The Diversity of Trees in Roadside Greenbelt in Jakarta

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ABSTRACT

Trees inroadside greenbelt were inventoried in 2008 by The Park and Public Funerial Agency of Jakarta Province Government in order to develop a trees database of green open space in Jakarta. Number of trees was observed in 113 main roads at 5 administration regions of Jakarta. Observed road consist of 23 roads in central Jakarta, 24 roads in North Jakarta, 22 roads in south Jakarta, 22 roads in West Jakarta, and 23 roads in East Jakarta. Data collection was limited to all trees that exist in right of way area that included trees in pedestrian paths, median and road separators. Physical attributes of these trees were observed include of name of the trees, caliper, tree height and width of canopy.

The results of these observation shows that in the most of roads, trees were found in one row in places such as road shoulders, road separators and road median. However more than one row of trees was found in several roads that have a wide median or road shoulder. The observation of 113 roads shows trees in roadside greenbelt in Jakarta consisted of wide varieties. Totally 25,701 trees were found, and at least 119 species of trees were recorded. However among of the species, 79% of population was dominated by the next 10 species: *Swietenia macrophylla*, *Pterocarpus indicus*, *Mimusops elengi*, *Polyathia fragrans*, *Cerbera manghas*, *Ficus benjamina*, *Diallium indum*, *Roystonea regia*, *Polyalthia longifiloa* and *Bauhinia purpurea*. Most of roads were planted with more than on single species. The number of tree species in each roads observed ranged from 1 – 26 species in Central Jakarta, 1- 49 species in West Jakarta, 1-36 species in North Jakarta, 1-37 species in East Jakarta, and ranged from 3-34 species in South Jakarta. The diversity of tree species in roadside greenbelt in Jakarta enhanced the functions of planting in creating a comfortable and beautiful road for its surrounding.

Keyword: Diversity, Roadside greenbelt, Tree

1. INTRODUCTION

Variety of vagetation area exists as components of green open scape in Jakarta. Roadside green belt and uban park perform as component of green open space spread dominantly in Jakarta compare to other type of green open space. Therefore roadside green belt and urban park contributes greatly to the visual and physical qualities of urban Landscape. City forest, mangrove and urban agricultural areas are also important components of urban green open scape.

Various type of plants such as ground cover plants, shrubs, and trees were planted in the area of green open space. Due to the trees type of plants having the biggest dimension of canopy, trees in the green open space contributes greatly to create urban visual landscape, and bossting environment qualities. Mature tree having a dense conopy and broadly spread roots become a component of green open space that effectively contributes to increase urban carrying capacity.

Jakarta has a system of greenery developed since collonial era spread such us roadside green belts, urban park, and urban forest. Due to broadly spread following the road network in the city of Jakarta, trees in the roadside green belts play an important role in increasing urban aesthetic, comport, and atmosfir qualities of Jakarta. Therefore mature tree and also young trees in the roadside green belts requires a planned maintenance management to provide good environment to ensure optimum trees growth.

Collecting information of exisitng trees in the road side green belts in Jakarta was necessary required to prepare tree maintenance programs. In order to constructing tree database; observation of tree diversity, population and distribution in roadside green belts have been carried out by Park and Public Funeral of Province of DKI Jakarta. The paper will discribe the results of studies especially the diversity and population of trees in roadside green belt in 5 municipals of Jakarta.

2. RESEARCH METHOD

2.1. Location and time of research

Trees of the roadside green belt were observed in 5 municipals of Jakarta, from July 1 to October 28, 2009. Location and the name of observed roads were shown in Table 3-6. Numbers of observed sites were 113 roads that consisted of 24 roads in central Jakarta, 22 roads in West of Jakarta, 21 roads in north Jakarta, 23 roads in east Jakarta, and 23 roads in South Jakarta. The points of observation were limited in ROW area, including trees in pedestrian path, the area beside of asphalted parts, in the median of road and in the traffic island, if any.

2.2. Data Collecting of Trees

In order to build a trees database, all of trees in the roadside green belt were observed both old and young trees. Variabels of tree that observed including : local name, scientific name, population, tree height, and trunk diameter on breast height.

3. RESULTS OF STUDY AND DISCUSSION

3.1. Population of trees in Roadside Green belt

Recapitulation of trees population observed in 5 municipal of Jakarta presented in Table 1. Number of trees found in 113 roadside green belts was 25,706 trees. The highest population (7,996 trees) found in East Jakarta. Population of trees in some roads that having trees in median and in the land beside pedestrian path contributed to high population in East Jakarta. The highest population of tree in some roads including Jl. I Gusti Ngurah Rai (1,664 trees), Jl. Pemuda (1,174 trees), Jl. Ahmad Yani (1,110 trees) dan Jl. Pramuka (878 trees).

Population of trees was grouped into old and young trees based on trunk diameter. Old dicotytiledon trees defining as a tree having trunk diameter $\geq$ 50 cm, and < 50 cm for young trees. But old monocotyledon trees having a trunk diameter $\geq$ 25 cm and < 25 cm for young trees.

Proportion of old and young trees varied in each region in Jakarta (Table 1). Among of 5 municipals in Jakarta, the highest proportion of old trees was found in Central Jakarta (23.3%), followed by the value in South Jakarta (21.2%), West Jakarta (15%), East Jakarta (12.6%), and north Jakarta (12.0%). In this research, number of old trees was found totally 4,087 trees (15.9%) and the rest was young trees (84.1%). In other word, a tree in the roadside green belts in Jakarta generally was consisted of young trees. Old trees and young trees should be maintaint properly in order to keep optimum trees growth, especially more cautions must be focused to old trees to ensure tree safety to road user.

Table 1. **Population of trees in the roadside green belts observed in 5 municipal of Jakarta**

No.	Region	Number of observed roads	Number of trees	Number of old trees	Proportion of old Trees (%)
1.	Central Jakarta	24	3,180	742	23.3
2.	West Jakarta	22	5,192	780	15.0
3.	North Utara	21	4,629	556	12.0
4.	East Jakarta	23	7,996	1,011	12.6
5.	South Jakarta	23	4,709	998	21.2
	Total	113	25,706	4,087	15.9

3.2. Tree diversity in the roadside green belts

Table 2 show recapitulation of tree species diversity in roadside green belt in 5 municipals of Jakarta. Species of tree used in roadside green belts widely varied. Among of 25,706 trees observed on 113 roadside green belts was found 119 tree species. The degree of tree species diversity was different among the municipals of Jakarta. The highest number of species was recorded in South Jakarta (83 species) followed by Central Jakarta (59 species), West Jakarta (70 species), North Jakarta (69 species) and East Jakarta (69 species).

It's found 119 tree species in the roadside green belts, however the dominancy of each species was widely different. The most frequent species found in the roadside green belts comprising 10 species, such as *Swietenea macrophylla* (4,779 trees), *Pterocarpus indicus* (4,531 trees), *Mimusops elengi* (3,532 trees), *Polyalthya fragrans* (2,104 trees), *Cerbera manghas* (1,351 trees), *Ficus benjamina* (1,331 trees), *Diallium indum* (939 trees), *Ryostonea regia* (658 trees), *Polyaltya longifolia* (628 trees), dan *Bauhinia purpurea* (407 trees). In the other word, population of the 10 dominant species represented 78.8% of all population. Other results of observation performed 50 species was used only a few, less than 10 trees.

Type of trees used in roadside green belts in 5 municipals of Jakarta represented variety of plants groups. I'ts found palms, needle leaf plants, blossom tree, leaves attractive trees, aromatic tree, and commonly planted as fruit tree. The high diversity of road side trees provide advantage, due to variety of species in the community of green belts more resist to pest attack, and also increasing physical qualities of environment.

Tabel 2. **Diversity of trees used in roadside green belts in 5 municipals of Jakarta**

No	Local name	Secientific name	Central Jakarta	West Jakarta	North Jakarta	East Jakarta	South Jakarta	Total (Trees)
1	Mahoni	*Swietenia macrophylla*	481	673	256	1,988	1,381	4,779
2	Angsana	*Pterocarpus indicus*	436	703	1,601	1,331	460	4,531
3	Tanjung	*Mimusop elengi*	577	392	116	1,445	1,002	3,532
4	Glodogan Bulat	*Polyalthia fragrans*	585	566	70	508	375	2,104
5	Bintaro	*Cerbera odollams*	2	574	664	78	33	1,351
6	Beringin	*Ficus benjamina*	52	190	98	897	94	1,331
7	Asam Kranji	*Dialium indum*	32	183	392	321	11	939
8	Palem Raja	*Roystonea regia*	22	212	100	126	198	658
9	Glodogan Tiang	*Polyalthia longifolia*	32	274	23	120	179	628
10	Bunga Kupu-kupu	*Bauhinia purpurea*	137	99	88	25	58	407
11	Tabebuia	*Tabebuia chrysantha*	12	74	148	47	13	294
12	Kelapa	*Cocos nucifera*	19	34	184	30	23	290
13	Ki Hujan	*Samanea saman*	59	94	58	35	23	269
14	Asam	*Tamarindus indica*	21	7	157	48	15	248
15	Biola Cantik	*Ficus lyrata*	7	126	52	4	45	234
16	Jati Mas	*Cordia sebestena*	39	100	57	34	2	232
17	Kelapa Sawit	*Elaeis guinensis*	28	174	6	3	18	229
18	Akasia	*Acacia auriculiformis*	5	22	49	100	9	185
19	Mahoni Kecil	*Swietenia mahagoni*	150	1	0	17	10	178
20	Sawo Duren	*Chrysophyllum coinito*	1	2	0	0	174	177
21	Kamboja	*Plumeria rubra*	106	27	3	5	26	167

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South Jakarta	Total (Trees)
1,381	4,7[illegible]
460	4,531
1,002	3,53[illegible]
375	2,104
33	1,351
94	1,331
11	939
198	654
179	62[illegible]
58	40[illegible]
13	294
23	290
23	269
15	248
45	234
2	232
18	229
9	1[illegible]
10	1[illegible]
174	1[illegible]
26	1[illegible]

22	Kersen	*Muntingia calabura*	17	24	32	64	21	158
23	Ficus	*Ficus sp.*	17	3	55	36	44	155
24	Flamboyan	*Delonix regia*	21	47	17	29	38	152
25	Dadap Merah	*Erithrina crista-galli*	3	53	10	41	44	151
26	Mangga	*Mangifera indica*	18	42	20	20	44	144
27	Sawo Kecik	*Manilkara kauki*	30	76	11	3	12	132
28	Sengon	*Paraseriathes falcataria*	13	25	9	25	55	127
29	Palem Putri	*Veitchia merrillii*	24	11	11	64	16	126
30	Puspa	*Schima wallichii*	0	0	0	117	0	117
31	Pinang	*Areca catechu*	0	1	23	83	5	112
32	Bunut	*Ficus sp.*	8	24	22	54	2	110
33	Cemara Angin	*Casuarina equisetifolia*	0	75	19	0	0	94
34	Lamtoro	*Leucaena glauca*	8	49	25	7	3	92
35	Nangka	*Arthocarpus integra*	26	12	4	16	29	87
36	Bungur	*Langerstroemia loudonii*	24	7	9	16	23	79
37	Palem Hijau	*Ptychosperma macarthurii*	25	5	17	10	15	72
38	Kapuk	*Ceiba pentandra*	5	50	5	8	1	69
39	Waru	*Hibiscus tiliaceus*	1	40	7	9	5	62
40	Kenari	*Cannarium hirsutum*	40	0	0	0	18	58
41	Mengkudu	*Morinda citrifolia*	3	5	29	8	8	53
42	Sengon Laut	*Paraserianthes sp.*	0	6	28	0	10	44
43	Salam	*Syzygium polyanthum*	0	5	0	19	14	38
44	Ketapang	*Terminalia cattappa*	5	1	11	13	7	37
45	Krey Payung	*Filicium decipiens*	9	0	0	20	5	34
46	Jambu Biji	*Psidium guajava*	0	2	9	22	0	33
47	Beringin Karet	*Ficus elastica*	6	2	5	8	8	29
48	Sapu Tangan	*Maniltoa grandiflora*	0	0	0	26	0	26
49	Petai Cina	*Leucaena glauca*	3	1	12	4	5	25
50	Palem Botol	*Mascarena lagenicaulis*	2	5	3	9	6	25
51	Pinus	*Pinus merkusii*	4	2	15	0	3	24
52	Kasia	*Kasia fistula*	0	0	23	0	0	23
53	Dadap Kuning	*Erythrina variegata*	0	22	0	0	0	22
54	Wuni	*Antidesma bunius*	4	15	0	0	2	21
55	Jati	*Tectona grandis*	0	1	6	5	9	21
56	Jambu Air	*Eugenia aquea*	1	1	2	9	7	20
57	Cemara Kipas	*Thuja orientalis*	0	0	0	19	1	20
58	Khaya	*Khaya senegalensis*	18	0	0	0	0	18
59	Saga	*Adenanthera pavonina*	1	0	7	8	1	17
60	Belimbing	*Averhoa carambola*	0	3	4	0	10	17
61	Jarak	*Ricinus communis*	0	11	0	5	1	17
62	Kecrutan	*Spathodea*	1	0	13	0	1	15

		campanulata						
63	Cemara	*Casuarina sp.*	0	0	0	7	8	15
64	Palem Sadeng	*Livistona rotundifolia*	0	2	2	10	1	15
65	Palem Alexander	*Archontophoenix alexandrae*	0	6	0	4	3	13
66	Kosambi	*Schleichera oleosa*	12	0	0	0	0	12
67	Jambu	*Psidium guajava*	0	0	0	0	11	11
68	Pucuk Merah	*Syzygium companulatum*	0	0	0	11	0	11
69	Sawo	*Manilkara zapota*	0	3	0	1	6	10
70	Gliricidia	*Gliricidia sp.*	0	6	3	0	0	9
71	Sikat Botol	*Callistemon citrinus*	0	0	0	0	8	8
72	Bunga Merak	*Caesalpinia pulcherrima*	7	0	0	0	0	7
73	Melinjo	*Gnentum gnemon*	0	1	0	3	3	7
74	Mimba	*Azadirachta indica*	0	0	7	0	0	7
75	Pacira	*Pachira aquatic*	0	1	1	0	5	7
76	Kayu Manis	*Cinnamomum burmanii*	5	0	0	1	0	6
77	Palem Ekor Tupai	*Wodyetia bifurcata*	3	1	1	1	0	6
78	Jamblang	*Syzigium cumini*	1	0	2	2	1	6
79	Alpukat	*Persea Americana*	0	0	0	1	5	6
80	Nyamplung	*Callophyllum inophyllum*	0	5	1	0	0	6
81	Rambutan	*Nephelleum lapiaceum*	0	0	0	2	4	6
82	Durian	*Durio zibethinus*	0	0	0	0	5	5
83	Karet	*Ficus elastic*	0	1	4	0	0	5
84	Kecapi	*Sandoricum kcetjapie*	0	4	0	0	1	5
85	Matoa	*Pometia pinnata*	4	0	0	0	0	4
86	Cemara Laut	*Casuarina equisetifolia*	0	0	4	0	0	4
87	Cempaka	*Michelia champaca*	0	0	2	0	2	4
88	Kayu Putih	*Eucalyptus alba*	0	0	4	0	0	4
89	Kedondong	*Spondias dulcis*	0	1	1	1	1	4
90	Palem Kuning	*Chrysalidocarpus lutescens*	0	0	2	0	2	4
91	Bixa/Kesumba	*Bixa orellana*	3	0	0	0	0	3
92	Kelapa Gading	*Cocosnucifera var capitata*	3	0	0	0	0	3
93	Sukun	*Artocarpus communis*	1	0	0	2	0	3
94	Belimbing Wuluh	*Averrhoa bilimbi*	0	0	0	0	3	3
95	Cemara Norflok	*Araucaria heterophylla*	0	0	0	0	3	3
96	Hujan Mas	*Casia multijuga*	0	0	1	0	2	3
97	Keluih	*Artocarpus communis*	0	2	0	0	1	3
98	Mindi	*Melia azedarach*	0	0	0	3	0	3
99	Serut	*Strobilus asper*	0	0	0	3	0	3
100	Sri Gading	*Nyctanthes arbortristis*	0	0	0	0	3	3

101	Kasia Emas	*Casia multijuga*	0	0	0	0	2	2
102	Kenanga	*Cananga odorata*	0	0	0	0	2	2
103	Lengkeng	*Nephellium longanum*	0	2	0	0	0	2
104	Mangium	*Acasia mangium*	0	0	0	2	0	2
105	Sempur	*Dillenia philippinensis*	0	0	0	2	0	2
106	Srikaya	*Annona squamosa*	0	1	1	0	0	2
107	Cempedak	*Artocarpus champeden*	1	0	0	0	0	1
108	Casia golden	*Cassia biflora*	0	0	0	0	1	1
109	Batavia	*Jatropha sp.*	0	0	0	0	1	1
110	Calincing	*Oxalis corniculata*	0	0	0	0	1	1
111	Cemara Gunung	*Casuarina junghuniana*	0	0	0	0	1	1
112	Ceremai	*Phyllanthus acidus*	0	1	0	0	0	1
113	Jati Belanda	*Guazuma ulmifolia*	0	1	0	0	0	1
114	Kanyere	*Bridelia monoica*	0	0	1	0	0	1
115	Ki Putri	*Podocarpus sp.*	0	0	0	0	1	1
116	Petai	*Parkia spesiosa*	0	1	0	0	0	1
117	Sikas	*Cycas rumpii*	0	0	1	0	0	1
118	Walisongo	*Schefflera sp.*	0	0	0	1	0	1
119	Waru Laut	*Hibiscus tiliaceus*	0	0	1	0	0	1
Total of trees			**3,180**	**5,192**	**4,624**	**7,996**	**4,709**	**25,701**
Total of species			**59**	**70**	**69**	**69**	**83**	**120**

3.3. Tree Population and Diversity in Central Jakarta

Population of trees in the roadside green belt in Central Jakarta is presented in Table 3. Observation in 24 roadside green belts found 3,180 trees that consisted of 742 trees (23.3%) old trees. Relatively high population of trees recorded in Jl. Kramat Salemba (641 trees), Jl. Gunung Sahari (431 trees) dan Jl. Hayam Wuruk (398 trees). Old trees generally found on all observed road, but the proportion of old trees was widely different, from 7.0 % in Jl. Hayam Wuruk to 81.3% in Jl. Veteran III.

Table 3 show the diversity of trees in the roadside green belts in Central Jakarta. The diversity of species that showed by the number of species in each observed roads, varied from 1-26 species. The most dominant species used in Central Jakarta including *Swietenia mahagoni*, *Pterocarpus indicus*, *Polyalthea fragrans*, *Canarium communae*, *Tamarindus indica*, and *Khaya senegalensis*. *Swietenia mahagoni* was dominant in 8 roads, *Pterocarpus indicus* dominant in 7 roads, *Polyathea fragrans* dominat in 4 roads. *Canarium communae*, *Mimusops elengi*, *Tamarindus indica* and *Khaya senegalensis* dominant in 1 road, respectively.

Tabel 3. **Tree population and dominant species in the roadside green belts in Central Jakarta**

No.	Name of road	Number of trees	Number of Old Trees	Proportion of old trees (%)	Number of species	Species Dominancy	
						Name of species	%
1	Jl. Abdulrahman Saleh Raya	19	10	52.6	7	*Swietenia macrophylla*	26.3
2	Jl. Abdulrahman Saleh 1/Kwini/RSGS	46	16	34.8	14	*Swietenia macrophylla*	26.1

3	Jl. Borobudur	26	15	57.7	4	*Pterocarpus indicus*	[illegible]
4	Jl. Cempaka putih	138	23	16.7	17	*Pterocarpus indicus*	[illegible]
5	Jl. Gunung Sahari	431	213	49.4	14	*Pterocarpus indicus*	[illegible]
6	Jl. Hayam Wuruk	398	28	7.0	9	*Swietenia macrophylla*	[illegible]
7	Jl. Juanda Veteran	130	7	5.4	3	*Mimusops elengi*	[illegible]
8	Jl. Katedral	51	5	9.8	7	*Canarium communae*	[illegible]
9	Jl. Kesenian	35	9	25.7	1	*Polyalthea fragrans*	[illegible]
10	Jl. Kimia	24	10	41.7	6	*Swietenia macrophylla*	[illegible]
11	Jl. Kramat Salemba	641	23	3.6	26	*Polyalthea fragrans*	[illegible]
12	Jl. Kwitang Gunung Agung	164	73	44.5	13	*Pterocarpus indicus*	[illegible]
13	Jl. Lapangan Banteng Selatan	52	12	23.1	4	*Swietenia macrophylla*	[illegible]
14	Jl. Lapangan Banteng Barat	34	17	50.0	5	*Tamarindus indica*	[illegible]
15	Jl. Lapangan Banteng Utara	66	8	12.1	7	*Polyalthea fragrans*	[illegible]
16	Jl. Lapangan Banteng Timur	61	2	3.3	6	*Swietenia macrophylla*	[illegible]
17	Jl. Latuharhari	336	111	33.0	12	*Mimusops elengi*	[illegible]
18	Jl. Mendut	64	22	34.3	10	*Pterocarpus indicus*	[illegible]
19	Jl. Percetakan Negara	217	102	47.0	16	*Pterocarpus indicus*	[illegible]
20	Jl. Pos Raya	54	3	5.6	4	*Polyalthea fragrans*	[illegible]
21	Jl. Prambanan	26	2	7.7	7	*Khaya senegalensis*	[illegible]
22	Jl. Veteran 1	91	0	0.0	11	*Swietenia macrophylla*	[illegible]
23	Jl. Veteran 3	32	26	81.3	1	*Pterocarpus indicus*	[illegible]
24	Jl. Wahidin	44	5	11.4	4	*Swietenia macrophylia*	[illegible]
	Total	**3,180**	**742**	**23.3**			

3.4. Tree Population and Diversity in West Jakarta

Table 4 show population and diversity of trees in the roadside green belt in West Jakarta. Whole trees observed in 24 roadside green belts were 5,192 trees that consisted of 780 (23.3%) old trees. Some roads have a relatively high population of trees, such as Jl. Tubagus Angke (2048 trees), Jl. Arjuna Selatan/Utara (551 trees), Jl. Daan Mogot (475 trees) dan Jl. Kyai Tapa (379 trees), Jl. Latumenten (322 trees), and Jl. Cideng Barat/Timur (369 trees). Long distance of the road, and the existence of median and road separator, and the dense of plants contributed to high population of tree in green belts.

Old trees in West Jakarta found on all observed road, except on Jl.Hadiah Utama and Jl. Jelambar. Proportion of old trees was widely different, from 1.3% in Jl. Gajah Mada to 78.3% in Jl. Pal Merah Utara. The diversity of species in West Jakarta that showed by the number of species in each observed roads varied, from 1-49 species. The 5 most dominant species used in West Jakarta including *Pterocarpus indicus, Swietenia mahagoni, Cerbera manghas, Polyalthea fragrans and Mimusops elengi. Pterocarpus indicus*was dominant in 7 roads, *Ryostdhea regia* was dominant in 2 roads, *Polyalthea fragrans* dominant in 7 roads, *Ficus lyrata* was dominant in 2 roads. *Polyathea longifolia, Artocarpus integra, Samanea* *saman, Mimusops elengi and Ficus benjamina was only dominat in 1 road, respectively.* Single spesies (*Pterocarpus indicus*) using in Jl. Tomang Raya strongly present a distinct road identity. The high diversity of tree species using in road side green belt such as 49 species in Jl. Tubagus Angke, and 24 species in Jl. Daan Mogot did not perform a uniq identity of road, but mass planting of variety of species will also promote physical environmental qualities.

Tabel 4. **Tree population and dominant species in the roadside green belts in West Jakarta**

No.	Name of road	Number of trees	Number of old Trees	Proportion of old trees (%)	Number of Species	Species Dominancy	
						Name of species	%
1	Jl. Arjuna Selatan	276	16	5.9	17	*Swietenia macrophylla*	34.6
2	Jl. Arjuna Utara	275	4	1.4	16	*Swietenia macrophylla*	30.5
3	Jl. Cideng Barat	183	85	46.4	11	*Ryostonea regia*	54.0
4	Jl. Cideng Timur	187	78	41.7	5	*Ryostonea regia*	70.3
5	Jl. Daan Mogot	475	126	26.5	24	*Swietenia macrophylla*	24.6
6	Jl. Gajah Mada	216	3	1.3	9	*Polyalthea fragrans*	52,5
7	Jl. Hadiah Utama Raya	38	0	0.0	7	*Swietenia macrophylla*	42.1
8	Jl. Jelambar Baru	27	0	0.0	5	*Polyalthea fragrans*	70.3
9	Jl. Jelambar utama	23	1	4.3	7	*Polyalthea fragrans*	43.4
10	Jl. Kebon Jeruk Raya	144	53	36.8	11	*Pterocarpus indicus*	79.8
11	Jl. Kemangisan Raya	14	5	35.7	11	*Pterocarpus indicus*	14.2
						Ficus lyrata	14.2
						Arthocarpus integra	14.2
12	Jl. Kembangan Raya	113	7	6.2	11	*Pterocarpus indicus*	46.9
13	Jl. Kembangan Raya Selatan	14	10	71.4	4	*Samanea saman*	78.5
14	Jl. KS Tubun	98	9	9.2	8	*Ficus lyrata*	70.4
15	Jl. Kyai Tapa	379	61	16.1	11	*Ficus benjamina*	35.3
16	Jl. Latumenten	322	70	21.7	23	*Pterocarpus indicus*	21.7
17	Jl. Meruya Utara	48	11	22.9	13	*Ficus benjamina*	27.0
18	Jl. Pal merah Barat	97	66	68.0	12	*Pterocarpus indicus*	69.0
19	Jl. Pal merah Utara	23	18	78.3	2	*Pterocarpus indicus*	56.5
20	Jl. Tanjung Duren Raya	129	10	7.8	10	*Swietenia macrophylla*	48.0
21	Jl. Tomang Raya	63	35	55.6	1	*Pterocarpus indicus*	100.0
22	Jl. Tubagus Angke	2,048	118	5.8	49	*Cerbera manghas*	22.9
		5,192	**780**				

3.5. Tree Population and Diversity in North Jakarta

Results of trees observation in the road side green belt in North Jakarta is presented in Table 5. Observation in 21 roadside green belts found 4,629 trees that consisted of 556 (12.0%) old trees. Relatively higher population of trees found in: Jl. R.E Martadinata (933 trees), Jl. Bandengan Utara-Selatan (508 trees), Jl. Bugis Raya (407 trees), Jl. Sunter Permai Raya (363 trees), and Jl. Cilincing Raya (316 trees).

Old trees found in all road side green belts, except in Jl. Pintu Besar Utara, Jl. Mawar dan Jl. Waru. Proportion of old trees among of observed roads varied from 1.2 % di Jl. Tugu Raya to 28.8% in Jl. Cilincing Raya. Therefore generally most of trees in observed roadside green belts in the north Jakarta consisted of young trees.

Tree diversity in the roadside green belts in north Jakarta presented in Table 5. Only one species of tree (*Pterocarpus indicus*) found in Jl. Bandengan Utara/Selatan, however number of species increased up to 36 in Jl. Bugis Raya. Among 4,629 trees recorded in North Jakarta, the 5 most frequent species used in north Jakarta including *Pterocarpus indicus* (1,601 trees), *Cerbera manghas* (664 trees), *Diallium indum* (392 trees), *Swietenia macrophylla* (256 trees), dan *Cocos nucifera* (184 trees).

Pterocarpus indicus was dominant in 11 roads, *Cerbera manghas* was dominant in 2 roads, *Cocos nucifera was dominant in 2 roads. Diallium indum, Tamarindus indica, Ryostonea regia, Swietenia macrophylla, Polyalthea fragrans*, and *Ficus benjamina was* dominant in 1 road, respectively. Single species used in mass planting such us *Peterocarpus indicus* in Jl. Bandengan Utara/Selatan strongly performed a distinct steetscape.

Tabel 5. **Tree population and dominant species in the roadside green belts in North Jakarta**

No.	Name of road	Number of trees	Number of old Trees	Proportion of old trees (%)	Number of Species	Species Dominancy: Name of species	Species Dominancy: %
1	Jl. Bandengan Utara-Selatan	508	77	15.2	1	*Pterocarpus indicus*	100
2	Jl. Bugis Raya	407	1	0.2	36	*Diallium indum*	16
3	Jl. Cilincing Raya	316	91	28.8	13	*Pterocarpus indicus*	30
4	Jl. Enggano	104	21	20.2	8	*Pterocarpus indicus*	45
5	Jl. Gedong Panjang	136	34	25.0	14	*Pterocarpus indicus*	28
6	Jl. Jampea	149	4	2.7	4	*Tamarindus indica*	85
7	Jl. Kali Besar Barat	131	19	14.5	11	*Ryostonnea regia*	45
8	Jl. Kali Besar Timur	95	2	2.1	11	Cocos nucifera	27
9	Jl. Kopi	58	15	25.9	6	*Swietenia macrophylla*	44
10	Jl. Kramat Jaya	298	6	2.0	16	Bintaro	6[illegible]
11	Jl. Lodan Raya	190	7	3.7	12	*Pterocarpus indicus*	41
12	Jl. Mawar	104	0	0.0	17	*Pterocarpus indicus*	31
13	Jl. Papanggo	32	4	12.5	5	*Cerbera manghas*	68
14	Jl. Pelabuhan Raya	204	26	12.7	7	*Pterocarpus indicus*	64
15	Jl. Pintu besar Utara	45	0	0.0	5	*Cocos nucifera*	44
16	Jl. Pelumpang Raya	261	29	11.1	17	*Pterocarpus indicus*	74
17	Jl. R.E Martadinata	933	203	21.8	33	*Pterocarpus indicus*	27
18	Jl. Sungai Bambu	57	4	7.0	15	*Ficus benjamina*	2[illegible]
19	Jl. Sunter Permai Raya	363	7	1.9	20	*Cerbera manghas*	1[illegible]

20	Jl. Tugu Raya	169	2	1.2	17	*Pterocarpus indicus*	56.2
21	Jl. Waru Raya	69	0	0.0	8	*Pterocarpus indicus*	66.7
		4,629	556				

3.6. Tree Population and Diversity in East Jakarta

Trees population and species diversity observed in East Jakarta presented in Table 6. Observation in 23 road side green belts found 7,996 trees that consisted 1,011 trees (12.6%) old trees. Relatively higher population recorded in some long roads and having tree in median such us Jl. I Gusti Ngurah Rai (1,664 trees), Jl. Pemuda (1,174 trees), Jl. Ahmad Yani (1,110 trees), Jl. Pramuka (878 trees), Jl. DI Panjaitan (428 trees), dan Jl. Sutoyo (423 trees). Old trees spread in all roads, except in Jl. Cipinang Baru Raya, Jl. Cipinang Elok II, and Jl. Matraman Raya.

The diversity of species in East Jakarta that showed by the number of species in each observed roads varied from 2-37 species. Only several species found dominant in the roadside green belts in East Jakarta. *Swietenia mahagoni was dominant in 9 roads, Mimusops elengi* was dominat in 7 roads, *Pterocarpus indicus* was dominant in 4 roads. *Ficus benjamina, Areca catecu,* and *Mangifera indica* was dominant in 1 roads, respectively.

Tabel 6. **Tree population and dominant species in the roadside green belts in East Jakarta**

No.	Name of road	Number of trees	Number of old trees	Proportion of old Tree (%)	Number of species	Species dominancy	
						Name of species	%
1	Jl. Ahmad Yani	1,110	152	13.7	37	*Pterocarpus indicus*	36.8
2	Jl. Bekasi Timur Raya	410	130	31.7	9	*Swietenia macrophyla*	26.1
3	Jl. Bujana Tirta Bea Cukai	191	13	6.8	15	*Swietenia macrophyla*	74.9
4	Jl. Cipinang Baru Raya	111	0	0.0	10	*Mimusops elengi*	76.6
5	Jl. Cipinang Cempedak 1	46	40	87.0	3	*Swietenia macrophyla*	93.5
6	Jl. Cipinang Cempedak 2	67	42	62.7	8	*Mimusops elengi*	47.5
7	Jl. Cipinang Cempedak Raya	2	2	100.0	2	*Mangifera indica*	50.0
8	Jl. Cipinang Elok I	34	5	14.7	9	*S. macrophylla*	50.0
9	Jl. Cipinang Elok II	30	0	0.0	4	*Swietenia macrophyla*	76.7
10	Jl. Cipinang Muara	32	9	28.1	6	*Pterocarpus indicus*	71.9
11	Jl. Dewi Sartika	240	2	0.8	10	*Pterocarpus indicus*	57.9
12	Jl. DI Panjaitan	428	62	14.5	16	*Swietenia macrophyla*	46.7
13	Jl. I GustiNgurah Rai	1,664	179	10.9	25	*Mimusops elengi*	17.1
14	Jl. Jatinegara Barat	8	1	12.5	3	*Ficus benjamina*	34.0
15	Jl. Jatinegara Timur	291	24	8.2	16	*Areca catecu*	75.0
16	Jl. Matraman Raya	370	0	0.0	23	*Mimusops elengi*	37.6
17	Jl. Otto Iskandardinata	213	112	52.6	6	*Pterocarpus indicus*	81.7
18	Jl. Pemuda	1,174	135	11.5	27	*Swietenia macrophyla*	53.6
19	Jl. Pramuka	878	33	3.8	15	*Pterocarpus indicus*	40.5
20	Jl. Raya Ceger	43	4	9.3	10	*Swietenia macrophyla*	67.4
21	Jl. RSU Persahabatan	173	8	4.6	10	*Mimusops elengi*	59.5
22	Jl. Sutoyo	423	18	4.3	24	*Swietenia macrophyla*	30.3
23	Jl. Urip Sumoharjo	57	40	70.2	4	*Pterocarpus indicus*	71.9
	Total	7,996	1,011	12.6			

3.7. Tree Population and Diversity in South Jakarta

Population and diversity of trees in the roadside green belt in South Jakarta presented in Table 6. All trees observed in 23 roadside green belts were 4,709 trees that consisted of 998 (21.1%) old trees. The roads having relatively higher population of trees including Jl. Pangeran Antasari (834 trees), Jl. Satrio (772 trees), Jl. Margasatwa (353 trees) dan Jl. Minangkabau (333 trees), Jl. Ragunan (313 trees), Jl. Manggarai Utara (210 trees) and Jl. Gunawarman (208 trees).

Old trees in South Jakarta found on all observed road, except on Jl.Hadiah Utama and Jl. Jelambar. Proportion of old trees was widely different, from 1.3% in Jl. Gajah Mada to 78.3% in Jl. Pal Merah Utara.

Number of species in each observed roads varied, from 3 species in Jl. Gerbang Pemuda TVRI to 34 species in Jl. Manggarai Utara. The 5 most highest number of trees using in the green belts in South Jakarta including *Swietenia macrophylla* (1,381 trees), *Mimusops elengi* (1,002 trees), *Pterocarpus indicus* (460 trees), *Polyalthea fragrans* (375 trees), and Ryostonea regia (198 trees).

Few species dominated each observed road side green belts. *Swietenia macrophylla* was dominant in 11 roads, *Mimusops elengi* was dominant in 7 roads, *Pterocarpus indicus* was dominant in 2 roads, *Polyalthea fragrans*, *Polyalthea longifolia*, and *Ryostonea regia* was dominant in 1 roads, respectively.

Tabel 7. **Tree population and dominant species in the roadside green belts in South Jakarta**

No.	Name of road	Number of trees	Number of old trees	Proportion of old Tree (%)	Number of species	Species dominancy	
						Name of species	%
1	Jl.Ciragil	129	40	31.0	29	*Swietenia macrophyla*	46.5
2	Jl. Daha	130	32	24.6	18	*Ryostonea regia*	31.5
3	Jl. Daksa	118	16	13.1	22	*Mimusops elengi*	20.4
4	Jl. Galuh	165	16	9.6	18	*Mimusops elengi*	41.2
5	Jl. Gerbang Pemuda TVRI	79	48	60.8	3	*Pterocarpus indicus*	59.4
6	Jl. Gunawarman	208	38	18.3	15	*Swietenia macrophyla*	37.9
7	Jl. Margasatwa	210	62	29.5	18	*Mimusops elengi*	60.4
8	Jl. Manggarai Utara	353	29	8.2	34	*Swietenia macrophyla*	45.[illegible]
9	Jl. Mataram Barat Timur	30	17	56.7	8	*Swietenia macrophyla*	56.[illegible]
10	Jl. Minangkabau	333	33	9.9	10	*Swietenia macrophyla*	64.[illegible]
11	Jl. Pangeran Antasari	834	301	36.0	21	*Swietenia macrophyla*	25[illegible]
12	Jl. Panglima Polim II	102	13	12.8	22	*Mimusops elengi*	47[illegible]
13	Jl. Panglima Polim III	129	48	37.2	16	*Swietenia macrophyla*	48[illegible]
14	Jl. Pejompongan	70	46	65.7	6	*Swietenia macrophyla*	92[illegible]
15	Jl. Polombangkeng	50	21	35.0	12	*Mimusops elengi*	26[illegible]
16	Jl. Ragunan	313	42	13.4	28	*Swietenia macrophyla*	35[illegible]
17	Jl. Rajasa	188	28	14.9	29	*Mimusops elengi*	27[illegible]
18	Jl. Sanjaya	134	26	19.3	29	*Pterocarpus indicus*	1[illegible]
19	Jl. Satrio	772	20	2.5	22	*Swietenia macrophyla*	[illegible]
20	Jl. Sriwijaya	187	60	32.3	28	*Mimusops elengi*	51[illegible]