

A Tree Inventory in The Homegarden at Tambakrejo Village, Jombang Regency

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ABSTRACT

Biodiversity has many variations in shape, appearance, number and characteristics that are seen in improving ecosystems, species levels and genetic levels. The homegarden can create environmental conservation, especially local trees. Tambakrejo Village is an example of an urban area located in Jombang District with the highest population density of 6.88 people/km² with a population of 12,279 people. This study aimed to determine the types of trees in the homegarden area of Tambakrejo Village, Jombang Regency. Data collection was carried out by observing each type of tree in 68 observation sample plots in the Tambakrejo Village homegarden area. The results of the observations found 414 tree species that belong into 26 types of families. Most of these tree species came from the Anacardiaceae family as many as 91 tree species.

Keywords: Tree Inventory; Homegarden; Jombang.

INTRODUCTION

As one of the world's biodiversity centers, Indonesia has invaluable biodiversity potential. Biodiversity has many variations in form, appearance, number and properties that are seen at the level of ecosystems, species levels and genetic levels (Nasirudin & Qomariyah, 2021). The diversity of trees in the homegarden is part of the biodiversity owned by the community around where they live. The homegarden is land that is around human activities that still have a relationship with home ownership (Roosenani et al, 2020). The homegarden can create environmental conservation, especially local trees. In addition, the role and used of the homegarden varies from one area to another, this depended on the level of need, socio-cultural, educational level, physical and local ecological factors (Zufahmi *et al.*, 2020).

As time goes on, tree vegetation continues to decline, one of the factors is the conversion of homegarden land into residential areas. Tambakrejo Village is an example of an urban area located in Jombang District with the highest population density of 6.88 people/km² with a population of 12,279 people (Central Bureau of Statistics Jombang., 2020). The denser the population, the lowered the index of tree diversity and evenness in an area (Fajarwati *et al.*, 2020). Based on the description above, it was importing to conducted research on homegarden land regarding tree inventory, which is useful for developing village potential, especially on homegarden commodity trees (Hakim et al, 2020). The purposed of this study was to determined the types of homegarden trees in Tambakrejo Village, Jombang District, Jombang Regency, East Java.

METHOD

This research was conducted for 3 months, started from February to May 2021 in Tambakrejo Village, Jombang Regency. There were 17 research locations in each hamlet, namely Dusun Tambakberas, Dusun Ngedang, Dusun Nglungu and Dusun Petengan so that the total research location was 17 x 4 = 68 plots. Data collection was carried out by observing each species found in the homegarden.

The parameters observed were all strata 3 tree species with a height of 2-4 m (Septiawan et al., 2018) located in Tambakrejo Village. The tools used in this research were stationery, camera, roll meter. The materials used were notebooks, observation sheets, 10 x 10 m plots, and homegarden trees in the research location. The species found were then identified used the book Flora Steenis et al., 2008. The

tree data were analyzed qualitatively and presented in the form of diagrams to made it easier to drew conclusions.

RESULT

Based on the results of the study (Table 1), there was 414 individuals and 26 species of strata 3 trees spread acrossed 4 hamlets in Tambakrejo Village. The homegarden tree species belonged to 30 families that make up the diversity of the residents' homegardens. This number was far less than the species composition found in the Tanjungan area in the Tanggamus district of Lampung, namely 155 species, 15 cultivars and 5 variants belonging to 58 families (Wakhidah et al., 2020).

Tabel. 1 Homegarden Trees in Tambakrejo Village, Jombang Regency

No	Local Name	Total	Family	Species
1	Alpukat	6	Lauraceae	<i>Persea americana</i>
2	Anggur	1	Vitaceae	<i>Vitis vinivera</i>
3	Asem	1	Fabaceae	<i>Tamarindus indica</i>
4	Belimbing	18	Oxalidaceae	<i>Averrhoa carambola</i>
5	Blinjo	1	Gnetaceae	<i>Gnetum gnemon</i>
6	Buah tin	1	Moraceae	<i>Ficus carica</i>
7	Belimbing wuluh	2	Oxalidaceae	<i>Averrhoa bilimbi</i>
8	Coklat	3	Malvaceae	<i>Theobroma cacao</i>
9	Daun salam	2	Myrtaceae	<i>Syzygiumpolyanthun</i>
10	Delima	1	Punicaceae	<i>Punica granatum</i>
11	Durian	1	Malvaceae	<i>Durio</i>
12	Gadung	6	Dioscoreaceae	<i>Dioscorea hispida</i>
13	Jambu air	10	Myrtaceae	<i>Syzygium aqueum</i>
14	Jambu biji	5	Myrtaceae	<i>Psidium guajava</i>
15	Jambu darsono	6	Myrtaceae	<i>Syzygium malaccense</i>
16	Jambu klampok	3	Myrtaceae	<i>Syzygium sp</i>
17	Jambu kristal	1	Myrtaceae	<i>Psidium guajava (l) merr</i>
18	Jati	5	Verbenaceae	<i>Tectona grandis linn. F</i>
19	Jeruk	4	Rutaceae	<i>Citrus sp.</i>
20	Jeruk bali	1	Rutaceae	<i>Citrus sinensis</i>
21	Jeruk nipis	8	Rutaceae	<i>Citrus x aurantifolia.</i>
22	Jeruk pecel	1	Rutaceae	<i>Citrus amblycarpa</i>
23	Juwet	1	Myrtaceae	<i>Syzygium cumini</i>
24	Kamboja	1	Apocynaceae	<i>Plumeria sp.</i>
25	Kapas	1	Malvaceae	<i>Gossypium</i>
26	Kelengkeng	26	Sapindaceae	<i>Dimocarpus longan lour</i>
27	Kembang turi	1	Fabaceae	<i>Sesbania grandiflora</i>
28	Kenikir	3	Compositae	<i>Cosmos caudatus</i>
29	Keres	10	Muntingiaceae	<i>Muntingia calabura</i>
30	Kesemek	2	Ebanaceae	<i>Diospryros kaki lf.</i>
31	Ketepeng	1	Fabaceae	<i>Senna alata</i>
32	Kluwih	9	Moraceae	<i>Artocarpus camansi</i>
33	Kurma	1	Arecaceae	<i>Phoenix dactylifera</i>
34	Lamtoro	30	Mimosaceae	<i>Leucaena leucocephala (lam.) De w</i>
35	Mahoni	1	Meliaceae	<i>Swietenia macrophylla</i>
36	Mangga gadung	51	Anacardiaceae	<i>Mangifera indica L.</i>

No	Local Name	Total	Family	Species
37	Mangga kopyor	2	Anacardiaceae	<i>Mangifera indica</i> L.
38	Mangga manalagi	4	Anacardiaceae	<i>Mangifera indica</i> L.
39	Mangga podang	33	Anacardiaceae	<i>Mangifera indica</i> L.
40	Mangga sepat	1	Anacardiaceae	<i>Mangifera indica</i> L.
41	Manggis	1	Clusiaceae	<i>Garcinia mangostana</i> L.
42	Matoa	1	Sapindaceae	<i>Pometia pinnata</i>
43	Murbei	1	Rosaceae	<i>Fragaria vesca</i> L.
44	Nangka	35	Moraceae	<i>Artocarpus heterophyllus lam</i>
45	Rambutan	26	Sapindaceae	<i>Nephelium lappaceum</i> L.
46	Randu	4	Malvaceae	<i>Ceiba pentandra</i> (L.) Gaertn
47	Ringin	1	Moraceae	<i>Ficus benjamina</i> L.
48	Salak	33	Palmae	<i>Salacca zalacca</i>
49	Sawo	6	Sapotaceae	<i>Manilkara zapota</i>
50	Sengon	6	Fabaceae	<i>Albizia chinensis</i>
51	Sirsak	6	Annonaceae	<i>Annona muricata</i> L.
52	Srikaya	13	Annonaceae	<i>Annona squamosa</i> L.
53	Sukun	14	Moraceae	<i>Artocarpus altilis (parkinson) fosberg</i>
54	Trembesi	2	Fabaceae	<i>Albizia saman</i> (jacq.) Merr
	Total	414		

Discussion

Based on Figure 1 of all the families found, there are 18 families with tree species > 1. In the **Anacardiaceae** family, 91 tree species were found which have woody stems with resin channels, odd pinnate leaves (Steenis et al., 2008). Types of homegarden trees in Tambakrejo Village belonging to the Anacardiaceae family include mango trees (*Mangifera indica* L). Mango fruit (*Mangifera indica*) has a rather thick flesh and is yellow when it is ripe and this mango is consumed directly (Nurrahma, 2021).

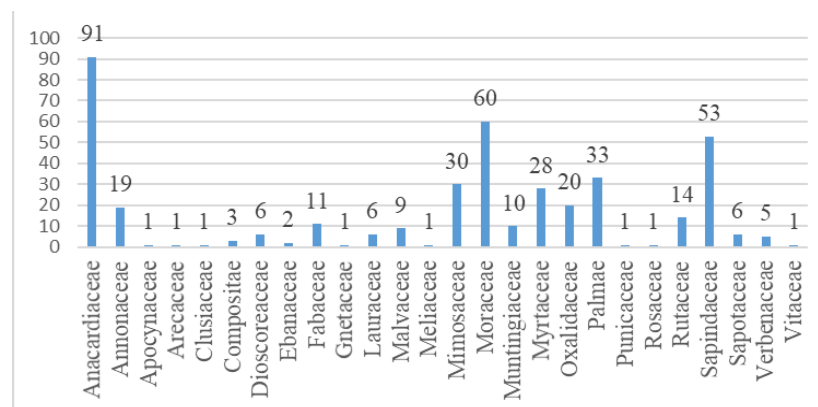


Figure 1. Family Distribution of Tree Plants in the Homegarden Area of Tambakrejo Village, Jombang Regency

Moraceae has the same number of 60 tree species. For the Moraceae family, it has the characteristics of shrubs or trees that have a lot of light yellow sap, side leaf bones that are wide apart from each other, which have benefits for clothing from tree bark, firewood, rubber sandpaper etc (Steenis et al., 2008). Types of homegarden trees in Tambakrejo Village belonging to the Moraceae family include tin (*Ficus carica*), jackfruit (*Artocarpus heterophyllus*), kluwih (*Artocarpus camansi*), banyan (*Ficus benjamina* L.) and breadfruit (*Artocarpus altilis*).

The **Sapindaceae** family was found in a number of 53 tree species, characterized by compound leaf trees, small flowers, varied fruit, box fruit, stone and bearing (Wulandari & Manurung, 2018). Types

of homegarden trees in Tambakrejo Village belonging to the Sapindaceae family include longan tree (*Dimocarpus longan* Lour), matoa (*Pometia pinnata*) and rambutan (*Nephelium lappaceum* L). The **Palmae** family found a total of 48 species of trees that have the characteristics of a trunkless palm, pinnate leaves with a wide leaf midrib, stems, base of the midrib, leaf edges and thorny fruit surfaces (Steenis et al., 2008). The types of homegarden trees in Tambakrejo Village belonging to the Palmae family are: salak (*Salacca zalacca*), kelapa (*Cocos nucifera* L.) dan kurma (*Phoenix dactylifera*), **Myrtaceae** with 31 tree species found on bay leaf trees (*Syzygium polyanthun*), guava (*Syzygium* sp), juwet (*Syzygium cumini*) and red shoots (*Syzygium oleana*).

Mimosaceae family found a total of 30 species of trees that are characterized by trees or shrubs that are rarely herbaceous, sometimes thorny. Leaves scattered, rarely opposite, compound. Flowers in spika, racemus or capitulum (Silalahi, 2014). Homegarden trees belonging to the Mimosaceae family include the lamtoro tree (*Leucaena leucocephala*). In the **Oxalidaceae** family, there were 20 species of trees that were characterized by shrubs or trees, multi-colored leaves, line-shaped fruit with a yellow-green narrow tip. Flowers are mostly tightly packed pink (Steenis et al., 2008). Pohon pekarangan yang tergolong dalam famili Oxalidaceae anatara lain belimbing (*Averrhoa carambola*). Homegarden trees belonging to the Oxalidaceae family include star fruit (*Averrhoa carambola*). In the **Annonaceae** family, 19 tree species were found with the characteristics of trees, shrubs or lianas, temple thorny fruit, slightly hard fruit skin, yellowish white flesh (Steenis et al., 2008). Homegarden trees belonging to the Annonaceae family include soursop (*Annona muricata* L.).

The **Fabaceae** family found a total of 11 species of trees that have characteristics of herbs, shrubs, lianas to trees. Most of the members who have tree and liana stature have flowers that are beautiful in shape and color (Putri & Dharmo, 2018). Homegarden trees belonging to the Fabaceae include trembesi (*Albizia saman* (Jacq.) Merr). The **Muntingiaceae** family was found in a number of 10 with the characteristics of a woody tree, single and pinnate leaves, twigs covered with fine hairs. The flowers are white and the fruit is round when the mask is blackish red (Steenis et al., 2008). Garden plants belonging to the Muntingiaceae family include keres (*Muntingia calabura*). In the **Malvaceae** family, 9 species of trees were found with the characteristics of the Malvaceae tribe (cotton), shrubs (terna), herbs, rarely shrubs. On certain surfaces covered by hairs stars or scales. Single leaf, most of the sitting leaves are scattered, with spines of finger leaves (*Palmatus*), there are stipules (*Supporting leaves*). Leaf edges are flat or variegated (Wulandari & Manurung, 2018). Homegarden trees belonging to the Malvaceae family include kapok (*Ceiba pentandra* (L.) Gaertn).

In the **Apocynaceae** family, 1 species of trees was found with the characteristics of trees or shrubs, erect or climbing. Rarely are herbs and have sap glands. Leaves are arranged opposite or (Wulandari & Manurung, 2018). Types of homegarden trees in Tambakrejo Village belonging to the Apocynaceae family include frangipani trees (*Plumeria* sp.). Cambodia's flowers are used for beauty and also for religious purposes. Family **Lauraceae** found a total of 5 tree species with tree characteristics single-leafed alternate, flower arrangement (Steenis et al., 2008). Home garden trees belonging to the family Lauraceae include the avocado tree (*Persea americana*). Family Dioscoreaceae found a total of 6 species of trees with characteristics, shrubs or shrubs, has tubers in the soil and leaves opposite or scattered, single or multiple (Steenis et al., 2008). Family **Dioscoreaceae** found a total of 6 species of trees with characteristics, shrubs or shrubs, has tubers in the soil and leaves opposite or scattered, single or multiple (Steenis et al., 2008). Trees belonging to the family Dioscoreaceae including gadung (*Dioscorea hispida*). Gadung tubers are usually used to be processed into chips.

In the **Sapotaceae** family, 6 tree species were found which have the characteristics of trees, white gummy, single leaves, alternate, flat leaf margins, bisexual flowers, bisexual, irregular, berries (Wulandari & Manurung, 2018). Homegarden trees belonging to the Saptaceae family include sapodilla (*Manilkara zapota*). In the **Verbenaceae** family, 5 species of trees were found with the characteristics of shrubs or trees, the young leaves are reddish brown and oval in shape (Steenis et al., 2008). Homegarden trees belonging to the Saptaceae family include sapodilla (*Manilkara zapota*). Homegarden trees belonging to the Verbenaceae family include teak (*Tectona grandis* Linn. F). Teak stems are used as raw materials for furniture. The **Rutaceae** family found a total of 14 species with characteristics of trees or shrubs, opposite or alternating leaves, pinnate leaves, thorny twigs, broad-winged petioles (Steenis et al., 2008). Homegarden trees belonging to the Rutaceae family include citrus (*Citrus* sp.). In the **Compositae** family, 3 tree species were found with the characteristics of sturdy annual herbs, erect and many branches, opposite leaves, long stalks, gutter-shaped, hard brownish berries (Steenis et al., 2008). Homegarden trees belonging to the Composite Family include kenikir (*Cosmos caudatus*). The

Ebenaceae family found a number of 2 species of trees with tree or shrub characteristics, usually black or dark hard wood without latex, single flowers (Silalahi, 2014). Family trees belonging homegarden ebenaceae include persimmon (*Diospyros foot* Lf.)

Family **Gnetaceae** characterized by a tree or liana, rating enlarges and jointed segments, pinnate leaves. The fruit when ripe is dark red, long elliptical in shape (Steenis et al., 2008). Garden trees belonging to the Gnetaceae family include the blinjo tree (*Gnetum gnemon*). The **Punicaceae** family has the characteristics of trees or shrubs with scattered leaves, red or yellow seeds, yellowish green white fruit, red brown or black purple (Steenis et al., 2008). Homegarden trees belonging to the Punicaceae family include pomegranate trees (*Punica granatum*), **Rosaceae** found in trees, mulberry (*Fragaria vesca* L.). The **Vitaceae** family has the characteristics of climbing shrubs, scattered leaves, sometimes supporting fruit ovules, yellowish serrated leaves (Steenis et al., 2008). Homegarden trees belonging to the Vitaceae family, including grapes (*Vitis vinivera*), and the **Meliaceae** family, have the characteristics of trees, shrubs or shrubs, the wood is sometimes fragrant. Pinnate or multiple compound leaves. 1. Fleshy fruit, seeds have a wrapper in the outer layer (Wulandari & Manurung, 2018). Homegarden trees belonging to the Meliaceae family include mahogany trees (*Swietenia macrophylla*). Mahogany stems are usually used for raw materials for the furniture industry. The **Arecaceae** family has the characteristics of monocots, single stems or clumps, fibrous roots, compound leaves, flowers arranged in a flower framework (mayang), leaf stalks have leaf midribs that wrap around the stem (Hutasuhut & Rasyidah, 2018). Homegarden trees belonging to the Arecaceae family include date palms (*Phoenix dactylifera* L.). Dates are commonly used as medicine, cosmetics, consumption for humans and animals. Meanwhile, the tree and its parts, such as the midrib of the date palm, are commonly used for firewood and roofs of houses. The **Clusiaceae/Guttiferae** family has the characteristics of a tree or shrub, and is rarely found in herbaceous form (Steenis et al., 2008). Homegarden plants belonging to the Clusiaceae/Guttiferae family include mangosteen (*Garcinia mangostana* L.). The mangosteen tree has benefits such as preventing erosion, the fruit can be consumed as herbal medicine, and the wood can be used as fuel (Jayanti & Ersam, 2018). Of the eight families have the same number of 1 tree species.

CONCLUSION

The results of the observations found 414 tree species that belong into 26 types of families. There are 18 families that have the number of trees > 1 based on all the families found. Anacardiaceae family was the most commonly found family with 91 tree species, followed by the Moraceae family with 60 tree species, the Sapindaceae family with 53 tree species, and the Palmae family with 33 species. trees, Family Mimosaceae with 30 tree species, Family Myrtaceae with 28 tree species, family Oxalidaceae with 20 tree species, Family Rutaceae with 14 tree species, Family Fabaceae with 11 tree species, Muntingiaceae with 10 tree species, Family Dioscoreaceae with 6 tree species. There are 6 tree species in the Lauraceae family, 6 tree species in the Sapotaceae family, 5 tree species in the Verbenaceae family, and 3 tree species in the Compositae family. There are 2 tree species in the Ebanaceae family. In the families Apocynaceae, Arecaceae, Clusiaceae, Gnetaceae, Meliaceae, Punicaceae, Rosaceae, and Vitaceae only 1 tree species was found.

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