



UNIVERSITI PUTRA MALAYSIA

**GROWTH AND DEVELOPMENT OF *LEPISANTHES ALATA* (BLUME)
LEENH FRUIT**

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**GROWTH AND DEVELOPMENT OF *LEPISANTHES ALATA* (BLUME) LEENH
FRUIT**

by

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A project report submitted to Faculty of Agriculture, Universiti Putra Malaysia in
fulfilment of the requirement of PRT4999 (Final Year Project) for the award of the degree
of Bachelor of Horticultural Science

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CERTIFICATION

This project report entitled ‘**Growth and development of *Lepisanthes alata* (Blume) Leenh fruit**’ is prepared by Megat Ahmad Yusuf Bin Megat Muhammad Hatim and submitted to the Faculty of Agriculture in fulfilment of the requirement of PRT4999 (Final Year Project) for the award of the degree of Bachelor of Horticultural Science.

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LIST OF ABBREVIATION

%	:	percentage
a*	:	Green red axis
AsA	:	Ascorbic acid
b*	:	Blue-yellow axis
C*	:	Chroma
cm	:	centimetre
CO ₂	:	Carbon dioxide
g	:	gram
GA	:	Gibberellins
h°	:	hue angle
L	:	liter
L*	:	lightness
m	:	meter
M	:	Molar
mg	:	milligram
ml	:	millilitre
mm	:	millimetre
NaOH	:	Sodium hydroxide
°C	:	degree in Celcius
SSC	:	soluble solids concentration

TA : titratable acidity

ABSTRACT

Growth and development of fruit is crucial to identify the characteristic changes during harvesting time of the fruit. The information on the growth and development, physico-chemical and the phytochemical properties of *Lepisanthes alata* during maturation are still lacking. Therefore, a study to determine growth and development characteristic changes of *Lepisanthes alata* was carried out. The fruits were harvested at different time for every two weeks of interval and the determination of physical properties (weight and density, length and diameter, peel color and firmness) and chemical changes (soluble solids concentration, titratable acidity, pH value, ascorbic acid) properties were carried out. The experiment was performed using completely randomize design (CRD). The collected data was analysed using Duncan's multiple range test. The results indicated that the fruits had increased in size (length, diameter, weight and density), soluble solids concentration and pH. Results also show decreased in titratable acidity content and ascorbic acid content as the fruit grew and developed.

ABSTRAK

Pembesaran dan perkembangan buah adalah penting untuk menentukan ciri-ciri perubahan bagi buah pada tempoh masa ia dituai. Maklumat mengenai pembesaran dan perkembangan buah, ciri-ciri fiziko-kimia dan faitokimia bagi *Lepisanthes alata* semasa proses kematangan adalah kurang. Oleh yang demikian, satu kajian untuk menentukan ciri-ciri perubahan pembesaran dan perkembangan bagi *Lepisanthes alata* telah dijalankan. Buah telah dituai dalam tempoh masa yang berbeza pada setiap selang dua minggu dan penentuan bagi perubahan sifat-sifat fizikal (berat dan ketumpatan, panjang dan diameter, warna kulit dan ketegasan) dan perubahan bagi sifat-sifat kimia (kepekatan pepejal larut, titrat keasidan, nilai pH, asid askorbik) telah dijalankan. Eksperimen telah dijalankan dengan menggunakan rekabentuk rawak lengkap. Data-data yang telah dikumpulkan telah dianalisis dengan menggunakan ujian pelbagai julat Duncan. Keputusan menunjukkan bahawa buah-buahan telah mempunyai peningkatan terhadap saiz (panjang, diameter, berat serta ketumpatan), kepekatan pepejal larut dan nilai pH. Keputusan juga menunjukkan penurunan dalam kandungan keasidan serta kandungan askorbik asid buah-buahan semasa tumbesarnya.

CHAPTER 1

INTRODUCTION

Lepisanthes alata is one of the edible plant fruit from the *Sapindaceae* family. It is commonly known as cherry Terengganu, Johore fruit or Rambai Istana. It is not commonly cultivated commercially thus it can be categorized as rare fruit species. This species is usually planted with other species of plants as an ornamental tree at the garden and farm area (FRIM, 2014). This is because it is an attractive tree with young leaves or shoots of pale purple as well as purple flowers and also the red color of the fruits (FRIM, 2014). It is non-seasonal fruit tree so the fruiting can occur throughout the year. According to Lim (2013), *Lepisanthes alata* is a tropical species that survive in the lowland jungle area and along streams or rivers.

Growth and development of fruit are always related to the changes of size and physiological and the size over the time. The growth of a fruits start from flowering, with intensive cell division, but the multiplication process of the cell decrease as the development continue and the tissue enters the stage of enlargement (Bertin *et al.*, 2003). The physiological changes occurred in a fruit could be the shape and its colour. The fruit growth and development is generally crucial for determining the physico-chemical attributes like changes in appearances which include size and weight, ascorbic acid content, sugar content and pH value, hormones and some of the chemical compounds involved.

However, a complete information about the growth and development of *Lepisanthes alata* are still lacking. The collection data of *Lepisanthes alata* are required in carrying out the physico-chemical characteristic so that we able to determine which is the optimum stage of the fruit that suitable to be harvested by the farmers and growers. Thus, the main study purpose of growth and development fruit is to examine the physico-chemical characteristic of *Lepisanthes alata* fruit harvested every two weeks.



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