



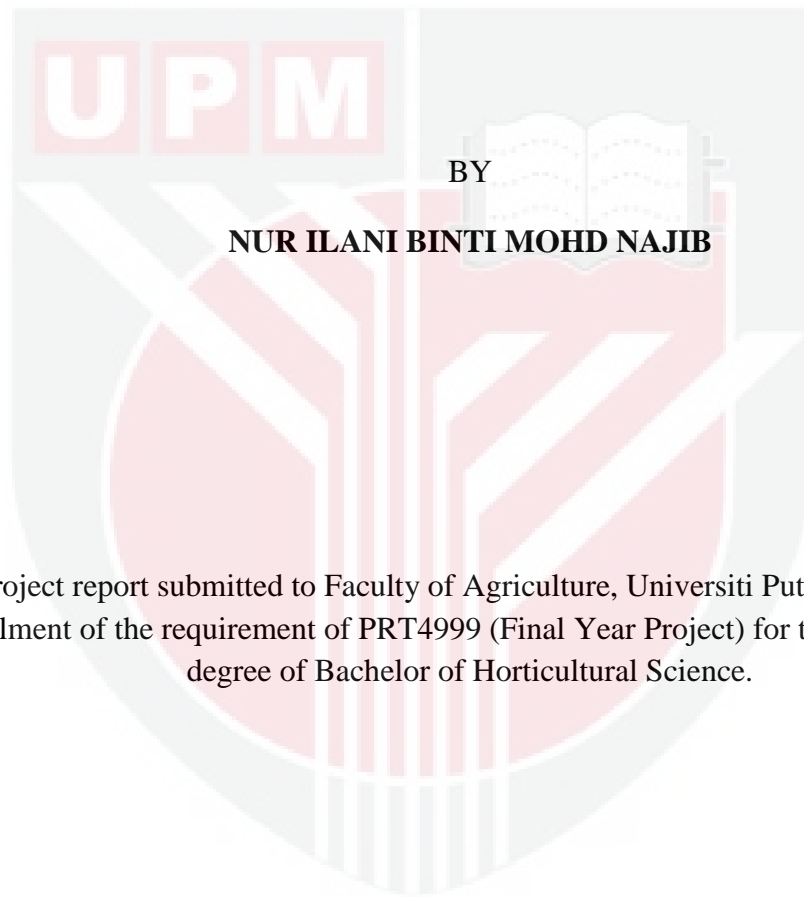
UNIVERSITI PUTRA MALAYSIA

**PROLIFERATING AXILLARY BUD FORMATION FROM SHOOT TIP
EXPLANTS OF F1 HYBRID CUCUMBER (*Cucumis sativus* L.) WITH
SUPPLEMENTED OF BAP AND KINETIN**

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FP 2015 166

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BY

NUR ILANI BINTI MOHD NAJIB

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

Faculty of Agriculture

Universiti Putra Malaysia

2014/2015

CERTIFICATION

This project report entitled “**Proliferating Axillary Bud Formation From Shoot Tip Explants of F1 Hybrid Cucumber (*Cucumis sativus* L.) With Supplemented of BAP and Kinetin**” is prepared by Nur Ilani Binti Mohd Najib and submitted to the Faculty of Agriculture in fulfillment of the requirement of PRT4999 (Final Year Project) for the award of the degree of Bachelor Horticultural Science.

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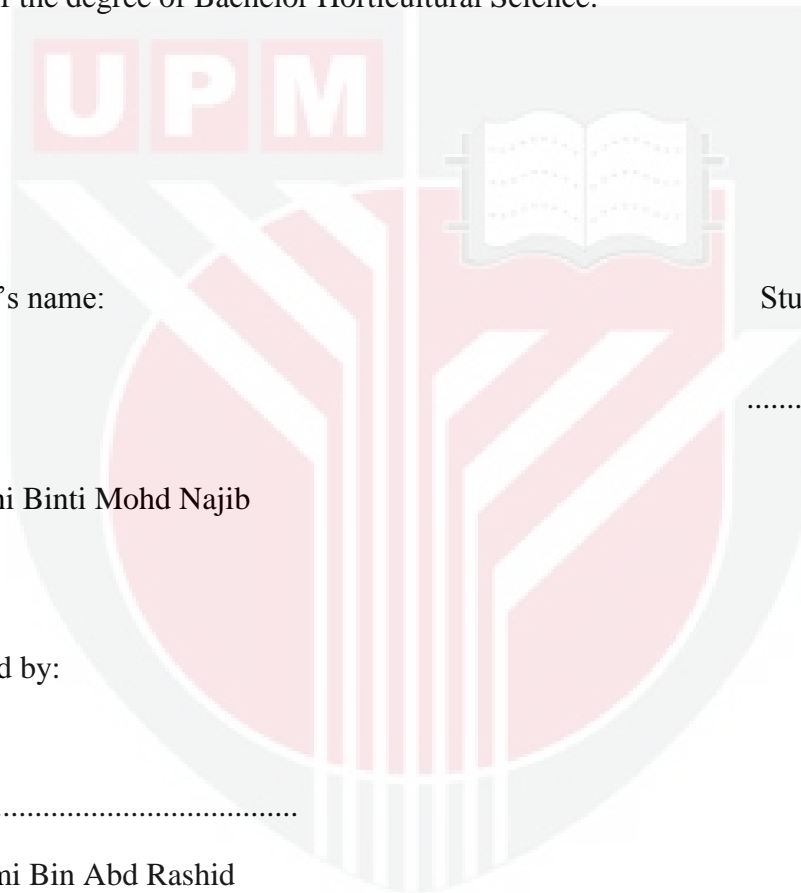
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ACKNOWLEDGEMENT

First of all, I would like to express my never ending gratitude to my supervisor, En. Azmi Abdul Rashid for his dedication, support and guidance in helping me complete this research. He helped me a lot and without his guidance, I would not be able to complete this research.

Not forgetting people that were involved in this research directly or indirectly, postgraduate students and lab staffs including Miss Nurul Husna, Miss Siti Raziah and Mrs. Rohani, without their help I would go nowhere. Besides that, my friends who are always there to help me whenever I needed them.

Last but not least, I would like to thank my beloved parents and siblings who are always there to support and gave their words of encouragement to me. The only thing I can say is, without their support, this research could not be completed.

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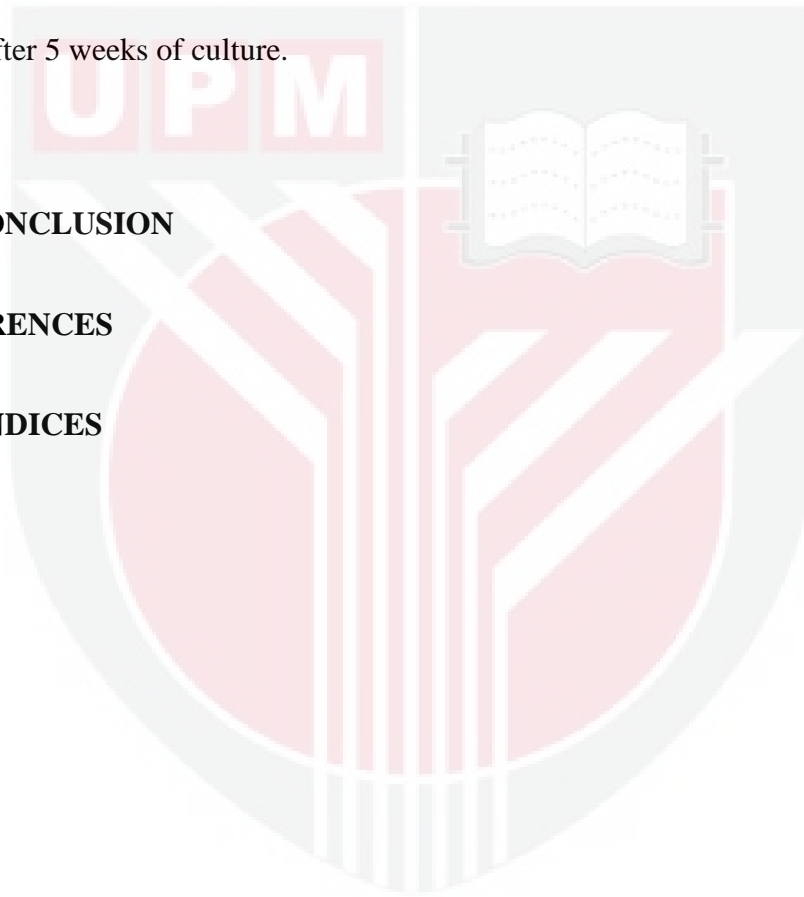
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LIST OF ABBREVIATIONS

The following abbreviations were used in the text.

BAP	6-benzylaminopurine
Kin	Kinetin
Mg/L	Miligram per liter
%	Percentage
°C	Degree Celcius
L	Liter
MS	Murashige and Skoog
MS	Mean of square
SS	Sum of square
F	Degree of freedom
pH	Hydrogen ion concentration $-\log (H)$
RCBD	Randomized Complete Block Design
ANOVA	Analysis of variance

ABSTRACT

This study was conducted to determine the best 6-benzylaminopurine (BAP) or Kinetin (Kin) in proliferating axillary bud formation from shoot tip explants of F1 hybrid cucumber (*Cucumis sativus* L.). Seeds of F1 hybrid cucumber were germinated on full Murashige and Skoog (MS) medium without the addition of plant growth regulator. In this experiment, the shoot tip explants excised from 14 day-old germinated seedlings were used. This explants were cultured on full MS medium supplemented with different BAP and Kinetin concentrations (0.0, 0.5, 1.0, 2.5 and 5.0 mg/L). This experiment was conducted using Randomized Complete Block Design (RCBD) with 10 replications per treatment. All BAP and Kinetin treatments including the control treatment showed 100% of explant proliferating axillary bud formation. Analysis of variance showed no significant difference between the control treatment and all other BAP and Kinetin treatments on mean number of shoots formed per explant.

ABSTRAK

*Kajian ini telah dijalankan bagi menentukan yang manakah terbaik di antara 6-benzylaminopurin (BAP) atau Kinetin (Kin) dalam pembiakan tunas aksil dari hujung pucuk bagi hibrid F1 timun (*Cucumis sativus* L.). Benih timun bagi F1 hibrid akan dicambahkan di dalam media penuh MS (Murashige and Skoog) tanpa penambahan pengawal penggalak pertumbuhan tumbuhan. Di dalam eksperimen ini, hujung pucuk eksplan yang dipotong akan digunakan selepas 14 hari benih timun bercambah. Melalui kajian ini, eksplan akan dicambahkan dalam media penuh MS yang ditambahkan dengan perbezaan kepekatan daripada BAP dan Kinetin (0.0, 0.5, 1.0, 2.5 and 5.0 mg/L). Kajian ini dijalankan dengan menggunakan Rekabentuk Blok Penuh Rawak bersama 10 replikasi bagi setiap rawatan. Kesemua rawatan BAP dan Kinetin termasuklah rawatan kawalan menunjukkan 100% eksplan menghasilkan pembentukan tunas aksil. Analisis varians menunjukkan tiada perbezaan yang signifikan di antara rawatan kawalan dan kesemua rawatan BAP dan Kinetin pada min bilangan pucuk yang terbentuk setiap eksplan.*

CHAPTER 1

INTRODUCTION

1.1 Introduction



In Malaysia, cucumber is called *timun* and the scientific name of cucumber is *Cucumis sativus* L. This species belongs to the Cucurbitaceae family. This crop can be grown in the tropic, subtropic and milder temperate zones of both hemispheres.

In India, cucumber is a plant which plays an important role in the horticultural field because it is cultivated as a vegetable. It has several uses such as in pickle production and for the preparation of traditional Indian medicines (Sangeetha and Venkatachalam, 2013) besides being taken fresh as salad.

This crop has antioxidant and detoxification property and contains high mineral content such as phosphorus and potassium. It also has high oxalic acid content (Milner, 2000; Chu et al., 2000). The seeds can be used in diuretic treatment and in making tonic drink (Pandey, 2000).

Botanically, cucumber (*Cucumis sativus* L.) is a type of vegetable with creeping vines. This plant also has leaves which are simple and arranged in an alternate manner. The leaves are deeply cordate with 3-5 lobed on its surfaces with a hairy denticulate margin. The flowers of cucumber are yellow in color. The male flowers are clustered, bearing anther with cohering and connective crush while the female flowers are solitary, thick and is covered by hairs. Its ovary is large and significant (Warrier, 1994).

Cucumber is usually propagated using sexual approach through the production of seeds (Ahmad and Anis, 2005). Production of plants using seeds will produce plants which might be non-true to type because plants produced at the second filial generation usually segregate. Therefore, micropropagating the plants at the F1 generation are necessary to maintain true to typeness of the F1 hybrid cucumber (George et al., 2008).

At present not much has been reported on induction of axillary budding from shoot tip culture of *Cucumis sativus* L. F1 hybrid. Therefore, this experiment was conducted with the following objective:

1. To determine the most suitable concentration of BAP or kinetin in proliferating axillary budding from shoot tip culture of *Cucumis sativus* L.



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