

DEVELOPMENT OF A TWO WHEEL TRACTOR DRIVEN COCONUT FERTILIZER APPLICATOR

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Coconut (*Cocos nucifera* L.) is a perennial tree crop with about 60 years of economic life span. Decreasing soil fertility over several decades due to inadequate replenishment of the exhausted nutrients is a major problem affecting the coconut production. The annual yield from a single tree can be increased up to 100-125 nuts, from 50-70 nuts with the application of fertilizer. There is no efficient method to apply fertilizer to coconut estates except manual application, which is laborious. General objective of the research study was to introduce an efficient method for fertilizing coconut estates.

After investigating physical properties of raw material and its influence on the performance of fertilizer application, a two-wheel tractor driven granular fertilizer applicator was developed. Main components of the applicator were hopper, opposite-direction screw conveyor, two set of furrow openers, fertilizer tubes, and a furrow closer. Power transmission from engine to the applicator was done by chain and sprockets. The applicator is designed to apply 5 kg of fertilizer mixture per palm at an optimum speed of 1.1 km/h.

The fertilizer applicator was evaluated in a coconut land and received satisfactory results. It performed at a fertilizer feeding capacity of 0.45 ha/hr with 72.7% efficiency. Compared to the traditional method, the developed fertilizer applicator could save 96.5 % of time as well as 94 % of cost in fertilizer application per hectare.

Key words: Coconut cultivation, Fertilizer applicator, Coconut fertilizer