Some Ecological Notes on Sabal yucatanica in Mexico*

BIÓL. LUIS ALFREDO PÉREZ JIMÉNEZ

Instituto de Biología, Departamento de Botánica, Ciudad Universitaria, México 20, D. F.

The ecological information on *Sabal yucatanica* L. H. Bailey reported here derives from an extensive vegetation survey of the northern part of the state of Chiapas, Mexico, in connection with a field program on several wild yams (*Dioscorea*) of pharmaceutical interest (Pérez Jiménez and Sarukhán K., 1970).

Environmental Data

The general area studied is located in the most northern portion of the state of Chiapas; the zone of present interest is between the villages of Huimanguillo, Tabasco, and Reforma, Chiapas, some 40 kilometers from the city of Villahermosa, Tabasco (Fig. 1). This area is part of the southeastern coastal plain and geologically is of Upper Miocene age, while the surrounding coastal plain is of Pleistocene age.

The climate of the study area, based on data from the nearest weather station at Huimanguillo, is "hot humid with rains in summer, Am(i')" according to the system of Koeppen modified by García (1964). The average annual rainfall is 2279.8 mm. (80.9 in.) and the average annual temperature is 25.9°C. (78.6°F.). Winter rains represent 10.7 percent of the year's total.

Figure 2 shows the distribution of rainfall and temperature throughout the year. As seen from this figure, four months have less than 100 mm. (some 40 in.) of rain, including a dry month (March) in the sense of Koeppen (1948), since it has less than 60 mm. (23.5 in.) of rain.

Vegetation and Soils

For the study of vegetation, the methodology proposed by Miranda, Gómez-Pompa and Hernández X. (1967) for tropical regions was followed. It was possible to define two plant associations in the northern part of the study area: a Tropical Rain Forest (*Selva Alta Perennifolia*) of *Dialium guianense* (Aublet) Sandwith (Leguminosae) and a Palm Forest (*Palmar*) of *Sabal yucatanica*. Analysis and comparison of the edaphic characteristics of the two associations disclosed differences, especially in the percentage of clay in the soil (Table 1).

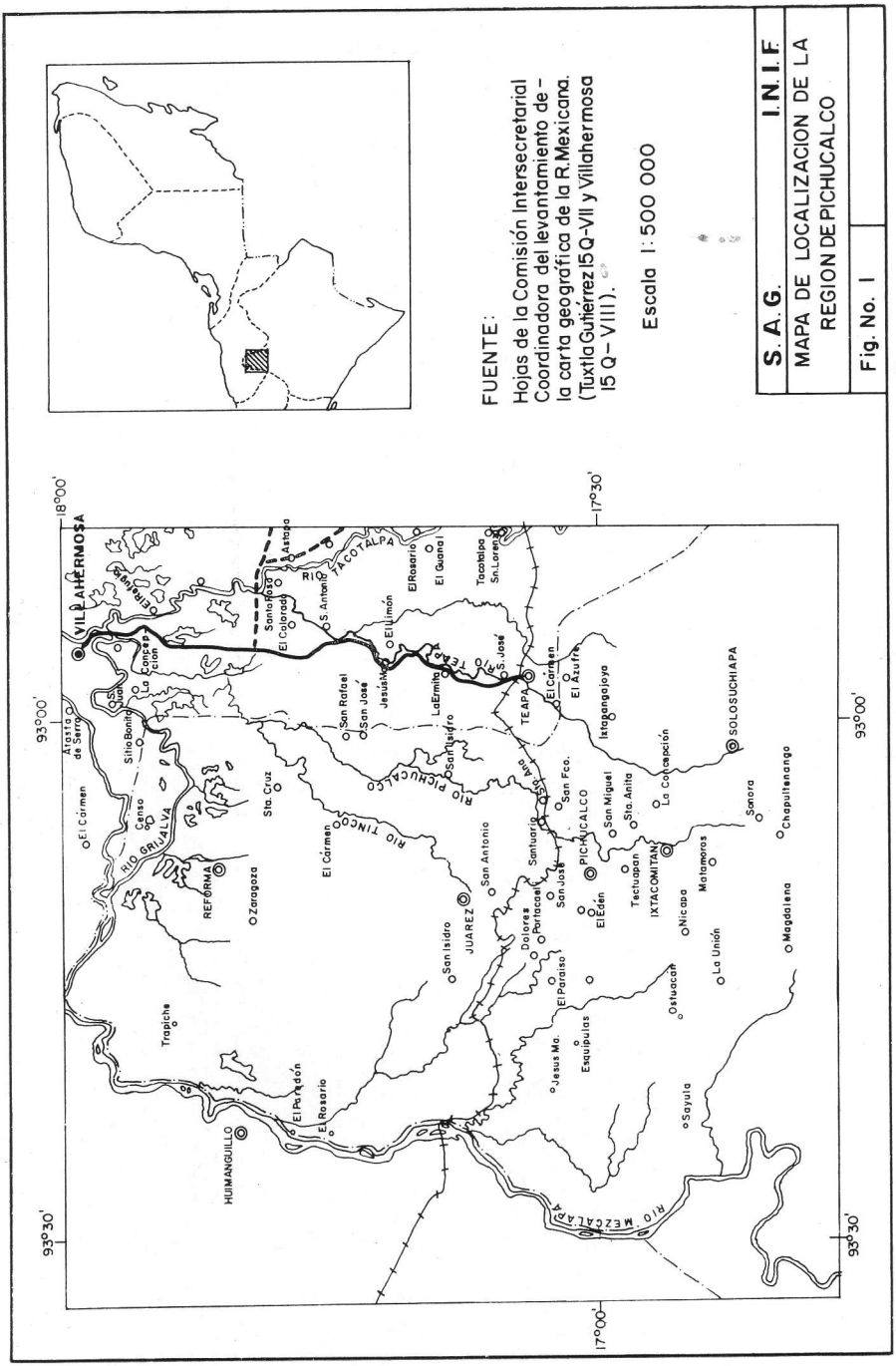
Discussion and Conclusions

Differences in vegetation appear within one climatic condition in the north of Chiapas owing to edaphic and geological differences. One vegetation type is the *Palmar* of *Sabal yucatanica* which grows on soils of special characteristics (Fig. 3). In the area studied, the presence of *Sabal yucatanica* is determined by

* Presented at the biennial meeting of The Palm Society, Mexico, D. F., June, 1972.

→

1. Map showing the region of the zone studied.


FUENTE:
Hojas de la Comisión Intersecretarial Coordinadora del levantamiento de la carta geográfica de la R. Mexicana. (Tuxtla Gutiérrez 15Q-VII y Villahermosa 15 Q – VIII).
Escala 1: 500 000
S. A. G. I. N. I. F.
MAPA DE LOCALIZACION DE LA REGION DE PICHUCALCO
Fig. No. 1
ESCALA GRAFICA EN KILOMETROS
VILLAHERMOSA
TACOTALPA
REFORMA
JUAREZ
PICHUCALCO
TEAPA
SOLOSUCHIAPA
IXTACOMITAN
HUIMANGUILLO
RIO GRIJALVA
RIO TACOTALPA
RIO PICHUCALCO
RIO TEAPA
RIO MEZCALAPA
93°30'
93°00'
18°00'
17°30'
17°00'

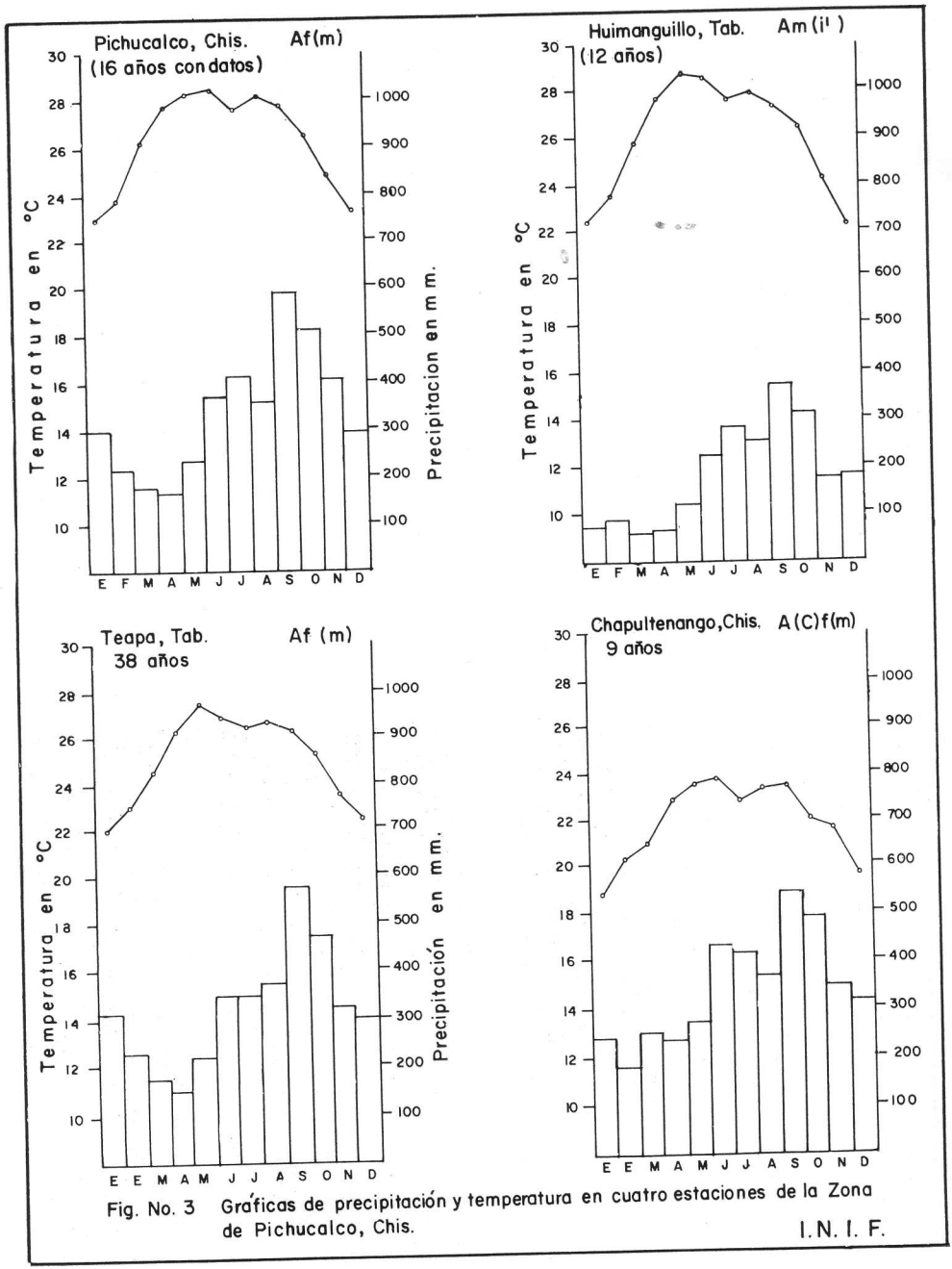


Fig. No. 3 Gráficas de precipitación y temperatura en cuatro estaciones de la Zona de Pichucalco, Chis. I. N. I. F.

2. Precipitation and temperatures for the zone studied.

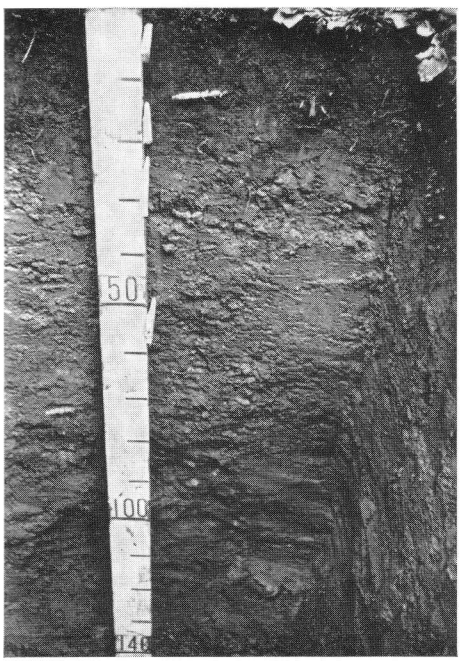
Table 1. Soils of the forest of Dialium guianense *and the palmar of* Sabal yucatanica.

Horizon	Depth in cm.	% Sand	% Silt	% Clay	% O.M.	C/N	
A_1	0–5	62.7	24.0	13.3	7.11	10.23	Forest of
A_2	5–25	63.7	24.3	12.0	4.64	9.61	*Dialium*
A_3	25–38	60.7	24.7	14.6	2.92	9.10	*guianense*
B_1	38–75	42.0	20.7	37.3	1.03	8.78	
B_2	75–150	41.0	22.4	36.6	0.00	0.00	
A_1	0–6	38.0	25.4	36.6	13.24	15.51	Palmar of
A_2	6–31	35.4	20.0	44.6	4.64	14.54	*Sabal*
A_3	31–59	31.4	17.0	51.6	2.54	15.34	*yucatanica*
B_1	59–110	20.7	22.0	57.3	0.73	10.35	
B_g	110–140	7.8	14.0	78.2	0.06	1.16	

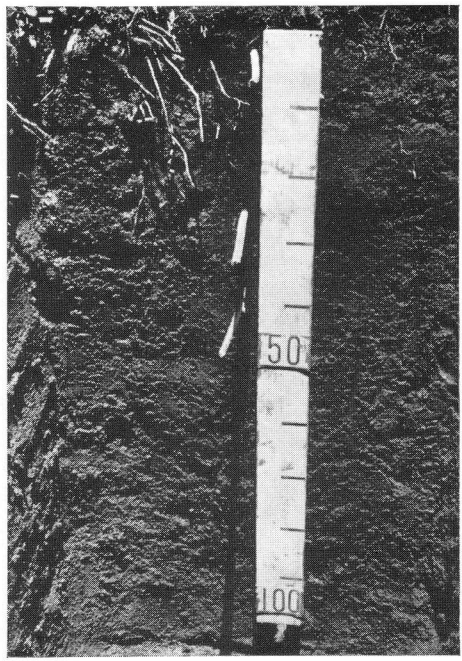
O.M. = Organic Matter.
C/N = Carbon/Nitrogen relation.

clayey soils of poor drainage due to a pseudogley horizon (Bg) in the soil profile at 1.10 m. (3.6 ft.) from the surface.

It is noteworthy that within the *Palmar* there are individuals of *Dialium guianense*, a leguminous species that characterizes the adjacent association of tropical rain forest, while *Sabal yucatanica* is never present within the forest



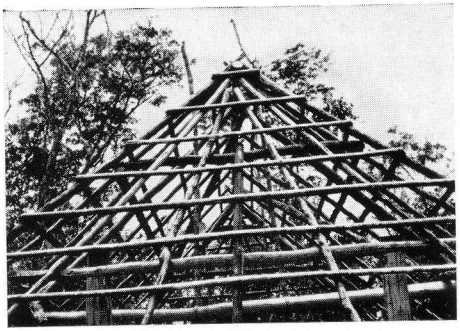
3. A soil profile from the Palm Forest of *Sabal yucatanica.*



4. A soil profile from the Tropical Rain Forest of *Dialium guianense.*

5. A corn field in which individuals of *Sabal yucatanica* have been left; at the center, one individual of *Dialium guianense* may be seen.

6. A house thatched with the leaves of *Sabal*.



7. The framework of a roof to be thatched with leaves of *Sabal*.

8. Detail showing the manner in which the leaves of *Sabal* are attached in thatching a roof.

of *Dialium guianense*. We also found that the abundance of a yam, *Dioscorea composita* Hemsley, is very low in the *Palmar* and very high in the surrounding rain forest or in its successional phases due to the fact that *D. composita* has a better development in deep, well-drained soils (Fig. 4). We are led to conclude that this population of *Sabal yucatanica* is very well adapted to a condition of poor drainage.

At present, the *Palmar* of *Sabal yucatanica* in this region is in the process of disappearing due to the transformation of the area into one devoted to agriculture and livestock; nevertheless, individuals of *S. yucatanica* remain in many places (Fig. 5) because the palm is fire-resistant and because its stems and leaves are used in the building of rural houses (Figs. 6–8).

Literature Cited

Congreso Geológico Internacional XX. 1956. Excursión C-7 Coatzacoalcos-Campeche.

García, Enriqueta. 1964. Modificaciones al sistema de clasificación climática de Koeppen (para adaptarlo a las condiciones de la República Mexicana). México, D. F., 71 pp.

Miranda, F., A. Gómez-Pompa and E. Hernández X. 1967. Un método para la investigación ecológica de regiones tropicales. Anales Inst. Biol. Univ. Nal. México 38, Ser. Bot. 1: 101–109.

Pérez Jiménez, L. A. and J. Sarukhán K. 1970. La vegetación de la región de Pichucalco, Chis. Bol. Esp. Inst. Nal. Invest. For. México 5: 49–123.