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Effects of Degree of Mulching on Mulching Oil Palm Fronds Using Tractor Mounted Mulcher Blades

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Abstract

The study investigates the influence of blade lifting angles, tractor forward speed and tractor PTO speed in predicting the reasonableness of the hypothesis on degree of mulching. In the oil palm industry, only 10% palm oil is produced and the remaining in the form of wastes, estimated at 80 million dry tonnes annually. This caused high propagation of rhinoceros beetles and severe crop loss in the first year of harvest due to beetle damage.Tractor mounted mulcher produced by Howard company which is cheaper than the heavy mulchers but farmers were complaining on the performance despite its evaluation. Four blades with different lifting angles, two tractor PTO with different speeds and three tractor forward speeds were assessed using parametric test at the Universiti Putra Malaysia oil palm plantation. The result shows that the best-fit regression equation was a quadratic regression with high coefficient of determination. It indicates that change on three-factor interaction has significant effect using Tukey's Studentized mean comparison and predict the degree of mulching. Seventy-four percent of the degree of mulching variance is explained by blade lifting angles, tractor forward speed and tractor PTO speed. Since blade lifting angle was a major predictor of degree of mulching, the implication of this result is that change in blade lifting angle predicts the degree of mulching in an oil palm plantation significantly. Additionally, the predicted model can further be used to predict degree of mulching during field operation, replanting and access operation for mulching of oil palm fronds. It is recommended that blade with 120 degree lifting angle be used for good mulching of oil palm fronds.

Keywords: Forward speeds, mulcher blade, mulching depth, Oil palm fronds

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