



Research Paper

**PLANT DIVERSITY IN CAMPO NOVO DO PARECIS HOMEGARDENS,
MATO GROSSO, BRAZIL**

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Abstract

Homegardens are disappearing from the urban scene, as real estate speculation advances with concrete buildings, with a minimum of green area available to alleviate the heat, in addition to the space for living with family and friends and children's leisure. The aim of this study was to survey the plant species kept in the homegardens of Campo Novo do Parecis, Mato Grosso, Brazil. Twenty homegardens were selected by the snowball technique, the maintainers were interviewed and guided tours were conducted with them to collect and identify the species. 134 species belonging to 22 botanical families were identified, with the largest number of species in the Asteraceae, Lamiaceae and Rutaceae families. The most frequent habit of growing species in homegardens was the herbaceous, with 88 species. The category of use with the largest number of species was food, with 63 taxa, belonging to 17 families, with predominance of the Asteraceae, Lamiaceae and Rutaceae family. The pineapple, acerola, cashew, guava, orange, papaya, pitanga and cassava species were present in more than 50% of the homegardens. The homegardens of Campo Novo do Parecis have great plant diversity. The food use followed by the medical use of most species, indicates the importance of encouraging the maintenance of diversity in backyards and these species for food security.

Key words: *Food security, medicinal plants, fruitful plants, species diversity.*

INTRODUCTION

Urban homegardens are forms of land use in which various species of trees are cultivated, together with annual crops and the raising of small animals around the

house, spaces that are maintained by the family and the products used to meet the family's nutritional needs, as well as energy and health [1].

The importance of homegardens is related to land use efficiency, species conservation and sustainability [2], food security and increased family income [3], species introduction and domestication [4], increased biodiversity [5]. Homegardens are important in the conservation of medicinal plants by rural and urban communities [6]. In Brazil, the uses of plant species kept in domestic homegardens for food and medicinal purposes stand out [2,7,8,9,10,11,12,13].

In Mato Grosso State, some ethnobotanical studies were carried out in homegardens proving the importance and different uses [3,13,14,15,16,17,18,19,20,21,22,23]. Unfortunately, homegardens are disappearing from the urban scene, as real estate speculation advances with concrete buildings, with a minimum of green area available to alleviate the typical heat of the region, in addition to the space for living with family and friends and children's leisure.

Thus, this study aimed to carry out a survey of the plant species used in homegardens in Campo Novo do Parecis, Mato Grosso.

MATERIALS AND METHODS

The municipality of Campo Novo do Parecis with an area of 9,448,384 km² is located in the northwest of the State, at coordinates 13°40'31" S and 7°53'31" west, at an altitude of 572 meters, with a population of 34,558 inhabitants [24].

The present study was carried out in twenty homegardens in the center of Campo Novo do Parecis-MT. In the selection of the interviewees, the snowball sampling technique was applied [25], that is, the interview with the person responsible for a homegarden was started, chosen at random and, at the end of the interview, the interviewee was asked to indicate someone else and so on. Direct and participant observation techniques were used, and the main ones involved in maintaining the yards were asked about the management of the plants and the parts used for each use [26].

The on-site verification of the species cited by the interviewees was carried out using the guided tour method, which consists of going to the field with the informant in order to substantiate and validate the names of the plants mentioned in the interviews [27].

In each homegarden visited, surveys of plant species were carried out with the collection of samples for exsiccates and identification at the Herbarium of the Federal University of Mato Grosso. The information was compiled in the form of a database, using text matrices, according to the methodology proposed by [28].

RESULTS AND DISCUSSION

134 species were identified, belonging to 22 botanical families (Table 1). The botanical families with the largest number of species were Asteraceae, Lamiaceae and Rutaceae (Figure 1).

Table 1. Family, scientific name, vernacular name, growth habit, origin, categories of use and frequency of species in the homegardens of Campo Novo do Parecis, MT.

Family / scientific name	vernacular name	habit	origin	use	frequency (%)
Adoxaceae					
<i>Sambucus nigra</i> L.	sabugueiro	herbaceous	E	med	5
Alismataceae					
<i>Echinodorus macrophyllus</i> (Kunth) Micheli.	chapéu de couro	herbaceous	N	med	5
Amaranthaceae					
<i>Celosia cristata</i> L.	crista de gallo	herbaceous	N	med	5
<i>Gomphrena globosa</i> L.	suspiro	herbaceous	N	med	5
<i>Alternanthera bettzichiana</i> (Regel) G. Nicholson	anador	herbaceous	N	med	5
Anacardiaceae					
<i>Spondias dulcis</i> Parkinson	caja manga	arboreal	N	food	5
<i>Anacardium occidentalis</i> L.	caju	arboreal	N	food	75
<i>Mangifera indica</i> L.	manga	arboreal	E	food	5
<i>Spondias purpurea</i> L.	seriguela	arboreal	N	food	15
Annonaceae					
<i>Annona squamosa</i> L.	fruta de conde	arboreal	E	food	30
<i>Annona pisonis</i> Mart.	pinha	shrub	E	food	20

<i>Annona muricata</i> L.	graviola	arboreal	E	food	15
Araliaceae					
<i>Schefflera actinophylla</i> Harms	chefera	arboreal	N	orn	15
Araceae					
<i>Dieffenbachia picta</i> Schott	comigo ninguém pode	herbaceous	E	mag	65
<i>Zantedeschia aethiopica</i> (L.) Spreng	copo de leite	herbaceous	E	orn	5
<i>Colocasia esculenta</i> (L.) Schott	inhame	herbaceous	E	food	20
<i>Scinapsus aureus</i> (Linden & André) Engl.	jiboia	herbaceous	E	orn	5
<i>Colocasia antiquorum</i> (L.) Schott	taioba	herbaceous	E	food	5
Araucariaceae					
<i>Araucaria augustifolia</i> L	pinheiro	arboreal	N	orn	5
Arecaceae					
<i>Butia capitata</i> L.	butiá	shrub	N	orn	5
<i>Cocos nucifera</i> L.	coco	shrub	E	food	20
<i>Syagrus weddeliana</i> (Wendl.) Becc	coqueiro de jardim	herbaceous	E	orn	65
Asteraceae					
<i>Alternanthera brasiliiana</i> (L.) O. Kunt.	terramicina	herbaceous	N	med	10
<i>Lactuca sativa</i> L.	alface	herbaceous	E	food	5
<i>Chicorium intybus</i> L.	almeirão	herbaceous	E	food	20
<i>Matricaria chamomilla</i> L.	camomila	herbaceous	E	med	10
<i>Chrysanthemum anethifolium</i> L.	crisantemo	herbaceous	E	orn	5
<i>Tagetes erecta</i> L.	cravo de defunto	herbaceous	E	orn	10
<i>Baccharis genistelloides</i> var. <i>trimera</i> (Less.) Baker	carqueja	herbaceous	N	med	10
<i>Dahlia pinnata</i> L.	dalia	herbaceous	E	orn	15
<i>Helianthus annus</i> L	girassol	herbaceous	E	med	5
<i>Chaptalia nutens</i> (L.) Polak.	lingua de vaca	herbaceous	N	med	5
<i>Artemesia absinthium</i> L.	losna	herbaceous	N	med	10
<i>Crisanthemum leucanthemum</i> L.	margarida	herbaceous	E	orn	20
Begoniaceae					
<i>Begonia elatior</i> Hort. ex Steud	begonia	herbaceous	E	orn	5
Boraginaceae					
<i>Symphytum officinale</i> L.	confrei	herbaceous	N	med	5
Blechnaceae					

<i>Blechnum brasiliense</i> Desv.	samambaia	herbaceous	E	orn	15
Brassicaceae					
<i>Brassica oleracea</i> var. <i>italica</i> Plenck	brocolis	herbaceous	E	food	5
<i>Daucos carota</i> L.	cenoura	herbaceous	E	food	10
<i>Brassica oleracea</i> var. <i>acephala</i> D.C.	couve	herbaceous	E	food	10
<i>Petroselium crispum</i> Nym. (Mill.)	salsa	herbaceous	E	food	30
<i>Eruca sativa</i> Mill.	rucula	herbaceous	E	food	5
Bromeliaceae					
<i>Ananas comosus</i> (L.) Merril	abacaxi	herbaceous	E	food	55
Cactaceae					
<i>Cereus jamacaru</i> DC	cacto	herbaceous	N	orn	5
Cannaceae					
<i>Canna edulis</i> Kerr-Gawler	birú	herbaceous	N	food	5
Combretaceae					
<i>Terminalia cattapa</i> L.	sete copas	arboreal	N	orn	5
Commelinaceae					
<i>Callicia repens</i> L.	dinheirinho	herbaceous	E	mag	5
Convolvulaceae					
<i>Ipomeae batatas</i> L.	batata doce	herbaceous	N	food	15
Chenopodiaceae					
<i>Chenopodium ambrosioides</i> L.	erva de santa maria	herbaceous	E	med	5
Chrysobalanaceae					
<i>Licania tomentosa</i> (Benth.) Fritsch	oiti	arboreal	N	orn	10
Cucurbitaceae					
<i>Cucurbita pepo</i> L.	abóbora	herbaceous	E	med	20
<i>Sechium edulis</i> L.	chuchu	herbaceous	E	food	20
<i>Citrullus vulgaris</i> L.	melancia	herbaceous	E	food	15
<i>Cucurbita maxima</i> L.	moranga	herbaceous	E	food	10
<i>Cucumis sativus</i> L.	pepino	herbaceous	E	food	5
<i>Cucumis melo</i> L.	melão	herbaceous	E	food	5
Cupressaceae					
<i>Cupressus thuja</i> Targ.	cipreste	herbaceous	E	orn	5
Euphorbiaceae					

<i>Euphorbia milii</i> Des Moulins	coroa de cristo	herbaceous	E	orn	5
<i>Manihot esculenta</i> Cranz	mandioca	herbaceous	N	food	65
<i>Pedilanthus tithymaloides</i> (L.) Poit.	pinhão de jardim	herbaceous	E	orn	5
<i>Phylanthus niruri</i> L.	quebra pedra	herbaceous	N	med	5
Fabaceae					
<i>Phaseolus vulgaris</i> L.	feijão	herbaceous	E	food	20
<i>Vigna unguiculata</i> L. Walp.	feijão miudo	herbaceous	E	food	5
<i>Delonix regia</i> (Boj. ex. Hook.) Raf	flamboiant	arboreal	E	orn	5
<i>Leucaena leucocephala</i> (Lam.) de Wit	leucena	shrub	E	orn	65
<i>Tamarindus indica</i> L.	tamarindo	arboreal	E	food	20
<i>Glycine max</i> (L.) Maerrill	soja	herbaceous	E	food	5
<i>Mimosa caesalpiniæfolia</i> Benth.	sansão do campo	arboreal	E	orn	5
Gentianaceae					
<i>Tachia guianensis</i> Aub.	caferana	shrub	E	med	10
Lamiaceae					
<i>Rosmarinus officinalis</i> L.	alecrim	herbaceous	E	med	10
<i>Coleus barbatus</i> Benth.	boldo	herbaceous	E	med	55
<i>Leucas martinensis</i> (Jacq.) R. Br.	catinga de mulata	herbaceous	E	med	5
<i>Solenostemon scutellarioides</i> L.	coração magoado	herbaceous	E	orn	5
<i>Mentha piperita</i> L.	hortela	herbaceous	E	med	25
<i>Origanum majorona</i> L.	manjerona	herbaceous	E	med	10
<i>Mentha pulegium</i> L.	poejo	herbaceous	E	med	30
<i>Leonotis nepetaefolia</i> (L.) R. Br.	rubim	herbaceous	E	med	5
Lauraceae					
<i>Persea americana</i> Mill.	abacate	arboreal	E	med	25
<i>Cinnamomum camphora</i> (L.) J. Presl	alcanfor	arboreal	E	med	5
Liliaceae					
<i>Allium sativum</i> L.	alho	herbaceous	E	food	5
			E		
<i>Aloe vera</i> L.	babosa	herbaceous		med	5
<i>Allium schoenoprasum</i> L.	cebolinha	herbaceous	E	food	
<i>Sansevieria trifasciata</i> Hort ex Pain	espada de são jorge	herbaceous	E	orn	25
Malvaceae					

<i>Gossypium barbadense</i> L.	algodão	shrub	E	med	5
<i>Hibiscus sabdariffa</i> L.	papoula	herbaceous	E	orn	5
<i>Hibiscus esculentus</i> L. Moench.	quiabo	herbaceous	E	food	30
Malpighiaceae					
<i>Malpighia glabra</i> L.	acerola	shrub	E	food	55
Moraceae					
<i>Morus nigra</i> L.	amora	arboreal	E	med	10
<i>Ficus carica</i> L.	figo	herbaceous	E	food	10
Musaceae					
<i>Musa paradisiaca</i> Kuntze	banana	herbaceous	E	food	5
<i>Musa acuminata</i> Kuntze	banana nanica	herbaceous	E	food	20
Myrtaceae					
<i>Eucalyptus globulus</i> Labill.	eucalipto	arboreal	E	orn	5
<i>Myrciaria cauliflora</i> Berg.	jabuticaba	arboreal	N	food	
<i>Psidium guajava</i> L.	goiaba	arboreal	N	food	55
<i>Eugenia cumini</i> (L.) Druce	jambo	arboreal	E	food	10
<i>Syzygium jambolatum</i> (L.) Skeels	jamelão	arboreal	E	med	5
<i>Eugenia uniflora</i> L.	pitanga	arboreal	N	food	55
Melastomataceae					
<i>Tibouchina granulosa</i> Desf.	flor de quaresma	arboreal	N	orn	5
Nyctaginaceae					
<i>Bougainvillea glabra</i> Choisy	bouganvile	shrub	E	orn	5
Poaceae					
<i>Paspalum notatum</i> Flugge	grama	herbaceous	E	orn	85
<i>Zea mays</i> L.	milho	herbaceous	E	food	25
Phytolacaceae					
<i>Petiveria aliacea</i> L.	guine	herbaceous	N	med	10
Hydrangeaceae					
<i>Hydrangea macrophylla</i> Ser.	hortencia	herbaceous	E	orn	5
Mimosaceae					
<i>Inga edulis</i> Mart.	inga	herbaceous	N	food	15
Moraceae					
<i>Artocarpus integrifolia</i> L.	jaca	arboreal	N	food	10

Apocynaceae

<i>Plumeria alba</i> L.	jasmim	arboreal	E	med	15
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Caricaceae

<i>Carica papaya</i> L.	mamão	herbaceous	N	food	60
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Passifloraceae

<i>Passiflora edulis</i> Sims.	maracujá	herbaceous	N	food	45
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Punicaceae

<i>Punica granatum</i> L.	romã	shrub	E	med	5
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Plantaginaceae

<i>Plantago major</i> L.	tanchagem	herbaceous	N	med	5
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Pteridaceae

<i>Adiantum cappilus-veneris</i> L.	avenca	herbaceous	N	orn	10
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Poaceae

<i>Sacharum officinarum</i> L	cana de açucar	herbaceous	E	food	15
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Rosaceae

<i>Prunus cerasus</i> L.	cereja	herbaceous	E	food	5
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<i>Rosa arvensis</i> Hud.	roseira	shrub	E	orn	55
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<i>Pyrus communis</i> L	pera	arboreal	E	food	5
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<i>Fragaria vesca</i> L.	morango	herbaceous	E	food	10
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Rutaceae

<i>Ruta graveolens</i> L.	arruda	herbaceous	N	med	30
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<i>Citrus aurantium</i> subsp. <i>bergamia</i> (Risso) Wight & Arn.	bergamota		N		10
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<i>Citrus limonum</i> Osbeck	limão	shrub	N	food	30
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<i>Citrus bigaradia</i> Risso & Poit.	limão cravo	shrub	N	food	5
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<i>Citrus aurantifolia</i> (Christm.) Swingle.	limão galego	shrub	N	food	15
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<i>Citrus aurantium</i> L.	laranja	shrub	N	food	70
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<i>Citrus latifolia</i> Tanaka	limão taiti	shrub	N	food	5
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<i>Citrus reticulata</i> L.	poncan	shrub	N	food	15
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Solanaceae

<i>Solanum melongena</i> L.	beringela	herbaceous	E	food	5
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<i>Capsicum frutescens</i> L.	pimenta	herbaceous	N	food	10
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<i>Capsicum annuum</i> L.	pimentão	herbaceous	N	food	25
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<i>Lycopersicum esculentum</i> L.	tomate	herbaceous	N	food	30
<i>Solanum gilo</i> Raddi	jilo	herbaceous	N	food	20
Umbelifera					
<i>Coriandrum sativum</i> L.	coentro	herbaceous	E	food	5
Verbenacea					
<i>Duranta repens</i> L.	pingo de ouro	herbaceous	E	orn	40
<i>Lippia alba</i> (Mill.) Brown.	erva cidreira	shrub	N	med	30
Zingiberaceae					
<i>Curcuma longa</i> L.	açafrão	herbaceous	E	med	5
<i>Zingiber officinale</i> Rosc.	gengibre	herbaceous	E	med	5

Legend: med= medicinal, food=food, orn=ornamental, mag=magic

In other studies, a greater number of species was found in the Lamiaceae and Asteraceae family, as in the states of Espírito Santo [30], Goiás [31], Maranhão [32], Minas Gerais [33] Paraná [34], Rio Grande do Sul [35], Rondônia [36], Santa Catarina [37], Mato Grosso [21], São Paulo [38]. Possibly because most species of these families have secondary compounds with antimicrobial and anti-inflammatory action, among other functions [39] with effects confirmed by scientific studies [40].

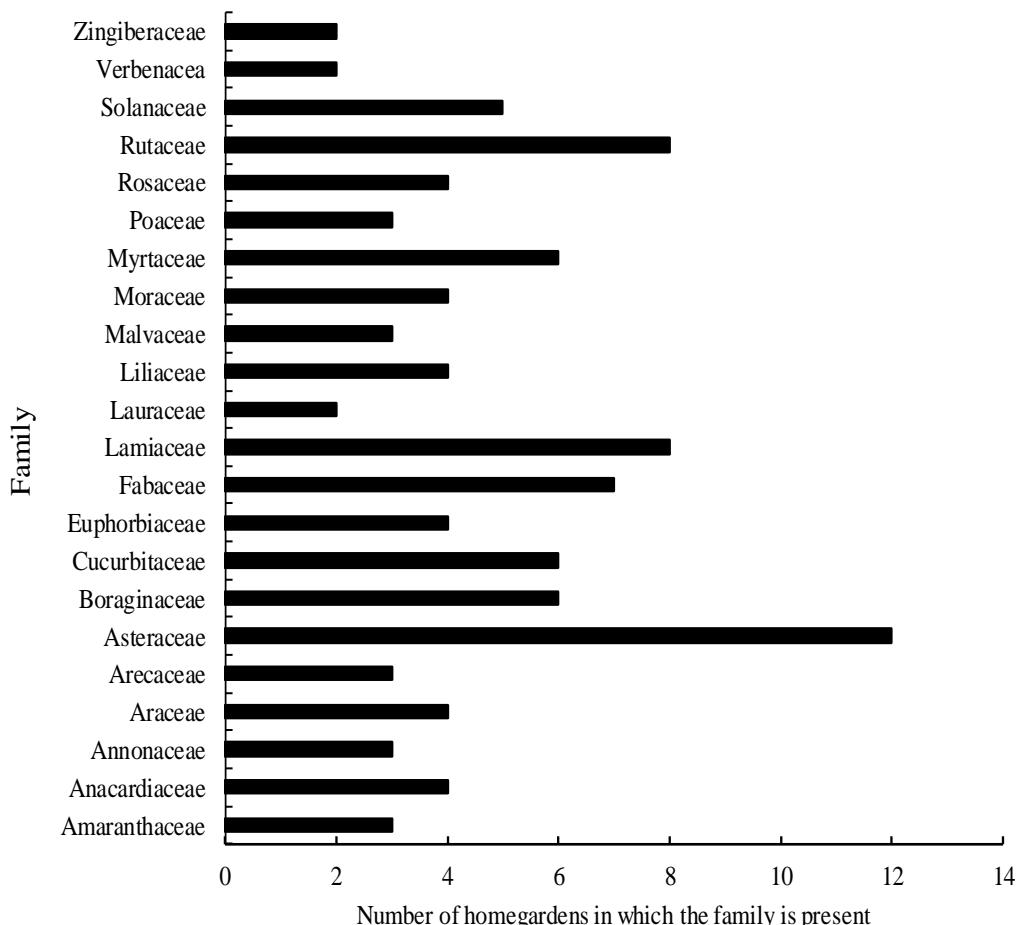


Figure 1. Botanical families present in the homegardens of Campo Novo do Parecis-MT.

The most frequent growth habit of species in homegardens was herbaceous, with 88 species, while shrub and tree species were represented by 22 and 24 species, respectively (Table 1). The predominance of herbaceous species was observed in other studies [22,30,31,38], possibly due to the ease of growing herbs in homegardens.

The category of use with the largest number of species was food, with 63 taxa, belonging to 17 families, with predominance of the Asteraceae, Lamiaceae and Rutaceae family (Figure 2). The pineapple, acerola, cashew, guava, orange, papaya, pitanga and cassava species were present in more than 50% of the homegardens, most of them native species, differently from what was found in Boa Vista-RR homegardens in which the cultivation of fruit trees is a pattern that concentrates the choice on a few species, not originating in the Amazon, but traditionally consecrated by the success in fruit production [41].

In the homegardens of Santarém-PA, was found the presence of 33 species of fruit plants in a total of 98 species [42]. The homegardens play an important role in food security, due to the richness of species found in tree and shrub extracts, mostly by species that provide healthy food, with a wealth of nutrients [12].

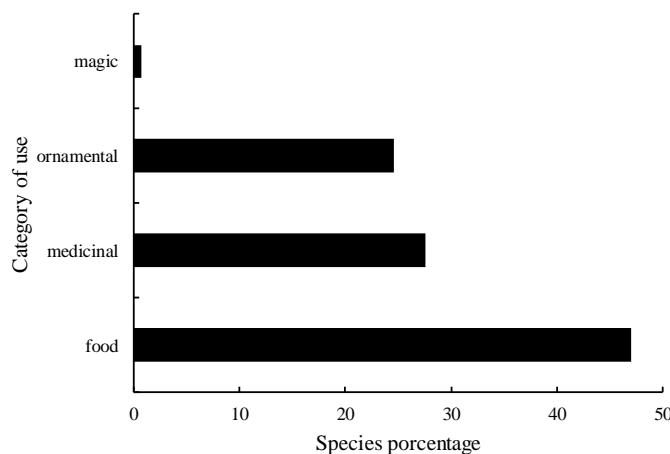


Figure 2. Categories of use of species in the homegardens of Campo Novo do Parecis-MT.

Most species are not native (87 taxa), as found in the survey carried out in homegardens of Alta Floresta - MT [23] and Cáceres-MT [13]. It is common to observe the presence of

native species in the homegardens of humid and arid tropical regions, in all of them there is dominance of exotic plants [43]. The use of exotic species that have been cultivated and used for a long time by the Brazilian population is frequent, as is the case of representatives of the Lamiaceae family (*Coleus barbatus*, *Rosmarinus officinalis*, *Mentha piperita* and *Origanum majorana*), being this family and these species mentioned in several other studies with homegardens in Mato Grosso [15,17,18,21,22,23].

Medicinal species play an important role in health care and are present in more than 30% of homegardens (Table 1). It appears that common symptoms such as colds, flu and inflammation are treated with teas (Table 2).

Table 2. Medicinal species in the homegardens of Campo Novo do Parecis-MT and their uses.

Medicinal species	Vernacular name	Uses
<i>Aloe vera</i> L.	babosa	Burns, healing, digestive
<i>Alternanthera bettzichiana</i> (Regel) G. Nicholson	anador	Healing wounds and against inflammation
<i>Alternanthera brasiliensis</i> (L.) O. Kuntze	terramicina	Healing wounds, ulcers and against inflammation
<i>Artemesia absinthium</i> L.	losna	Tea against worms, abortion
<i>Baccharis genistelloides</i> var. <i>trimera</i> (Less.) Baker	carqueja	Protective for the liver
<i>Celosia cristata</i> L.	crista de gallo	Cough tea, bronchitis, washing wounds
<i>Chaptalia nutans</i> (L.) Polak.		
	língua de vaca	Tea for flu, cough, sore throat
<i>Chenopodium ambrosioides</i> L.	erva de santa maria	To treat worms and broken bone
<i>Cinnamomum camphora</i> (L.) J. Presl	alcanfor	Inflammation, furuncle, rheumatism
<i>Coleus barbatus</i> Benth.	boldo	Liver and kidneys
<i>Cucurbita pepo</i> L.	abóbora	Seeds against worms and inflammation
<i>Curcuma longa</i> L.	açafrão	Healing, against inflammation and cancer

<i>Echinodorus macrophyllus</i> (Kunth) Michel.	chapéu de couro	Blood purifier, inflammation, swollen feet
<i>Gomphrena globosa</i> L.	suspiro	Tea for sore throat, cough and inflammation
<i>Gossypium barbadense</i> L.	algodao	Healing, washing after delivery
<i>Helianthus annus</i> L.	girassol	High blood pressure, cholesterol, inflammation
<i>Leucas martinensis</i> (Jacq.) R. Br.	cordão de são francisco	Inflammation, kidneys, rheumatism
<i>Lippia alba</i> (Mill.) Brown.	erva cidreira	Soothing tea, digestion, insomnia, high blood pressure
<i>Matricaria chamomilla</i> L.	camomila	Tea for inflammation, stomach pain, gas
<i>Morus nigra</i> L.	amora	Tea to relieve the symptom of menopause
<i>Origanum manjorona</i> L.	majerona	Healing, cough and flu
<i>Persea americana</i> Mill.	abacate	Diarrhea, hepatitis, kidneys, high cholesterol
<i>Petiveria aliaceae</i> L.	guine	Inflammation and abortion
<i>Phylanthus niruri</i> L.	quebra pedra	Kidney stone, intestinal infection
<i>Plantago major</i> L.	tanchagem	Tea for sore throat, colds, as an expectorant, lung disease, asthma and bronchitis
<i>Plumeria alba</i> L.	jasmim	Heart problems
<i>Punica granatum</i> L.	romã	Cough tea, flu
<i>Rosmarinus officinalis</i> L.	alecrim	Stimulant
<i>Ruta graveolens</i> L.	arruda	Varicose veins, eye wash, abortion
<i>Sambucus nigra</i> L.	sabugueiro	Tea for fever, measles
<i>Symphytum officinale</i> L.	confrei	Healing, inflammation, cough, dysentery, diabetes and dysentery
<i>Syzygium jambolatum</i> (L.) Skeels	jamelao	Diabetes and dysentery
<i>Tachia guianensis</i> Aub.	canfora	Stomach pain and worms
<i>Zingiber officinale</i> Rosc.	gingibre	Cold, cough, flu tea

Among the species of medicinal use there is a predominance of the family Asteraceae and Lamiaceae. These families concentrate the largest number of medicinal species in most studies, as found in Mato Grosso [21,23], in Espírito Santo [30], in Santa Catarina

[30], in São Paulo [38]. The species of the Lamiaceae family stand out for being rich in essential oils, which gives the same aromatic and medicinal properties, hence the greater representativeness of this family in the work on the survey of plant species in domestic homegardens [9, 11, 44, 45].

CONCLUSIONS

The domestic homegardens of Campo Novo do Parecis, Mato Grosso have great plant diversity, with 134 species belonging to 22 botanical families. The most frequent families are Asteraceae, Lamiaceae and Rutaceae, with emphasis on the species *Anacardium occidentalis*, *Carica papaya*, *Citrus aurantium*, *Dieffenbachia picta*, *Manihot esculenta*, *Leucaena leucocephala*, *Paspalum notatum* and *Syagrus weddeliana*. The food use followed by the medical use of most species, indicates the importance of encouraging the maintenance of diversity in homegardens and these species for food security.

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