Economic Potential for Amate Trees

*Ficus* (Fig Tree) Species of Guatemala

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Entire monographs have been written on the bark paper of the Maya and Aztec codices (Van Hagen 1944). And there are plenty of scholarly botanical studies of Ficus trees of the family Moraceae.

But on the Internet there is usually total confusion in popular web sites about the differences between strangler figs and normal fig trees. It is unclear to which degree the bark paper comes from a strangler fig tree, or also from another Ficus species which is a normal tree (not dedicated to wrapping its roots around a host tree). But all this needs further research since 90% of the books and about 99% of the articles are on bark paper of Mexico. Indeed bark paper is still made in several parts of Mexico (to sell the tourists interested in Aztec, Maya and other cultures).

Since we are in the middle of projects studying flavorings for cacao, Aztec and Maya ingredients for tobacco (more than just tobacco), colorants from local plants to dye native cotton clothing, and also trying to locate all the hundreds of medicinal plants of Guatemala, it would require funding to track down and study every species of Ficus. But since we are interested in all utilitarian plants of Mesoamerica, we wanted at least to prepare an introductory tabulation and a brief bibliography to assist people to understand that:

- strangler figs strangle other trees; these are very common in Guatemala
- But there are many fig trees which are not stranglers
- Figs for candy and cookies come from fig trees of other parts of the world
- Not all bark paper comes just from amate (Ficus) trees

For photographs we show in this first edition only the two fig trees which we have found in the last two months of field trips. We will need to see their flowers before we can identify precisely which species of Ficus they are (but they not typical strangler figs, unless their host already was “strangled” and rotted away decades ago!).

During the coming year we will find, photograph, and publish the more common strangler and non-strangler figs of Guatemala.

So month by month we will advance in our studies of the utilitarian plants of the Aztec and Maya areas of the world, the area known as Mesoamerica: Mexico, Guatemala, Belize, Honduras, El Salvador, Costa Rica and Nicaragua. The heartland is Mexico and Guatemala.
Introductory Tabulation of a sample of Ficus species of Mesoamerica

There are 22 species of *Ficus* for Mexico (Ibarra et al.:2012:392) and at least 36 or more *Ficus* species included in Parker’s book on Trees of Guatemala (2008:556-564). Dozens more exist in the rest of Mesoamerica. I list only a sample here.

In bold font I emphasize which species can be used to make bark paper. There are many non-*Ficus* trees which can also produce a bark-paper. So the ethnobotany gets complicated very quickly. But at least now we have initiated this research project and want to show our first photographs and our initial tabulations. I provide a separate tabulation to list all trees of other kinds of trees which can also make paper.

The best discussion of which trees can be used to make paper in Mexico is in the PhD dissertation of Lopez. Here we list only *Ficus* species; Although Lopez is often an original source, the tabulation of Robles is the easiest to follow (2011: 216). There are also lists in the PhD dissertation of Maya (2011).

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ficus calyculata</em> Miller</td>
<td>Higuerón.</td>
<td>Listed in dissertation of Lopez as one of many sources of bark paper.</td>
</tr>
<tr>
<td><em>Ficus citrifolia</em> Mill.</td>
<td>Higuerón.</td>
<td>Medically it has serves to cure infections, sores, as masticatory and worming.</td>
</tr>
<tr>
<td><em>Ficus obtusifolia</em> Kunth</td>
<td>Higuerón.</td>
<td>No known use</td>
</tr>
<tr>
<td><em>Ficus cotinifolia</em> Kunth</td>
<td>Higuerón.</td>
<td>Has been used medicinally in bruises, sores and intestinal problems. And for manufacturing a paper called &quot;bark paper&quot;.</td>
</tr>
<tr>
<td><em>Ficus oerstediana</em> Kunth</td>
<td>Higuerón.</td>
<td>Its wood has applications for posts.</td>
</tr>
<tr>
<td><em>Ficus glabrata</em> Kunth</td>
<td>Amate</td>
<td>Its sap is used as a vermifuge.</td>
</tr>
<tr>
<td><em>Ficus padifolia</em> Kunth</td>
<td>Amatillo</td>
<td>Medicinal uses made of the plant are against toothache and in cases of inflammation of the breasts of lactating women.</td>
</tr>
<tr>
<td><em>Ficus goldmanii</em> Standl</td>
<td>Matapalo, higuerón</td>
<td>Its ripe fruits are somewhat nice. Also used to make bark paper.</td>
</tr>
<tr>
<td><em>Ficus insipida</em> Willd. subsp. Insipida</td>
<td>higuerón</td>
<td>Soft wood, used for construction</td>
</tr>
<tr>
<td><em>Ficus padifolia</em> H. B. K.</td>
<td>Listed in dissertation of Lopez as one of many sources of bark paper.</td>
<td></td>
</tr>
<tr>
<td><em>Ficus pertusa</em> L.f.</td>
<td>higuerón</td>
<td>Bark paper.</td>
</tr>
<tr>
<td><em>Ficus petiolaris</em> Kunth</td>
<td>amatillo</td>
<td>Bast used in Mexico for manufacturing a paper called &quot;bark paper&quot;. Locally has some medicinal uses.</td>
</tr>
<tr>
<td><em>Ficus jaïlsicana</em> S. Watson</td>
<td>No known use</td>
<td></td>
</tr>
<tr>
<td><em>Ficus radula</em> Mill.</td>
<td>No known use</td>
<td></td>
</tr>
<tr>
<td><em>Ficus maxima</em> Mill.</td>
<td>Teating parasites</td>
<td></td>
</tr>
<tr>
<td><em>Ficus involuta</em> Miq.</td>
<td>For manufacturing paper</td>
<td></td>
</tr>
<tr>
<td><em>Ficus segoviae</em> Miq.</td>
<td>No known use</td>
<td></td>
</tr>
<tr>
<td><em>Ficus mexicana</em> (Miq.) Miq.</td>
<td>No known use</td>
<td></td>
</tr>
<tr>
<td><em>Ficus tofuckensis</em> (Liebm.) Miq.</td>
<td>Bast used in Mexico for manufacturing a paper called &quot;bark paper&quot;.</td>
<td></td>
</tr>
<tr>
<td><em>Ficus nymphaeifolia</em> Mill.</td>
<td>Higuerón</td>
<td>No known use</td>
</tr>
<tr>
<td><em>Ficus velutina</em> Kunth ex Wild.</td>
<td>Higuerón</td>
<td>No known use</td>
</tr>
</tbody>
</table>
BALICK, Michael J., NEE, Michael H. and Daniel E.ATHA

BERG, Cornelis C.
2001 Moreae, Artocarpeae, and Dorstenia (Moraceae), with Introductions to the Family and Ficus and with Additions and Corrections to Flora Neotropica Monograph 7. Flora Neotropica Monograph 83: 1–346

BURGER, W. C.

CARVAJAL, Servando

CONDIT, I. J.
1947 The Fig. Chronica Botanica Co., Waltham, Mass.

CONDIT, I. J.
1955 Fig Varieties: A Monograph. Hilgardia: 11: 323-538

DRUMMOND, J.
1991 Determining and processing quality parameters in geographic information systems

DURAN-Ramírez, Carlos Alberto, FONSECA–Juárez, Rosa Maria and Guillermo IBARRA–Manrique

GRANDTNER, M. M.

IBARRA-Manriquez, Guillermo, CORNEJO-Tenorio, Guadalupe, GONZALES-Castaneda, Nahu, PIEDRA-Malagon, Eva Maria and Albino LUNA
2012 En genero Ficus L. (Moraceae) en Mexico. Botanical Sciences 90 (4): 369-452. One excellent feature of this well presented opus are the line drawings of each species. Fresh, clean, adequate size drawings.

LANSKY, Ephraim Philip and Helena Maaria PAAVILAINEN
2010 Figs, the Genus Ficus. Traditional Herbal Medicines for Modern Times. CRC Press. 415 pages, 204 illustrations.

MARTINEZ Alfaro, M.A.; EVANGELISTA,, V; MENDOZA, M.; Morales, G.; TOLEDO-Cortina, G. and WONG-León, A.
1995 Catálogo de plantas útiles de la Sierra Norte de Puebla. Cuadernos del Instituto de Biología 27. Jardín Botánico, Instituto de Biología UNAM, Mexico.

MOLINA-Rosito A.

PARKER, Tracey
2008 Trees of Guatemala. The Tree Press. 1033 pages. Useful, but is a compendium of data from Standley and comparable earlier field workers. Not very much fresh new field work for this booth. Nonetheless it really helps to have 98% of the Guatemalan trees all in one single book. But it would have helped to have more first-hand information over and above what is already in the earlier monographs.

PENNINGTON, T. D. and J. SARUKAHN

SANDV Id., at al.
1992 Bark, the formation, characteristics, and uses of bark around the world. Timber Press.

STANDLEY,P. C.

STANDLEY,P.C.

WEIBLEN, G. D.

WIEBES, J. T.
Websites which are useful when learning about Ficus trees

There are many web sites, we list just an introductory sample because there are already plenty of articles and monographs on Ficus, especially of Mexico

www.ars-grin.gov/misoinmpnd/Ficus.html

Sorting Ficus names; an unbelievably complete list of seemingly hundreds of scientific names of Ficus trees and indicating which is a synonym of which.


The Atlas of las Plantas de la Medicina Tradicional Mexicana provides a very brief summary of several species, but one at a time, including Ficus cotinifolia, Ficus glabrata, Ficus tecolutensis and others.


A simple but useful list. However weak for Ficus species: lists only nine meager species.

Introductory Bibliography on bark paper from amate

You can find complete bibliographies in monographs and technical ethnobotanical articles. But here we list enough key resources to provide abundant information to get started to better understand how to make bark paper from native trees of Mexico (and thus, in theory, what could be introduced into the other Maya and Aztec-related countries of Mesoamerica).

AMTIH, Jonathan D.
1995 The Amate Tradition. Mexican Fine Arts Center Museum, Mexico, D.F.

BERENZON, B.

BODIL, Christensen and Samuel MARTI
1972 Witchcraft and Pre-Columbian Paper. Ediciones Euroamericanans Klaus Thiele, México, D.F.

FREDERICK, Jennie

GALLINIER, J.

GALLINIER, J.

GARTNER, B.

HUNTER, Dard
1927 Primitive papermaking. An account of a Mexican sojourn and of a voyage to the Pacific islands in search of information, implements and specimens relating to the making and decorating of bark-paper. Chillicothe.

HUNTER, Dard.

LENZ, Hans

LENZ, Hans

LOPEZ Binququist, Rosaura Cittalli

This is the best recent work I have yet seen. Would be nice to see comparable studies for Guatemala, Belize, Honduras, and El Salvador. Her pages 320-322 list all species usable for bark paper by each of about a dozen authors (curiously Victor von Hagen is not in her list).

LOPEZ Binququist, Rosaura Cittalli

LOPEZ, Cittalli

LOPEZ, Isais and M. V. MEEREN
2009 Papel amate. CONABIO, Biodiversitas 82::11-15.

MAYA Moreno, Ruben
2011 El papel amate, suporte y recurso plastico en la pintura indigena del centro de Mexico. PhD dissertation, Universidad Complutense de Madrid, Department of Painting. 461 pages.

The copious number of photographs of the step by step processing of the bark makes this one of the absolute best resources to understand how the paper is really made. It is not “bark” at the end of the process, it is boiled, steamed, mashed remains of inner bark, applied in a mud-like form to a frame. So it really is “manufactured” paper. The bark simply is what is the base material.

This dissertation is available on-line.

OETTINGER Jr., Marion.
A good general survey of the literature, though a challenge to know whether it is based primarily or entirely on library research or whether there is first-hand research in Mexico.
