

POTENTIAL USERS/COMMERCIAL POTENTIALITIES

The demand for OTOSIL will be initially amongst the cattle growers in oil palm plantation. Taking into account the number of cattle in the year 2003 at 771,000 heads, the potential number of OTOSIL sold will be 4,500 units. Spread over a 10-year period, the number of OTOSIL sale will be 450 units per year. Based on the production capacity at 1,260 tonnes per year, the economic viability of OPF silage production using OTOSIL shows that the Internal Rate of Return of 30.1% is higher than the base lending rate (6-12%). Net present value is positive at RM 241,366. Benefit cost ratio is higher and pay back period is achieved in a shorter period. Based on the above indicators, the OPF silage production using OTOSIL technology is viable and has a commercial potential.

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OTOSIL

– A COST EFFICIENT MACHINE FOR
OPF SILAGE PRODUCTION



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BACKGROUND

Oil palm fronds (OPF) are one of the most abundant agricultural by products in Malaysia with an estimated availability of 36 million tonnes annually. Extensive research conducted by MARDI had shown that the practical application of OPF as animal feed has been in the form of pellet and cube. One of the major obstacles in the commercial production of OPF pellet and cube is the cost of drying which currently consumes more than 30% of the production cost. A viable alternative method of utilizing OPF feed is in the form of silage which does not involve drying. Nevertheless the production of OPF silage has not been widespread because its production is currently being done manually. A mobile machine, named OTOSIL, has been developed to produce OPF silage in a complete and improved mechanised process. OTOSIL is now made available to livestock producers.

DESCRIPTION OF TECHNOLOGY/ INNOVATION

OTOSIL consists of three major components viz, a chopper, a hydraulic compactor and an inoculant injector. The chopper is powered by an electric motor and produces fine OPF chips of 1-2 cm in length, considered to be most suitable for efficient fermentation and animal intake. After chopping, the chips are then blown through the chopper trunk to a cylindrical hopper equipped with an automatic sensor switch. The chips upon touching the sensor activate the injector unit which then sprays inoculants at measured amounts. A hydraulic compactor unit compacts the OPF chips into an awaiting PVC drum. The process continues intermittently until the PVC drum is fully filled with OPF chips. Finally the lid is installed on top of the PVC drum to complete the process. The OPF chips are then ensiled for 3-4 weeks before feeding to ruminants. This invention has been filed for patent registration at MyIPO through SIRIM.

NOVELTY OF INNOVATIVENESS

OTOSIL increases production rate of OPF silage by 63% and subsequently reduces production cost by 27% over the manual method. The quality of silage produced by OTOSIL also increases as indicated by the reduction in pH value to 3.9 compared to 4.5 for the manual method. In general high quality silage has lower pH value.

USEFULNESS OF APPLICATION

OTOSIL is very useful and practical to all types of livestock entrepreneurs. OTOSIL is easily transportable to any location. Currently it is powered by an electric motor, but it can also be powered by a diesel engine. It can be applied in-situ where processing and utilization can be made in oil palm estates. The invention of OTOSIL will assist the livestock producers and feed manufacturers to systemize silage production and feeding.

ECONOMIC IMPACT

Firstly, the technology will create an increase in ruminant feed production with subsequent decrease in import of feed. Secondly the technology will create an increase of interest in new feed trading between feed manufacturers and ruminant producers by supplementing and adding value to the supply chain in ruminant production. Besides increase in OPF utilization as ruminant feed, it also increases in the utilization of other ingredients such as PKC, molasses, rice bran and forage for ruminants.

