ETHNOHORTICULTURAL STUDY OF ORNAMENTAL PLANTS IN ONE RURAL ZONE OF THE SIERRA NORTE DE PUEBLA[1]

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SUMMARY. In Totutla (Sierra Norte de Puebla) 244 ornamental species (wild plants and comercial cultivars) were found in home gardens, patios, terraces and at road sides. The inhabitant of that region select them by their multiple use: Esthetic, food and medicinal. Often rich collections are forming "hanging gardens" upon the outside walls. Out of this number, 58.2% were classified as introduced species and the rest as native ones. Species with advanced domestication formed 18.4%; endemic to Mexico were 6.97% and edible with ornamental potential 9.8%; 54 species belong to fruit and vegetables and 45 have some medicinal use. Collection of interesting and rare cultivars of exceptional beauty of *Begonia, Gloxinia, Caladium* and *Coleus* exist around and inside rural houses and patios.

KEY WORDS: Mexico, ornamental plants, rural gardens, patios.

ESTUDIO ETNOHORTICOLA DE LAS PLANTAS ORNAMENTALES DE UNA ZONA RURAL DE LA SIERRA NORTE DE PUEBLA

RESUMEN. En Totutla (Sierra Norte de Puebla) se han encontrado 244 especies de plantas ornamentales (silvestres y cultivares comerciales) en jardines caseros, interiores, patios, terrazas y a lo largo de los caminos. Los habitantes de esta región las seleccionan por sus valores múltiples: estético, alimenticio, medicinal. Frecuentemente son las colecciones que forman "un jardín colgante" sobre las paredes de las casas. De un total de 244 especies ornamentales, 58.2% son clasificadas como introducidas y el resto lo constituyen especies nativas, 18.4% son plantas silvestres en proceso de domesticación; 6.97% son endémicas para México y 9.8% son plantas comestibles con potencial ornamental; 54 especies son de uso alimenticio frutícola y hortalizas, 45 son medicinales. Existen colecciones de interesantes y raros cultivares de excepcional belleza de *Begonia, Gloxinia* y *Coleus* afuera y dentro de las casas rurales y patios.

PALABRAS CLAVE: México, plantas ornamentales, jardines rurales, patios.

INTRODUCTION

Since the beginning, plants in Mexican culture have been distinguished for their importance (Heyden, 1985). People have manifested this importance in their customs, traditions and art. The main reasons to conduct ethnobotanical studies is to detect the empirical knowledge of particular ethnic groups in the usage of vegetal resources for nutritional and medicinal use, as well as for forages and condiments, and the degree of domestication and/or preservation of the wild material. The investigation upon the use of vegetative resources during religious ceremonies, popular fiestas and every day life by the rural inhabitant to obtain or give aesthetic satisfaction is relatively rare, despite the fact that these are the ethnic groups who have used the aeshetical components of plantas in their works of art (Leszczyñska-Borys, 1933; 1994; Leszczyñska-Borys *et al.*, 1993; Leszczyñska-Borys and Sosa Cortés, 1993).

The formation of taste in a human group depends on the knowledge of tastes, reasons and preferences of other groups. Such cognition could have an impact on the whole national and international horticulture industry by detecting species and types of plants of aesthetic character and wide acceptance. Such knowledge should also have a significant impact on teaching an the creativity of breeders. In Mexico there is an enormous number of native species, wild and identified, but massive production is based mainly on introduced species like chrysanthemum, carnations, gerberas and roses, leaving the native ornamental potential virtually untapped. This situation exists

[1] This paper was presented at the 35 th Annual Meeting of the Society for Economic Botany (20-26 June 1994), México, D.F.

because of the lack of knowledge: (1) of ornamental values of native species, (2) of people's tastes and (3) of plantas already cultivated in rural homes, patios and home gardens. This exploration was began to provide some of this cognizance.

The objetive of this work is to show the species which have useful ornamental value and to document the particular tastes of a hard-to-access rural community (Totutla, Pue.), hidden between fog and mountains (Fig. 1). Totutla belongs to the municipality of Huitzilán de Serdán, which was founded in the prehispanic time by the Totonaco and Nahuatl groups. It has 644 inhabitants of which 203 speak the Totonaco and/or Nahuatl lenguage and Spanish. Currently, the mestizo is the predominant group (X Censo, 1980). The village is characterized by the influence of the moderate climate of the Sierra Norte and warm one from the Gulf of Mexico. The predominant climate is semiwarm and semihumid (A)C(fm) with rain throghout the year and a mean annual temperature higher than 18°C (Enciclopedia de los Municipios de Puebla, 1988). the closest flower, fruit and vegetables market is located in Zacapoaxtla, approximately 40 km from Totutla. Most of the road (23 km) is unpaved, the remaining 17 km are asphalted.

METHODOLOGY

An ethnohorticultural study was done through interviews with the owners of houses and gardens in three zones of Totutla, Puebla, in order to obtain information on the usage of plant resources with ornamental potential. The first zone (830 m over see level) refers to gardens located in the center (12 gardens, patios, terraces and interiors, including a garden of the Secondary School); the second (1250 m.o.s.l.) refers to gardens and patios of 5 houses and the cementery located on the north-west side of the village, and the third zone (1 060 m.o.s.l.) includes the south-east part (5 houses). These sites represent 16.2% of the households existing in Totutla. Self-observation, a bibliographical study and the collection of plants were done.

RESULTS

The comunity of Totutla, Puebla is very rich in ornamental plants. The analysis of 23 gardens and patios identified a total of 244 species of plants with ornamental usage. Table 1 shows two groups of plants of ornamental and utilitarian value (wild and in the domestication). Several of them (*Aristolochia, Begonia, Beloperone, Bouvardia, Fuchsia, Heliconia, Jacobinia, Tagetes, Tropaeolum, Zebrina*) are endemic to Latin America (Boyle, 1991). Even more interesting is that 18.4% are wild plants in the process of domestication.

The species designated as wild in the process of domestication are those placed in the garden and taken care of in a similar manner to commercially cultivated species. These domesticated materials could constitute important germplasm sources. These plants already cultivated or their progenitors could bear genes of resistance to pathogens, genes which are searched for in the genetic breeding programs in order to obtain new cultivars resistant to diseases (Borys and Leszczyñska-Borys, 1992; Boyle, 1991; Leszczyñska-Borys, 1993; Leszczyñska-Borys and Sosa Cortés, 1993).

Some species seem to be more prefered by particular families. Such is the case of *Gloxinia, Caladium* y *Coleus,* which adorn almost every wall in some of the houses. There is no doubt that these are very decorative species because of the richness of colors in their leaves. There are also representatives of *Gladiolus* spp. which escaped from cultivation after their introduction. At present, 4 glad cultivars are associated with basic crops: corn or sugar cane. One is well adapted to the local environment. There are 5 cultivars known locally as "chinos" and "gachupinas" (*Impatiens* spp.) in the home gardens; some of them are growing wild on the sides of rivers and streams in the study zone.

Plants always have had multiple functions, especially in familiar gardens (Tables 1, 2). Various ornamental species have been found to have a ceremonial use on the Saint Cross Day (Leszczyñska-Borys, 1994), from which the most distinguished were: chamaki (*Heliconia* spp.), hortensia (*Hydrangea macrophylla* Ser.), flower of the Saint Cross (*Befaria glauca,* Hmb. Bonpl.), flower of wax (*Palicourea padifolia* Will. ex Taylor y Lorence), tepejilote palm (*Chamaedorea tepejilote* Liemb.) and the All Saints palm (*Ceratozamia mexicana* Brongn.) (Leszczyñska-Borys, 1994). It is worth mentioning that the use of *Ceratozamia* is very common in the Sierra Norte of Puebla during the holidays (Day of Dead and All Saint's Day, Holy Week, Saint Michael Day, Fiesta of Huipil among others). This species is endemic to Mexico (Gilbert, 1984; Vovides, 1989) and of slow development considering that it belongs to the oldest and most primitive plants of Mexico. It is urgent to conserve it *in situ* and at the same time to establish propagation programs along with the region's native people who know and use it and value it as a part of their culture which should be preserved.

The inhabitants of Totutla like plants rich in aesthetical value and multiple purpose (ornamental,

Fig. 1. Map. of the Sierra de Puebla.

medicinal, ceremonial, nutritional, magic...). Various ornamental species have a nutritional use and with them the local people prepare some dishes. It is common to prepare beans, using chiltepin (*Capsicum annuum* L. var. *minimum.* (Miller) Heiser) and tequelite (*Peperomia* sp) with xocoyul stalks (*Begonia heracleifolia* Cham. et Schlecht.); to toss a salad of *Colocasia* spp. leaves (without veins) common name tequexquilit and to use the floral buds of esquimite (*Erythrina americana* Mill.) or the flowers of equizote (*Yucca elephantipes* Regl.) with scrambled eggs (Table 2).

CONCLUSIONS

Flora offer to ornamental horticulture a great richness of aesthetical value and character that could enhance the national and international market. The reference frame is formed by the interest which man has in the values and functions which the plant has in the proximity of the home, in the garden, patio, interior and at the workspace, in the rural and urban landscape. The fact that so many species (244) with ornamental potential were found in the home gardens, interiors and patios as well as their usage during holidays shows the important cultural role which plants play inside the community.

ACKNOWLEDGEMENTS

The authors thanks Dr. Jerzy Rzedowski and Biol. Graciela Calderón de Rzedowski from the Instituto of Ecology, Patzcuaro, Mich., Dr. Andrew P. Vovides, Biol. Sergio Avendaño Reyes and Biol. Carlos Durán Espinoza from the Institute of Ecology, Jalapa, Ver. for consulting and the identification of some collected species.

The authors also thanks Paula Smith for suggestions on English usage.

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TABLE 1. Ornamental plants wild and in the domestication in the family gardens of Totutla, Pue.

Species	Origin[z]				Common name
	Native			Introduced	
	EM	EA	O		
WILD					
Agave americana L.	EM				Agave
Ageratum houstonianum Mill.		EA			Shía
Anoda cristata (L.) Schl.		EA			Amapola morada, violeta
Baccharis conferta HBK	EM				Escobo. Escobillo
Bauhinia monandra Kurz.				I	Mariposa
Befaria glauca Humb. y Bonpl.					Flor de la Santa Cruz
Begonia heracleifolia Cham. et Schlecht.		EA			Xocoyul, Xocoyol
Brugmansia arborescens L.				I	Floripondio
Brugmansia candida (Pers.) Stafford.				I	Floripondio
Caesalpinia pulcherrima (L.) Swartz.		EA			Tabuchín
Campanula sp.				I	Manguita de Jesús
Castilleja tenuiflora Mart. et Gal.					Cola de borrego
Cedronella mexicana Benth.	EM				Toronjil
Ceratozamia mexicana Brongn.	EM				Tepzintle, palma de Todos Santos
Cirsium mexicanum DC.		EA			Cardo
Cletra mexicana DC.		EA			Palo blanco
Cnidoscolus multilobus (Pax) J.M. Johnston	EM				Mala mujer
Colocasia sp.				I	La negra. Luto de Juárez
Commelina coelestis Willd.		EA			Hierba de pollo
Conostegia xalapensis (Bonpl.) Don.		EA			Capulín
Cosmos bipinnatus Cav.	EM				Mirasol
Crocosmia aurea (Hook.) Planch.				I	Palmita
Cupressus lindleyi Klotsch.		EA			Cedro blanco
Cyperus sp.					Papiro
Erigeron delphinifolius					Chalchuán
Hedychium coronarium Koening&Jims.				I	Papatla, mariposa
Helianthus annuus L.	(Mexico+USA)		O		Girasol, chimalacatl (Náhuatl)
Ipomoea purpurea Lam.		EA			Manto
Ipomoea tricolor Cav.		EA			Manto
Kalanchoe pinnata Pers.				I	Botoncitos
Kohleria deppeana (Schl. et Cham) Fritsch.					Tochómitl, tlachichinole
Lagerstroemia indica L.				I	Astronómica
Leucaena esculenta (Moc. et Sees)	EM				Guaje
Liquidambar styraciflua L.	(Mexico to Canada)		O		Liquidambar, ocotzoquiaiutl (Náhuatl)
Malvaviscus arboreus Cav.		EA			Monacillo
Odontonema callistachyum (Sch. et Cham.) Kuntze					Flor de la Santa Cruz
Palicourea padifolia Will ex. Taylor y Lorence		EA			Flor de cera
Philodendron sp.					Filodendro
Pinguicula caudata Schl.					Violeta de monte
Pteridium aquilinum Kaulf.				I	Pesma
Ricinus communis L.				I	Higuerilla
Sambucus mexicana Prsl	EM				Sauco, xumet (Náhuatl)
Sedum craigii	EM				Siempre viva
Selaginella lepidophylla Hooker et Grev.	EM				Doradilla, texóchitl (Náhuatl)
Smilax glauca Walter.				I	Bejuco
Solandra nitida Swartz.	EM				Capa de oro

Species	Origin[z]				Common name
	Native			Introduced	
	EM	EA	O		
Solanum wedlandii Hook		EA			
Sphaeropteris horrida					Helecho arborescente
Spilanthes acmella L.		EA			Botoncillo
Syngonium sp.		EA			Syngonio
Tagetes erecta L.	EM				Cempasúchil
Tagetes filifolia Lag.		EA			Anís
Tagetes micrantha Cav.	(México+USA)		O		Anisillo
Tagetes patula	EM				Cempasúchil
Tecoma stans (L..) Juss. ex HBK.	(América)		O		Tronadora, retama
Tillandsia usneoides L.	(América)		O		Pashtle
Xanthosoma violaceum Schott.		EA			Tequeschquilit
Xanthosoma robustum sp.		EA			Tequeschquilit
WILD IN DOMESTICATION					
Adiantum tenerum Sw.					Helecho
Amorphophallus rivieri Dur.				I	Culebra
Anthurium crassinervium (Jacq.) Schott.		EA			Anturio, hoja de cuero
Antigonon leptopus Hook. et Arn.		EA			San Diego
Aristolochia grandiflora Swartz.		EA			Flor de pato, guaco
Begonia gracillis HBK.		EA			Ala de ángel
Begonia heracleifolia Cham. et Schlecht		EA			Xocoyul, xocoyol
Beloperone guttata Nees.		EA			Cachalaca
Bouvardia ternifolia Cav.	(Mexico+USA)		O		Trompetilla
Brugmansia arborescens L.				I	Floripondio
Brugmansia suaveolens (Willd.) Bercht y Presl.				I	Floripondio
Canna indica L.		EA			Platanillo
Cattleya deckeri K.L.					Flor de San Juan
Chamaedorea tepejilote Liemb.		EA			Palma tepejilote
Chrysanthemum parthenium Pers.				I	Crisantemo, hierba de Santa María
Cleome speciosa Raf.		EA			Barba de chivo
Commelina coelestis Willd.		EA			Hierba de pollo
Epiphyllum Haw. non. Pfeiff.					Nopalito
Fuchsia x hybrida Voss.					Aretillo
Gladiolus x hybridus				I	Palma
Gomphrena globosa L.					Moradilla
Heliconia bourgaeana O.B. Peters					Chamaki
Heliocereus sp.					Pitaya
Hylocereus undatus (Haw.)					Pitahaya, tenochtli (Náhuatl)
Hypoestes phyllostachya Baker				I	Hierba
Impatiens balsamina L.				I	Chino
Impatiens walleriana Hook f.				I	Gachupina
Ipomoea tricolor Cav.		EA			Estrella de mar, estrella de noche
Ixora occidentalis L.				I	
Jacobinia poliana (Nees) Lindau.	(Sudamérica)		O		Cola de zorra
Lantana camara L.		EA			Orozuz
Laelia speciosa HBK. Schltr.	EM				Orquidia
Mirabilis jalapa L.		EA			Maravilla, tlaquilin (Náhuatl)
Monstera deliciosa Liemb.		EA			Piñanona
Nephrolepis sp. Schot.					Helecho

Species	Origin[z]			Common name
	Native		Introduced	
	EM	EA	O	
Oncidium sp.				Mujercitas
Oxalis sp. L.		EA,		Trébol de suerte
Pedilanthus purpusii Brandeg	EM			Quebrado
Peperomia sp.			I	Tequelite
Phlebodium aureum L.			I	Helecho
Polygonum bistorta L.				
Portulaca grandiflora Hook.		EA		Verdolaga
Rhoeo spathacea Steam.		EA		
Salvia L.				Castor
Setcreasea pallida		EA		Maclale
Stanhopea hernandezii (Kunth) Schlechter.		EA		Toritos, coatzontecoxóchitl (Náhuatl)
Thunbergia alata Bojer				Ojo de pájaro
Tradescantia L.				
Yucca elephentipes Regel.		EA		Izote, equizote
Zebrina pendula Schnizl.		EA		Chiachiantl
Zinnia elegans Jacq.	EM			Cinia

[z] EM = endemic for Mexico; EA = endemic for Latin America; O = other.

TABLE 2. Edible plants with ornamental potential presented in home gardens.

Species part	Family	Common name	Edible (Portion)
Amaranthus hybridus L.	Amaranthaceae	Amaranto, huaitli	Seed
Begonia heracleifolia Cham.	Begoniaceae	Xocoyul	Stalk
Colocasia sp.	Araceae	Tequexquilit	Leaf
Capsicum annuum L.	Solanaceae	Chiltepin	Fruit
Carica papaya L.	Cariaceae	Papaya	Fruit
Citrus limetta Risso	Rutaceae	Lima de castilla	Fruit
Coffea arabica L.	Rubiaceae	Cafeto	Fruit
Crataegus pubescens HBK.	Rosaceae	Tejocote	Fruit
Cucurbita facifolia Bouché	Cucurbitaceae	Chilacayote	Fruit
Cucurbita pepo L.	Cucurbitaceae	Calabaza	Flower, fruit
Erythrina americana Mill.	Leguminosae	Esquimite	Flower
Ipomoea batatas (L.) Lam.	Convolvulaceae	Camote dulce	Root,
Manihot esculenta Crantz.	Euphorbiaceae	Yuca	Root
Monstera deliciosa Liemb.	Araceae	Piñanona	Fruit
Musa sapientum Lamb.	Musaceae	Plátano Tabasco	Fruit
Opuntia spp.	Cactaceae	Nopal	Stem
Pachyrrhizus erosus (L.) Urb.	Leguminosae	Jicama	Root
Peperomia sp.	Peperomiaceae	Tequelite	Leaf
Portulaca oleracea L.	Portulacaceae	Verdolaga	Stem, leaf
Rosa centifolia L.	Rosaceae	Rosa de castilla	Fruit
Sechium edule Sw.	Cucurbitaceae	Chayote o espino	Fruit, leaf, root
Stenocereus stellatus (Pfeiffer) Riccobono	Cactaceae	Pitaya roja	Fruit
Tigridia pavonia (L.F.) DC.	Iridaceae	Flor de tigre	Bulb
Yucca elephantipes Regl.	Agavaceae	Equizote	Flower