

Mechanized system for in-field oil palm fresh fruit bunches collection-transportation.

ABSTRACT

A new machine system was developed to overcome the limitations for the in-field collection-transportation of oil palm fresh fruit bunches (FFB) with the commonly used mini tractor-trailer with grabber in the oil palm plantations in Malaysia. This single chassis 50.5 kW universal prime mover was operated at 2,600 rpm and had a 4 wheel drive and a collection-transportation attachment with a 1,500 kg payload storage bin. The machine system had an output of 2.526 ton/h or 20.213 ton/day on sloping terrain and 2.620 ton/h or 20.965 ton/day on gently undulating terrain. Operating cost reductions were in the range of 10.26 % to 14.44 % per ton or operating cost savings in the range of USD 0.27/ton to USD 0.38/ton over that of the mini tractor-trailer with grabber. Generally, this new machine system offered a good technological solution for in-field collection-transportation of FFB for the oil palm plantation industry in Malaysia.

Keyword: Fresh fruits; Machine systems; Malaysia; Mechanized systems; Oil palm plantations; Prime movers; Sloping terrains; Technological solution