



Euphorbia tanquahuete (Euphorbiaceae), The Yellow Tree

Miguel J. Cházaro-Bazañez (Mexico), Raúl Lopez-Velazquez (Mexico) & Burl L. Mostul (USA)

INTRODUCTION

In spite of the caustic and toxic milky sap (latex), there are many species of *Euphorbia* (spurges) cultivated as ornamentals around the world, most of them cactiforms, that comes from Africa, Madagascar, the Arabic peninsula, India, and the Canary Islands, such as *Euphorbia anoplia*, *E. canariensis*, *E. caput-medusae*, *E. grandicornis*, *E. gorgonis*, *E. horrida*, *E. lactea*, *E. mammillaris*, *E. obesa*, *E. pentagona*, *E. splendens* (= *E. milli*), *E. stellata*, *E. tirucalli*, etc. (Graf, 1978; Brewerton, 1975.).

In the Americas this biological form (cactiform), is missing, since it is replaced by true cacti (family Cactaceae), however there are some known species in cultivation like *Euphorbia pulcherrima* (Poinsettia), *E. cotonifolia*, *E. caracasana*, *E. fulgens* (scarlet plum), *E. pteroneura*, *E. phosphorea*, *E. weberbaueri*, etc. (Chazaro & Mostul, 2009). Furthermore there are a handful of Mexican spurges that have horticultural potential, but they have been neglected by plantsman, probably because they are poorly known for fanciers, among them *E. macvaughii* (see Chazaro & Mostul, 2009 and 2010) and *E. tanquahuete*, the topic of this paper. So the aim of this article it is provide taxonomic and ecological data on this latter one.

RESULTS

So far, we have published 6 papers on some Mexican Euphorbiaceae, namely:

- 1.- On *Euphorbia pteroneura* Berger (Chazaro & Mostul, 1997).
- 2.- On *Euphorbia radians* Benth. and *E. scabrida* Arnold & Hooker (Mostul & Chazaro, 1996).



Euphorbia tanquahuete, habitat, Barranca Las Cruces, Jalisco (photo : Rodolfo Sanchez).

- 3.- On *Jatropha bullockii* E. Lott (Chazaro & Valencia, 2000a).
- 4.- On *Jatropha chamelensis* Perez-Jimenez (Chazaro & Valencia, 2000b).
- 5.- On *Euphorbia tanquahuete* and *E. calyculata* H. B. K. (Chazaro & Mostul, 1998).
- 6.- On *E. macvaughii* Carvajal & Lomeli (Chazaro & Mostul, 2009 and 2010).

Euphorbia tanquahuete Sessé & Mociño

This spurge it has an interesting and somehow complex history, roughly as follow:

By late 1770, Charles III, the king of Spain, sent 3 botanical expeditions to his possession in Latin America, one to Chile and Peru led by Hipolito Ruiz and Jose Antonio Pavon (hence called the Ruiz and Pavon expedition), the second to New Granada (now Colombia) headed by Jose Celestino Mutis (thence the Mutis Expedition), and the third one to New Spain (now Mexico and adjacent territories) in the charge of Martin Sessé y Lacasta.

The so called Royal botanical expedition to New Spain remained here for 25 years, from August 1778 to February 1803 (Engstrand, 1981).

They formed a botanical garden and taught botany classes in Mexico City (in the charge of Vicente Cervantes), as well exploring, collecting dried plants for herbarium specimens and seeds that were sent to the royal botanical garden in Madrid, as well as nearly making 2,000 drawings (by Atanasio Echeverria* y Godoy and Juan Castillo y Lopez) of plants and animals found during the field trips (Engstrand, 1981).



Euphorbia tanquahuete, habitat, Barranca Las Cruces, Jalisco (photo : Rodolfo Sanchez).

A few years later the expedition arrived at Mexico city, Jose Mariano Mociño, a “criollo” (Mexican born from Spanish parents), joined them as a botanist, travelling extensively within the New Spain political boundaries , then Mexico, Guatemala, and as far north as Nutka (Nootka) Bay, currently north of Vancouver, British Columbia, Canada.

During all these years Sessé and Mociño, found many botanical novelties, that they described in *Plantae Novo- Hispanae* (in Latin) and *Flora Mexicanae* (also in Latin), unfortunately upon arrival to Madrid in early 1803, the political situation in Spain was adverse, since Napoleon had invaded Spain, and the manuscripts sat for many years unpublished, thence their new species remained *inedit* names, fortunately a few were published and are valid names, *E. tanquahuete* among them (*Flora Mexicanae* Ed.2, 2:122, 1894).

Sessé & Mociño were not precise in assigning localities for the plants collected and often described by them by just saying Mexico, Guatemala, Cuba, etc. However, knowing that the specific epitet *tanquahuete* it is a Purepechan word (the Purepechan or Tarascan Indians live in central Michoacan state, mostly at the Tarascan plateau), they should have collected it somewhere between Morelia-Patzcuaro-Uruapan and Tepalcatepec, Michoacan (a Tarascan territory).

Like other species of plants described by Sessé & Mociño, *E. tanquahuete* was overlooked by a long time by botanists and layman as well because the name of *E. fulva* was constantly used in the litterature.

In the meantime, over a 100 year later, in 1904, Fernando Altamirano, a Mexican botanist, meanwhile on a field trip between Acambaro and Uruapan, also in Michoacan, found and collected the “palo amarillo” (yellow tree) (Altamirano, 1904) a spurge tree that he identified only as *Euphorbia* sp., and a possible source of rubber. A year later he and the famous American botanist Joseph N. Rose from the Smithsonian Institute, described it as *E. elastica* (Altamirano, 1905).

Unfortunately for them, earlier that year (1905), the French botanist and ultimately director of the Musee Colonial Henri Jumelle (1866-1935) had described *E. elastica* for a Madagascan spurge, totally unrelated to the Mexican yellow tree, therefore the Altamirano & Rose’s name was invalidated by the German botanist Otto Stapf (1907), who replaced it by the name *E. fulva*, stating that he choose the species name after the Latin word *fulvus*, which means yellow, because the common name for the tree was yellow tree, since the outer bark and latex being of yellowish color. Stapf ignored the fact that “palo amarillo” had been already described as *E. tanquahuete* by Sessé & Mociño since 1794 (Chazaro & Mostul, 1998).



Euphorbia tanquahuete, (infl.) habitat, Sierra Las Vigas, Jalisco.
(photo : Miguel Cházaro).

E. tanquahuete, infl., Sierra Las Vigas. (photo : Victor Marquod).

E. tanquahuete is a tree of 4-10 m high, with a trunk up to 120 cm in diameter, but usually 30-60 cm, leaves are lanceolate 3-9 cm long, 2-4 cm wide, glabrous above, densely pubescent beneath, devoid of foliage during the dry season (January to late April), then it makes photosynthesis through the trunk and branch bark, that it is papery and peeling.

Inflorescences are arranged in umbels of 4-6 cyatha, involucrel cyatha are tomentose, cream in color, each branch in March and April produces numerous cyatha, that when open are visited by the domestic bees (*Apis mellifera*) in quest of nectar. In a cyathum there are 5 nectar glands, 5 male and 1 female flowers, the male flowers are reduced to the minimum expression, namely the anther, that released the pollen when the female flowers are not receptive yet avoiding pollination in the same cyathum, later the female flowers mature protruding from inside the cyathum, the three partite stigmas are then receptive to the pollen



Euphorbia tanquahuete, habitat, Barranca Las Cruces, Jalisco (photo : Rodolfo Sanchez).



E. tanquahuete (fr.), Sierra Las Vigas. (photo : Miguel Cházaro). *Euphorbia tanquahuete*, seeds ex habitat, Barranca de Huertitas, Jalisco. (photo : Miguel Cházaro).

of other cyathum. Landed pollen attaches to the stigmas, germinating and fecundating the ovules, giving rise to the three-lobed capsule with three seeds so characteristic of euphorbias.

The capsules of *E. tanquahuete* are by far the biggest of more than 100 species of Mexican spurge, with 2-6 cm long and 1-2.5cm wide, the peduncle up to 2.5cm long and containing three seeds. At the beginning of the dry season (late October or early November) when the

capsules reach maturity they explode releasing the large seeds of up to 0.6 cm, that remain scattered around the mother plant, germinating next year during the rains.

The seeds have a large ratio of germination when watered but also can be propagated by stem cuttings, which root easily after a few weeks (Chazaro & Mostul, 1998).

Due to the easiness of *E. tanquahete* of propagating by stem cuttings like many species of *Busera*, it is occasionally used as living fences; the wood it is soft and decayed quickly after dead (Chazaro & Mostul, 1998). According to Martinez (1979) the latex has an 18 % rubber content.

E. tanquahuete only occurs in western Mexico, so far it is known in the states of Zacatecas, Jalisco, Michoacan, Guanajuato, Guerrero, Morelos, state of Mexico and Oaxaca (Chazaro & Mostul, 1998). More recently, it was signaled in the state of Queretaro by Baltazar et al. (2004). It is part of the tropical deciduous forest and lower part of oak forest (*Quercus* spp.) from near sea level up to 1,700 m.

Besides the common names of “tanquahuete” and “palo amarillo” used in Michoacan, in Jalisco it is known as “leche amarilla” and in Oaxaca as “palo mulato” and “palo cucaracha” (Chazaro & Mostul, 1998).

Where *E. tanquahuete* grows sympatric with *Bursera*, like *B. attenuata*, *B. simaruba*, *B. grandifolia*, *B. kerberi*, that also has red-yellowish papery and peeling bark, they look very like and are difficult to tell apart, except that burseras have compound leaves (versus single leaves in *Euphorbia*) and a resin (versus latex in *Euphorbia*).

We encourage all *Euphorbia* fanciers to try *E. tanquahuete*, although you must be aware that being from the tropical deciduous forest it might be frost sensitive.

Text & photos: Miguel J. Cházaro-Bazañez E-mail: **chazaro55@hotmail.com**
Raúl Lopez-Velazquez e-mail: **raulany@gmail.com**
& Burl L. Mostul

Photos: Patricia Hernandez, Victor C. Marquod, Rodolfo Sanchez

* N. of ed.: Echeverria gave his name to the genus *Echeveria*.

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Alain MOUCHEL

Mas Tardieu

07700 St Marcel d'Ardèche, France

tel.(00.33) (0)4.75.04.67.70

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