



ICAR-Indian Institute of Oil Palm Research

Success story on Chaff cutter

Problem statement

Oil palm plantations produce huge quantities of biomass in the form of fronds accounting to 15-17 tons per hectare per year. This is a lignocellulosic material which is highly resistant to biological degradation due to chemical integrity. In general, if the fronds are left as such in the field, the natural and complete degradation takes about 5-7 months by which time there will be a pileup of cut fronds. The accreted fronds cause hinderances in movement of vehicles like tractors in the plantations and also attract snakes and other poisonous arthropods.

Technological intervention

Chaffcutter is a high throughput machine which makes the oil palm fronds into smaller pieces for fast degradation. The machine operates with 50HP tractor with a threshing capacity of 60-70 fronds in 10 minutes accounting to a biomass of three tonnes per hour. Manual feeding of the fronds to chaff cutter makes them into pieces which were spread around the palm bases for disintegration. This allows *insitu* decomposition of biomass and improves soil organic matter. This also decreases the application of inorganic fertilizers and most importantly will not allow the weed growth. A chaffcutter is provided to a group of 23 farmers of Rayannapalem village under SCSP program implemented by ICAR-IOPR, Pedavegi. The group members were demonstrated on using and maintenance of chaff cutter in detail.

Impact of technology

The group is presently using the chaffcutter in about 75 acres of oil palm plantation. During harvesting times, the group can cover an area of 10 acres of oil palm garden per day which yields 60-70 fronds per acre accounting to a total biomass chaffing of more than four and half tons per day (60 fronds X 8 kgs per frond X 10 acres). Similarly, during pruning times, the machine covers an area of two acres in a day with biomass chaffing accounting to eight and half tons per day (10 fronds per tree X 53 number of trees per acre X 8 Kg per frond X 2 acres). The machine can run for 20-25 days per month during peak season of harvesting (June to October), whereas it was 10-15 days per month during lean periods. The group was using the trashed material as base material for vermicomposting which was found to be prominent and useful than coconut waste. Other advantages include natural weed suppression, improved soil health, increased numbers in earthworms and field sanitation etc. The group also opined that threshing of biomass is as important as harvesting to improve overall garden health. One chaffcutter supplied to the group is operated in 200 acres of oil palm.



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Economics

The direct economic gain of use of chaff cutter in any given garden is hard to estimate. However, threshing and *insitu* spreading of leaf biomass in the plantation reduces environmental costs. This also allows reduced carbon foot print. Above all, the group opined that, use of chaff cutter created extra working days of 8 days per month to 6 female and 3 male labourers. This accounts to an extra income of Rs. 3600/- and 2000/- per month to male and female labourers, respectively with a mere maintenance cost of Rs. 500/- per month. By the use of chaff cutter, the group also earns an amount of Rs. 4000/- per day when the chaffcutter is given on rent basis during off-time. Above all, use of chaff cutter reduced the man power requirement for frond handling. From the farmer point of view, the *insitue* addition of biomass using chaff cutter reduces the use of chemical fertilizer up to 20-30% saving the costs of purchase.

