COMPARATIVE BETWEEN MOTORIZED HARVESTING AND MANUAL HARVESTING SYSTEM IN OIL PALM PLANTATION

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DECLARATION

I declare that the work in this research was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This research has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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Date: 10/8/2015

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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 degree of Bachelor of Science (Hons.) Plantation Technology Management , Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

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ABSTRACT

The Malaysian Palm Oil Board (MPOB) has developed a motorized cutter popularly known as cantas for harvesting fresh fruit bunch (FFB) where as we expect it can produced double productivity, low cost and light weight compare to conventioanl manual system. But it is contrary where conventional manual system is more provides fast pruning, harvesting is easy and comfortable control. Trial carried out on manual harvesting system (using a conventional sickle) revealed that the productivity was get 250 to 300 bunches per day (equivalent to 5.00 to 6.00 t day^{-1} at a bunches weight of 20kg). The productivity very much depends on the cropping level, the topography of the plantation area and the operator's skill. By comparison, the productivity of motorized harvesting system (using a cantas) is only 230 to 250 bunches per day (4.6 to 5.00 t day^{-1}). Therefore, the productivity of manual harvesting system is equivalent to two human harvester. Using the manual harvesting system the plantation company would able to reduced 50% of labour requirement in the harvesting operation. Another advantage of this cutter is that the height of palm until 15 m does not restrict its usage. As for the economics of the manual sysytem, based on the conventional manual sickle the cost per unit is only RM 200 where can used until 3 to 6 month depend on maintenance and good care. The cost effectiveness was calculated at RM 0.52 t^{-1}.

ABSTRAK

Lembaga Minyak Sawit Malaysia (MPOB) telah membangunkan pemotong bermotor dikenali sebagai Cantas untuk menuai tandan buah segar (FFB) di mana seperti yang kita jangka ia boleh menghasilkan produktiviti berganda, kos yang rendah dan ringan berbanding dengan conventioanl sistem manual. Tetapi ia adalah sebaliknya di mana sistem manual konvensional lebih menyediakan pemangkasan cepat, penuaian adalah kawalan yang mudah dan selesa. Percubaan dijalankan ke atas sistem penuaian manual (menggunakan sabit konvensional) menunjukkan bahawa produktiviti adalah mendapatkan 250-300 tandan sehari (bersamaan dengan 5,00-6,00 t day^{-1} pada berat tandan 20kg). Produktiviti amat bergantung kepada tahap tanaman itu, topografi kawasan ladang dan kemahiran pengendali. Sebagai perbandingan, produktiviti sistem penuaian bermotor (menggunakan Cantas) hanya 230-250 tandan sehari (4,6-5,00 t day^{-1}). Oleh itu, produktiviti sistem penuaian manual bersamaan dengan dua penuai manusia. Menggunakan sistem penuaian manual syarikat perladangan akan dapat dikurangkan 50% daripada keperluan tenaga kerja dalam operasi penuaian. Satu lagi kelebihan pemotong ini ialah ketinggian sawit sehingga 15 m tidak menyekat penggunaannya. Bagi ekonomi sysytem manual, berdasarkan sabit manual konvensional kos setiap unit hanya RM 200 di mana boleh digunakan sehingga 3 hingga 6 bulan bergantung kepada pemeliharaan dan penjagaan yang baik. Keberkesanan kos telah dikira pada RM 0.52 t^{-1}