

UNIVERSITI TEKNOLOGI MARA

**SUITABILITY STUDY OF MALAYSIAN
TREE SPECIES AND CHARACTERISTICS
FOR GOLF COURSE LANDSCAPE USING
GEOGRAPHIC INFORMATION SYSTEMS
(GIS)**

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ABSTRACT

Today's golf courses provide beautiful views and scenic places within the surrounding areas. More than 70 percent of golf courses are rough and non-play areas including trees, shrubs and natural grasses. These golf courses provide many planted tree species and a beautiful landscape for the area. The purpose of this research is to recommend the most appropriate local tree species based on their characteristics in golf course landscape using Geographic Information Systems (GIS). The objectives of this study is to identify the species of trees (local and exotic) and determine their suitability in Kelana Course of the Subang National Golf Club, to develop tree species suitability map showing distribution of exotic and local species using Geographic Information Systems (GIS) and to identify potential local tree species and their characteristics for recommendation in golf courses. The study area is located at Subang National Golf Club. The Kelana Course was selected for tree species inventory in this area. The methodology presented in this research is divided into seven major stages (i) the selection of the study area (ii) data collection, (iii) field survey (iv) selection of the software, (v) data processing (vi) data analysis (vii) results. A field survey was conducted to collect the data of soil series and tree species on site. Two types of field survey were carried out at Kelana Course: 1) soil survey and 2) survey of trees. The field survey was conducted as follows: 1) a survey of trees in the golf course to collect the data of species, diameter breast height (dbh), canopy spread and height of trees and 2) soil survey to verify the soil series in the 18 Hole Kelana Course area. In the geo processing Arc GIS version 9 was used to register the map and digitized the image of Kelana Course and followed by layering. Total numbers of local tree species in Kelana Course is 23 and exotic species is 18. The five (5) highest numbers of species were found in Kelana Course. They are *Casuarina equisetifolia* (Rhu Pantai) 115 trees, *Podocarpus neriifolius* (Podo Bukit/ Jati Bukit) 93, *Pelthophorum pterocarpum* (Jemerlang/Batai Laut) 81 trees, *Fragrea fragrans* (Tembusu) 75 and *Eugenia grandis* (Kelat Jambu Laut) 70. The highest number of exotic species is *Acacia mangium* (Akasia Daun Lebar) 112. In this research, 15 local species are most suitable in golf courses. The most suitable local tree species at fairways and rough area are *Fragrea fragrans* (Tembusu), *Mesua ferrea* (Penaga Lilin), *Podocarpus neriifolius* (Podo Bukit), *Pelthophorum pterocarpum* (Jemerlang) and *Hopea odorata* (Merawan Siput Jantan). The recommended species at tee box area are *Garcinia parviflora* (Kandis), *Pometia pinnata* (Kasai). The species at water body area are *Dillenia suffruticosa* (Simpoh Air), *Melaleuca cajuputi* (Kayu Putih), *Lagerstroemia speciosa* (Bungor) and *Eugenia grandis* (Jambu Laut) and *Alstonia Angustiloba* (Pulai). The suitable local tree species at green area is *Pometia pinnata* (Kasai), *Cinnamomun iners* (Medang Teja) and *Mimusops elengi* (Bunga Tajung). GIS will help Landscape Maintenance staff to know where each tree is located along fairway, tee, green, water body and rough area. It is also useful for the staff to know where trees should be located when planning new reconstruction developments in golf course.

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TABLE OF CONTENTS

	Page
TITLE PAGE	
AUTHOR'S DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	vi
LIST OF FIGURES	x
LIST OF TABLES	xiv

CHAPTER 1: INTRODUCTION

1.1	Background information	1
1.2	Research Questions	8
1.3	Aim	9
1.4	Research objectives	9
1.5	Significance of the Study	9
1.6	Study Area	10
1.7	Definition	11
1.8	Scope and Limitation	12

CHAPTER 2: LITERATURE REVIEW

2.1	Tree Characteristics	13
	2.1.1 Leaves	14
	2.1.2 Foliage	15
	2.1.3 Crown Shape	16
	2.1.4 Branching	20