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Residual oil recovery system: crude palm oil recovery from Pressed Mesocarp Fibre in the palm oil mill

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Abstract

The Malaysian oil palm industry has shown stellar performance in 2011. Average annual price of palm oil for the year breached the RM3,000 mark to register at RM3, 219, while export revenue of palm products reached a record high of RM80.4 billion.At the palm oil mill crude palm oil(CPO) is produced by squeezing out the digested mesocarp of the palm fruits. Currently mills use mechanical screw presses to squeeze out the oil from the mesocarp. However, mechanical methods have their limitations as some oil will still remain in the pressedmesocarp. The pressed mesocarpfibre(PMF) retains about 5.00-11.00% oil as a ratio to dry matter which translates to an oil loss per tonne of fresh fruit bunches (FFB) in the range of 0.25-0.55%. In order to recover part of this residual oil in the PMF, a residual oil recovery system (RORS) was developed. This system has the ability to recover the residual oil in the PMF by using a washing technique, followed by pressing to recover CPO. Water at a certain temperature is used to digest the PMF, following which it is pressed. The water and oil expelled by pressing are then sent to a vibrating screen to remove solids and are recovered in the oil recovery tank in the palm oil mill. The water is sent for recycling. The system is found to bring down the residual oil content in the PMF to as low as 2.00% on a dry basis. The normal oil loss in pressed mesocarp fibre in the mill is 5.00 to 11.00% on a dry basis (equivalent to 1.80 to 3.96% on a wet basis). The oil extracted by RORS also depends on the amount of oil loss, and will range from 0.15 to 0.45% oil recovery per tonne of FFB. CPO that is extracted from the pressed mesocarp fibre by RORS exhibits even better oil quality than normal CPO.

Biography

VijayaSubramaniam obtained her PhD from University Malaya of Malaysia in the year 2009. She is attached to the Engineering and Processing Research Division under the Malaysian Palm Oil Board. She is currently working as a Senior Research Officer and is the Leader of the Environment research group under the Energy and Environment Research Unit. She is currently working on the disciplines of Life Cycle Assessment for palm oil and the oil palm industry, water footprint, carbon footprint, sustainability and recovery of residual oil (waste to wealth program) for the oil palm industry.