DEVELOPMENT SYSTEM INTEGRATION PLANTATION PALM OIL, CATTLE AND ENERGY IN RURAL AREAS LAMPUNG PROVINCE

by

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ABSTRACT

The study aims to analyze the financial feasibility of developing a system of integration of oil palm plantations, cattle and energy, and to analyze the prospects of developing a system of integration of oil palm plantations, cattle and energy.The research was conducted in Kecamatan Candipuro, Lampung Selatan District, Lampung Province, Selection of research location because it is a pilot village/subdistrict that performs system of integration of oil palm plantation, cattle and energy in Lampung Province. The data used include primary data and secondary data. Sampling was done by census method as much as 32 respondents. Analytical methods are analyzed: (1) financial feasibility analysis, using NPV, IRR, Net B/C, Gross B/C, Payback Period, (2) sensitivity analysis, and (3) system development prospect using descriptive qualitative analysis. The results showed that the system of integration of oil palm plantations, and energy financially feasible to run with the ratio Net B/C 8.99, Gross B/C 4.46, NPV Rp 650.665.938, Payback Period (PP) 8.68 , and IRR 36%. Development of a system of integration of oil palm plantations, cows have good prospects in technical, market, management and organization.

Keywords: Oil Palm Plantation, Cattle, Energy, System Integration, Rural

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1. Introduction

Oil palm plantations in Sumatra play an important role for national and international palm oil supply. Palm oil is the largest vegetable source needed by many industries in the world. In addition, demand for palm oil continues to grow by 5% per year. Fulfillment of world palm oil demand is dominated by crude palm oil (CPO) production from Indonesia. Indonesia produces about 43% of the total production of crude palm oil (CPO) in the world. In Sumatra islands, the main economic activity of the palm oil production process contributes to a large economy. Approximately 70% of oil palm plantation land in Indonesia is in rural Sumatra Island and opens wide employment.

Oil palm plantation is one of the plantations that is very suitable for use as a source of forage feed. It is estimated that around 70-80% of the area of oil palm plantations can be utilized as a source of forage forage. The pattern of business development that combines oil palm and cattle plantation business is the development of livestock business without having to open new land (Liwang, 2003).

In palm oil plantations there is also potential vegetation of weeds and crops that can be eaten by livestock, so that the control of the crops can be done with grazing cattle (Aritonang, 1989). According to Sutardi (1997) each hectare of oil palm plantation can produce 10-15 tons of fresh fruit palm fruit bunches (TBS) and if processed then every ton of FFB will produce 3 types of waste that can be used as animal feed that is 45-46% palm kernel cake, 12% palm fiber and 2% oil palm. Thus in the case of feeding not only demanded the achievement of quality aspects but also the economic aspects.

The palm oil rod has the potential as a base feed to replace a partial or complete forage. Suharto (2004) showed that palm oil rods can be used in feed as much as 30% of total feed, with 30% palm stalk and 70% concentrate to gain weight 0.66-0,72 kg in cattle. While the palm stem can be used as a substitute for grass and palm oil can be given in the form of fresh or silage. This potential can be used as a feed for cattle, because cattle are able to grow and

develop. Besides, cattle also produce dirt that can be used as compost for oil palm plantations. Use of compost in addition to improving soil fertility, can also improve soil structure and texture.

Lampung Province is one of the provinces in Sumatera Corridor as the center of oil palm production. Increased production of palm oil is supported by a total area that increases every year. Besides, the area of available area can be used by farmers for ruminant livestock. South Lampung regency is one of the districts in Lampung Province that has excellent potential in the field of plantation, therefore the area owned is very potential to be integrated with ruminant livestock.

Several plantations in Indonesia have implemented plantation-livestock integration systems with different patterns. Oil palm plantations in Kecamatan Candipuro, South Lampung Regency have already implemented a system of integration of oil palm and cattle with the term SISKAPI (System Integration of Palm Oil and Cattle). Various studies show that SISKAPI implementation can provide increased production for both oil palm plantation and cattle (Yamin, 2010).

The system of integration of oil palm - cattle in particular in Batuliman Village Candipuro District of South Lampung Regency is done by farmer group called Wahana Makmur, where the farmer group is very adaptive and quick response to the program given by the government in order to improve the welfare of farmers. Therefore, the South Lampung plantation office selected Batuliman Village Candipuro District as the development area of Integration Program of Palm Oil and Cattle Farm (SISKAPI).South Lampung Regency has a large oil palm plantation although not as wide as rubber plantations, but the empty bunches and empty bunches can be utilized to feed cattle. In addition, the farmland itself can provide land for grazing and forage of livestock originating from oil palm weeds. The study aims to analyze the financial feasibility of developing a system of integration of oil palm plantations, cattle and energy, and to analyze the prospects of developing a system of integration of oil palm plantations, cattle and energy.

2. Research Method

Method of collecting data

This research was conducted by census method and direct observation in field. Primary data were obtained from the farmers of respondents who applied the Integration System of Palm Oil - Cattle (SISKAPI) through interview techniques using questionnaires (questionnaires) that have been prepared. The number of farmers who joined SISKAPI amounted to 32 people, secondary data obtained from institutions and other institutions that provide the necessary information.

Data analysis method

The analysis used was quantitative analysis and qualitative analysis. Quantitative analysis was used to find out the financial feasibility which consists of investment valuation analysis, namely Gross Benefit Cost Ratio (Gross B/C Ratio), Net Benefit Cost Ratio (Net B/C Ratio), Payback Period and Net Present Value (NPV).

3. Result and Discussion

General Condition of Respondents

Wahana Makmur farmer group is a group of farmers who only perform Integration System Oil Palm - Cow (SISKAPI) in the village Batuliman Candipuro District of South Lampung regency. This farmer group was established in 1999 which consists of 52 farmers, but only 32 people joined to establish a system of integration of oil palm plantations - cattle. Cattle are integrated with palm oil plantations starting in the middle of 2014, amounting to 35 heads and 13 years of oil palm age The size of the farmers' oil palm farming area varies from 1 ha to 5,50 ha, with an average of 2ha.

Production of SISKAPI

Based on the results of 35 cows gained 8 tons of compost per month and cow non-productive (aged> 10 years) in the year to 23, an 24, as well as palm oil plantations average yield of fresh fruit bunches (FFB) of 20 774 kg /ha/ year. The palm oil plant begins to bear fruit at the age of 4 (four) years. The production of SISKAPI, covering the estimated production of FFB, cattle and compost in Batuliman Village, Candipuro District, Lampung Selatan Regency. Cattle waste produced by cattle farming has the potential to be processed into a source of solid organic fertilizer which can then be used to meet the needs of oil palm plantation owned by farmers. Manure that is a livestock waste can be used as a source of soil organic matter. Even all livestock and feed waste can be processed in situ to produce biogas as an alternative energy. The selling price for each piece different SISKAPI products, TBS is sold at Rp 1.290/kg, compost is sold at a price of Rp 800/kg, and a nonproductive cows sold at a price of Rp 8.000.000/ tail.

Business Analysis of SISKAPI

In the oil palm plantation, it is necessary to have facilities and infrastructures that can be used to implement oil palm plantation. The facilities and infrastructure are investments, which are the initial costs that must be incurred to carry out these activities. Initial costs incurred in the manufacture of oil palm plantations such as land management, pengajiran, making planting holes, planting costs, purchase of seeds, bokor, weeding and equipment. The investment cost of composting and cow breeding in Batuliman Village, Candipuro District, South Lampung Regency is a contribution from the South Lampung Regency Government in the form of grant, but it is still taken into account. Investment costs incurred in SISKAPI include the cost of making pens, fermentation tubs, compost houses, and equipment.

On average oil palm plantations applicable for land treatment, planting, planting and planting, plastering, baking, fertilizing, bokor are Rp 30.000,00. The cattle breeding and compost

fertilizer business usually use labor in the family and from outside the family, the activity done by the worker in the family (TKDK) is in the control of the cage only, whereas, the worker outside the family (TKLK) is paid in accordance with the business needs breeding cows among others, cleaning cages, bathing cows, providing food and drinking wages amounting to Rp 30.000,00/ day.

The cost of purchasing SISKAPI equipment is the cash cost incurred by the farmers. The cost of purchasing the equipment is included in the replacement cost in accordance with its economic life. Equipment used by farmers in the oil palm farming, meter, spray tank, ganco, and egrek of Rp. 8,200.00, where ganco and egrek are purchased in the 4th year and have a 2-year economic life and a 3-year spray tank. Equipment used by farmers in cow breeding business and compost fertilizer ie, three-wheeled motor, water hose, weighing scales, weighing scales, fertilizer processing of Rp. 30.312.200,00.The cost of fertilizer in oil palm farming is included in the operational costs that farmers must incur each year. Average annual fertilizer price for NPK worth Rp. 2.500,00 / kg for urea fertilizer worth Rp. 2.000,00 / kg and manure which is only used at the beginning of planting is Rp. 100.00 / kg. Herbicides used by farmers every year are only Gramoxone worth Rp 19.800,00 / kg.

Financial Analysis of SISKAPI

The financial analysis of SISKAPI in Batuliman Village, Candipuro District, South Lampung Regency during the economic life of oil palm plant (25 years) was calculated by discounting the interest rate of 14%. The interest rate of 14% is the interest of the retail business credit (small-medium scale business) at the bank in the research area, in this case Bank Rakyat Indonesia (BRI). Discount factor is intended to reduce the benefits derived from SISKAPI in the future and the flow of costs into value at the present time.

The net financial profit (NPV) analysis obtained during 25 years of business amounted to Rp 650,606,587, taking into account the prevailing interest rate (14%). Analysis of Net B / C obtained value of 8,98 which means that for 25 years effort, net benefit which is got equal to 8,98 times of cost (cost) that issued. The calculation of Gross B / C Ratio is 4.45 indicates that

the system of palm oil integration - cattle according to Gross B / C Ratio criteria is feasible, because the value obtained is greater than 1, the value of Gross B / C Ratio is 4.45 means that with a cost of Rp 1 will generate revenue of Rp 4.45.

It is known that the payback period on the SISKAPI investment is achieved in the eighth year, it means that the investments issued for SISKAPI will return in the eighth year, while in year 8 it is the advantage gained during the handling of the cow palm - oil integration system. Because Payback Period (PP) is smaller than the project's economic life, the financial feasibility analysis of the system of oil palm plantation integration in Batuliman Village of South Lampung Regency is based on the criteria of decent PP. System Integration of oil palm plantations - cattle (SISKAPI) based on IRR criteria obtained a value of 36% means to the interest rate below 36% SISKAPI feasible and profitable.

Market Aspects

The market feasibility aspect relates to the demand, supply, pricing, marketing program and sales forecasts the company can achieve. According to Mc Carthy (1995), the classification or classification of the four elements of marketing mix tools consists of 4P, namely: (1) Products (Product), something that manufacturers offer that is realized or not (services) to the market, to meet the needs of consumers. In this study the products produced by the producers are the FFB from oil palm plantations and compost from cattle breeding cattle, (2) Price, the amount of the value of an item paid for a particular product. In this study the price of TBS products marketed is due to an agreement between farmers (marketing team) and Palm Processing Factory (PPKS), which is based on the quality of TBS. And the price of marketable compost fertilizer is very affordable, which is worth 800 / kg. So that the compost fertilizer is much in demand by the community, especially the people of Lampung Selatan Regency. (3) Place, Products produced by oil palm plantations in the form of TBS (Fresh Fruit Bunches) which are then marketed through marketing teams from farmer groups. While the compost is a product of cattle farms marketed to the surrounding community and agriculture / livestock service scope of Lampung province. (5) Promotion (Promotion), all activities undertaken by the company to communicate and promote its products to the target market.

Technical Aspects and Production of SISKAPI

Seeds used by farmers of respondents for palm oil farming come from buying. Seeds purchased by farmers from PTPN VII Rejosari business unit, although oil palm plantations in Batuliman Village Candipuro District is not a partnership garden but PTPN VII Rejosari Business Unit sells seeds and provide counseling about the cultivation of oil palm to all farmers of respondents.

Oil palm cultivation activities conducted by farmers of respondents in the study area include weed control / eradication, disc making, fertilization, and palm leaf cutting. Harvesting activities in oil palm crops can be done when the plants begin to age 4 years. The fruit picked is a ripe fruit, with the characteristics of the fruit skin from black to orange red. The harvest is collected in one place for sale. Harvesting is done every 15 days or once a month is done palm fruit picking as much as 2 times. Once the palm fruit is picked, it will be transported and collected in one place. In the research area, oil palm that has been picked and collected and then sold by a marketing team derived from gapoktan located in the research area. Compost material produced by farmer groups in the framework of SISKAPI t with formulation standards (ARA, 2003). Percentage of the use of additional materials adapted to the needs of cow dung raw materials to be in the process of decomposition in accordance with what is expected.

Aspects of Management and Organization

Farmers of Palm Oil Integration System - Cattle (SISKAPI) conducts management in running their business although the management is still simple and not yet written. This management includes production planning, production implementation and control. Production planning undertaken aims to the production process can be in accordance with the frequency of production run. Implementation and control of production is done in accordance with production planning. Viewed from this aspect of management, the system of integration of oil

palm plantations - cows can support the prospect of siskapi development in South Lampung Regency. From management and organization aspect of SISKAPI farmer group can develop cow breeding business that was only micro scale to small-medium scale.

4. Conclusion

1. The system of integration of oil palm, cattle farms and energy (SISKAPI) in South Lampung Regency in calculating average 1 hectare land is financially feasible (profitable) to be cultivated and developed.
2. The prospect of developing a system of integration of oil palm, cattle farms and energy (SISKAPI) in Lampung Selatan Regency has technically good prospects for production, markets, management and organization to increase farmers' income.

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