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2023 [DOI: 10.31289/biolink.v9i2.7571](#) [Accred : Sinta 3](#)

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Universitas Medan Area [BIOLINK \(Jurnal Biologi Lingkungan Industri Kesehatan\) Vol. 9 No. 2 \(2023\): February 151-162](#)

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### ARTICLES

#### VEGETATION COMPOSITION ON ECOLOGICAL FUNCTION IN MATARAM MERAH PARK, JAKARTA

Author(s): Nur Intan Mangunsoong , Rini Fitri , Qurrotu Aini Besila

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Citations 1 37 28

PDF

123-129

#### EFFECTIVENESS TEST OF BLACK CUMIN SEEDS (NIGELLA SATIVA) EXTRACT ON THE GROWTH OF KLEBSIELLA PNEUMONIAE AND PSEUDOMONAS AERUGINOSA BACTERIA

Author(s): Nadya Nazmuddin Putri , Linda Chiuman , Christis Novalinda Ginting , Erni Girsang

DOI: 10.31289/biolink.v7i2.3702

Citations 1 109 50 0 0

PDF

130-138

#### MACROFUNGI DIVERSITY IN MOUNT BURNI TELONG BENER MERIAH REGENCY ACEH PROVINCE

Author(s): Siti Nurhalidiah , Zulfin Azzro , Feriani Fitriani

DOI: 10.31289/biolink.v7i2.3846

Citations 0 70 48

PDF

139-153

#### ESTIMATION OF NUMBERS OF COLIFORM BACTERIAL AS WATER QUALITY INDICATOR IN KEPAHANG DISTRICT RIVERS, BENGKULU PROVINCE

Author(s): Sipriyadi Sipriyadi , Risky Hadi Wibowo , Welly Darwis

DOI: 10.31289/biolink.v7i2.3841

Citations 0 44 54

PDF

154-163

#### GLANDULAR TRICHOME IN THE ASTERACEAE FAMILY

Author(s): Wina Dyah Puspita Sari , Click Suriani , Dina Handayani

DOI: 10.31289/biolink.v7i2.3333

Citations 1 96 109

PDF

164-171

#### DETERMINATION OF THE TROPICAL STATUS OF FLOATING NET CAGE WATER BASED ON THE DISTRIBUTION OF NITROGEN, PHOSPHORUS AND CHLOROPHYLL-A

Author(s): Peru Pujiastuti , Roeselini J Putri , Suseno Suseno

DOI: 10.31289/biolink.v7i2.3902

Citations 2 64 43

PDF

172-184

#### TEMPERATURE AND NITRATE CONCENTRATION EFFECT ON THE ABUNDANCE AND GROWTH RATE OF MELOSIRA SR.

Author(s): Nita Rukminasari , Sharifuddin Andy Omar , Muhammad Lukman

DOI: 10.31289/biolink.v7i2.4054

Citations 1 48 27

PDF

185-194

#### THE EFFECT OF COCOPEAT AND RICE HUSK PLANTING MEDIA HYDROPONICALLY ON THE GROWTH OF PALM OIL IN PRE NURSERY

Author(s): Aulia Juanda Djangastro , Hardiansyah Sinaga , Ranto Mangai Sitoum

DOI: 10.31289/biolink.v7i2.4115

Citations 2 108 81 0

PDF

195-203

#### THE POTENTIAL OF NGOKILO LEAVES EXTRACT (STACHYTARPHETA MUTABILIS, VAHL) AS A LOWERING OF BLOOD GLUCOSE LEVELS OF WHITE MICE (RATTUS NORVEGICUS)

Author(s): Minatun Nasihah

DOI: 10.31289/biolink.v7i2.3893

Citations 0 51 28

PDF

204-214

#### ETHNOMEDICINE OF BAJO TRIBE COMMUNITY IN BANGKO VILLAGE, MAGINTI DISTRICT, WEST MUNA, SOUTHEAST SULAWESI

Author(s): Fachruddin Fachruddin , Musthamin Balumbi , Dustan Dustan

DOI: 10.31289/biolink.v7i2.4364

Citations 0 62 52

PDF

215-226

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***VEGETATION COMPOSITION ON ECOLOGICAL FUNCTION  
IN MATARAM MERAH PARK, JAKARTA***

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Submitted : 15-06-2020; Reviewed :10-09-2020; Accepted : 23-11-2020

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***Abstract***

*The existence of the city park is important for Jakarta as a metropolitan city with the current activity level of motor vehicles and air pollution greatly affects the quality of the city environment. The selection of vegetation in Mataram Merah park considered functional aspects and aesthetic values . The objective of this study were to determine the composition and type of vegetation landscape in Mataram Merah park and to determine the function of each type of landscape vegetation in Mataram Merah park. This study used a descriptive qualitative method with several stages, which is survey; identification of the name and type of vegetation; size identification; identification of the type of vegetation making up the composition (name of type and size that makes up the vegetation structure). The results showed that Mataram Merah park was generally planted with vegetation that functioned aesthetically rather than functionally. The function of landscape plants in Mataram Merah park were as aesthetics is 96.55%, as controlling view as much as 13.80%, vegetation function as physical barrier as much as 62.07%, plants as controlling erosion 51.72%, function of plants as controlling climate 13.79% and vegetation function for wildlife as much as 17.24%.*

**Keywords:** *Vegetation composition; Ecological function; Park*

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**How to Cite:** Simangunsong, N.I., Fitri, R., & Besila, Q.A. (2021). *Vegetation Composition on Ecological Function In Jakarta Mataram Merah Park*, BioLink: Jurnal Biologi Lingkungan, Industri dan Kesehatan, Vol.7 (2): Hal. 123- 129

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## INTRODUCTION

Green open space (RTH) in the form of a city park is one of the public facilities that can be enjoyed by urban communities. This park is provided by the city government so that it can be enjoyed by all city residents (Yuantika & Sulistiyowati, 2019). Regulation of the Minister of Public Works Number 05 / PRT / M / 2008 states that the government is obliged to provide a minimum of 30% RTH consisting of 20% land / urban area for RTH (public / park) plus 10% RTH which is private or belongs to people who already have control over the land (park or yards planted with plants).

To fulfill the requirements of 30% RTH, it is necessary to plan and collaborate with various parties, namely collaboration between stakeholders, increasing community participation and strengthening regulations that are carried out consistently and continuously. (Herdiansyah & Prakoso, 2019)

Green Open Space has an important role in the image of a city, among them are as a landmark, a 'mouthpiece for the people', a place for community interaction, a place that can accommodate people's aspirations, and has its own historical value (Ayu, 2019). Green Open Space (RTH) in the form of city parks can be utilized by urban communities for various social activities in a city or part of an urban area

supported by sports facilities, children's playgrounds, special parks for the elderly, flower gardens, recreational facilities and all these facilities are regulated in Regulation of the Minister of Public Works Number 05 / PRT / M / 2008 states that it is open to the public. The criteria for city parks are categorized as good, namely easy to access, neatly arranged, providing a sense of comfort and safety for its users and allowing for many social interactions (Hanan, 2013).

The existence of city parks is very important for DKI Jakarta as a metropolitan city with a high level of activity; of course it greatly affects the carrying capacity of the environment, namely increasing air pollution and motor vehicles. City parks have long been considered as sanctuaries from noise and pollution around the city (Brimblecombe & Xing, 2019)

City parks does not only function ecologically but also as public spaces for the interaction of urban communities in the midst of their busy activities; Proper use of landscape plants can reduce pollutant levels (Alfian & Kurniawan, 2010; Rizkiyah *et al.*, 2016). The conceptual green open space planning (city parks) can control global problems and ecosystem degradation in urban areas and meet ecological and environmental needs. Along with its development, city parks are not only limited to places for relaxing and



picnic activities, as well as active recreational activities, sports, cultural activities, entertainment and social interactions. City parks also have various other functions, namely ecological, biological, hydrological, aesthetic, recreational and social (Nurbalkis & Nurini, 2016).

Mataram Merah Park is a city park that functions as a green open space for residents of Selong Village, Kebayoran Baru Jakarta. Considering the importance of the ecological function of vegetation in city parks for environmental quality, it is necessary to study how to plan the

selection of functional landscape vegetation and provide aesthetic value to Mataram Merah Park. The objective of this study were to determine the composition of the species, the size of the vegetation in Mataram Merah Park landscape and to determine the function of each type of landscape vegetation in Mataram Park.

## MATERIALS AND METHODS

This research was conducted in March 2020, in Mataram Merah Park, Jakarta. The study area and the position of this city park can be seen in (Figure 1).

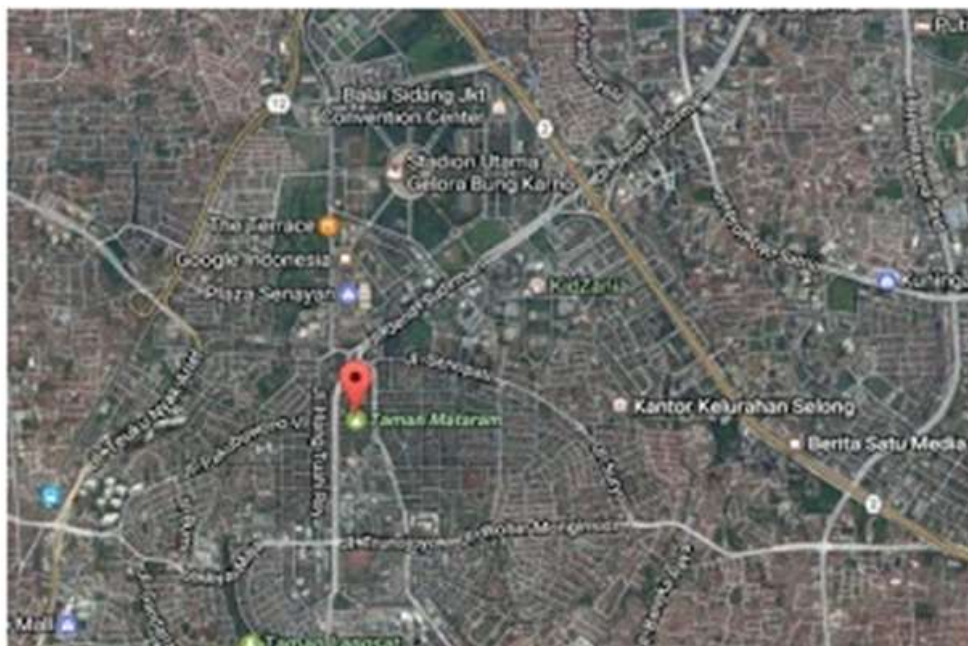


Figure 1. Map of the Research Location  
Source: Google Earth (downloaded 29 April 2020 at 9:31 WIB)

This study used a qualitative descriptive method, this method carried out data collection activities consisting of two stages, namely the first stage of collecting data through a survey of the

object of research. This stage identified the types of vegetation composing plants throughout Mataram Park (local names, scientific names and sizes that make up the vegetation structure). The second stage

was to analyze the types of plants (Table 1), its ecological function in the landscape with the tree size specifications are based on reference to several sources and validated (Irwan, 2007) and descriptive analysis of by a team of experts.

Table 1. Tree types and specifications

No.	Tree Size	Combination of Height and Header Width	Tree Height (m)		Head Width (m)	
			Code	High	Code	Wide
1	Small Tree (S)	Aa, Ab	A	<5	a	<
2	Medium Tree (M)	Ac, Ba, Bb, Bc, Ca, Da	B	5-10	b	3-7
3	Big Tree (L)	Ad, Bd, Cb, Cc, Db	C	10-15	c	7-10
4	Very Large Tree (LL)	Cd, Dc, Dd	D	> 15	d	> 10

Source: Irwan, 2007

## RESULTS AND DISCUSSION

Mataram Merah Park had an area of 3490 m<sup>2</sup>, various facilities were available with various facilities, namely a children's playground, jogging track, discussion room, seating, financial literacy learning facilities, lighting, financial information boards, trash cans, seats for visitors. The existence of a city park with optimal quality was very important for a city, besides functioning as an ecological function, it also functioned as a public space, namely for interaction with urban communities (Miladan *et al.*, 2019). Mataram Merah Park was a favorite for residents around the city to do activities, apart from being supported by adequate facilities, there was also various landscape vegetation to add aesthetic value. The majority of urban residents of various countries really felt the importance of the availability of urban park

landscape vegetation for public health as well as for recreation (Strumse *et al.*, 2006).

The vegetation in Mataram Merah Park after being identified were 29 types of plants consisting of 5 types of trees (17.24%), 21 types of shrubs (72.41%), 2 types of ground cover plants (6, 91%), and grass plants as much as 1 species (3.44%). The selection of vegetation types was important because the determination was very much determined by the function of plants to reduce pollution, and was beneficial for water conservation, directional function and aspects of beauty. The function of plants in the landscape is to control views, climate, erosion, physical barriers, animal habitat and aesthetics (Suparwoko, 2012). In detail, the types and functions of vegetation in Mataram Merah Park, Kebayoran Baru, DKI Jakarta are presented in Table 2 below.



Table 2. Data on the Types and Functions of Landscape Vegetation in Mataram Merah Park, Jakarta

No.	Local name	Latin name	Σ	Functions of Plants in Landscape						Tree Size (*)
				Want to have a view	Phys ical boun dary	Climate Control	Erosion Control	Animal Habitat	Aesthetics	
Tree										
1	Princess earrings	<i>Wrightia religiosa</i>	31					V	V	M
2	Cambodia Japan	<i>Adenium spp</i>	1				V		V	M
3	Yellow palm	<i>Dypsis lutescens</i>	6		V	V	V		V	S
4	Red palm	<i>Cyrtostachys lakka Becc</i>	6		V	V	V		V	S
5	Sadeng palm	<i>Livistona rotundifolia.</i>	2		V		V		V	M
Shrubs										
6	Sri Ivory	<i>Saraca indica</i>	300			V	V	V	V	
7	Mill flower		579							
8	Blood symbol	<i>Excoecaria cochinchinensis</i>	250						V	
9	Paradise	<i>Strelitzia reginae</i>	350		V				V	
10	Red Soka	<i>Saraca Indica</i>	805		V		V		V	
11	Mirten	<i>Malpighia coccigera</i>	80	V	V				V	
12	Yellow pandanus	<i>Pandanus pygmaeus</i>	307		V		V		V	
13	Bromelia flower	<i>Bromeliasp.</i>	19		V		V		V	
14	Aralea	<i>Osmoxylon lineare</i>	891		V		V		V	
15	White earrings	<i>Acalypha australis</i>	220						V	
16	Red earrings	<i>Acalypha indica</i>	500						V	
17	Centipede fern	<i>Nephrolepis</i> sp.	306						V	
18	Heliconia zebra	<i>Heliconia</i> sp	180	V	V				V	
19	Green paris lilies	<i>Chlorophytum comosum</i>	545		V		V		V	
20	Marantha batik	<i>Maranta leuconeura</i>	52		V		V		V	
21	Lee kwan you	<i>Vernonia elliptica</i>	30	V					V	
22	Tuber lilies	<i>Lilium</i> sp.	225						V	
23	Red shoots	<i>Syzygium oleana</i>	420	V	V	V			V	
24	Rollia upright	<i>Ruellia tuberosa L.</i>	340		V			V	V	
25	Rollia collapsed	<i>Ruellia tuberosa L.</i>	500		V			V	V	
26	Taiwan beauty	<i>Cuphea hyssopifolia</i>	100		V		V	V	V	
Ground Cover										
27	Brazil paris lilies	<i>Brazil paris lilies</i>	906		V		V		V	
28	Red Erpah	<i>Aerva sanguinolenta</i>			V		V		V	
Grass										
29	Mini elephant grass	<i>Axonopus compressus</i>	2619m2				V		V	

Source: Field Observation Data (2020)

Based on Table 2, it shows that with a total of 906 plants. Mataram Merah among the 29 types of plants in Mataram Park was generally planted with vegetation Merah Park, the dominant type of which functions aesthetically rather than landscape vegetation is the type of functionally. Planting vegetation did not only to fulfill ground cover, namely lily paris brazil

aesthetic functions, but how animals can be present in the environment needed to be added with the large trees and small trees, especially those with flower because birds and insects need suitable vegetation as their habitat (Irwan *et al*, 2012).

The results of the vegetation analysis in Mataram Park showed that there were 28 types of landscape plants that functioned as aesthetics (96.55%) and 4 types of plants that functioned as view control (13.80%). There were 18 types of plants whose landscape vegetation function as a physical barrier (62.07%). The functions of vegetation as erosion control are 15 species (51.72%); as climate controllers as many as 4 types (13.79%); the function of vegetation for animals are 5 species (17.24%). Each vegetation had different functions and benefits. The composition of vegetation should be adjusted to the function of the area, so that its function in city parks can be realized optimally (Soemaerno *et al*, 2013). The composition of the right vegetation in urban green open spaces such as city parks was the first step to create city parks that had an ecological function as the main support and aesthetic function as a support.

## CONCLUSION

From this study it can be concluded that in Mataram Merah Park, the dominant vegetation structure composition is shrubs, followed by trees (small / S and medium / M), ground cover and grass. The composition of this vegetation had an impact on function vegetation at the study site. The highest was the aesthetic function, followed by physical barrier functions, erosion control, functions for animals, visual control and climate control. Thus, the need for certain functions of a city park needs to pay attention to the composition of the vegetation structure.

## ACKNOWLEDGMENT

In this research, the authors received help from various parties. Thank you to Dinas Pertamanan Jakarta, for the data provided; Universitas Trisakti; Department of Landscape Architecture for provides research funding and the research team in carrying out research and writing this manuscript.

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# VEGETATION COMPOSITION ON ECOLOGICAL FUNCTION IN MATARAM MERAH PARK, JAKARTA

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**Submission date:** 30-Jul-2025 11:02AM (UTC+0700)

**Submission ID:** 2722683833

**File name:** artikel\_biolink.pdf (417.44K)

**Word count:** 2608

**Character count:** 13554



## **VEGETATION COMPOSITION ON ECOLOGICAL FUNCTION IN MATARAM MERAH PARK, JAKARTA**

**18**  
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Submitted : 15-06-2020; Reviewed :10-09-2020; Accepted : 23-11-2020

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### **Abstract**

The existence of the city park is important for Jakarta as a metropolitan city with the current activity level of motor vehicles and air pollution greatly affects the quality of the city environment. The selection of vegetation in Mataram Merah park considered functional aspects and aesthetic values . The objective of this study were to determine the composition and type of vegetation landscape in Mataram Merah park and to determine the function of each type of landscape vegetation in Mataram Merah park. This study used a descriptive qualitative method with several stages, which is survey; identification of the name and type of vegetation; size identification; identification of the type of vegetation making up the composition (name of type and size that makes up the vegetation structure). The results showed that Mataram Merah park was generally planted with vegetation that functioned aesthetically rather than functionally. The function of landscape plants in Mataram Merah park were as aesthetics is 96.55%, as controlling view as much as 13.80%, vegetation function as physical barrier as much as 62.07%, plants as controlling erosion 51.72%, function of plants as controlling climate 13.79% and vegetation function for wildlife as much as 17.24%.

**Keywords:** Vegetation composition; Ecological function; Park

**How to Cite:** Simangunsong, N.I., Fitri, R., & Besila, Q.A. (2021). Vegetation Composition on Ecological Function In Jakarta Mataram Merah Park, BioLink: Jurnal Biologi Lingkungan, Industri dan Kesehatan, Vol.7 (2): Hal. 123- 129

## INTRODUCTION

Green open space (RTH) in the form of a city park is one of the public facilities that can be enjoyed by urban communities. This park is provided by the city government so that it can be enjoyed by all city residents (Yuantika & Sulistiyowati, 2019). Regulation of the Minister of Public Works Number 05 / PRT / M / 2008 states that the government is obliged to provide a minimum of 30% RTH consisting of 20% land / urban area for RTH (public / park) plus 10% RTH which is private or belongs to people who already have control over the land (park or yards planted with plants).

To fulfill the requirements of 30% RTH, it is necessary to plan and collaborate with various parties, namely collaboration between stakeholders, increasing community participation and strengthening regulations that are carried out consistently and continuously. (Herdiansyah & Prakoso, 2019)

Green Open Space has an important role in the image of a city, among them are as a landmark, a 'mouthpiece for the people', a place for community interaction, a place that can accommodate people's aspirations, and has its own historical value (Ayu, 2019). Green Open Space (RTH) in the form of city parks can be utilized by urban communities for various social activities in a city or part of an urban area

supported by sports facilities, children's playgrounds, special parks for the elderly, flower gardens, recreational facilities and all these facilities are regulated in Regulation of the Minister of Public Works Number 05 / PRT / M / 2008 states that it is open to the public. The criteria for city parks are categorized as good, namely easy to access, neatly arranged, providing a sense of comfort and safety for its users and allowing for many social interactions (Hanan, 2013).

The existence of city parks is very important for DKI Jakarta as a metropolitan city with a high level of activity; of course it greatly affects the carrying capacity of the environment, namely increasing air pollution and motor vehicles. City parks have long been considered as sanctuaries from noise and pollution around the city (Brimblecombe & Xing, 2019)

City parks does not only function ecologically but also as public spaces for the interaction of urban communities in the midst of their busy activities; Proper use of landscape plants can reduce pollutant levels (Alfian & Kurniawan, 2010; Rizkiyah *et al.*, 2016). The conceptual green open space planning (city parks) can control global problems and ecosystem degradation in urban areas and meet ecological and environmental needs. Along with its development, city parks are not only limited to places for relaxing and



picnic activities, as well as active recreational activities, sports, cultural activities, entertainment and social interactions. City parks also have various other functions, namely ecological, biological, hydrological, aesthetic, recreational and social (Nurbalkis & Nurini, 2016).

Mataram Merah Park is a city park that functions as a green open space for residents of Selong Village, Kebayoran Baru Jakarta. Considering the importance of the ecological function of vegetation in city parks for environmental quality, it is necessary to study how to plan the

selection of functional landscape vegetation and provide aesthetic value to Mataram Merah Park. The objective of this study were to determine the composition of the species, the size of the vegetation in Mataram Merah Park landscape and to determine the function of each type of landscape vegetation in Mataram Park.

## MATERIALS AND METHODS

This research was conducted in March 2020, in Mataram Merah Park, Jakarta. The study area and the position of this city park can be seen in (Figure 1).

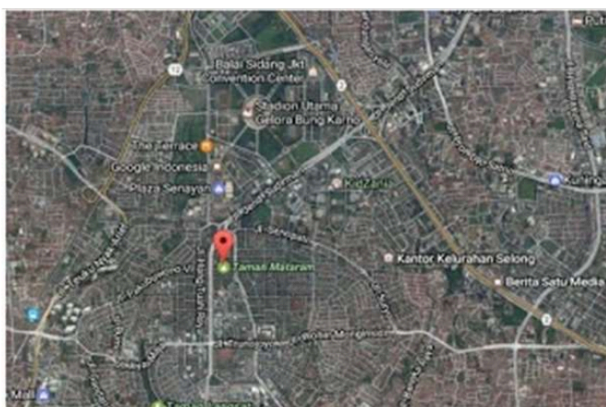


Figure 1. Map of the Research Location

Source: Google Earth (downloaded 29 April 2020 at 9:31 WIB)

This study used a qualitative descriptive method, this method carried out data collection activities consisting of two stages, namely the first stage of collecting data through a survey of the

object of research. This stage identified the types of vegetation composing plants throughout Mataram Park (local names, scientific names and sizes that make up the vegetation structure). The second stage

was to analyze the types of plants (Table 1), its ecological function in the landscape with the tree size specifications are based on reference to several sources and validated (Irwan, 2007) and descriptive analysis of by a team of experts.

Table 1. Tree types and specifications

No.	Tree Size	Combination of Height and Header Width	Tree Height (m)		Head Width (m)	
			Code	High	Code	Wide
1	Small Tree (S)	Aa, Ab	A	<5	a	<
2	Medium Tree (M)	Ac, Ba, Bb, Bc, Ca, Da	B	5-10	b	3-7
3	Big Tree (L)	Ad, Bd, Cb, Cc, Db	C	10-15	c	7-10
4	Very Large Tree (LL)	Cd, Dc, Dd	D	> 15	d	> 10

Source: Irwan, 2007

## RESULTS AND DISCUSSION

Mataram Merah Park had an area of 3490 m<sup>2</sup>, various facilities were available with various facilities, namely a children's playground, jogging track, discussion room, seating, financial literacy learning facilities, lighting, financial information boards, trash cans, seats for visitors. The existence of a city park with optimal quality was very important for a city, besides functioning as an ecological function, it also functioned as a public space, namely for interaction with urban communities (Miladan *et al.*, 2019). Mataram Merah Park was a favorite for residents around the city to do activities, apart from being supported by adequate facilities, there was also various landscape vegetation to add aesthetic value. The majority of urban residents of various countries really felt the importance of the availability of urban park

landscape vegetation for public health as well as for recreation (Strumse *et al.*, 2006).

The vegetation in Mataram Merah Park after being identified were 29 types of plants consisting of 5 types of trees (17.24%), 21 types of shrubs (72.41%), 2 types of ground cover plants (6, 91%), and grass plants as much as 1 species (3.44%). The selection of vegetation types was important because the determination was very much determined by the function of plants to reduce pollution, and was beneficial for water conservation, directional function and aspects of beauty. The function of plants in the landscape is to control views, climate, erosion, physical barriers, animal habitat and aesthetics (Suparwoko, 2012). In detail, the types and functions of vegetation in Mataram Merah Park, Kebayoran Baru, DKI Jakarta are presented in Table 2 below.

Table 2. Data on the Types and Functions of Landscape Vegetation in Mataram Merah Park, Jakarta

No.	Local name	Latin name	Σ	Functions of Plants in Landscape						Tree Size (*)
				Want to have a view	Phys ical boun dary	Climate Control	Erosion Control	Animal Habitat	Aesthetics	
Tree										
1	Princess earrings	<i>Wrightia religiosa</i>	31					V	V	M
2	Cambodia Japan	<i>Adenium spp</i>	1				V		V	M
3	Yellow palm	<i>Dypsis lutescens</i>	6		V	V	V		V	S
4	Red palm	<i>Cyrtostachys lakka Becc</i>	6		V	V	V		V	S
5	Sadeng palm	<i>Livistona rotundifolia.</i>	2		V		V		V	M
Shrubs										
6	Sri Ivory	<i>Saraca indica</i>	300			V	V	V	V	
7	Mill flower		579							
8	Blood symbol	<i>Excoecaria cochinchinensis</i>	250						V	
9	Paradise	<i>Strelitzia reginae</i>	350		V				V	
10	Red Soka	<i>Saraca Indica</i>	805		V		V		V	
11	Mirten	<i>Malpighia coccigera</i>	80	V	V				V	
12	Yellow pandanus	<i>Pandanus pygmaeus</i>	307		V		V		V	
13	Bromelia flower	<i>Bromeliasp.</i>	19		V		V		V	
14	Aralea	<i>Osmoxylon lineare</i>	891		V		V		V	
15	White earrings	<i>Acalypha australis</i>	220						V	
16	Red earrings	<i>Acalypha indica</i>	500						V	
17	Centipede fern	<i>Nephrolepis</i>	306						V	
18	Heliconia zebra	<i>Heliconia sp</i>	180	V	V				V	
19	Green paris lilies	<i>Chlorophytum comosum</i>	545		V		V		V	
20	Marantha batik	<i>Maranta leuconeura</i>	52		V		V		V	
21	Lee kwan you	<i>Vernonia elliptica</i>	30	V					V	
22	Tuber lilies	<i>Liliumsp.</i>	225						V	
23	Red shoots	<i>Syzygium oleana</i>	420	V	V	V			V	
24	Rollia upright	<i>Ruellia tuberosa L.</i>	340		V			V	V	
25	Rollia collapsed	<i>Ruellia tuberosa L.</i>	500		V			V	V	
26	Taiwan beauty	<i>Cuphea hyssopifolia</i>	100		V		V	V	V	
Ground Cover										
27	Brazil paris lilies	<i>Brazil paris lilies</i>	906		V		V		V	
28	Red Erpah	<i>Aerva sanguinolenta</i>			V		V		V	
Grass										
29	Mini elephant grass	<i>Axonopus compressus</i>	2619m2				V		V	

Source: Field Observation Data (2020)

Based on Table 2, it shows that with a total of 906 plants. Mataram Merah among the 29 types of plants in Mataram Park was generally planted with vegetation Merah Park, the dominant type of which functions aesthetically rather than landscape vegetation is the type of functionally. ground cover, namely lily paris brazil Planting vegetation did not only to fulfill

aesthetic functions, but how animals can be present in the environment needed to be added with the large trees and small trees, especially those with flower because birds and insects need suitable vegetation as their habitat (Irwan *et al*, 2012).

The results of the vegetation analysis in Mataram Park showed that there were 28 types of landscape plants that functioned as aesthetics (96.55%) and 4 types of plants that functioned as view control (13.80%). There were 18 types of plants whose landscape vegetation function as a physical barrier (62.07%). The functions of vegetation as erosion control are 15 species (51.72%); as climate controllers as many as 4 types (13.79%); the function of vegetation for animals are 5 species (17.24%). Each vegetation had different functions and benefits. The composition of vegetation should be adjusted to the function of the area, so that its function in city parks can be realized optimally (Soemaerno *et al*, 2013). The composition of the right vegetation in urban green open spaces such as city parks was the first step to create city parks that had an ecological function as the main support and aesthetic function as a support.

## CONCLUSION

From this study it can be concluded that in Mataram Merah Park, the dominant vegetation structure composition is shrubs, followed by trees (small / S and medium / M), ground cover and grass. The composition of this vegetation had an impact on function vegetation at the study site. The highest was the aesthetic function, followed by physical barrier functions, erosion control, functions for animals, visual control and climate control. Thus, the need for certain functions of a city park needs to pay attention to the composition of the vegetation structure.

## ACKNOWLEDGMENT

In this research, the authors received help from various parties. Thank you to Dinas Pertamanan Jakarta, for the data provided; Universitas Trisakti; Department of Landscape Architecture for provides research funding and the research team in carrying out research and writing this manuscript.

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