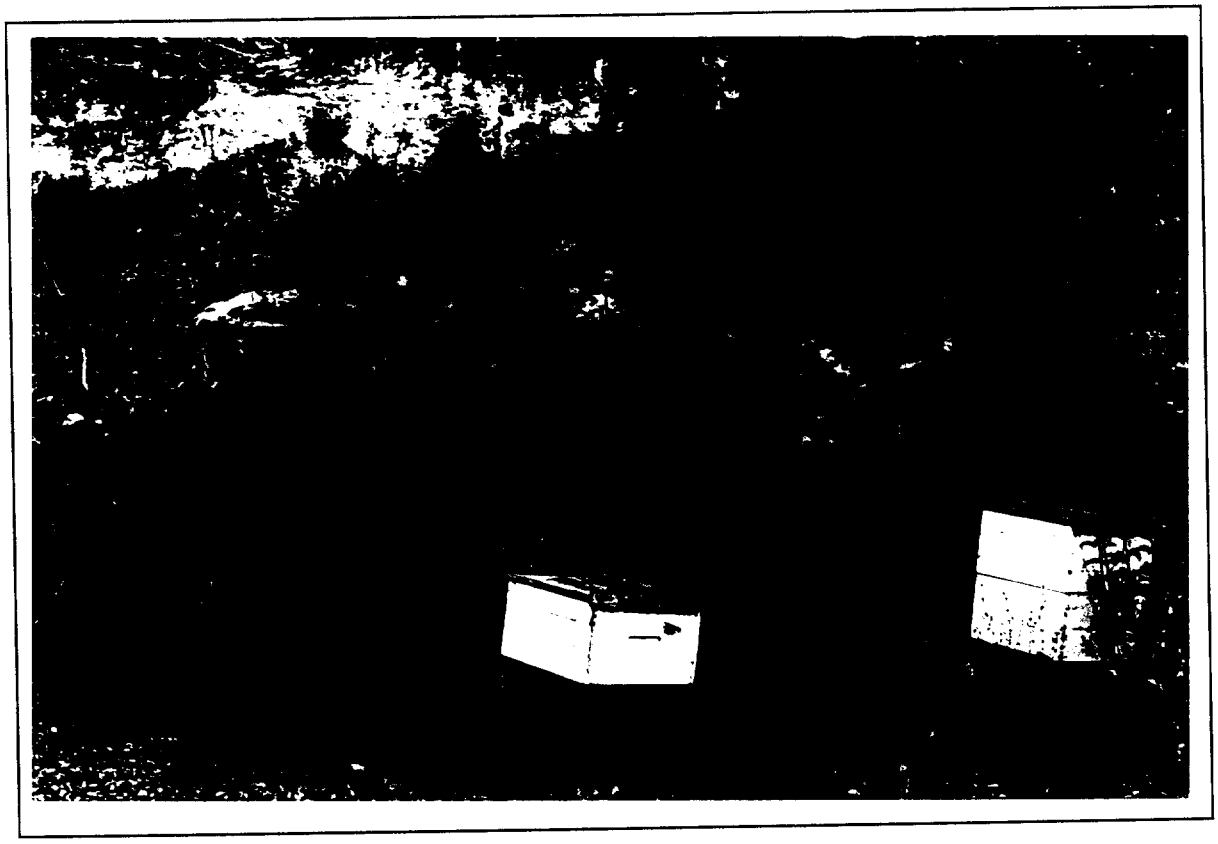


Fig. II-11 Honey: One of Several Important Non-Timber Resources

Nature and culture-oriented tourism and related enterprises

Perhaps the non-timber resource which has received the least attention from PPF is nature tourism and related products and services. Good opportunities exist which could might be attractive, especially to some of the more urban "ejidatarios". Specific areas discussed include a nature trail and underwater exploration near Tulum which would help local residents resist the pressures for displacement from the massive tourism to nearby ruins. An excellent preliminary project proposal, concept description and budget was presented by Carlos Meade of the technical team for the Zona Maya.

Other archeological sites with potential include the Becan ruins, where a restoration program has helped local farmers with cash to mitigate impact of lost crops. Lastly, there are good opportunities for rural and roadside enterprises aimed to provide services and souvenirs to passing tourists and provide income to women groups: fresh orange juice stands, clean bathrooms, restaurants, sales of sewn gift items.

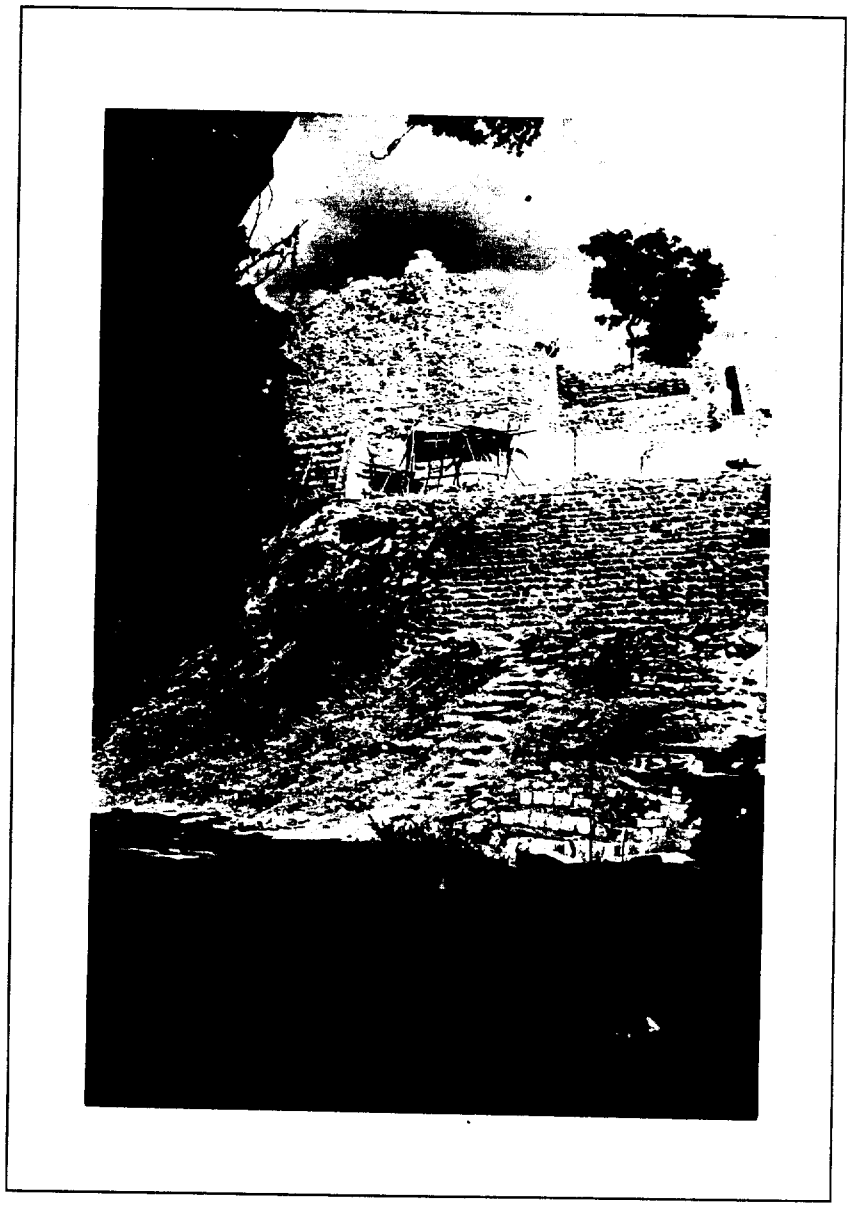


Fig. II-12 Nature and Culture-Oriented Tourism Can Supplement Incomes

C. RECOMMENDED ACTIONS

Quintana Roo's production forests have survived due to a combination of factors including: historically small population, agrarian reform plot sizes over 400 há, chicle incomes which made forests valuable to the local population and a history of natural disasters leading to low volume forests.

With today's rapid population growth, reduced chicle market and recent legal reforms facilitating the break-up of "ejidos", the chances for survival of the Plan Piloto forests depend on implementing the following:

1.. ***Increase Net Revenues and Employment Linked to Increased Harvesting of a Broader Number of Timber Species and Sizes.***

Improve utilization of logging machinery and reduce logging costs. An internal study has correctly identified several options, including downscaling to less capital intensive options, animal traction etc. Criteria for road building and location should be reviewed in conjunction with increasing the volumes harvested per há and extending the logging season. Drier areas with suitable soils and species mix should be targeted in the annual logging plans for extraction during months with spotty rains.

Launch an applied research testing program on production-scale field tests. Review silvicultural practices to make them less dependent on a single species (mahogany) and on the "minimum diameter" concept. The revised practices should include larger openings of the canopy with fellings timed to facilitate regeneration of light-seeking species and to minimize damages and costs.

Develop a longer-term marketing and allocation strategy for roundwood which responds as closely as possible with forest management plans, logging plans and road building plans. This strategy should identify which species, sizes and log grades can be sold profitably to which open market plants and which, if any, can be processed by "ejido"-controlled facilities. Multi-year supply contracts, which adequately protect all parties, should be sought with local processing plants. Eventually, a marketing consortium of several "ejidos" could be established to coordinate and consolidate volumes from smaller "ejidos".

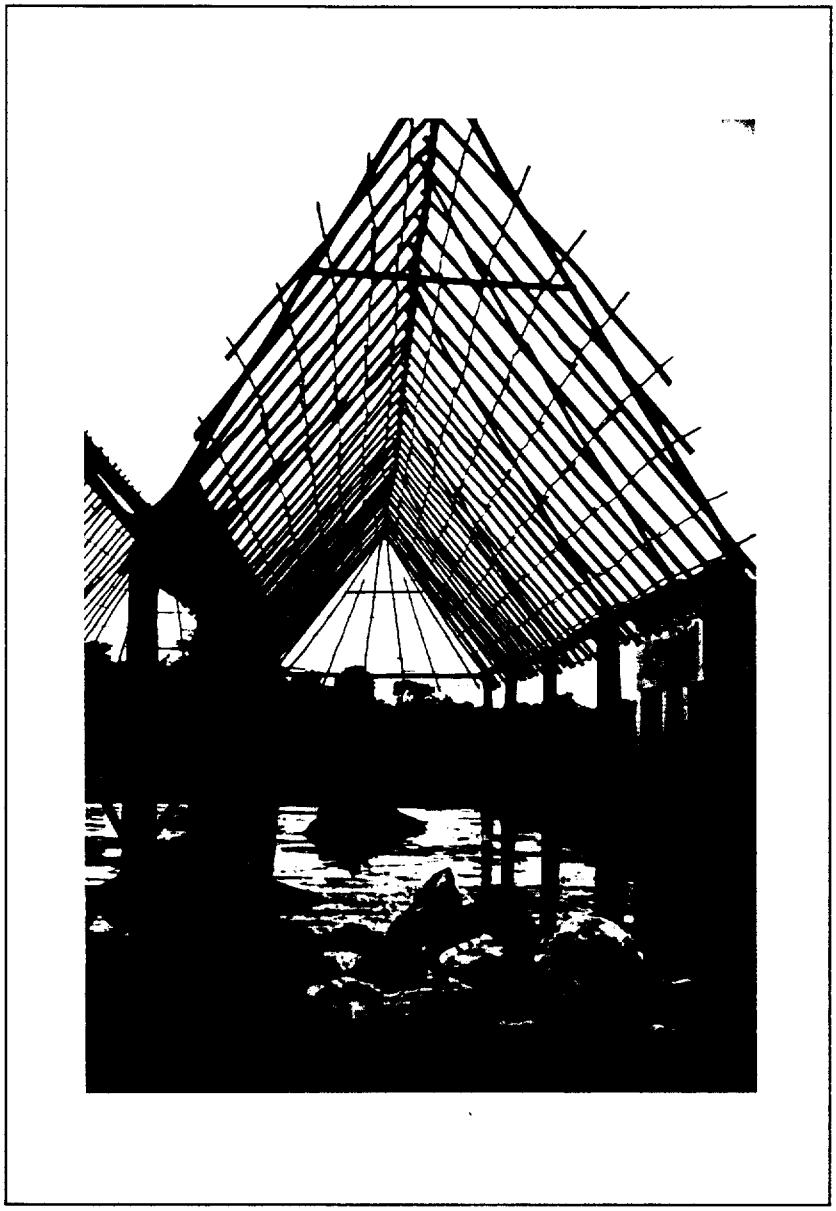


Fig. II-13 Pole Buildings Create a Market for Small-Diameter Thinnings

2. Increased Value-Added Manufacturing of Timber Products in the Region.

Start a technical and product development assistance program aimed at existing private producers interested in using lesser known species. This program should be conducted in close cooperation with PPF and provide a natural vehicle to increase cooperation between primary producers from the ejidos with private firms engaged in plywood, millwork,flooring,

moldings and plywood. Focus should be maintained on increasing value from present and potential harvest.

A resident hands-on advisor would train and direct a team of local technicians and consultants to provide in-plant assistance. The team could be supported by other wood-utilization projects in Mexico, Central America and cooperate with US and European entities which can help contact buyers and access technical resource persons in México, the USA or abroad, in specialized topics such as design, finishes, sawfiling, etc. Emphasis would be on providing catalytic support on a cost-shared basis to those industries which will advance program's goals.

Start a vocational training program for young people in woodworking techniques. A careful search should be made to explore all options for linking with existing Mexican programs and training entities with good track records. Several years ago AMA and PPF started a similar although more ambitious initiative which included both training and industrial design. A complete set of german woodworking equipment was installed at Bacalar, Quintana Roo, in a center with classrooms, dormitories, etc. For unknown reasons this center called "Centro de Capacitacion y Diseño Industrial" (CECADI), is now under the Secretaría de Desarrollo Económico del Gobierno de Quintana Roo. Reportedly, is being used as a carpentry shop for the State which is the typical outcome for these facilities in Latin America when private producer groups have not been involved in managing them. It is important that this effort remains focused on worker training, not design, and clearly separate from commercial product development efforts.

3. ***Gradual Introduction of a Market-Oriented Behavior and Improved Production Management and Product Development Skills in Ejido Manufacturing Operations.***

Start Two to Three Pilot Projects for Product Development and Training in selected areas. These would have to be aimed at demonstrating how the application of production and business management techniques can benefit operating results. They would be fully market driven and involve very simple products, including present ones, at first. All phases of a business would be covered including accounting, management reporting, controls and audits. In-plant assistance supplemented by courses and workshops when needed could be administered by the same group mentioned in #2 above.

Possible wood products for pilot projects:

There is a current North American market for a range of wood products that may be restricted to the use of selected species of wood as identified by forest management actions. Additional products may also be produced, particularly for export markets, by the intensive use of now abandoned "cut-off" material, tree crotches and limbs. This wood resource forms an effective material supply for the following manufactures: (mahogany is not an essential material for these products).

- Toys — pull-toys, games and puzzles, collector "eggs", small child vehicles
- Furniture — infant/ chairs/cribs, lampbase (parts only), carved furniture parts (probably machine spindle-carved only), garden and patio furniture including decorative wooden planters (finger-jointed material), carts, trays and tables.

Fig. II-14 Utilization of Logging Residues Have Low Marginal Costs

4. ***Increase local income and employment from non-timber products and services.***

Should PPF and the individual "ejido" groups be interested, a specific program should be designed with individual community groups and the support of marketing consultants and product developers experienced in areas such as:

- honey, chicle, spices, herbs, resins
- tourism
- crafts
- lodging
- restaurants

Agricultural Specialty Products

The growing of spices (allspice is already in local production), medicinals, garden and decorative plants, and honey production are market-responsive activities that require specific (generally offshore) purchaser identification and technical participation (as well as possible investment) if they are to succeed to the advantage of producers.

IMCC sees purchaser or "market-window" identification activity mentioned above to be a first and necessary step in the introduction of new agricultural contract-cash crop opportunity for the lowland communities of Quintana Roo and Campeche.

D. LIST OF CONTACTS IN QUINTANA ROO

Albrecht, Harald	Productor juguetes,diseñador. Chetumal
Alderete, Manuel	Asesor,PPF,Chetumal.
Arguelles, Alfonso	Director Técnico,PPF, Soc. Prod Zona Sur,Chetumal.
Azuara, José Luis	Maderas Finas Belmex Laguna Ocom,Felipe Carrillo Puerto,Quintana Roo tel 40481
Canche, Abundio	Presidenteconsejo Directivo Soc. Ejidos Zona Maya,FCP,QR
Carreon, Marcelo	Director Tecnico,PPF Org. Ejidos Productores Forestales, Zona Maya,FCP,QR tel 40307,40373
Flachsenberg, Henning	Asesor GTZ/AMA tel (983) 24424 PPF,Chetumal

Galletti, Hugo	Asessor,PPF/AMA, Chetumal
Hellmund, Alejandro	Director,NYDC, Fabrica PIQRO
Meade, Carlos	Antropologo,PPF,Zona Maya,FCP
Montalvo, Francisco	Asesor PPF,ejidatario
Morzuca Lic.	Gerente Fabrica de Puertas, Chetumal
Poot, José Luis	Asesor PPF
Sanchez, Felipe	Asesor PPF
Santos, Victoria	Asesor PPF,Zona Maya,FCP.
Urich, Rosendo	Presidente Directiva,Soc. Pueblos Indigenas Tumben Cuxtal, Chunhuhub,FCP.

III. CHALLENGES AND OPPORTUNITIES IN THE STATE OF CAMPECHE

A. BACKGROUND

The state of Campeche has a total of 5.7 million há. About 52 percent are middle-height forests, 27 percent low-forests and mangroves and about 8 percent wetlands, savannahs and cut-over forests. It is estimated that the agricultural frontier clears between 40 and 60,000 há annually. Between 1900 and 1985 a total of 3.2 million há were assigned to farmers by the Mexican government. Over half a million hectares of these lands were assigned after 1971.

In 1988, 700,023 há, near the borders with Quintana Roo and Guatemala, were designated as the Biosphere Reserve of Calakmul. (see Annex III-1).

B. FINDINGS AND CONCLUSIONS

1. Great Interest in Environment and Natural Resources (ENR) Expressed at the Highest Level of State Government.

The government of Campeche has centralized their actions in the ENR field and has chosen the energetic Secretary of State, Mr. Joaquin Repetto, to be the coordinating point of a multi-agency group. Their projects are focused on agro-forestry and large-scale industrial gmelina plantations for exporting pulp wood.

2. Weak Technical and Market Base for Projects Being Considered.

The teams brief visit to Campeche had to be shortened even further than originally planned because of heavy flooding. No field visits, other than to the promising agro-forestry projects supported by World Wildlife Fund and USAID in the Calakmul buffer zones, were made. Discussions of on-going and planned agro-forestry and industrial plantation projects left the clear impression that the assistance of an experienced industrial forester to the inter-agency groups could strengthen these projects. Because of the size of the projects being planned and the large number of small farmers involved, the potential for disappointments and damage is substantial.

Fig. III-1 Promising Agro-Forestry in Calakmul Buffer Zones

3. *Diversification of Species and Target Markets for Agro-Forestry Projects is Desirable.*

Much reforestation activity with small farmers seems to aim at potential export markets which have not been secured. Local markets for roundwood in construction and even low-cost furniture and millwork should be pursued to spread the risk. For these same reasons, species which will produce straighter stems than gmelina should be added.

Fig. III-2 Value-Added Markets for Agro-Forestry Species: Preservation Needed

4. *Potential for Natural Forest Management Pilot Projects has not been adequately Studied.*

Given the acute need for buffer forestry around the Calakmul Biosphere Reserve, the strategy of concentrating initially on plantations seems plausible. However, because of the proximity of the Plan Piloto Forestal in Quintana Roo, the natural forest management option appears worth exploring.

C. RECOMMENDED ACTIONS

1. A detailed examination of the above issues in the field by a qualified and diverse team of consultants, including Mexican professionals from the Plan Piloto, would be desirable.

2. After strengthened local teams are in place, it would be worthwhile to conduct visits to similar projects in Central America. The AID Regional Office for Central America and Panama (ROCAP) could provide contacts.

3. Ways should be explored so the inter-agency groups share more fully the experiences of PPF and WWF technicians working on related projects.

D. LIST OF CONTACTS IN CAMPECHE

Abreu, Rene	SEDUE, Campeche
Acopa, Deocundo	Consultor PPF, WWF
Alcocer, Eliseo Ek	Presidente Junta Municipal X-Pujil
Dzib, Marcial	Presidente Consejo Regional, X-Pujil
Ordoñez, Edgar hijo	Jefe de Produccion Fabrica de Plywood
Repetto Ocampo, Joaquin	SEDUE, Campeche
Repetto, Jose Manuel	Productor, Muebles y Jugetes

IV. CHALLENGES AND OPPORTUNITIES IN THE STATE OF CHIAPAS

A. BACKGROUND

1. General

The State of Chiapas has a land area of 7.04 million há of which 3.1 million há were estimated by SARH in 1991 to be covered with forests. About 33% is pastures and 14% agricultural crops. Chiapas is the third largest corn producer in the Federation.

Chiapas' population is 3.2 million of which 74% is rural. Its economically active population is estimated at 1.1 million of which 57% is engaged in the agricultural, forestry and fisheries sectors.

About 60% of the land is owned by "ejidos" or communities and 29% is privately held. It is estimated that about 50,000 ha of forests get cleared annually for cattle raising and cash crops.

2. Forest Resources and Forest Industry.

2.1 Valuable but abandoned production forests.

Chiapas' forests cover six different ecological zones (see Annex IV-1 and IV-2). About 38% or 1.2 million há is temperate forests and 62% or 1.9 million há is lowland humid forests. The temperate forests are mostly located in the mountain ranges running parallel to the Pacific coastline called Sierra Madre and Serranía Central. The temperate forests are rich in biodiversity and include over 14 species of pine and are also intermingled with hardwoods such as Liquidambar and several species of oak. (For distribution map see IV-3)

The forest inventory of 1975 classified over one million há of coniferous and mixed-coniferous forests as production forests ("Bosques de Aprovechamiento Irrestricto"). This same inventory cites growth rates ranging from 0.6 to 1.4 m3/há/yr.

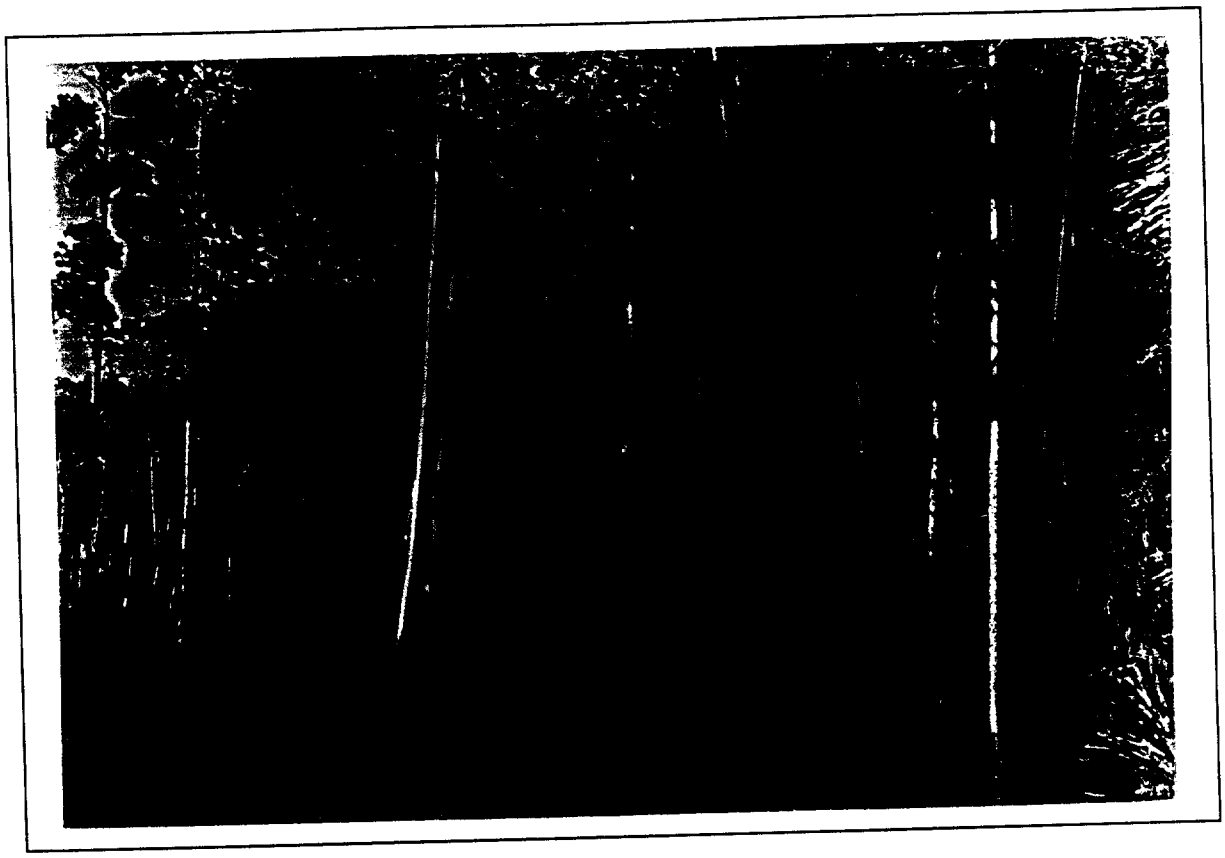


Fig. IV-1 Standing Dead Trees Represent Inadequate Forest Management & Fire Danger

The 1991 National Forest Inventory (see Annex IV-4), which was conducted with some support of the USDA Forest Service, seems to indicate that total forest areas and volumes per hectare in 1991 are between 20 to 30 percent lower than the 1975 figures (see Annex IV-5). Naturally, statistical errors and limitations inherent to each inventory may be affecting this rough comparison.

In very round and conservative numbers, Chiapas has today well over 600,000 há of valuable production forests which, with present lack of silvicultural management, could provide an allowable harvest of 600,000 m3/yr (see Annex IV-6) **and with just mediocre management, three to five times that amount or over three million m3 per year.** These estimates are based on the author's experience in Guatemala with many of the same species and forest types.

2.2 Industry not given an effective role in managing and conserving production forests.

Historical records seem to indicate that although industry extraction levels from the coniferous forests were not out of balance with the growth potential, virtually no investments in forest management were made.

Over 60% of the forest lands are either "ejido" or communal and their forests have been mined by the a familiar and deadly combination:" tragedy of the commons", official neglect and ignorance coupled with short-term greed. As elsewhere in México, rather large industrial investments were made without a sustainability focus.

3. *Conservation of valuable lowland humid forests historically committed to protection and control strategies.*

Some of the older forest inventories reviewed reflect little appreciation for the inherent differences between coniferous forests and lowland humid forests. As of 1990 two large protected areas totalling 450,000 há had been established. These natural forests were assigned as territories reaching well into Guatemala's Petén, since the 1800's, to a succession of European and North American companies for mining the famous "lacandon mahogany logs". This trade persisted well into the 20th century and used waterways and railroads to reach the sea ports in the Laguna de Términos in Campeche.

Because of the short time available and the international attention that the Selva Lacandona, and other lowlands are receiving, this report will concentrate on the temperate forests. Experiences of countries with similar geographies and racial makeups indicate that protecting unpopulated lowland areas has short-term value unless sustainable income and job opportunities are created in the populated areas. Sustainable production forestry in the Chiapas coniferous forests could become a powerful economic buffer zone for its lowlands.

B. FINDINGS AND CONCLUSIONS

1. *Coniferous forests of Chiapas are losing their valuable economic potential.*

The ban on cutting imposed by the state government, if continued, will condemn these valuable forests to certain destruction as historic examples show. Having no industry to give them value, no individual owners and a growing demand for agricultural land leaves fuelwood as the only use for these forests. Since fuelwood has traditionally been collected and not paid for, the forest has negative value and is removed as soon as the agricultural frontier reaches it.

The initial desertification that is occurring in the more populated areas of the Guatemalan highlands is predicts well what is to come to the similar areas of Chiapas as population pressure increases.

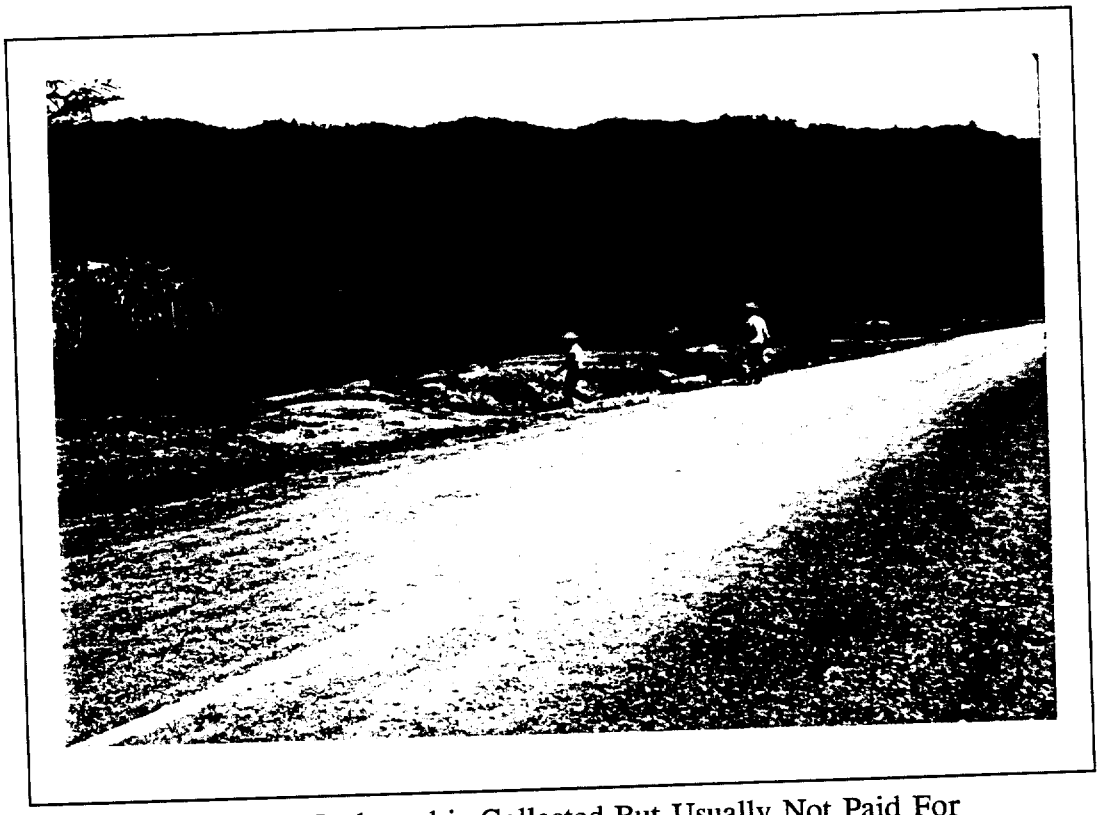


Fig. IV-2 Fuelwood is Collected But Usually Not Paid For

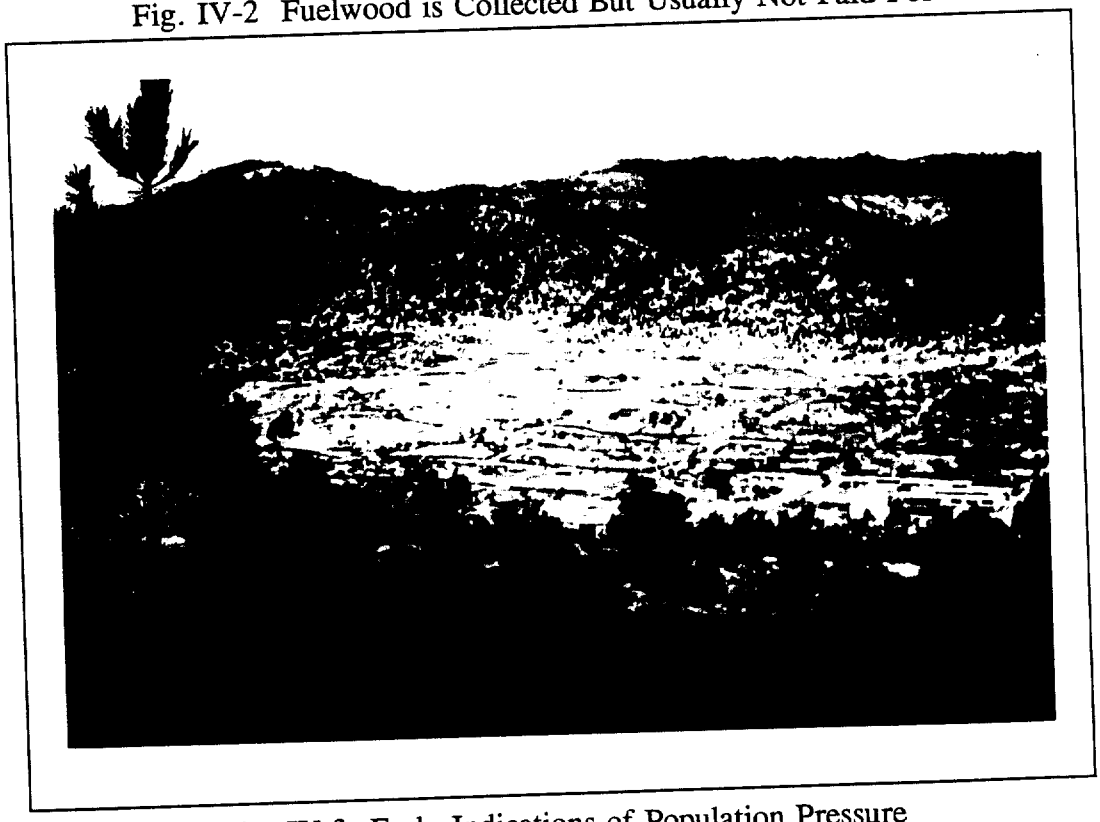


Fig. IV-3 Early Indications of Population Pressure

2. *Concentrating attention exclusively in the lowlands may devastate the lowlands later*

Given the fact that major oil deposits occur in the lowlands, it may prove politically impossible to slow down the road and infrastructure build-up associated with oil development.

Appropriate agro-forestry buffer activities in the transition areas coupled with a strong forest industry based on sustainable management of the coniferous forest with firms and communities will retard the migration towards the lowlands. The forestry option in the highlands might be the best insurance policy for effective protection of the biodiversity-rich lowland areas.

C. RECOMMENDED ACTIONS

1. *Prepare a set of technical studies on key natural resource and forestry issues.*

Example of issues:

- Identification of community or private-owned forests for managing.
- Identification of key industries and industrial poles.
- Identification of possible public-private mechanisms for implementing, controlling and auditing forest management plans.
- Defining options, mechanisms and values so appropriate stumpage fees can be effectively used to strengthen sustainable forest management.

2. *Conduct a series of policy workshops with high level participation to ensure that top decision makers understand the consequences of present policies.*

Well selected and timed visits to other countries and States by officials of SEDUE, the Governor's office and local journalists are an essential part of this effort.

3. *Start pilot projects, based on the experiences of Quintana Roo, for managing natural pine forests with existing community groups and private firms.*

The group operating a sawmill and millwork shop at Las Margaritas using dead trees from bark beetle attacks owns their forests and appears to be a good candidate provided the estimated 1000 há they control could be joined by others to ensure economies of scale.

A detailed one-week field visit to this group and neighboring forests and private firms by a team including a silviculturist, a manufacturing specialist and a local project manager is

recommended. Experiences of "Plan Piloto Forestal" in Quintana Roo should be analyzed in this context. Particularly, the institutional setting of the implementing team should act as a catalyst for joint action and training of state and private technicians and firms. Good opportunities for wood crafts seem to exist given performance in ceramics, textiles and wooden toys, which are being produced by native indigenous groups with private assistance from resident foreigners near San Cristobal de las Casas.

Fig. IV-4 Excellent Craft Skills in Textiles and Ceramics

D. LIST OF CONTACTS IN CHIAPAS

Lara, Ricardo	Director General Liquidador, Corp. de Fomento de Chiapas, Comitán
Moreno, Fernando	Gerente Aserradero Comunidad San Antonio Agua Escondida, Municipio Las Margaritas
Hernandez, Alfonso	Presidente del Comisariado de Comunidad anterior.
Robles, Lic. Rodolfo	SEDUE, Sub-dirección de Ecología, Tuxtla G.

V. OPPORTUNITIES FOR REGIONAL TRADE AND COOPERATION TO CONSERVE AND DEVELOP NATURAL RESOURCES OF S.E MEXICO, BELIZE AND GUATEMALA.

A. TOURISM AND MANAGEMENT OF PROTECTED NATURAL AND CULTURAL AREAS

1. Logistic and Marketing Synergies.

The Ruta Maya and Mundo Maya (the Mexican/European version of Ruta Maya) concepts make sense and are happening. Good opportunities exist for grass-root organizations to share in the preparation of materials for the nature-oriented tourist: guides, lodging and eating directories, facility design, planning brochures, etc.

Current efforts by local and foreign NGO's could be supported and strengthened with technical input and resources from specialized international, private and public entities in areas such as park management, self-funding, applied research, among others.

2. Legal Cooperation Could Extend to Resource Management and Trade Issues.

Driven by the touristic efforts mentioned above, several legislators of the region recently met to harmonize laws related to tourism. An opportunity exists to educate and share valuable positive and negative experiences of each region and country in the natural resources and forestry field.

B. FOREST PRODUCTS TRADE

1. Already Significant Trade Flows Could be Facilitated and Made more Transparent.

Trade across borders between México, Guatemala and Belize has existed well before the country borders were demarcated. It was driven mainly by the location of deep sea ports at Campeche and Chetumal in relation to the Petén and Yucatán mahogany and palo campeche resources.

Until recently, large flows of unregistered logs, cants and lumber moved across the Guatemalan borders into Mexico. The Campeche wood products industry is largely dependent on lumber and veneers transferred from Quintana Roo, Guatemala and Belize.

Increasing costs and dwindling quality of selective and high grade logging are pricing unintegrated primary wood products plants of the Peninsula out of their historic markets. Several remanufacturing and furniture plants are importing well manufactured and dried temperate hardwoods from the USA. Modern finishing methods decrease the advantage of mahogany. Temperate hardwoods do not have a negative environmental connotation.

Transfer of cants, veneer and even logs between Guatemala, Mexico and Belize will facilitate achieving maximum value-added to the present harvest.

2. Long-term Conservation Perspective Favors Utilization of Local Forest Species.

While on the surface, the use of imported temperate hardwoods in place of local species would appear "to save the tropical forest". The fact is that production forests will lose economic value if no timber, chicle or other products can be marketed from them. There appear to be important opportunities to combine some imported temperate hardwoods and pine with selected local, tropical hardwoods within joint-venture approaches which will facilitate global manufacturing and marketing.

C. SHARING EXPERIENCES, RESOURCES AND MARKETS

1. Collaboration in Silvicultural Management Techniques.

Current projects in Quintana Roo and Peten urgently need support with applied field research and testing for silvicultural options for improving and managing mahogany and cedar regeneration. Support from experienced and practical specialists from the US and other countries would help. The right delivery and execution approach needs to be carefully designed to foster local acceptance and participation by private firms from the start.

2. Sharing in Wood Utilization and Product Development.

There seems to be interest, human resources and under-utilized facilities with potential to tackle a variety of practical technical and processing obstacles for lesser-known species. Wood technical centers in Quintana Roo, Belize and Cuprofor in San Pedro Sula are all interested in the same topics. Leadership and funding assistance from an external organization could play a useful role.

3. Sharing Human Resources and Experiences in Agro-Forestry Techniques and Approaches for Buffer-Zone and Community Projects.

An improved network for collaboration would strengthen the design and implementation of new projects by sharing experiences, strategies and local experienced consultants who otherwise could not be afforded by a single, isolated project.

4. Sharing Techniques for Improved Management and Funding of Protected Areas.

A wealth of untapped experience exists among different US agencies and NGO's operating park areas in the US, Puerto Rico and abroad which might be usefully applied here. Nature-oriented tourism could be carefully used to attract funding from tourists. Present discussions by large promoters to extend the massive tourism to the natural areas will need early attention to ensure

that development protects instead of destroying the natural, cultural heritage and social fabric of indigenous communities.

VI. BIBLIOGRAPHY

BIBLIOGRAPHY

Cabrera, Gustavo — Compendio geográfico del Estado de Chiapas, 179pp.

Dickinson, J.C et al. — Promising approaches to natural forest management in the American Tropics, Desfil Project, USAID, October 1991. 34pp.

Dirección General del Inventario — Inventario forestal de Chiapas 1975 Forestal Nacional, 1976

Gobierno del Estado de Chiapas — Propuesta de Plan de Manejo para la Reserva Integral de la Biósfera de Montes Azules,Selva Lacandona,Chiapas,México,Dic 1990;187pp.

Gómez-Pompa, Arturo — Una visión sobre el manejo del trópico húmedo de México,Revista de Difusion Científica y Técnológica,vol Oct-Dic 1990,1990.pp 3-10.

INEGI — Atlas ejidal del estado de Quintana Roo, 1988

Leyes y Códigos de México — Legislación Forestal y de Caza. Ed. Porrúa, 1991; 383pp.

McCaffrey Dennis — Sustainable Forest Management for the production of mahogany. A review of forest management practices under the PPF, QRoo. Jul. 1991; 17pp.

Plan Piloto Forestal — Disponibilidad anual de madera propicia para la producción de pisos. Internal doc. 1991; 4pp.

Richards, E.M — The forest ejidos of S.E. México: A case study of community based sustained yield management.The Commonwealth Forestry Review, Vol70(4) No.224, Dec. 1991. pp 290-312.

SARH — Programa de Acción Forestal Tropical (PROAFT), Agosto 1992; 21pp.

Snook, L.C — Opportunities and constraints for sustainable tropical forestry: Lessons from the Plan Piloto forestal,

Quintana Roo, Mexico. Desfil Conference Proceedings, 1991; pp 65-83.

Secretaría de la Reforma Agraria — Ley Agraria, 23 febrero 1992, Diario oficial pp 11-40.

Zamora, Crisóforo et al. — Manual para plantaciones de coníferas en Chiapas. Campo Experimental Rancho Nuevo, San Cristóbal de las Casas, Chiapas, INIFAP, SARH, 1992; 84 pp.

Annex I-1

Scope of Work

Increasing the value of Forest Resources
Through Private Sector Initiatives
MTAP/R&D/ENR - Phase I Activity

Purpose: This Phase I MTAP activity will field a high-level technical team to identify area wood-product commercial production opportunities that will permit an increase in the manufacture of value added products to support effective sustainable forestry management. This activity will also consider non-timber production opportunities that relate to the use of forest resources. Specifically, this first phase activity will identify area production resources and related domestic and international market windows that may be accessed through follow-on product development and market development actions.

This effort to be carried out in close cooperation with Mexican forest management entities, particularly seeks to identify those forest value added products that support effective sustainable forest management and the conservation of national wood resources. A rationale of this activity is the increase in local awareness of the significant economic value of well managed and sustained forest resources that can provide long term income benefits to the area. Finally, the team will make related recommendations for GOM and AID planning and programming for specific follow-on (Phase II) activities in the context of existing forestry issues and forestry management practices. (e.g., Plan Piloto in Qunitana Roo; Mexico Tropical Forestry Action Plan)

Background

The rate of decline in Mexico's forests is alarming. Throughout the entire country, some 615,000 ha of forest (or 1.3% of the total land area) are being cut each year. This situation is worse in the southern tropical hardwood forests where the annual rate of deforestation is 470,000 ha (or 1.8 %).

The predominant forest types in the states of Qunitana Roo and Campeche are evergreen tropical hardwood forests. Timber harvesting has been focused on the extraction of "precious" hardwoods including mahogany (Swietania Macrophylla) and cedro rojo (Cedrela Mexicana), which together have accounted for as much as 97% of the total volume harvested. The effective harvesting and commercial use of alternative tropical forest tree species has received only limited attention. Much of these alternative species are now lost to commercial use.

The forests of Chiapas, on the other hand, consist of a mixture of evergreen tropical hardwood formations, semi-deciduous formations, and mixed hardwood and coniferous forests at higher elevations. Genera that are common in the mixed forest include pine (Pinus), fir (Abies), Cuppressus, Juniperous, and various species of oaks

(Quercus). Pine forests produce more than 80 % of the lumber used in the State.

A primary cause of deforestation in southern Mexico, is the "shifting agriculture" ("milpa"), which is an increasing practice resulting from population growth. As a result, the fallow periods in the traditional "milpa" agriculture have decreased from the customary 25 - 30 years to 7 - 10 years.

Although the timber industry is expected to continue to play an important role in the local economy, competing resource uses such as shifting agriculture and fuelwood cutting severely impact upon the sustained maintenance of the forest. Effective forest management addresses this situation. The valuable experience already gained in Mexico with successful ongoing forestry programs (e.g., "Plan Piloto" in Quintana Roo) serves as a positive basis to lead further forestry management efforts for the area. The well managed forest has an important contribution to make to the economy of Mexico's southern states. Current agricultural practices resulting in soil depletion and loss of forest cover need redirection. The area manufacture of forest products for both domestic and international markets that support an increase in the number of species harvested and conserved can increase the value of southern Mexico's remaining forests and provide needed incentive and support for sustainable forest management.

Description of Tasks

Activities delivered by the R&D/ENR buy-in to PRE/MTAP project are structured to promote the development of locally manufactured, value-added export products that are dependent on the use of area tropical woods supplied by effectively managed area forests. This objective is realized by the phased execution of a series of related tasks that result in the local manufacture of value-added products that utilize a broad range of wood species.

These MTAP activities are phased stand-alone efforts that begin by identifying area forest management issues in a climate of forest and production resource identifications. Specifically, this MTAP/R&D/ENR Phase I action identifies and qualifies area material and production resources, production infrastructures, production assets and constraints as well as existing regulatory and policy issues that impact on the local ability to engage in useful income-generating export commerce that is supported by effective forestry management.

A follow-on Phase II effort, when programmed to follow a Phase I activity, is partially tasked to identify specific U.S. company market-demand for products that may be produced in the area. These companies are initially supported by MTAP for the product development and producer support that is needed to implement serious commercial export activity. Phase II activities also include the input of forestry management specialists to develop sustainable forestry management practices that support the material

needs of local manufacturers of value-added export products. Recommendations for the level of effort and budget requirements for a possible Phase II effort will be included, for AID/Mexico consideration, in the Phase I report.

Phase I - MTAP/ENR Tasks - Increasing the Value of Mexico's Forest Resources Through Private Sector Initiatives.

- o Identify U.S. market opportunities indicated for a variety of wood products that may be produced in the area.
- o Identify and qualify area production resources in the context of production opportunity for U.S. markets. Develop a data base of local firms seen able, with product development support, to produce for U.S. market-demand.
- o Explore, with Mexican forest specialists, effective ways to continue the useful management of the area forests within actions that promote the use and conservation of native species as well as the promotion of forest management.
- o Provide a summary report to be delivered to AID/Mexico within forty-five days of completion of this activity. This comprehensive report is to be directed to findings, conclusions and specific recommendations for possible Phase II follow-on actions related to the purpose of this activity.

Special Provisions: SCW

In-country travel will be undertaken to selected forestry areas in two of three AID/Mexico program-targeted states of southeastern Mexico, i.e.: Campeche and Qunitana Roo. It is anticipated that the team will work in close consultation with the Mexico Tropical Forestry Action Program (PROAFT) directed by Sra. Sylvia del Amo), Presidential Advisor Dr. Arturo Gomez Pompa and State Governors and forestry advisors (a list to be provided by AID/Mexico) as well as with other leading players active in Mexican forestry affairs (eg. WWF-G.Castelleja, PPF, and NGOs implementing AID/M buffer-zone and parks-in-Peril projects)

A team of two senior level IMCC staff specialists will undertake the Phase I tasks indicated. The Team will be led by Raymond A. Manoff, IMCC Director for Product Development and Export Promotion and IMCC Forest Management Specialist, Vicente Molinos. (Mr. Molinos is currently on a long-term forestry related assignment (AID/ROCAP) in Guatemala and can be made available for this brief assignment. Both Mr Manoff and Mr. Molinos are currently concerned with similar issues in Guatemala among other tropical forest countries. IMCC will complete this effort including the submission of a report within 45 days of initial travel.

The IMCC team provides strong expertise in tropical forestry issues

and in forest product development and marketing (both timber and non-timber forest products). (The proposed IMCC Team, however, is focused on MTAP Phase I deliveries and does not include significant capability in forestry economics.) Mr. Molinos is a native Spanish speaker (Chile) and Mr. Manoff is a Spanish speaker with 25 years of Latin American, including Mexican, experience.

Annex I-2

ANNEX I-2

CALENDARIO DE VIAJE SRES. RAY MANOFF Y VICENTE MOLINOS

DOMINGO OCT.18 LLEGADA A CANCUN:

R. MANOFF CONTINENTAL AIRLINES #1663 LLEGA 20 HRS. (MOLINOS RECOGE)
V. MOLINOS LACSA #680 LV-GUA 15:50 ARR-CANCUN 17:10

RESERVAS EN CANCUN HOTEL America

Recogida de automóvil, reserva en National Car Rental conf #758987531 vw jetta

LUNES OCT.19	**7:00 AM** Viaje a Chetumal (350 Kms.) Reservas en Hotel Continental, 2 singles, por Marisol de PPF. **P.M** Reunión en Sociedad Productores Forestales Ejidales de Quintana Roo. Recepción del grupo y discusión general con técnicos y directivos de la sociedad. Contactos principales para Quintana Roo Ings. Hugo Galletti y Alfonso Arguelles, Plan Forestal Estatal, Tel y Fax (983) 24424, Chetumal.
MARTES OCT. 20	**Mañana:** Viaje al "ejido" Noh Bec (120 km.). Observación de las operaciones de monte, planifiación de la extracción, aserradero, carpintería. **Tarde:** Discusión de la problemática industrial.
MIERCOLES OCT. 21	**Mañana**: Visita de la industria de los alrededores de Chetumal **Tarde**: Presentación del sistema de información geográfica del inventario forestal. Discusión de los planes de manejo forestal.
JUEVES OCT. 22	Viaje a Felipe Carrillo Puerto (150 Km.). Discusión con el grupo de la Organizacón de Ejidos Productores Forestales Ejidables de la Zona Maya. Visita a un "ejido" de la región. Noche en Felipe Carrillo Puerto.
VIERNES OCT. 23	Viaje a Chunhuhub (60 Km.). Discusión con el grupo de la Sociedad de Pueblos Indígenas Forestales **"Tumben Cuxtal".** Visita a un predio de la región. Viaje a Chetumal (180 Km.).

SABADO OCT. 24

Mañana: Viaje a Tres Garantías (120 Km.). Visita de la industria ejidal. Continuación del viaje a la zona de Xpujil, Campeche (65 Km.), donde se están llevando a cabo proyectos de desarrollo forestal en áreas colindantes con la Reserva de la Biósfera de Calakmul.

Tarde: Reunión con el Consejo Regional de Xpujil.

DOMINGO OCT. 25

Visitas a proyectos de la región de Xpujil.

Tarde: Continuación del viaje hacia Escárcega (180 Km.).**Parada en vivero López Mateos (encargado Gregorio).** Seguir hasta Campeche. Dormir en Campeche, Hotel _____.

LUNES OCT. 26

A.M. Visita a plantas de parquet ó plywood, depósitos de madera concertada por el Sr. Joaquín Repetto, Sub-Secretario de Desarrollo Urbano, Vivienda y Medio Ambiente, estado de Campeche, (esto es un cambio debido a la cancelación de la visita al Proyecto Forestal Municipal de Escárcega donde hay actividades de rescate).

15:00 Hrs Entrevista con oficiales del Gobierno de Campeche, Sr. Joaquín Repetto, Calle 10 #214 Barrio Guadalupe, Campeche, Tel. (981) 115 61 (a criterio del Sr. Repetto esta entrevista podría realizarse en la mañana.

17:00 Hrs. Viaje a Merida

MARTES OCT. 27

MEXICANA VUELO #911 MERIDA A TUXTLA
SALE 9:50 LLEGA 12:20
Reservas en el Hotel Flamboyant, Tels. (961) 50505/508-88 por confirmar.

P.M. Visitas a industrias ó proyectos en coordinación con oficiales del Gobierno de Chiapas, contacto principal Ing. Juan Manuel Mauricio - Secretaría de Desarrollo Social, Estado de Chiapas, Tels. (961) 22197/22228 (es Fax también).

MIERCOLES OCT. 28

En Chiapas: **AM** Visitas a proyectos con potencial para relacionarse con actividades de majero forestal sostenido. Posibles áreas: Las Margaritas.

PM Visitas continúan

JUEVES OCT. 29	8:30 Disponibles para reunión de resumen y conclusiones con la Secretaría de Gobernación, Lic. Galo Alcántara (por confirmar).
	MEXICANA VUELO #260 TUXTLA A MEXICO DF, Sale Tuxtla a las 11:05 Llega México DF 12:20
	15:00 Hrs. Tentativo reunión con Proaft, Dra. Silvia del Amo. (Por confirmar).
	Hotel México DF _____
VIERNES OCT. 30	**AM** Disponible para reuniones con Sres. Helmut Janka, Sr. Gomez Pompa u otros, (por confirmar).
	PM Reunión de información y conclusiones con US Embassy. Este Cambio de día y hora deberá ser confirmado por el Sr. Frank Zadroga.
	UNITED VUELO #877 MEXICO A GUATEMALA SALE 21:31 LLEGA 23:31

Contacts during trip preparation and debriefing:

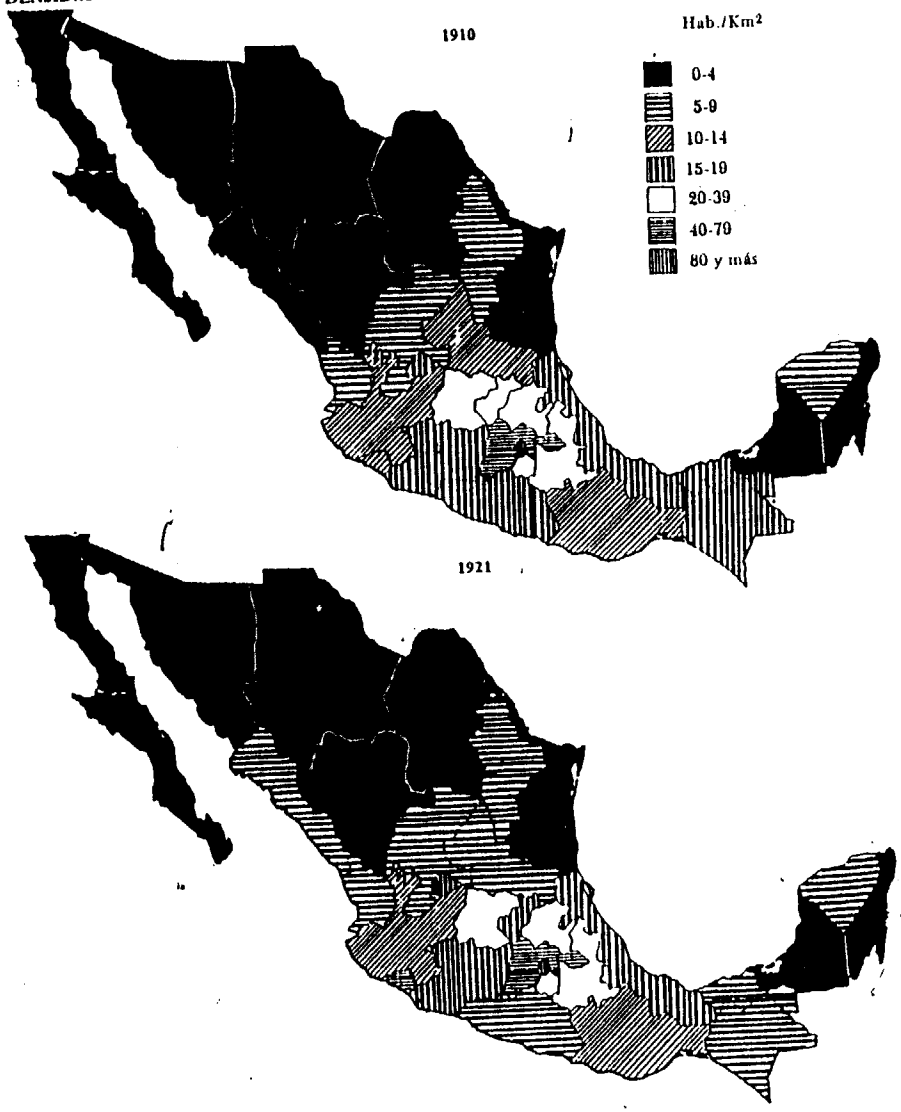
Bray, David	IAF, Wash.DC	tel fax	703-841-0973 703-841 3891
Castillejas, Guillermo	WWF, Wash.DC	tel	202-770-9627
Díaz Gómez, Victor	consultor, DF	tel	525-550-3641
Echenique-Manrique, Ramón	consultor	tel	52-281-63275
Mauricio, Juan	SEDUE, Chiapas		
Negreros, Patricia	INIFAP, Mérida	tel fax	52-99-247764 52-99-219946
Zadroga, Frank Cantú, Magdalena	AID/México	tel fax	(52-5)-211-0042 (52-5)-207-7558
Del Amo, Silvia	PROAFT,DF	tel	(52-5)-658-3112

Gómez-Pompa, Arturo	Asesor GOM	tel	(52-5)254-3514

Annex II-1

DENSIDAD DE POBLACION POR ENTIDAD FEDERATIVA

Gráfica 1.8

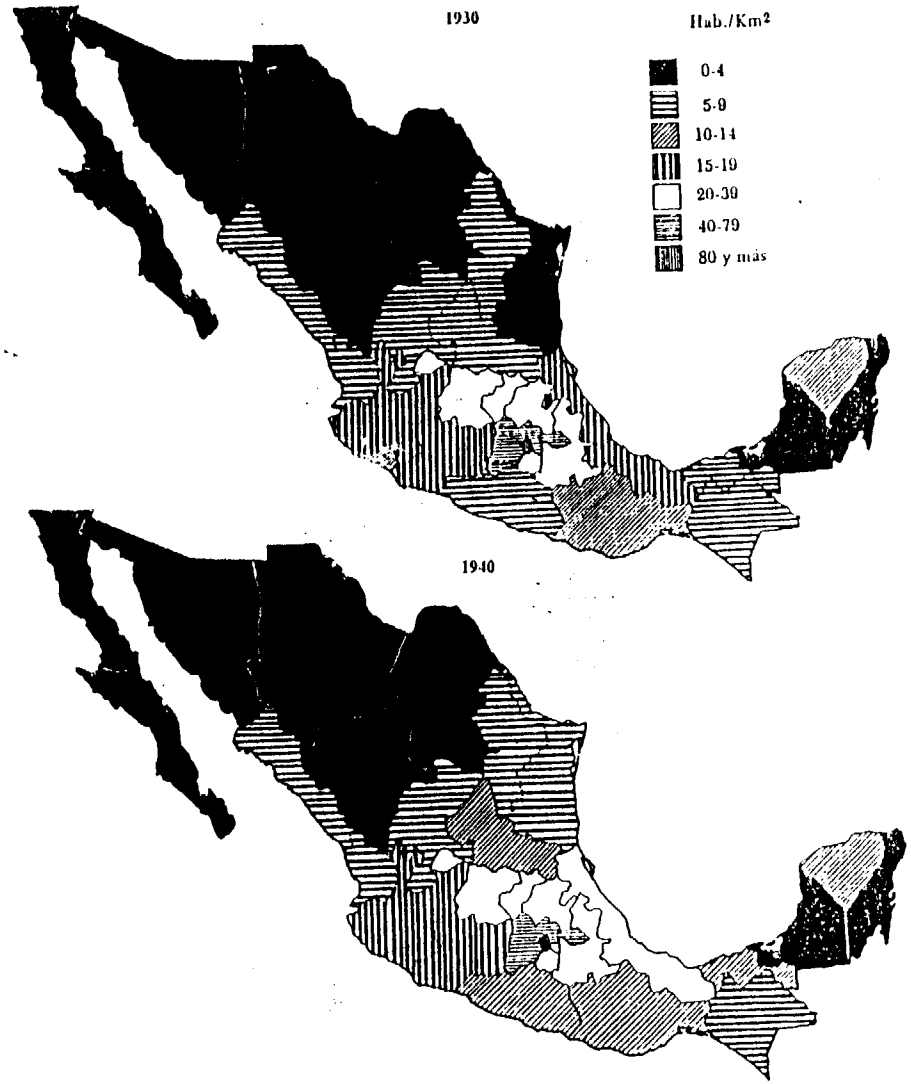


FUENTE: Cuadro 1.12

INEGI

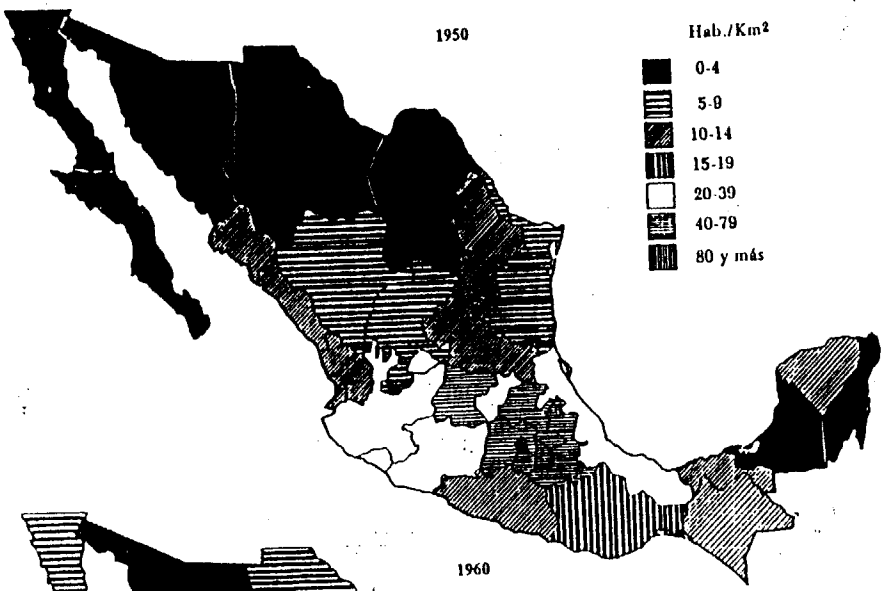
DENSIDAD DE POBLACION POR ENTIDAD FEDERATIVA

Gráfica 1.8



DENSIDAD DE POBLACION POR ENTIDAD FEDERATIVA

Gráfica 1.8



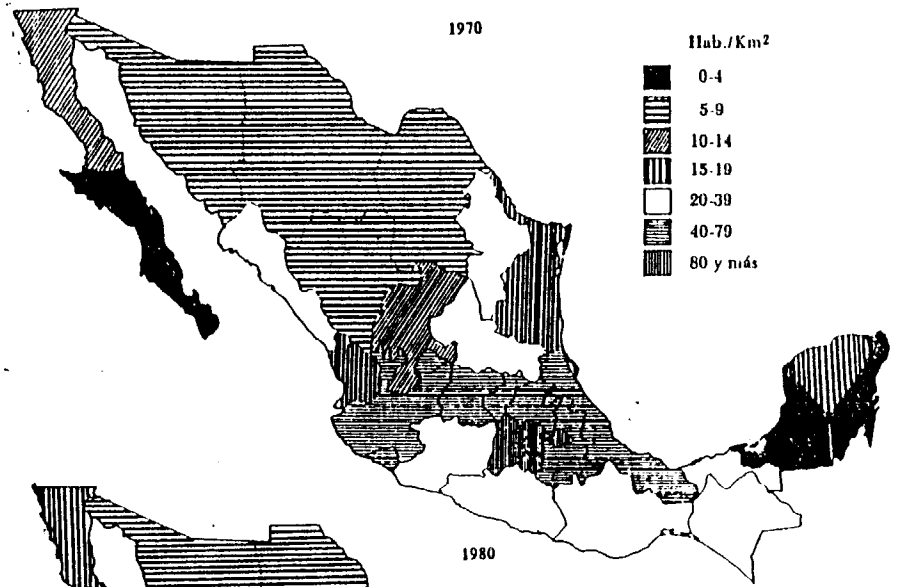
FUENTE: Cuadro 1.1.2

INEGI

POBLACION

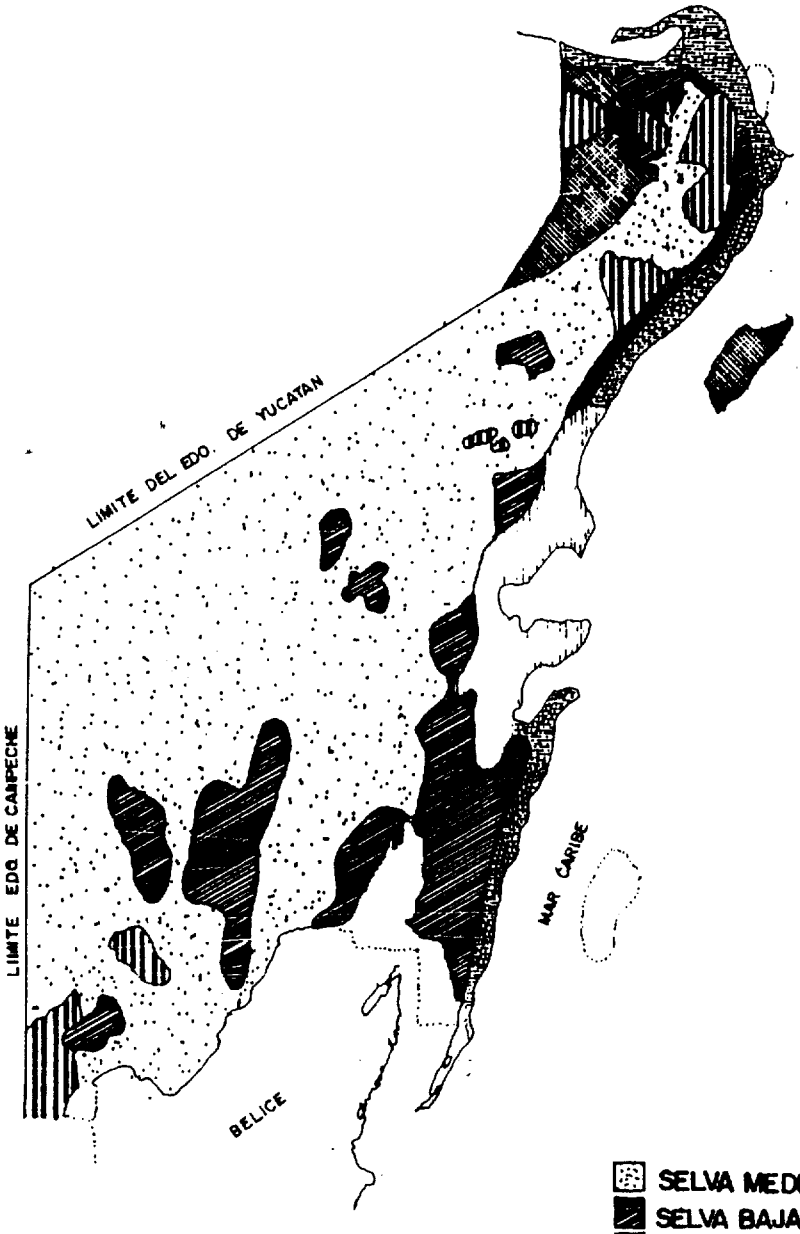
DENSIDAD DE POBLACION POR ENTIDAD FEDERATIVA

Gráfica 1.8



Annex II-2

RECURSOS FORESTALES
QUINTANA ROO



- SELVA MEDIANA SUBPERENNIFOLIA
- SELVA BAJA SUBPERENNIFOLIA
- SELVA ALTA SUBPERENNIFOLIA
- SELVA MEDIANA CADUCIFOLIA
- MANGLAR
- POPAL

FUENTE:

GEOGRAFIA GENERAL
DEL ESTADO DE
QUINTANA ROO
A. ESCOBAR NAVA

Annex II-3

SOCIEDAD DE PUEBLOS INDIGENAS FORESTALES DE QUINTANA ROO, "TUMBEN CUXTAL", S.C.

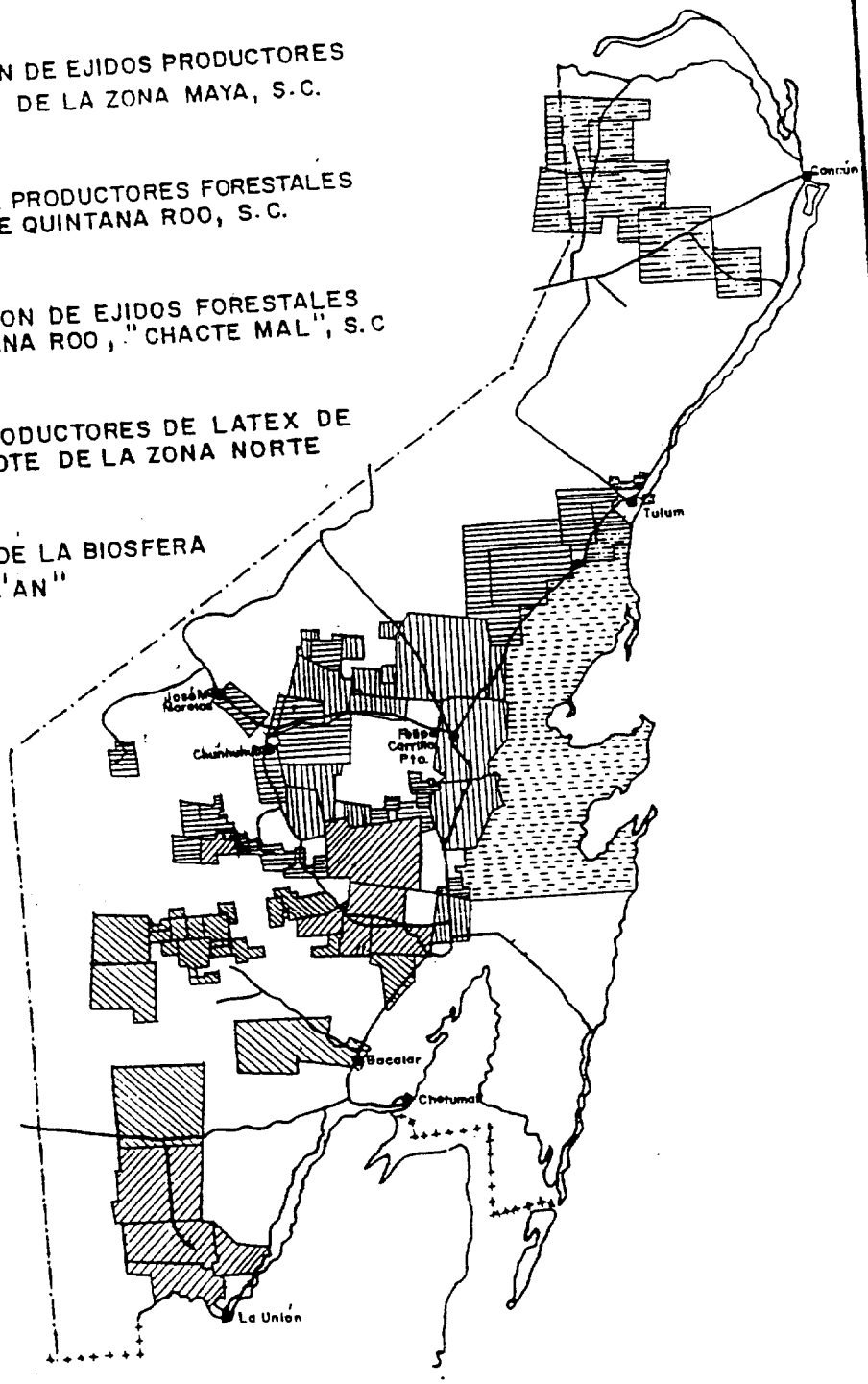
ORGANIZACION DE EJIDOS PRODUCTORES FORESTALES DE LA ZONA MAYA, S.C.

SOCIEDAD DE PRODUCTORES FORESTALES EJIDALES DE QUINTANA ROO, S.C.

ORGANIZACION DE EJIDOS FORESTALES DE QUINTANA ROO, "CHACTE MAL", S.C

EJIDOS PRODUCTORES DE LATEX DE CHICOZAPOTE DE LA ZONA NORTE

RESERVA DE LA BIOSFERA "SIAN KA'AN"



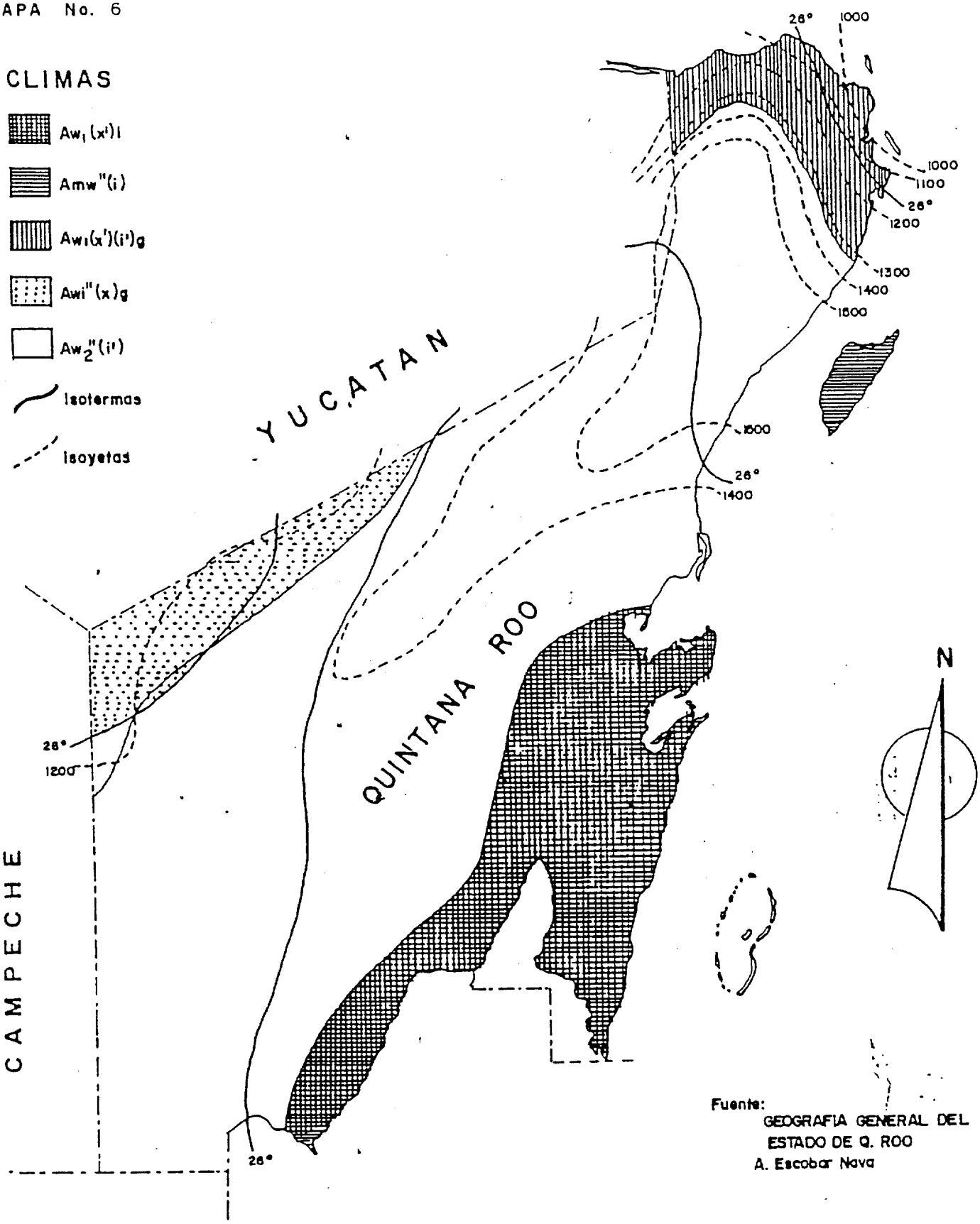
LA RESERVA FORESTAL ESTRATEGICA Y LAS ORGANIZACIONES FORESTALES CAMPESINAS DE QUINTANA ROO.

ESCALA	FECHA
1:2,000,000	NOVIEMBRE DE 1991

Annex II-4

QUINTANA ROO

MAPA No. 6



Fuente:
GEOGRAFIA GENERAL DEL ESTADO DE Q. ROO
A. Escobar Nava

Annex II-5

Q U I N T A N A R O O

CUADRO Nº 1

Suelos Principales -Características-

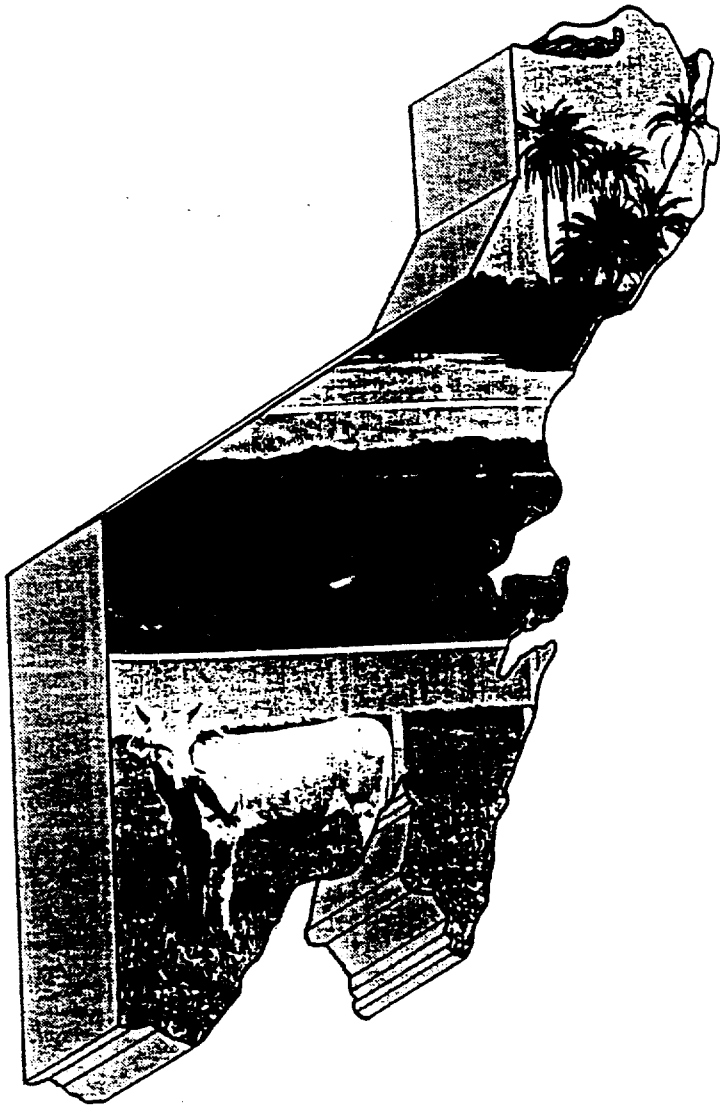
Nombre Maya	FAO	Prof. Cms.	Roc.	Pedr.	Color	Materia Orgán.	Horiz.	Drenaje	Textura	Veget.	Observaciones
Chaltún	Litosol	0-5	+++	++	/	Hojas	A-C	Efic.	/	Sm. sp.	Piedra laja
Ek-luum	Litosol Rendzina	5-15	++	++	Negro	Alto	A-C	Efic.	Humif.	Sm. sp.	Alcalinos
Chac-luum	Litosol Rendzina	5-15	++	++	Rojo	No	A-B-C	Nat.	Franca	Sb. sp.	Alcalinos
Box-luum	Rendzina	20-30	/	++	Negro	Alto	A-C	Efic.	Humif.	Smsp Sasp	Alcalinos
Kakab	Rendzina	20-30	/	++	Pardo	Med.	A-B-C	Nat.	Franca	Smsp	pH neutro
K'ankab	Luvisol crómico	30-50	/	+	Rojo	Med	A-B-C	Nat	Franco Arcilloso	Smsp Sasp	pH ligeramente ácido
Huntunich	Regosol Calcáreo	100	/	/	Blanco Gris	Bajo	A-B	Efic.	Arenosa	Duna	Litoral
Ak'alché	Gleysol calcáreo	40	+	/	Gris	Alto	A-B-C	Defic.	Arcilloso humífera	Tintal Pucteal	Inundable
Ya'ax-hom	Vertisol pélico	40	/	/	Café	Var.	A-B-C	Nat-def	Arcilloso humífera	Ecotonal Smsp-Tint.	Parcialmente inundables
Took	Quema	¿?	+	/	¿?	20 cms.	A-B-C	Defic.	Arcilloso humífero	Sabana	

FUENTE: Arturo López Ornat. 1983.

Annex II-6

Atlas Ejidal del Estado de Quintana Roo

Encuesta Nacional Agropecuaria Ejidal, 1988



INSTITUTO NACIONAL DE ESTADISTICA
GEOGRAFIA E INFORMATICA

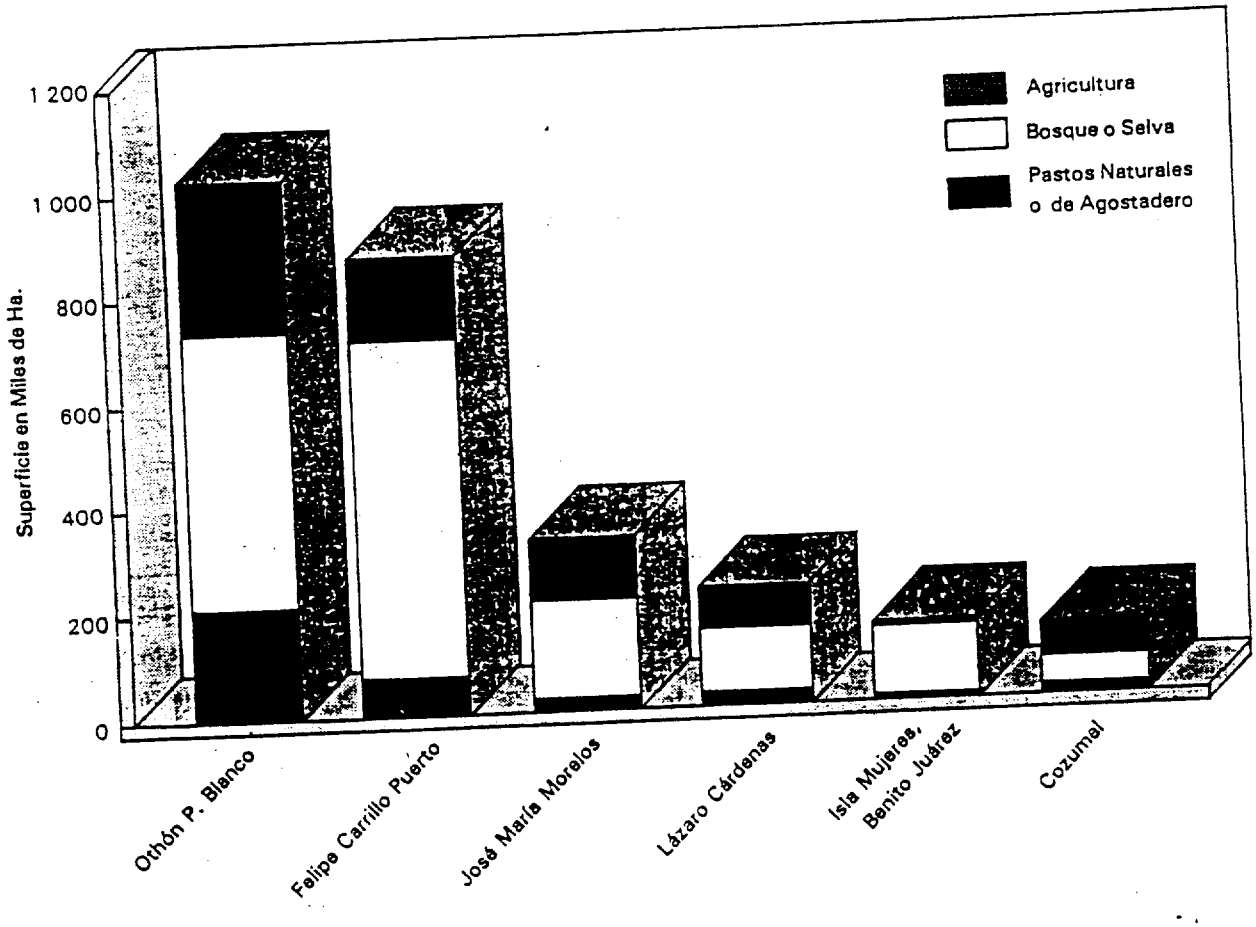
5. USO ACTUAL DEL SUELO

5.1 Uso Actual del Suelo de Ejidos por Municipio

De la Superficie Ejidal que se tiene en el Estado, ésta se destina a un uso Agrícola en un porcentaje promedio de 12%, mientras que el 26%, corresponde a Pastos Naturales ó Agostaderos. La Superficie destinada a Selvas representa el 62%.

Clave	Municipio Nombre	Superficie Ejidal (Ha.)	Agricultura (Ha.)	Selva (Ha.)	Pastos (Ha.)	Otros Usos (Ha.)
1	Cozumel	131 590	10 774	55 060	65 756	0
2	Felipe Carrillo Puerto	872 747	71 295	655 272	146 090	90
3, 5	Isla Mujeres, Benito Juárez	143 600	980	139 720	2 850	50
4	Othón P. Blanco	1 046 967	209 307	530 367	306 793	500
6	José María Morelos	325 661	26 371	189 335	109 415	540
7	Lázaro Cárdenas	222 721	20 625	129 136	72 921	39
	TOTAL	**2 743 286 (100%)**	**339 352 (12%)**	**1 698 890 (62%)**	**703 825 (26%)**	**1 219 (0%)**

Gráfica 9



3.2. Superficie Ejidal Parcelada y No Parcelada por Municipio

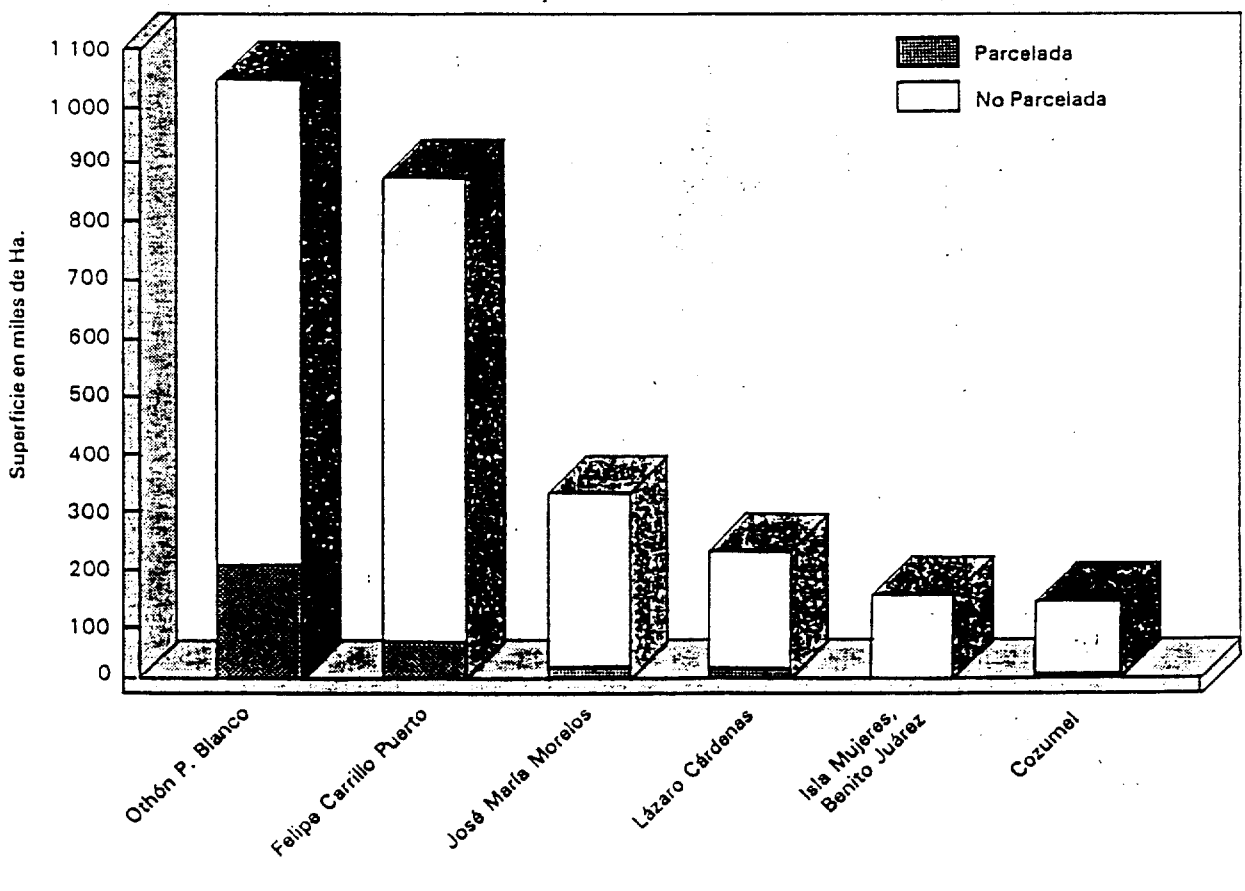
La Superficie Parcelada del Estado representa el 12% de la Superficie Total Ejidal.

El Municipio Othón P. Blanco tiene en este sentido, una mayor representatividad y la de Isla Mujeres y Benito Juárez juntos, es la más reducida.

Con respecto a la Superficie Total Ejidal por Municipio, observamos que Othón P. Blanco muestra los porcentajes más altos con 20% de Superficie Parcelada y 80% de Superficie No Parcelada.

Municipio		Superficie Ejidal (Ha.)	%	Superficie Parcelada (Ha.)	%	Superficie No Parcelada (Ha.)	%
Clave	Nombre						
1	Cosumel	131 590		10 774	8	120 816	92
2	Felipe Carrillo Puerto	872 747		74 000	8	798 747	92
3,5	Isla Mujeres, Benito Juárez	143 600		597	0	143 003	100
4	Othón P. Blanco	1 046 967		205 977	20	840 990	80
6	José María Morelos	325 661		28 582	9	297 079	91
7	Lázaro Cárdenas	222 721		21 262	10	201 459	90
TOTAL		**2 743 286**	**100**	**341 192**	**12**	**2 402 094**	**88**

Gráfica 4



Annex II-7

ORGANIZACION DE EJIDOS PRODUCTORES FORESTALES DE LA ZONA MAYA, S.C.

DOMICILIO CONOCIDO
FELIPE CARILLO PUERTO, QUINTANA ROO

DIRECTOR TECNICO: ING. MARCELO CARREON MUNDO

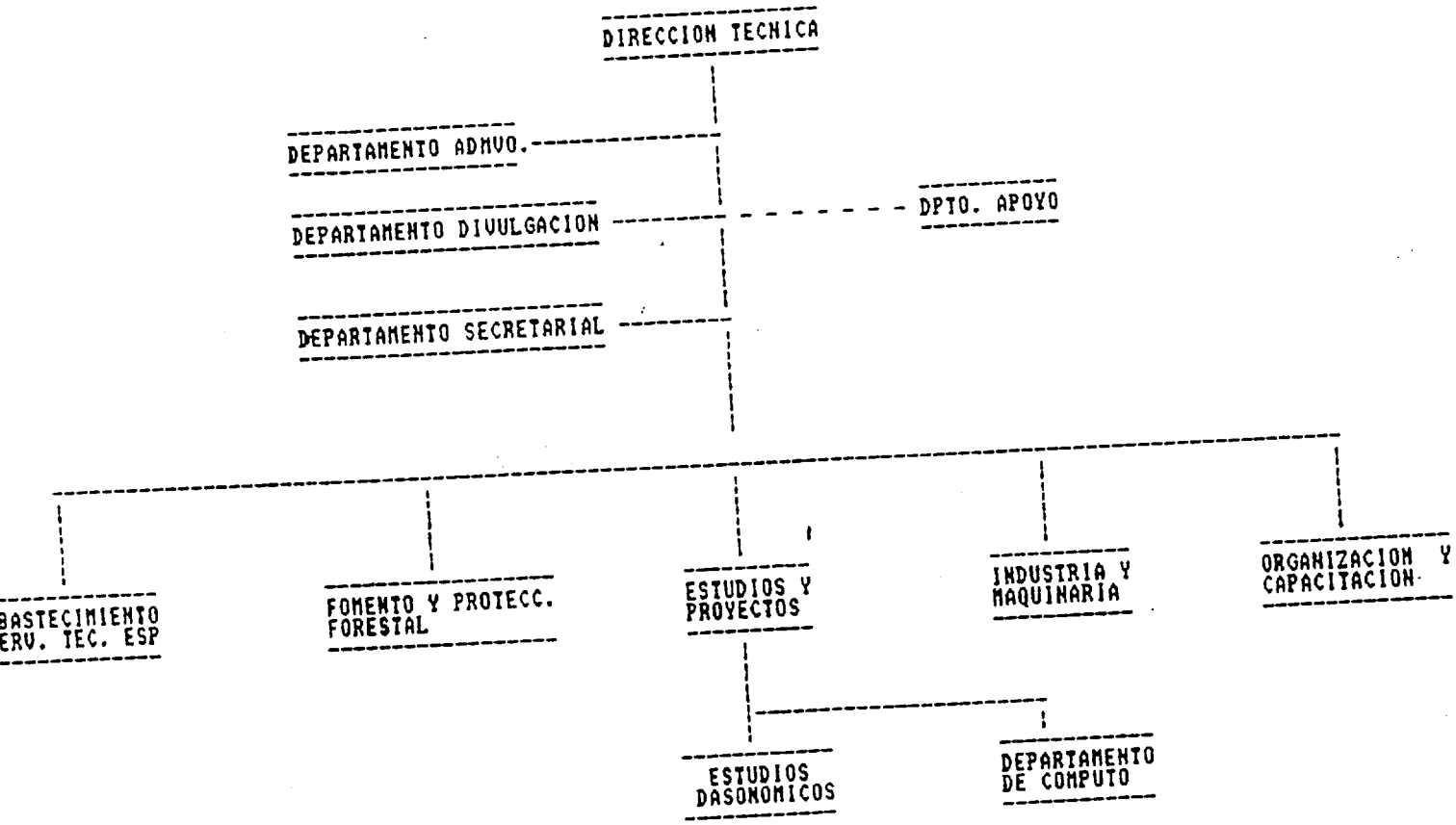
TEL: 983 - 40307

EJIDOS ASOCIADOS

01. X-MABEN
02. X-HAZIL
03. FELIPE CARRILLO PUERTO
04. LAGUNA KANA
05. X-PICHIL
06. CAFETAL/LIMONES
07. CHUNHUAS
08. NARANJAL PONIENTE
09. TULUM
10. YAXLEY
11. KAMPOCOLCHE
12. TRES REYES
13. TUZIC
14. CHAN SANTA CRUZ
15. DZOYOLA
16. TABI
17. REFORMA AFRARIA
18. CUAUHTEMOC
19. YOACTUN

ORGANIZACION DE EJIDOS PRODUCTORES FORESTALES DE LA ZONA MAYA
SOCIEDAD CIVIL

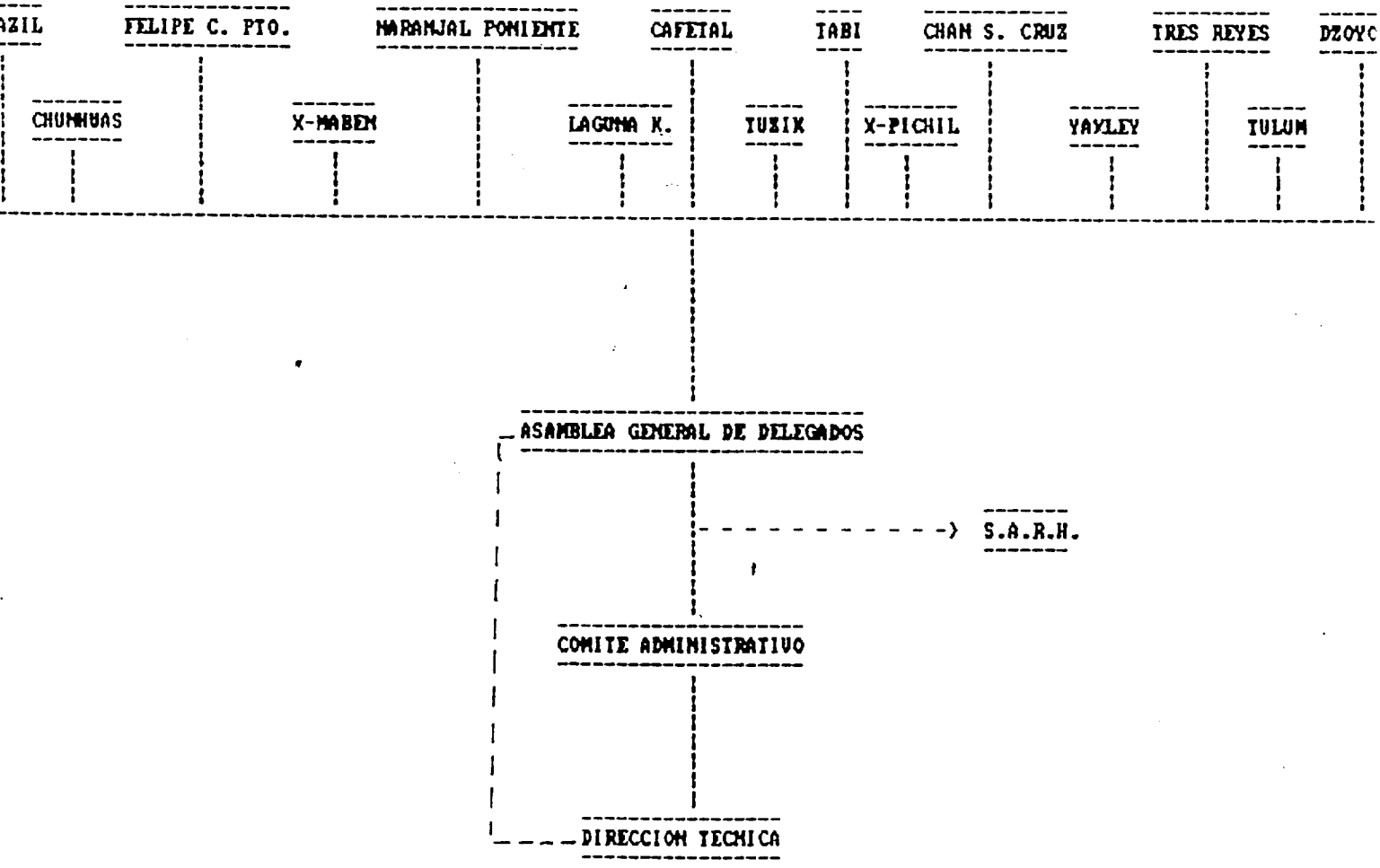
ORGANIGRAMA DE LA DIRECCION TECNICA FORESTAL



FELIPE CARRILLO PUERTO Q. ROO., ENERO/90

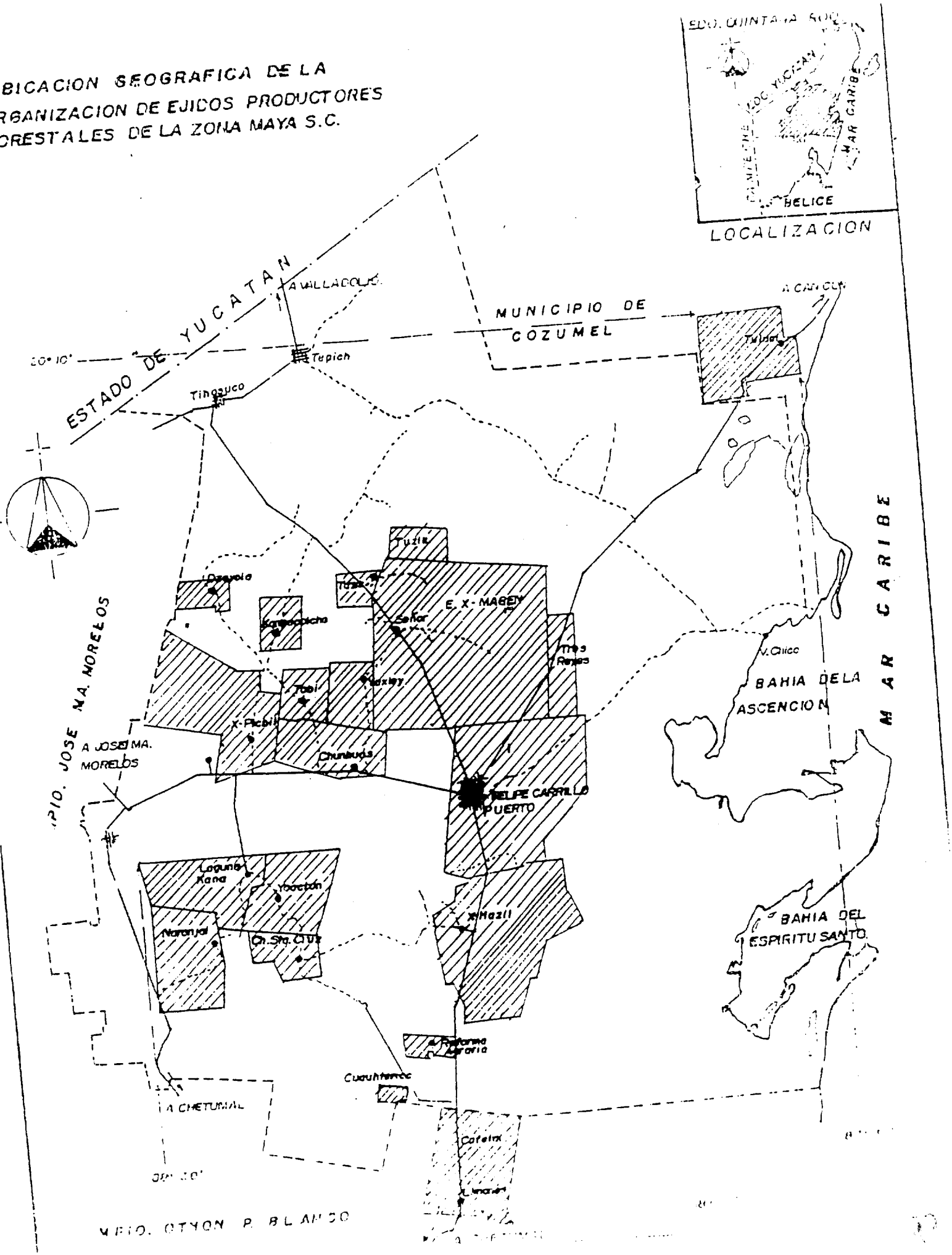
ORGANIZACION DE EJIDOS PRODUCTORES FORESTALES DE LA ZONA MAYA
SOCIEDAD CIVIL

O R G A N I G R A M A
O.E.P.F.



FELIPE CARRILLO PUERTO Q.ROO., ENERO/90

BICACION GEOGRAFICA DE LA
RGANIZACION DE EJIDOS PRODUCTORES
ORESTALES DE LA ZONA MAYA S.C.



I N F O R M A C I O N G E N E R A L

EJIDO	DOT.EJID. (HAS)	AREA FTAL. PERM. (HAS.)	AREA CORTA ANUAL (HAS.)	No.DE EJID.	No. DE HABITANTES	No. DE EJID. EN TRAB.FTAL
- X-HAZIL	55,019	25,000	1,000	398	2,650	200
- FPE.C-PTO.	47,040	20,000	800	246	1,476	80
- X-MABEN	73,400	25,000	1,000	554	3,324	280
- NARANJAL	12,620	7,500	300	106	642	100
- LAGUNA KANA	32,180	10,000	400	171	1,026	75
- CAPETAL	20,681	8,000	200	224	1,200	110
- CHUNHUAS	14,420	8,000	300	103	618	40
- X_PICHIL	27,300	10,000	400	303	1,150	150
- CHAN S. CRUZ	6,540	3,100	100	114	684	60
- YAXLEY	10,340	5,000	200	106	636	50
- TABI	5,400	2,000	100	64	384	30
- PUZIK	10,550	2,000	100	172	1,032	72
- TRES REYES	10,500	5,000	200	26	38	15
- BACALCHE	5,750	1,000	100	53	350	40
- TULUM	22,800	10,000	300	122	732	20
- ESCYOLA	6,480	2,000	100	78	425	20
- YOXCTUN	16,800	8,000	320	- -	- -	- -
- PEF.AGR.	2,600	700	28	- -	- -	- -
TOTAL.....	380,420	152,100	5,948	2,840	16,367	1,312

1991

ANEXO 1: DISTRIBUCION DE LOS VOLUMENES POR EJIDO PARA 1991 (M3.R.F.S/C.)

E J I D O S	PRECIOSAS	C. TROP.	C. TROP.	DURMIENTES
X-HAZIL	1,600	3,000	2,000	2,000
FPE. C. PTO.	800	2,500	500	1,000
NARANJAL PTE.	850	2,200	300	1,000
X-MABEN	450	1,850	450	3,000
LAGUNA KANA	300	500	500	1,000
CAFETAL	200	300	200	1,000
YAXLEY	100	500	500	1,500
CHAN STA. CRUZ	100	200	200	1,000
CHUNHUAS	- - -	1,700	300	1,000
TABI	- - -	1,700	600	900
DZOYOLA	- - -	- - -	100	500
X-PICHIL	100	- - -	- - -	1'800
TULUM	- - -	- - -	- - -	1,000
TUZIK	- - -	- - -	- - -	500
TRES REYES	- - -	- - -	- - -	1,000
KAMPOCOLCHE	- - -	- - -	- - -	500
YOACTUN	- - -	- - -	- - -	1,000
T O T A L	4,500	12,850	5,650	19,700

Annex II-8

CUADRO: 3.1.1

PRODUCTO INTERNO BRUTO NACIONAL
Y DEL SECTOR PRIMARIO POR SUBSECTORES
(miles de millones de pesos de 1980)

PIB DEL SECTOR PRIMARIO	1986	1987	1988	1989	1990 *	variación (%) 1987/1986	1988/1987	1989/1988	1990/1989
AGRICOLA	235.5	242.0	228.8	218.0	229.1	2.76	-5.45	-4.72	5.09
PECUARIO	135.5	131.7	128.7	123.4	125.5	-2.80	-2.28	-4.12	1.70
FORESTAL	19.8	20.8	21.2	20.4	19.4	5.05	1.92	-3.77	-4.90
PESQUERO	14.0	15.9	15.7	15.9	16.7	13.57	-1.26	1.27	5.03
TOTAL	404.8	410.4	394.4	377.7	390.7	1.38	-3.90	-4.23	3.44

* preliminar

FUENTE: Sistema de Cuentas Nacionales de México (INEGI)

Trigo

CUADRO: 1.1.3

SERIE HISTORICA DE SUPERFICIE SEMBRADA
DE LOS CULTIVOS PRINCIPALES, AÑOS AGRICOLAS 1987-1991

	(miles de hectáreas)					variación (%)			
CULTIVO	1987	1988	1989	1990	1991	1988/1987	1989/1988	1990/1989	1991/1990
GRANOS BASICOS	11,843	11,513	10,699	11,269	11,032	-2.79	-7.07	5.33	-2.10
Arroz	185	175	193	120	96	-5.41	10.29	-37.82	-20.00
Frijol	2,323	2,344	1,737	2,272	2,199	0.90	-25.90	30.80	-3.21
Maíz	8,294	8,029	7,564	7,918	7,730	-3.20	-5.79	4.68	-2.37
Trigo	1,041	965	1,205	959	1,007	-7.30	24.87	-20.41	5.01
OLEAGINOSAS	1,182	786	969	855	807	-33.50	23.28	-11.76	-5.61
Ajonjolí	130	103	91	131	90	-20.77	-11.65	43.96	-31.30
Algodón (s)	226	303	190	224	271	34.21	-37.29	17.89	20.98
Cártamo	328	225	180	203	98	-31.47	-20.00	12.78	-51.72
Soya	498	155	508	297	348	-68.87	227.74	-41.54	17.17
OTROS GRANOS	2,380	2,239	2,104	2,184	1,805	-5.92	-6.03	3.80	-17.35
Cebada	324	298	294	268	296	-8.02	-1.34	-8.84	10.45
Sorgo	2,056	1,941	1,810	1,916	1,509	-5.59	-6.75	5.86	-21.24
TOTAL	15,405	14,538	13,772	14,308	13,644	-5.63	-5.27	3.89	-4.64

FUENTE:- Dirección General de Estadística, SARH.

CUADRO: 1.3.1

SERIE HISTORICA DE PRODUCCION FORESTAL, 1987-1991

CONCEPTO	1987	1988	1989	1990	1991 3/	VARIACION (%) 1988/87	1989/88	1990/89	1991/90
MADERABLE (miles m3r)	9,791	9,313	8,888	8,166	7,683	-4.88	-4.56	-8.12	-5.91
Escuadría 1/	6,137	5,839	5,806	5,515	5,391	-4.86	-0.57	-5.01	-2.25
Celulosa	2,664	2,591	2,349	1,965	1,631	-2.74	-9.34	-16.35	-17.00
Postes, pilotes y morillos	149	164	156	139	98	10.07	-4.88	-10.90	-29.50
Combustibles	492	495	443	465	445	0.61	-10.51	4.97	-4.30
Durmientes	349	224	134	82	118	-35.82	-40.18	-38.81	43.90
NO MADERABLES (ton)	73,204	106,546	74,088	193,871	166,993	45.55	-30.46	161.68	-13.86
Resinas	44,180	43,443	36,296	32,923	29,797	-1.67	-16.45	-9.29	-9.49
Gomas	392	548	834	415	457	39.80	52.19	-50.24	10.12
Ceras	1,387	1,983	1,385	2,205	1,953	42.97	-30.16	59.21	-11.43
Rizomas	3,129	1,190	1,081	370	1,391	-61.97	-9.16	-65.77	275.95
Fibras	6,257	6,914	3,047	4,790	2,799	10.50	-55.93	57.20	-41.57
Otros 2/	17,859	52,468	31,445	153,168	130,596	193.79	-40.07	387.10	-14.74

1/ Incluye trocería para chapa y triplay.

2/ A partir de 1990 se incluye tierra de monte.

3/ Preliminar

FUENTE: Dirección General de Estadística, SARH.

Annex II-9

TABLA 4

INDUSTRIA FORESTAL EN QUINTANA ROO[1]

TIPO	PROPIEDAD PRIVADA	PROPIEDAD EJIDAL	TOTAL
Aserraderos disco	1	5[2]	6
Aserraderos banda o combinados	9	7	16
Aserraderos integrados a otras industrias[3]	7	1[4]	8
Fábricas de chapa y sus subproductos	1[5]	--	1
Fábricas de chapa y triplay	4[6]	--	4
Fábricas de duela y lambrín	1	1	2[7]

(1) Aparte de las registradas en la tabla, una fábrica de pisos y muebles trasladó el presente año sus instalaciones a Belize. No se incluyen carpinterías de tipo semiartesanal
(2) Cuatro fuera de operación
(3) Todas las industrias, salvo PIQRO, disponen de un aserradero
(4) Fuera de operación, al igual que la fábrica correspondiente
(5) Fuera de operación
(6) Una fuera de operación
(7) Ambas fuera de operación

Annex II-10

Tabla 1 ESPECIES FORESTALES MADERABLES

Cod.	Nombre Comun	Nombre Científico	Peso Esp. kgs m3
01.	AMAPOLA *	Pseudobombax ellipticum	440
02.	BARI	Calophyllum brasiliense	520
03.	BAYO	Aspidosperma cruentum	670
04.	BOBCHICHE	Coccoloba spicata	800
05.	BOJON	Cordia alliodora	490
06.	BOOP	Coccoloba cozumelensis	675
07.	CAOBA *	Swietenia macrophylla	420
08.	CARACOLILLO	Mastichodendron capiri	
09.	CEDRO	Cedrela odorata	430
10.	CEIBA	Ceiba pentandra	220
11.	CHACA ROJO *	Bursera simaruba	430
12.	CHAKTE KOK *	Sickingia salvadorensis	660
13.	CHAKTE VIGA *	Caesalpinia platyloba	825
14.	CHECHEM NEGRO *	Metopium brownei	770
15.	CHI CHE	Chrysophyllum mexicanum	660
16.	CHICOZAPOTE *	Manilkara zapota	900
17.	CHINTOK	Krugiodendron ferreum	1080
18.	CILILLON	Pouteria izapalensis	810
19.	COPAL	Protium copal	555
20.	ELEMUY	Malmea depressa	720
21.	GRANADILLO	Platymiscium yucatanum	660
22.	GUAYA	Talisia olivaeformis	890
23.	GUAYABILLO	Myrcianthes fragrans	830
24.	GUAYACAN	Guayacum sanctum	1000
25.	GUAYACOX	Matayba opposiifolia	715
26.	HIGO	Ficus sp.	
27.	HULE	Castilla elastica	280
28.	JABIN	Piscidia communis	590
29.	JOBILLO	Astronium graveolens	800
30.	JOBO	Spondias mombin	450
31.	KANATSIN	Lonchocarpus rugosus	
32.	KANISTE *	Pouteria campechiana	895
33.	KASKA'AT	Luehea speciosa	520
34.	KATALOX *	Swartzia cubensis	830
35.	KITAMCHE	Caesalpinia gaumeri	835
36.	LAUREL	Nectandra sp.	460
37.	LIMONARIA	Trichilia minutiflora	
38.	MACHICHE	Lonchocarpus castilloi	740
39.	MACULIS	Tabebuia rosea	
40.	MAJAHUA	Hampea trilobata	395
41.	MORA	Maclura tinctoria	
42.	MAMBA	Psudolmedia oxypnyllaria	650
43.	NANCE	Byrsonima crassifolia	
44.	PALO DE SOL	No identificado	
45.	PALO DE TINTE	Haematoxylon campechianum	870
46.	PATA DE VACA	Bauninia divaricata	
47.	PELMAX	Aspidosperma megalocarpum	670

			470
48.	PASA'AK *	Simarouba glauca	775
49.	PEREZ KUCH	Croton reflexifolius	
50.	PICH	Enterolobium cyclocarpum	
51.	PIMIENTA	Pimenta dioica	545
52.	PIXOY	Guazuma ulmifolia	570
53.	POCHOTE	Ceiba aesculifolia	850
54.	PUKTE *	Bucida buceras	
55.	ROBLE	Bourreria oxiphyllaria	730
56.	RAMON	Brosimum alicastrum	930
57.	RUDA	Diphysia carthaginensis	400
58.	SAC CHACA *	Dendropanax arboreus	750
59.	SIRICOTE	Cordia dodecandra	
60.	SUBIN	Acacia dolychostachia	635
61.	TABAQUILLO	Alseis yucatanensis	595
62.	TADSI	Hypocratea celastroides	610
63.	TAMAY	Zuelania guidonia	645
64.	TASTAS	Guetarda elliptica	530
65.	TZALAM *	Lysiloma bahamensis	670
66.	YA'AXNIK *	Vitex gaumeri	1100
67.	YAITI	Gymnanthes lucida	830
68.	ZAPOTILLO *	Pouteria unilocularis	

* = Especies de valor comercial y de existencias interesantes.

Tabla 2 AGRUPAMIENTO DE ESPECIES CON PERSPECTIVAS COMERCIALES

Aparte de pocas excepciones, la heterogeneidad de la selva quintanarroense no permite un manejo especie por especie ni silvícola ni económicamente.

El sistema policiclico actualmente ejecutado, está orientado a una especie guia, en este caso la más valiosa, la CAOBA (*Swietenia macrophylla*).

Las demás especies de valor comercial o con potencialidad comercial y de existencias suficientemente altas para un aprovechamiento sostenido, quedan agrupadas en siete grupos tomando en cuenta tanto sus afinidades tecnológicas y su aceptación en el mercado como su comportamiento silvícola en cuanto conocido.

Las especies CHICOZAPOTE (*Manilkara zapota*) y RAMON (*Brosimum alicastrum*) no obstante su abundancia forman grupos propios por motivo de su uso otro de madera, lo que requiere de un tratamiento diferente.

Grupo	Uso principal
1. PRECIOSAS	Construcciones interiores, armazones, ebanisteria, chapa desarrollada, chapa rebanada decorativa, madera para embalaje, madera aserrada ESPECIES COMERCIALES Caoba Cedro
2. SAC CHACA	Construcciones interiores, chapa desenrollada, madera para embalaje, productos celulósicos, tableras de madera contrachapada (centros) ESPECIE COMERCIAL Sac Chaca
3. AMAPOLA	Chapa desenrollada, madera para embalaje,construcciones inter., productos celulósicos, tableras de madera contrachapada (centros), tableros alglomerados, armazones ESPECIE COMERCIAL Amapola

4. BLANDAS

Construcciones interiores, chapa rebanada decorativa, madera para embalajes, productos celulósicos, tableros aglomerados

ESPECIES CON POTENCIALIDAD COMERCIAL
Chaka
Jobo
Pasa'ak

5. DURAS

Construcciones exteriores e interiores, chapa rebanada decorativa, pisos y parquet, durmientes, ebanisteria, madera aserrada

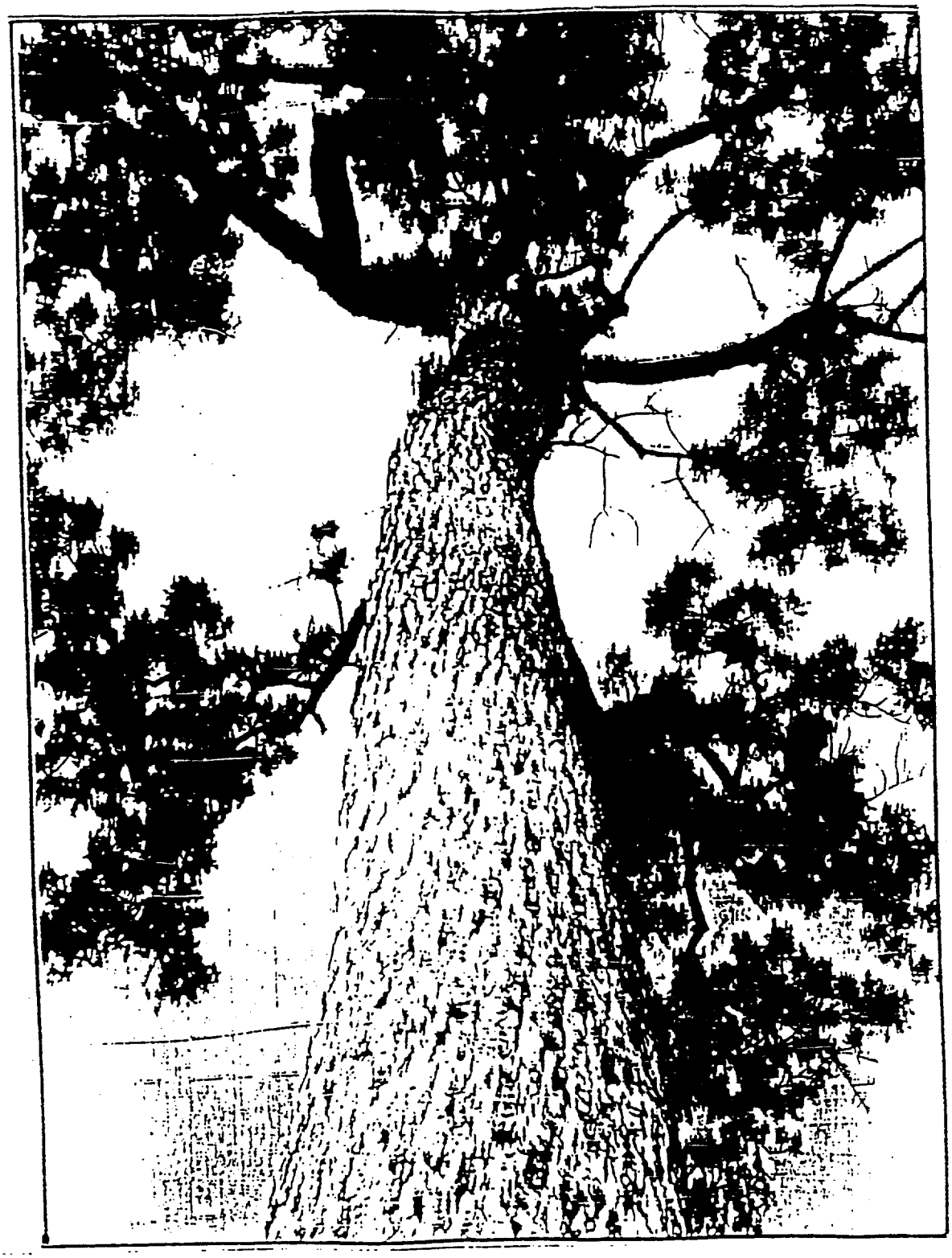
ESPECIES COMERCIALES
Chechem negro
Granadillo
Machiche
Tzalam
Siricote

ESPECIES CON POTENCIALIDAD COMERCIAL
Chakte kok
Chakte viga
Jabin
Kaniste
Pukte
Bari
Katalox

6. CHICOZAPOTE

7. RAMON

Annex II-11



ESTADO DE QUINTANA ROO

DISPONIBILIDAD ANUAL DE MADERA PROPICIA PARA LA PRODUCCION DE PISOS

Quintana Roo

Las sociedades civiles

Las cuatro sociedades civiles con el objetivo de un manejo forestal en Quintana Roo están constituidas por un total de 42 ejidos y además, en la Sociedad de Pueblos Indígenas Forestales de Quintana Roo, por 8 pequeños propietarios, y cubren una superficie forestal de aproximadamente 400000 has. Esta superficie ha sido delimitada como Área Forestal Permanente, es decir, como área destinada exclusivamente al aprovechamiento forestal. Las superficies se manejan con un ciclo de corta de 25 años, con un control espacial bueno o mediano en el caso de los ejidos que producen durmientes. A diferencia de la mayoría de las otras organizaciones ejidales, las sociedades empiezan a implementar un manejo silvícola que va mas allá del control espacial y temporal de la extracción: reforestación, limpias de apoyo a la regeneración natural, planificación de los caminos de éxtracción y bacadillas en función de la presencia de árboles semilleros de las especies deseadas, primeros pasos al manejo sostenido de fauna.

Existen grupos de servicios técnicos, concesionados a las sociedades civiles, encargados de orientar a los sociedades en cuestiones silvícolas. Son los ejidos los que efectúan las labores silvícolas y la comercialización de la madera.

Por otro lado, un numero importante de ejidos cuenta con maquinaria propia de extracción. Además, en los últimos años, se han puesto en marcha cuatro aserradetos y dos carpinterías.

DISPONIBILIDAD ANUAL DE MADERA DE ESPECIES PROPICIAS PARA LA PRODUCCION DE PISOS

VOLUMENES EN M3 DE MADERA ROLLIZA PROCEDENTES DE AREAS FORESTALES PERMANENTES DE SOCIEDADES FORESTALES EJIDALES

Nombre Común	Nombre científico	Peso kg/m3	Disponibilidad m3
	01. Maderas Duras		
TZALAM	Lysiloma bahamensis	530	7,000
PUKTE	Bucida buceras	850	2,544
CHECHEM NEGRO	Metopium brownei	770	8,040
CHAKTE KOK	Sickingia salvadorensis	660	3,592
KATALOX	Swartzia cubensis	830	3,904
RAMON	Brosimum alicastrum	730	21,040
	02. Maderas Blandas		
AMAPOLA	Pseudobombax ellipticum	440	5,208
CHACA ROJA	Bursera simarouba	430	8,360
SAC CHACAH	Dendropanax arboreus	400	6,888
NEGRITO	Simarouba glauca	470	1,600

Annex II-12

Product development technical support includes the following specific activities:

1. Producer/Buyer Interface - Product developers are responsible for the development of fair and effective commerce between producers and buyers and are only wholly compensated when that commerce is successfully developed. The product developer has, therefore, a strong incentive to make the process work for all parties. *There is seen to be a significant need in the area to provide product development interface between offshore buyers and area producers.*

Product developers respond to the immediate interests of the companies that retain them to find new products. Generally, the importer pays this cost, but producers may also elect to share in these costs. By accessing market supplied product development, the producer can create and sell actual market-demanded products. The importing company is satisfied to receive the product it wants, the producer is benefitted by having profitable export sales. Product developers particularly deal with product and packaging design.

2. Costing And Pricing - Experienced product developers assist producer companies, including new as well as new-to-export exporters, to develop competitive and consistent pricing strategies. By using well practiced product developers, companies acquire a knowledge of the price points required for competitive market entry and are thereby able to develop effective pricing strategies.

3. Materials Identification And Environmental Impact - As a general rule of production management, it is the product developers role to review and consider production materials within the context of environmental use-impact; in terms of quality and quantities available for production operations and in terms of labor, plant and machinery and energy requirements. Given Mexican and U.S. increasingly strengthened environmental impact concerns related to resource use for industrial process, environmental use-impact analysis becomes a requirement for industrial producers and particularly in the value-added wood products sector. The product developer supports environmental impact evaluations and provides substantive responses to these issues. For example, the selection of "mahogany" as a woodworking material can signal serious conservation issues. The product developer, aware of these issues, can offer production alternative solutions including the use of alternative species as production material for specific product interests.

4. Production Planning And Producer Training - Effective planning of the production cycle and the implementation of quality control measures are essential factors affecting a producer's long-term success. It was observed that the producers visited in the three State area would benefit from the introduction of production planning as well as training in materials processing techniques. The product developer can provide assistance in these areas. ***Product developers can introduce improved production planning to qualified producers, in addition to coordinating relevant training programs which can increase the skills-levels of the work force.*** Training programs would be tailored to the specific needs of area producers. The product developer may be asked to support such production issues as plant layout, machinery selection,

work flow development, machining and finishing processes. The product developer will participate in worker training.

5. Responsibility For The Producers' "Trinity" Performance - The trinity performance is composed of the following factors:

- quality controlled operations
- timely and complete delivery performances
- stable producer pricing from contract to contract

The product developer is professionally responsible to both export producers and import buyers for the assurance that the "trinity" is well managed. Quality control programs are necessary to assure the continued goodwill of buyers. Quality controlled production and effective product delivery occurs by design and not by chance. The product developer must assure that this design is in place. In addition to effective quality control and timely delivery, the product developer is concerned with the maintenance of selling-price stability during contract periods. Maintained contract-pricing is a critical matter for continuing long-term business relationships.

6. Export Process, Payments And Disputes - An important aspect of any international business is timely payments. The heading off of potential disputes or their rapid resolution is a vital service which the product developer can help perform. While they may assist in export process management, this is not always demanded or able to be delivered. Most product developers, however, are well versed and experienced in production financing issues including financial-risk management and are prepared to discuss optimum payment terms on behalf of both producers and buyers. The professional product developer is, in fact, a "good faith" intermediary between producers and purchasers and, consequently, their role is to assure that fair and reasonable behavior is delivered by both seller and buyer and that a "win-win" business climate is in place. In the case of dispute or less that correct business behavior, the product developer is expected to provide objective and unbiased positions.

Enterprise Development Opportunities - Quintana Roo, Campeche, Chiapas.

Annex II-13

CUADRO: 3.1.11

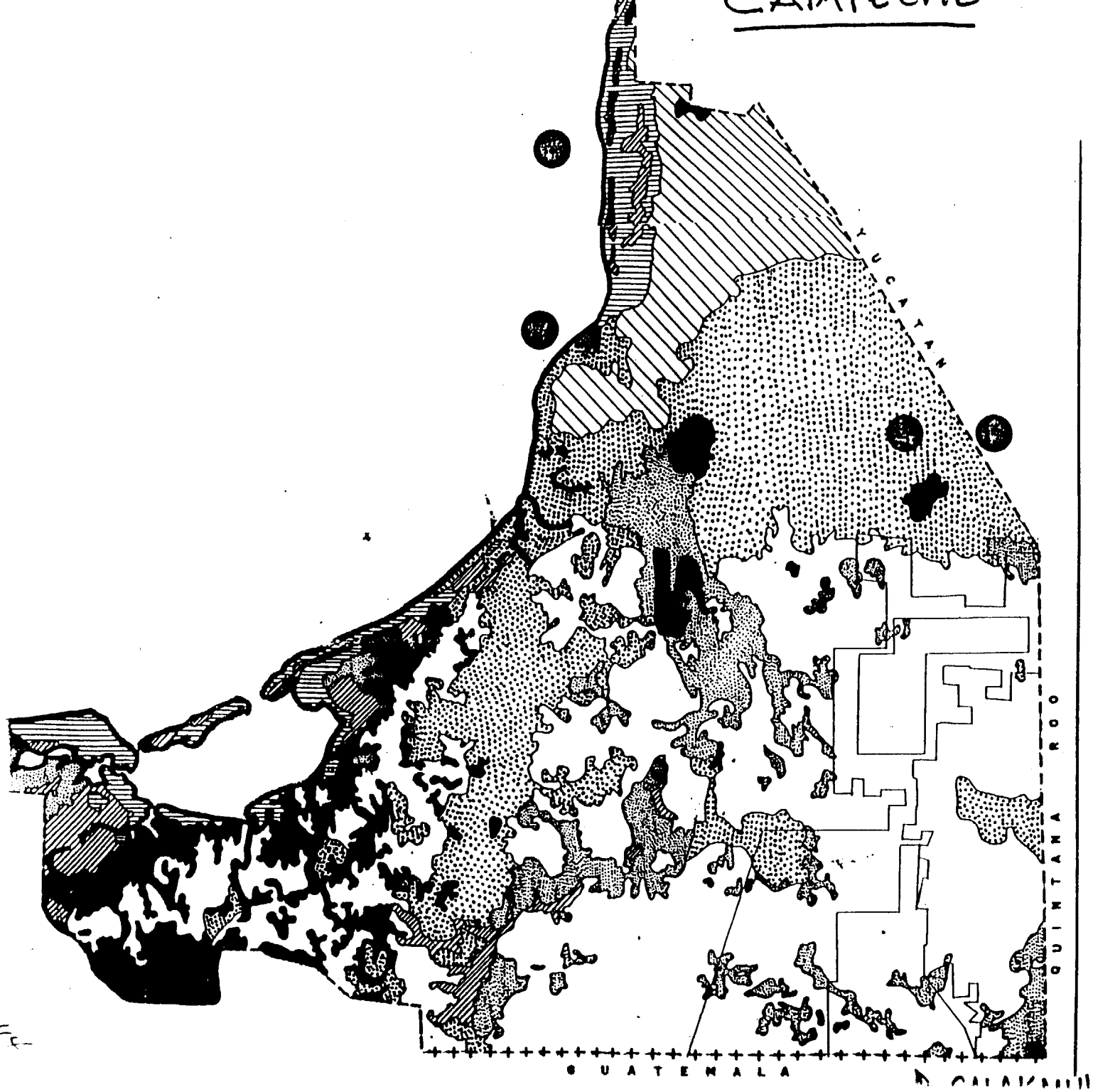
EXPORTACIONES AGROPECUARIAS, ENERO-DICIEMBRE 1990-1991
(miles de dólares y toneladas)

PRODUCTO	VALOR ENE-DIC 1990	VALOR ENE-DIC 1991	VARIACION 91/90 %	VOLUMEN ENE-DIC 1990	VOLUMEN ENE-DIC 1991	VARIACION 91/90 %
EXPORTACIONES AGROPECUARIAS	2,110,721	2,290,832	8.53	2,327,291	2,822,451	21.28
AGRICULTURA Y SILVICULTURA	1,720,706	1,876,933	9.08	2,283,914	2,772,121	21.38
Algodón	91,833	76,920	-16.24	57,327	57,722	0.69
Almendra de ajonjolí	---	---	---	---	---	---
Arroz	---	4	---	---	25	---
Borra de algodón	633	2,648	318.33	607	2,577	324.55
Cacao	---	---	---	---	---	---
Café crudo en grano	332,890	368,047	10.56	190,570	203,916	7.00
Cera vegetal	2,545	1,914	-24.79	1,061	714	-32.70
Colofonia	1,050	984	-6.29	1,538	1,112	-27.70
Chicle	3,525	2,845	-19.29	680	489	-28.09
Especias diversas	11,956	15,626	30.70	12,678	14,123	11.40
Fresas frescas	16,998	20,766	22.17	14,120	15,102	6.95
Frijol	86	507	489.53	80	417	421.25
Garbanzo	34,557	32,025	-7.33	54,018	43,393	-19.67
Ixtle de lechuguilla	17,042	19,597	14.99	13,414	13,052	-2.70
Jitomate	428,402	261,739	-38.90	392,171	443,192	13.01
Legumbres y hortalizas frescas	430,017	489,559	13.85	806,142	910,950	13.00
Maíz	108	2,829	2519.44	753	16,185	2049.40
Melón y sandía	90,428	142,150	57.20	316,856	418,476	32.07
Otras frutas frescas	138,276	283,487	105.02	383,030	577,591	50.80
Raíces y tallos	795	84	-89.43	909	72	-92.08
Semilla de ajonjolí	37,678	44,365	17.75	26,682	41,197	54.40
Simiente de trigo certificado	15	10	-33.33	1	10	900.00
Tabaco en rama	21,626	44,452	105.55	8,980	11,806	31.47
Trigo	329		-100.00	2,297	---	-100.00
Otros	59,917	66,375	10.78	---	---	---
GANADERIA, APICULTURA	390,015	413,899	6.12	43,377	50,330	16.03
Ganado vacuno 1/	349,046	358,323	2.66	---	---	---
Miel de abeja	37,701	50,489	33.92	43,377	50,330	16.03
Otros	3,268	5,087	55.66	---	---	---

FUENTE: Banco de México.
NOTA: Los totales de volúmen unicamente representan los volúmenes en los productos reportados aquí, por lo que no se incluye el rubro de otros y el de ganado vacuno.
1/ Cabezas

Annex III-1

CAMPECHE



GOBIERNO DE

DE CAMPECHE

SECRETARIA DE DESARROLLO

URBANO Y MEDIOAMBIENTE

MAPA FORESTAL

VEGETACION Y U

SIMBOLO

SELVAS MEDIAS

SELVA BA

SELVA BAJA CAI

MANGLAR

AREA AGROP

OTROS TIPOS DE

AREA FUERTEMEN

AREA PERTU

ZONA URBA

CUERPO DE A

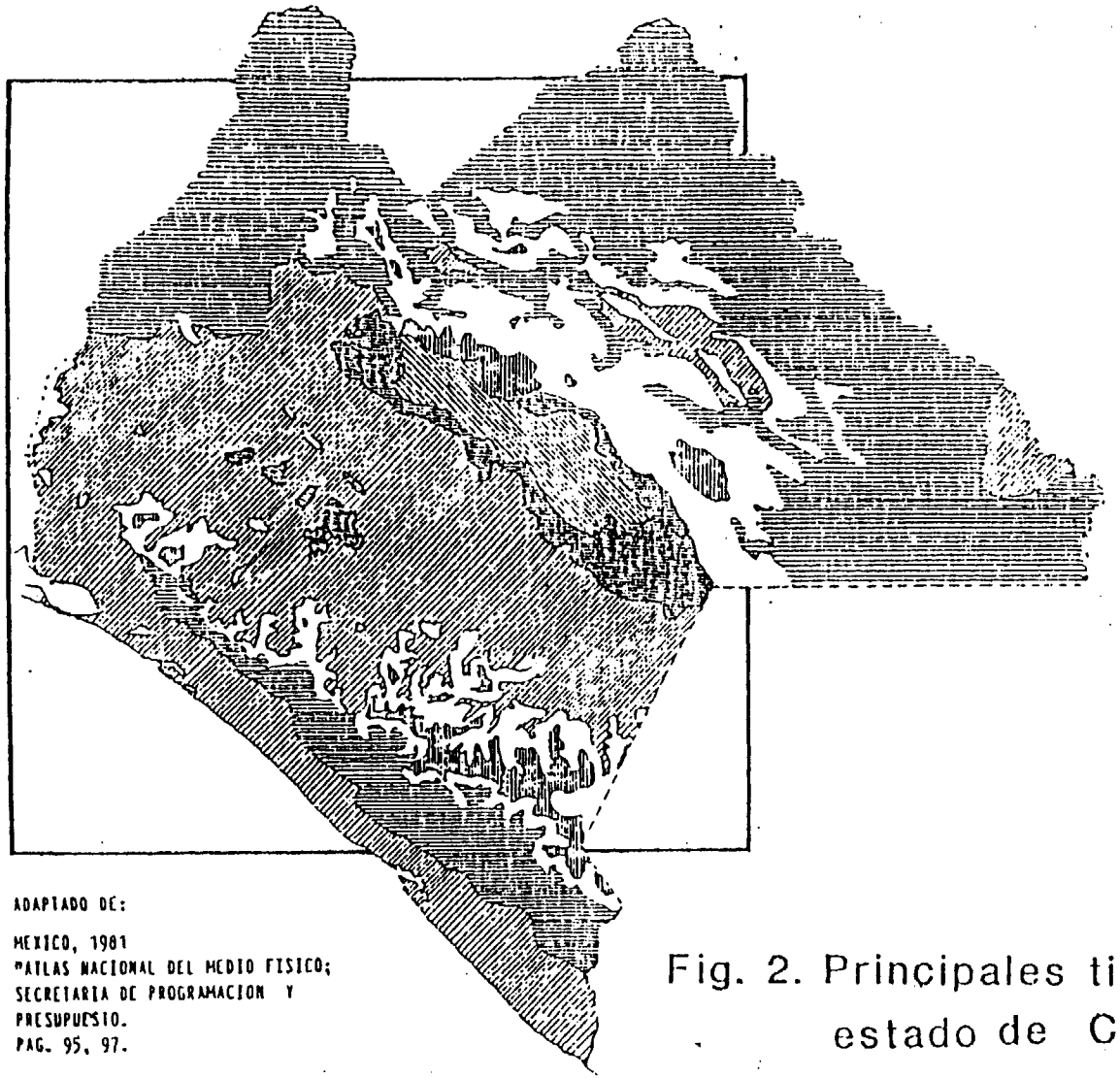
LIMITE ESTA

LIMITE INTERN

ESCALA. 1:1000

Fuente: Inventario Nacional F

Annex IV-1



ADAPTADO DE:

MEXICO, 1981
"ATLAS NACIONAL DEL MEDIO FISICO;
SECRETARIA DE PROGRAMACION Y
PRESUPUESTO.
PAG. 95, 97.

ESCALA APROX. 1: 2250 000

Fig. 2. Principales tipos de climas en el estado de Chiapas

Annex IV-2

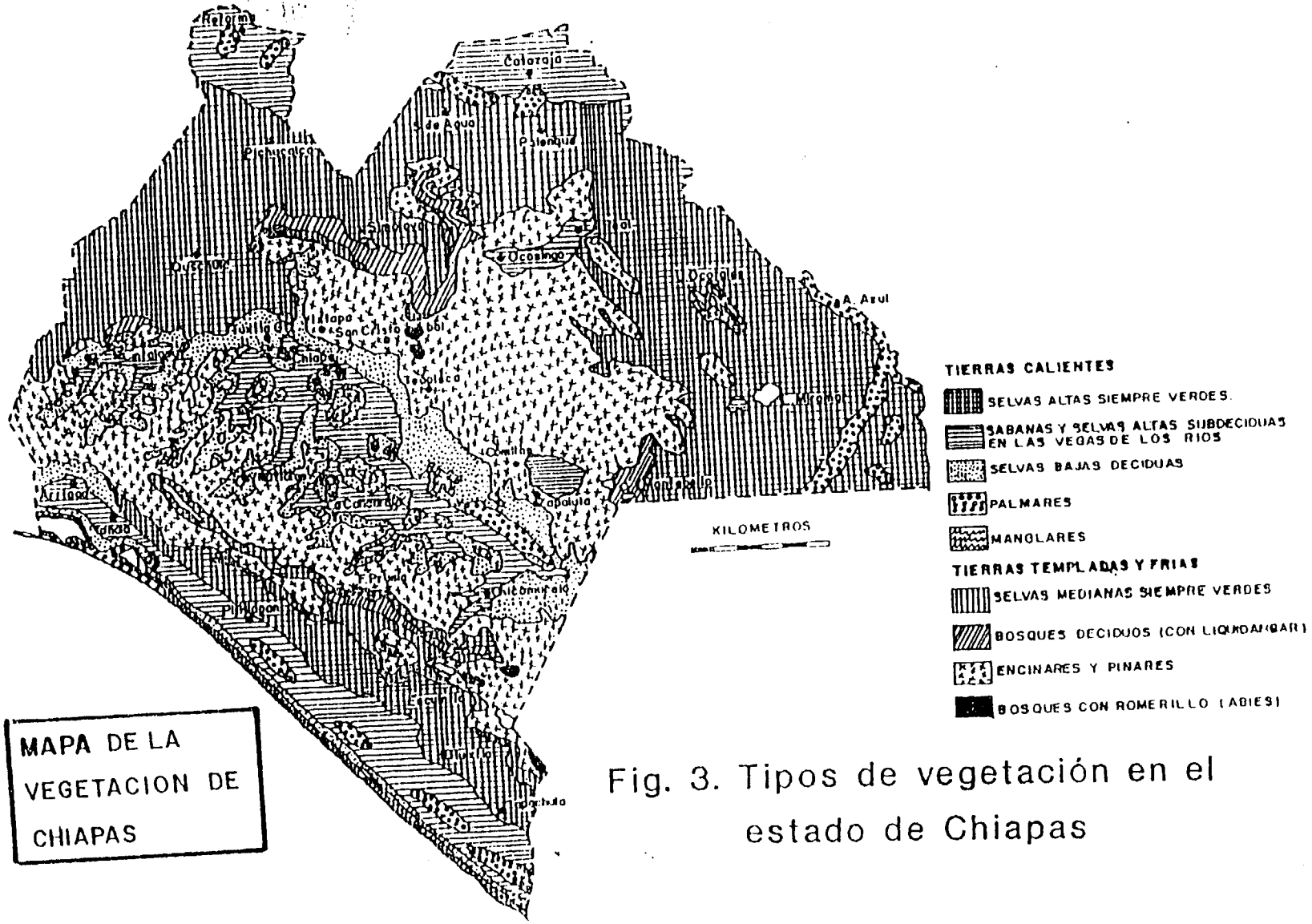
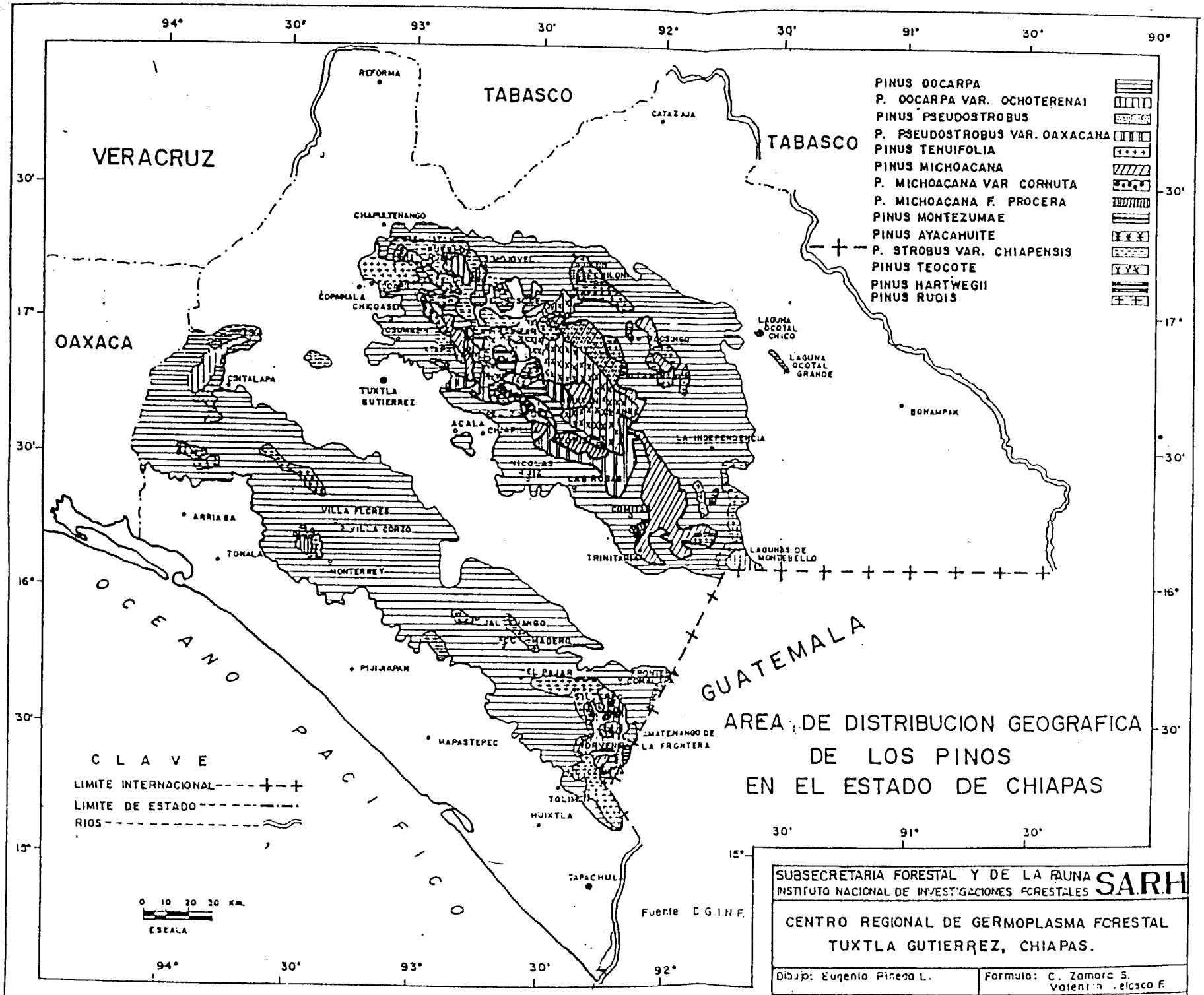


Fig. 3. Tipos de vegetación en el estado de Chiapas

Annex IV-3


94°
30'
93°
92°
91°
90°
17°
16°
15°
VERACRUZ
TABASCO
OAXACA
GUATEMALA
OCEANO PACIFICO
REFORMA
CATAZAJA
CHAPULTENANGO
COPAINALA
CHICOASEN
TUXTLA GUTIERREZ
CINTALAPA
ACALA
LA INDEPENDENCIA
BONAMPAK
LAGUNA OCOTAL CHICO
LAGUNA OCOTAL GRANDE
LAGUNAS DE MONTEBELLO
TRINITARIA
VILLA FLORES
VILLA CORZO
ARRIAGA
TONALA
MONTERREY
PIJIJIAPAN
MAPASTEPEC
TAPACHULA
HUIXTLA
PINUS OOCARPA
P. OOCARPA VAR. OCHOTERENAI
PINUS PSEUDOSTROBUS
P. PSEUDOSTROBUS VAR. OAXACANA
PINUS TENUIFOLIA
PINUS MICHOACANA
P. MICHOACANA VAR CORNUTA
P. MICHOACANA F. PROCERA
PINUS MONTEZUMAE
PINUS AYACAHUITE
P. STROBUS VAR. CHIAPENSIS
PINUS TEOCOTE
PINUS HARTWEGII
PINUS RUDIS
CLAVE
LIMITE INTERNACIONAL
LIMITE DE ESTADO
RIOS
0 10 20 30 Km.
ESCALA
Fuente D.G.I.N.F.
AREA DE DISTRIBUCION GEOGRAFICA
DE LOS PINOS
EN EL ESTADO DE CHIAPAS
SUBSECRETARIA FORESTAL Y DE LA FAUNA
INSTITUTO NACIONAL DE INVESTIGACIONES FORESTALES
SARH
CENTRO REGIONAL DE GERMOPLASMA FORESTAL
TUXTLA GUTIERREZ, CHIAPAS.
Dibujo: Eugenio Pineda L.
Formulo: C. Zamora S.
Valentin Velasco F.

Annex IV-4

CUADRO 5.- PARTICIPACION DE LAS SUPERFICIES DE LOS TIPOS DE CUBIERTA FORESTAL DEL ESTADO DE CHIAPAS, EN RELACION A TOTAL NACIONAL.

C O N C E P T O	S U P E R F I C I E S (H E C T A R E A S)			
	ESTADO DE CHIAPAS	(%)	REPUBLICA MEXICANA	(%)
BOSQUES				
CONIFERAS	869,326	5	16'961,245	100
HOJOSAS	277,693	3	8'420,436	100
MESOFILOS	27,526	19	142,371	100
TOTAL BOSQUES	1'174,545	5	25'524,052	100
ALTAS Y MEDIANAS	1'636,612	19	8'723,872	100
BAJAS PERENNIFOLIAS	7,343	0.4	1'774,002	100
BAJAS CADUCIFOLIAS	273,117	2	13'578,994	100
TOTAL DE SELVAS	1'917,072	8	24'076,868	100
TOTAL ARBOLADO	3'091,617	6	49'600,920	100
PERTURBADAS	1'243,934	7	18'311,356	100
FUERTEMENTE PER.	462,709	8	5'476,565	100
TOTAL PERTUBADO	1'706,643	7	23'787,921	100

SARH, INVENTARIO NACIONAL de GRAN VISIÓN, 1991.