Mobile Cassava Processing Plant

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Summary

Cassava commercialization is faced with a double-edged problem: industrial cassava processors often located in the cities experience scarcity of fresh cassava roots to operate the processing plants while cassava farmers, mostly located in rural areas, lack market access to sell their roots partly due to inaccessible rural roads. The rural sector lacks the necessary infrastructure (electricity, water, etc.) and labor to attract investments in processing factories. Since cassava is very perishable and bulky, the risk of postharvest losses and cost of transporting cassava roots to city-based factories are high. Hence, most cassava processing factories in sub-Saharan Africa, established in the cities, are not competitive and are in a state of paralysis. Many investments in cassava processing factories have become moribund and bankrupt. The IITA TAAT Cassava Compact Project has designed a Mobile Cassava Processing Plant (MCPP) as an alternative investment approach for the private sector to avoid the problems associated with investments in expensive immobile processing factories, inconsistent and inadequate supply of raw materials, high cost of transporting bulky fresh roots to the city-based factories, and the loss in both the quality and quantity of roots that reach the factory.

Technical Description

The specially constructed MCPP consists of modern processing machinery and an electricity generator housed on a six-wheel machinery carrier equipped with a loader crane. Both the back sides and the tailgate of the truck open flat to form a larger flatbed, platform or processing workspace. Depending on the product for which the mobile machinery was tailored, processing operations can be completed on the workspace combined with the ground-level workspace. Specific standard operating procedures are used for processing the product of choice.

Uses

The MCPP is carefully equipped with a specific set of machinery tailored to process a targeted, shelf-stable, and market-demanded cassava product such as high-quality cassava cake, wet fufu, or wet starch, and gari which can be transported with ease and at low cost to a centrally located factory for drying and packaging.

Composition

The mobile unit is made of a six-wheel truck with crane, processing machinery, electricity generator, water pump, water storage tank and other accessories.

Means of application

The MCPP is an engineering construction. The unit is driven to the farm-gate for processing of cassava roots into the products of choice for which the unit was constructed to make.

Agroecologies	Humid forest, Moist savanna.
Regions	Africa South of Sahara, Southeast Asia.
Developed in Countries	Nigeria.
Available in	Nigeria.
Solution Forms	Equipment.
Solution Applications	Value addition.
Agricultural Commodities	Cassava.
Target Beneficiaries	Agro-manufacturers, Other beneficiaries.

Commercialization

Commercialization Category

Undergoing commercial testing

Startup Requirements

The specially constructed Mobile Cassava Processing Plant (MCPP) consists of modern processing machinery and an electricity generator that housed on a six-wheel truck equipped with a loader crane. The installed machinery depend on the type of semi-processed or final cassava product desired.

Production Costs

The cost of a mobile processing factory, including electricity generator and the six-wheel truck with a loader crane, is estimated at about $40,000 - US$48, 500 depending on the machinery for the desired cassava products such as gari, wet starch, wet fufu or high quality pressed cake for the production of high quality cassava flour (HQCF).

Customer Segmentation

The Mobile Cassava Processing Plant is an alternative or supplementary investment for cassava processing investors to avoid the problems associated with investments in expensive processing buildings that are often faced with the challenges of insufficient electricity supply, inconsistent and inadequate supply of roots, and the high cost of transporting bulky fresh roots to the city-based factories. The MCPP is most useful for processing factory owners to process cassava at farm-gate into non-perishable semi-processed products that are 20–50% of the weight of fresh roots. The less bulky semi-processed products are transported from the farms at lower transportation cost to city-based factories for final drying and packaging at a competitive price and higher profitability.

Potential Profitability

A start-up capital of US$52,900 is needed for the use of the MCPP for gari production. With loan amount of US$37,000, a three-month moratorium, 36 month loan tenor and 17% interest rate, the net profit after tax is estimated at US$82,600, net present value (NPV) is US$79,524, the internal rate of return (IRR) is 49%, and return on investment (ROI) is 156.2 For the use of the MCPP for the production of high quality cassava cake (HQCC), a startup capital of US$49,386 is required. With a loan of US$34,570, a three-month moratorium, 36-month loan tenor and interest rate of 17%, the net profit after task could be US$77,000, net present value (NPV) of US$75,346, internal rate of return (IRR) of 50% and return on investment (ROI) of 155.9 could be obtained.

Licensing Requirements

No licensing requirement.

Innovation as Public Good

The MCPP was conceptualized, designed and constructed by the TAAT Cassava Compact as a Public Good using the TAAT grant provided by the African Development Bank (AfDB).

Solution Images

Institutions