

**COMPARATIVE STUDY OF OIL TO BUNCH RATIO FOR RIPE AND UNRIPE  
OIL PALM FRUITS**

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## DECLARATION


This Final Year Project is a partial fulfillment of the requirements for a degree of Bachelor of Science (Hons.) Plantation Technology and Management, Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

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I hereby declare that I have checked this project and in my opinion, this project is adequate in terms of scope and quality for the award of the degree of Bachelor of Science (Hons.) Plantation Technology and Management, Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

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## **ABSTRACT**

### **COMPARATIVE STUDY OF OIL TO BUNCH RATIO FOR RIPE AND UNRIPE OIL PALM FRUITS**

Oil Palm is the major plantation crop in Malaysia. The production of oil palm is very important to Malaysian economic. Palm oil processing is the major oil industry in Malaysia since the Malaysia is one of the higher productions of oil palm in the world. This study would focus more on unripe oil palm bunch analysis. This research was done at Felda Sungai Tengi Palm Oil Mill. The selection sample was categorized from small, medium and large bunch. The palm oil extraction procedure began with sterilization process where the bunch that needed to be extract would be steam in sterilizer to soften the fruit mesocarp for easy to digestion and release of oil. The next process was continued with loosening the fruits from bunch with manually process. From this process, the weight of empty fruit bunch was obtained. Weight of fruitlet that was obtained from loosening manually process such as unripe fruit, ripe fruit, abnormal parthnenocarp and carlix leaves were taken the weight including weight of empty fruit bunch (EFB). That needs in get the percentage of oil in bunch. The extraction process has used soxhlet method process. This process was used to get an oil extraction from the mesocarp. As the result from this study, the small, medium and large size of bunch that have categories, the result was showed that the oil in bunch content more have in small bunch. The average of oil in small bunch was 13.28% in young bunch and 33.32% the oil in bunch content in ripe bunch. As the conclusion, this research can be further study in the future to get the quality of oil that have in unripe bunch.

## ABSTRAK

Kelapa sawit merupakan tanaman utama di Malaysia. Pengeluaran minyak kelapa sawit adalah sangat penting kepada ekonomi negara. Pemprosesan minyak sawit adalah industri utama di Malaysia. Ini adalah kerana Malaysia merupakan salah satu negara pengeluar minyak sawit yang terbesar di dunia. Tujuan utama kajian ini dijalankan adalah untuk mengkaji minyak dari buah tandan muda yang dihantar ke kilang oleh peladang. Analisa buah tandan ini dijalankan di Kilang Sawit Felda Sungai Tengi. Kajian ini dimulakan dengan memilih sampel tandan yang akan dianalisa di pusat pengumpulan buah kelapa sawit. Pemilihan buah tandan adalah mengikut kepada saiz buah tandan yang terbahagi kepada kecil, sederhana dan besar. Prosider pengekstrakan minyak sawit dimulakan dengan proses pensterilan. Proses ini dijalankan bagi memudahkan peleraian buah sawit daripada tandan dan melembutkan buah sawit. Proses seterusnya diikuti dengan meleraikan buah sawit yang telah dimasak (steril) secara manual. Daripada proses ini, berat buah sawit muda, buah sawit masak, buah yang tidak normal dan daun dapat diambil beratnya termasuk berat tandan kosong. Semua berat ini diperlukan untuk mendapatkan peratus kandungan minyak di dalam tandan. Proses ekstrak minyak sawit dilakukan mengguna soxhlet. Soxhlet digunakan untuk mengekstrak minyak daripada mesokap. Sebagai keputusannya, jumlah purata peratus minyak lebih terdapat di dalam tandan kecil berbanding tandan besar. Purata peratus minyak di dalam buah tandan muda kecil ialah sebanyak 13.28% manakala di dalam tandan masak kecil pula ialah sebanyak 33.32%. Kesimpulannya, kajian ini boleh diteruskan pada masa akan datang dengan mengkaji kualiti minyak yang terdapat di dalam buah tandan muda.