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The effects of banana positions within a bunch on the ripening behavior of *Musa acuminata* cv. Berangan / James Jam Jolly.

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PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

**THE EFFECT OF BANANA POSITIONS WITHIN A BUNCH ON THE  
RIPENING BEHAVIOR OF  
*Musa acuminata* cv. Berangan**

**By  
James Jam Anak Jolly**

**Research Report submitted in partial fulfillment of  
the requirements for the degree of  
Bachelor of Agrotechnology Science (Post Harvest Technology)  
under supervision of  
Miss Roshita Binti Ibrahim and co-supervisor Dr Adzemi Mat Arshad**

**DEPARTMENT OF AGROTECHNOLOGY  
FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE  
UNIVERSITI MALAYSIA TERENGGANU  
2010**

## ENDORSEMENT

The project report entitled **The Effect of Banana Positions within a Bunch on the Ripening Behavior of *Musa acuminata* cv. Berangan** by **James Jam Anak Jolly** Matric Number **UK14747** has been reviewed and corrections have been made according to the recommendations by examiners. This project is submitted to the Department of Agrotechnology in partial fulfillment of the requirement of degree of Science in Agrotechnology (Post Harvest Technology) Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.



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## DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been dully acknowledged.

Signature

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: 15<sup>th</sup> May 2010

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## ABSTRACT

A study on the ripening behaviors between different position of hands (upper, middle and lower) within intact and de-handed bunches of 'Berangan' banana (*Musa acuminata*) was carried out. The ripening behaviors were determined based on quantitative measurements of physico-chemical characteristics during storage at ambient temperature of 3 days intervals for 12 days. Both intact and de-handed bunches of bananas had shown different patterns of ripening behaviors in terms of physical changes (peel and pulp color and weight ratio, fruit weight, texture and volume) and chemical changes (starch, total soluble solid (TSS) and tannins) with respect to different hand positions (upper, middle and lower). There were increasing trends of fruit volume, size, color (L, a, b) and TSS content whereas peel and pulp weight ratio, weight changes, peel and pulp texture, starch and tannin contents showed decreasing values over the storage. This study had proven that, maturation of fruits in a bunch started from upper hands down to lower hands in both intact and de-handed bunches of bananas. Nevertheless, the lower hands were able to catch up with the ripening process in terms of total soluble solid, tannins and starch contents where towards the end of storage day, their contents had synchronized with those upper and middle hands although upper and middle hands had showed advance changes in terms of physical characteristic (peel color) thus resulting in contemporaneous ripening within a bunch. Besides, this study also showed that ripening process occurred faster in de-handed bunches compared to the intact bunches of bananas.

## ABSTRAK

Kajian tentang perbezaan perilaku kematangan antara kedudukan sikat (atas, tengah dan bawah) dalam setandan dan tandan yang telah pun diasingkan kepada sikat 'pisang Berangan' (*Musa spp*) telah dijalankan. Perilaku kematangan ditentukan berdasarkan pengukuran kuantitatif melihat kepada ciri-ciri fizik kimia sepanjang penyimpanan pada suhu bilik selama 12 hari dan data serta analisis dibuat selang 3 hari sekali. Kedua-dua pisang dalam setandan dan tandan yang telah diasingkan kepada sikat telah menunjukkan pola perilaku kematangan yang berbeza dalam perubahan fizikal (warna kulit dan isi buah dan nisbah berat, perubahan berat keseluruhan, tekstur dan isipadu) dan perubahan kimia (kanji, jumlah keseluruhan pepejal terlarut (TSS) dan tannin) pada kedudukan sikat yang berbeza (atas, tengah dan bawah). Peningkatan didapati dalam aspek isipadu buah, saiz, warna (L, a, b) dan kandungan TSS manakala nisbah berat kulit kepada isi, perubahan berat buah keseluruhan, kulit dan tekstur isi, kanji dan kandungan tannin menunjukkan penurunan nilai selama simpanan. Kajian ini juga telah membuktikan bahawa, kematangan buah dalam setandan bermula daripada sikat atas pada kedua-dua pisang dalam setandan dan tandan yang telah diasingkan kepada sikat. Namun demikian, sikat pada bahagian bawah mampu mengejar dan menyamaratakan proses pematangan dari aspek keseluruhan pepejal terlarut, tannin dan kandungan kanji, walaupun sikat bahagian tengah dan bahagian atas lebih awal menunjukkan perubahan dalam ciri-ciri fizikal seperti perubahan warna (kulit). Selain itu, kajian ini juga menunjukkan bahawa proses pematangan berlaku lebih cepat dalam tandan yang telah diasingkan kepada sikat berbanding dengan dalam setandan tanpa diasingkan kepada sikat.