

21 South Florida Weeds and Mexican Plants— Friends or Foes?

Cristina Ugarte

Department of Biological Sciences, Florida International University, University Park, Miami, Florida 33199; ugarte@fiu.edu

Abstract

Several exotic and poisonous plants in southern Florida are useful in other parts of the world. The Totonac people of Mexico harvest and use a variety of these plants as foods and medicines. This paper will examine the use and management of several plants considered invasive and/or poisonous in South Florida, yet are important resources in the rural Totonac community of Zapotitlán de Méndez, Mexico.

Introduction

South Florida has over 2226 plant species, of which 754 species are exotic (G. Gann and K. Bradley, unpubl. data). Many of these plants were introduced to Florida as new agricultural or ornamental crops and were seen as having economic potential. In 1990 alone, 333 million plants were brought to Florida through Miami International Airport (U.S. Congress 1993). Outside their native environment, many of these prolific colonizers have caused serious problems. They transform the original environment at various levels. Most out compete native vegetation, thus affecting the original habitat, local ecological processes, and food webs. Federal, state, and local governments have spent millions of dollars to eradicate these plants in an attempt to protect native communities. Although they are an economic and physical burden to southern Florida, many of these exotic plants have economic, medicinal, and nutritional value to people throughout the world. Mexico, for example, has a very diverse flora, as well as a rich cultural heritage. Ethnobotanical research in a rural Totonac community in the highlands of Puebla, Mexico (Ugarte 1997), revealed that many local plants that were collected, sold at markets as a source of income, and eaten or used medicinally, are serious pest plants in

southern Florida. This paper will examine the use and management of several of these plants considered invasive and/or poisonous in southern Florida, yet are important resources in the rural Totonac community of Zapotitlán de Mendez, Mexico.

Zapotitlán de Mendez, a Totonac town in the Sierra Madre Oriental mountains of Mexico, lies in the northern part of the state of Puebla (19° 38' 36" N latitude and 97° 47' 24" W longitude) at 650 m above sea level (Fig. 1). The region has a tropical, rainy, mild, and semi-humid climate. The mountainous terrain produces vari-

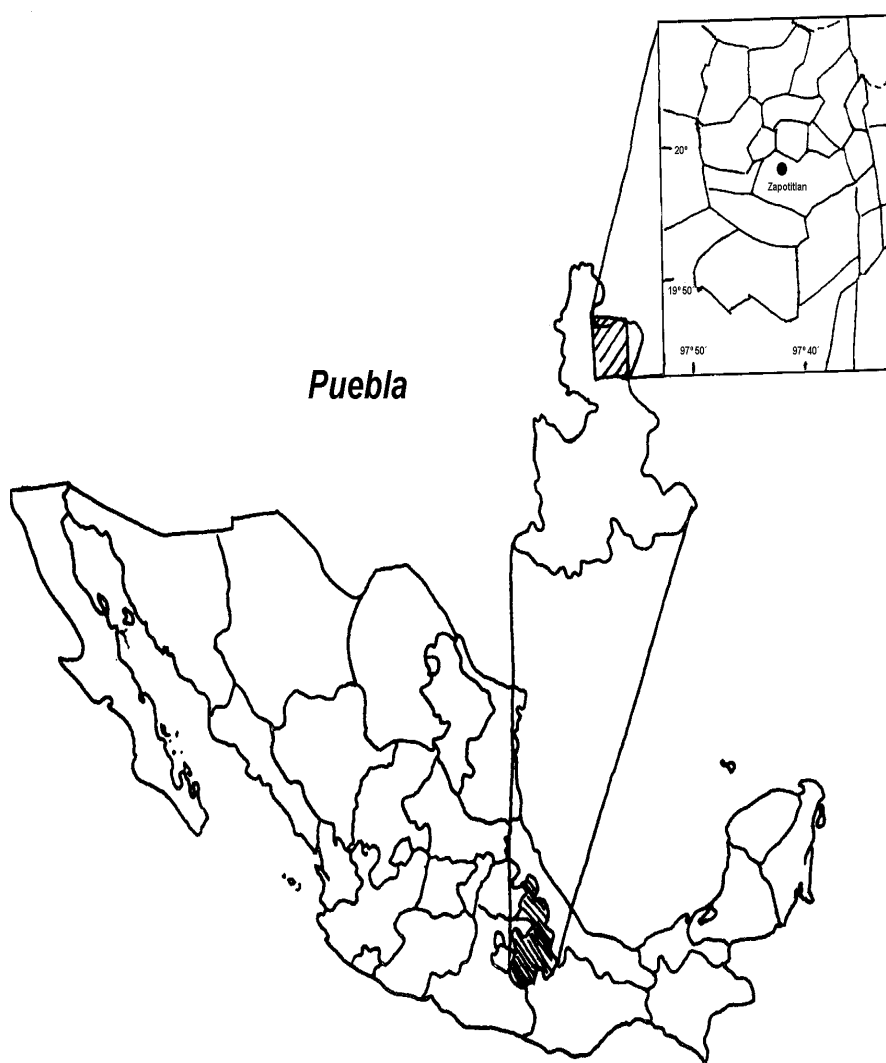


Figure 1. Location of the study area, Zapotitlán de Mendez, Puebla, Mexico.

able vegetation types, from subtropical deciduous forest at lower altitudes to cloud forest and pine forest in higher altitudes. The vegetation, like southern Florida, demonstrates a mixture of temperate and tropical species.

People have inhabited the Northern Sierra of Puebla since at least 300 A.D. The Totonacs, who are linguistically related to the Mayans, are among the earliest groups to have arrived in the region. Agriculture is their primary means of subsistence. Corn (*Zea mays* L.), chile (*Capsicum annuum* L.), squash (*Cucurbita pepo* L., *C. moschata* (Lam.) Poir., and *C. ficifolia* Bouche), and beans (e.g., *Phaseolus vulgaris* L. and *P. coccineus* L.) are the staple crops. These are cultivated using the *milpa* system; a slash and burn type of agriculture. *Milpas* are areas that mainly grow corn, yet often contain squash and beans. *Cafetales*, agricultural plots where coffee is grown, are the most abundant form of land management in Zapotitlán. In Zapotitlán, fruit trees, herbs, and ornamentals are cultivated in *huertos* or home gardens. Areas that are temporarily ‘abandoned’, or *acabuales*, are rich in secondary growth herbaceous plants. Each of these different systems maintains a diverse array of edible and medicinal wild and semi-wild plants (plants adapted to germinate in disturbed areas). These plants, which are carefully managed and gathered, supplement the local diets and provide free medicines and other resources. Several of these plants also grow in southern Florida, yet are considered a nuisance or useless. As most are weedy ornamentals or seriously invasive, they will be discussed accordingly.

Weeds

Weeds are defined as plants that are adapted to areas of human disturbance. Though annoying to most people, to others they hold nutritional, medicinal, and ecological value (Bye 1981). Weeds are an extremely important supplemental food in Zapotitlán, especially for the poor. Edible herbaceous weeds are called *quelites*. This prehispanic term is common throughout Mexico and refers to any species that has edible greens, including young leaves, shoots, and inflorescences (Bye 1981). In Zapotitlán, there are over 50 species of *quelites*, of which 66 % also are medicinal (C. Ugarte, unpubl. data). Species may be found in multiple habitats or occur in certain specific managed areas (Table 1).

Plant uses also vary depending on culture and local flora of neighboring towns. Some species, like *Bidens alba* (L.) DC. var. *radiata* (Sch. Bip.) Melchert and *Xanthosoma robustum* Schott, are collected for consumption at home from *milpas* and/or *acabuales*. These weedy plants are protected in the areas where they grow. Another protected weed, *Solanum americanum* Mill., is harvested and protected in *cafetales* and sold in local markets. *Portulaca oleracea* L. is cultivated in more temperate climates, but brought to the markets in the town. Except for *Xanthosoma*, these plants are considered weeds in southern Florida, and grow commonly in disturbed areas, yet few people would venture to eat any of them.

Table 1. Distribution and use of *quelites* (edible herbaceous weeds) in Zapotitlán de Mendez, Mexico.

Habitat ¹	Number of <i>quelites</i>	Number of edible plants	Percent <i>quelites</i> of edible plants
<i>Milpa</i>	24	37	65
<i>Huerto</i>	23	79	29
<i>Cafetal</i>	15	45	33
Wild/weedy	20	56	36

¹ See text for explanations.

Aside from the nutritional value and variety these plants provide to local diets, they also provide a cheap alternative to expensive medicines (Table 2). The Totonaque have developed methods to improve palatability and eliminate harmful toxins. They follow various pre- or post-harvesting techniques. For example, all *quelites* are collected when young and boiled. Certain *quelites*, like *S. americanum* and other members of the Solanaceae, are collected by snapping stems without using a sharp object, and are boiled in water without using salt. The plants taste bad and are discarded if these methods are not followed. *Xanthosoma* is harvested when young in areas of low light. The leaves are deveined and the leafy portion is used to create *paxni'cac*. Failure to eliminate all parts of the veins will cause throat irritations from the oxalic acids.

Ornamentals

In Miami, *Jatropha curcas* L. is sold as an ornamental. The species is also listed as being poisonous (Morton 1981). When the seeds are eaten raw, they cause vomiting and diarrhea. By contrast, in Zapotitlán, they are sold in markets and the plants are protected in home gardens. The seeds are used in dishes such as moles and salsas. People are well aware of their toxic properties and therefore roast the seeds thoroughly before eating them. On occasion, children suffer from eating the raw seeds; nevertheless, they are an inexpensive source of protein and an additional source of income to the people of Zapotitlán.

Invasive Exotic Plants

In southern Florida, we can see the negative impact exotics have biologically and economically. They have a different role, however, in their native cultural and environmental surroundings. *Lantana camara* L., and *Synгонium podophyllum* Schott and

Leucaena leucocephala (Lam.) de Wit, Category I and II exotics, respectively (Florida Exotic Pest Plant Council 1997), are all natives to tropical America and grow abundantly throughout Zapotitlán (Table 3). Category I exotics are plants that invade and disrupt native plant communities in Florida, while Category II exotics are species that have shown potential to disrupt native plant communities. *Lantana* and *Syngonium* fruits are gathered occasionally and eaten when ripe. *Leucaena* seed pods are collected and sold in markets when unripe. The seeds are eaten raw and mixed with chiles in salsa. Although all three of these exotics contain either toxic compounds or irritants, they continue to be eaten on a regular basis (Table 2). *Dioscorea bulbifera* L., an Old World native and Category I exotic in southern Florida, also grows throughout Zapotitlán. However, it is difficult to find because people gather the aerial tubers. The tubers are usually roasted or boiled and then eaten; they contain alkaloids but this processing method may eliminate these compounds.

Table 3. Origin of some south Florida pest plants.

Scientific name	Origin
<i>Bidens alba</i> var. <i>radiata</i>	Mexico to Central America
<i>Solanum americanum</i>	South of Canada to South America
<i>Xanthosoma robustum</i>	Tropical America
<i>Jatropha curcas</i>	Tropical America
<i>Dioscorea bulbifera</i>	Asia, Africa
<i>Leucaena leucocephala</i>	Tropical America
<i>Lantana camara</i>	Tropical America
<i>Syngonium podophyllum</i>	Tropical America
<i>Portulaca oleracea</i>	Europe

Discussion

Most of the weeds and exotics mentioned in this paper are abundant but not rampant in Zapotitlán. People in need of nutritional and economic resources have developed ways of using these plants. Those initially brought to Florida for agriculture, when taken from their cultural context, lack of harvesting and control, may be problematic, e.g., *Ipomoea aquatica* Forssk. and *Dioscorea bulbifera*. Use of the reproductive parts (seeds, tubers, fruits) and young stems of these plants may help contain the spread of these plants. Though the fact remains that these plants remain a nuisance, their previous history and wide usage throughout parts of Mexico

Table 2. Noxious plants common to South Florida and Zapotitlán de Mendez, Puebla, Mexico.

Scientific name	English common name	Spanish/Totonac common name	Use in Florida	Use in Zapotitlán	Pharmacological data
<i>Bidens alba</i> var. <i>radiata</i>	Spanish needles	Mozote/ <i>x'tiyu snapapap</i> (<i>x'tiyu</i> -term for aster-like flower, <i>snapapap</i> -“white”)	Grows as a weed	Edible— Leaves cooked as a <i>quelite</i> . Medicinal- Juice from the cooked leaves is drunk for stomach pains, kidneys. For internal hemorrhages and bleeding, an infusion of the leaves is taken. For swollen feet a bath with the leaves is administered	The roots, stems, and leaves are reported to have an alkaloid. It has been shown to have diuretic and antidiabetic properties. Was extremely photoactive, and inhibited <i>B. cereus</i> , <i>E. coli</i> , and <i>S. cerevisiae</i>
<i>Portulaca oleracea</i>	Purslane	Verdolaga/ <i>x'puhl cac</i>	Grows as a weed in lawns		
<i>Solanum americanum</i>	Deadly night shade	Hierba Mora/ <i>muu stu'luut</i>	Grows as a weed in lawns	Edible-Young leaves boiled without salt and eaten fresh. Medicinal-Juice from boiled leaves is drunk for stomach aches and rashes	Fruits contain the alkaloids solamargine, solamdine. The stems, leaves, and flowers contain alkaloids. Inhibited <i>S. cerevisiae</i> . Reported to have antimyotic activity
<i>Xanthosoma robustum</i>		Mafafa blanca/ <i>paxni'cac</i> (<i>paxni</i> -“pig”, <i>cac</i> -“ <i>quelite</i> ”)		Edible-Young leaves. Medicinal- The leaves with honey and soda are employed as a compress for rashes and skin infections	Contains oxalic acids, a skin irritant. Tested positive for phenolics

Table 2. *concluded*

Scientific name	English common name	Spanish/Totonac common name	Use in Florida	Use in Zapotitlán	Pharmacological data
<i>Jatropha curcas</i>	Physic nut	Piñon/ <i>chut'a</i>	Ornamental	Edible-Seeds edible when toasted. These are ground and added to several dishes. Medicinal-The latex is applied to mouth and skin lesions	The stems, seeds, and leaves contain alkaloids. Members of the genus are reported to contain tannins, and the seeds cyanogenic glycosides. Both the latex and seeds inhibit <i>E. coli</i> and are phototoxic
<i>Dioscorea bulbifera</i>	Air potato	Papa de Burro/ Totonac- <i>tapa lad'ni</i>	Invasive exotic, no use	Edible- Tubers eaten boiled or roasted	Tubers, fruits, stems, and leaves contain alkaloids. Tested positive for phenolics and alkaloids. Many members of this genus contain steroidal saponins in their rhizomes
<i>Leucaena leucocephala</i>	Lead tree	Guaxi , Totonaco- <i>li'li'ka</i> , <i>guamuxi</i>	Invasive exotic	Edible- unripe seeds. The seeds are ground with chili and salt and eaten as a sauce. Medicinal- Seeds eaten to kill intestinal worms.	The genus is reported to contain hydrocyanic acid, tannic acid and leucaenine. An alkaloid mimosin is present in the seeds. Over eating the seeds can cause loss of hair
<i>Lantana camara</i>	Lantana	Ojo de pescado, Orozuz/ <i>x'laca stap'u- squii'ti</i> (<i>laca stap'u</i> "eye", <i>squi'ti</i> "fish")	Invasive exotic	Edible- Ripe fruits are eaten primarily by children. Medicinal- Leaves used as <i>chicadores</i> to avoid strokes. Also used for <i>susto</i> , dysentery from heat and colds. Notes- Primarily children snack on the ripe fruits.	The plant contains the alkaloid lantanine, and several several essential oils. It has demonstrated photoactive, cytotoxic, and spasmolytic properties
<i>Synгонium podophyllum</i>	Arrow head vine	Xapis	Invasive exotic	Edible- Fruit when ripe	The plant contains oxalic acids. It is a skin irritant when not handled properly

and other areas may provide some alternative control measures. Presently, members of the migrant community gather several edible exotics in southern Florida (*Yucca* sp., *Leucaena leucocephala*, etc.). While this may not have much effect on the exotics collected, the addition of certain exotic species to ethnic markets may help control aggressive plants. Although we consider many of these plants to be toxic, the Totonac have come up with ways of preparing these plants and eating them. Future studies would be needed to investigate the preparation of these plants and how this may affect toxic compounds.

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